A·I·A

Journal

February 1966

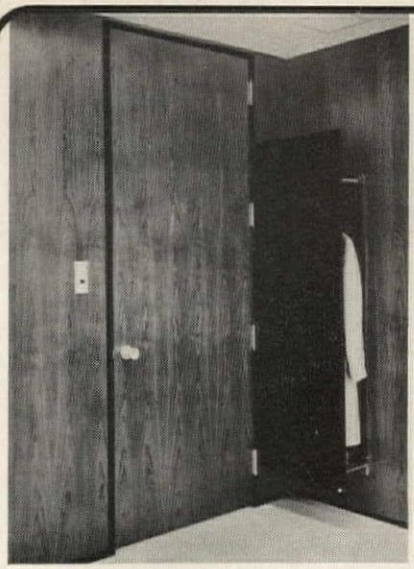
In Search of John Edelmann

Au Naturel—Kentile's newest vinyl asbestos floor tile: 12" x 12" x 3/32"—shown with feature strips. Easy to maintain. Greaseproof. Colors: 4. For samples, call your Kentile® Representative.

Natural beauty with extra thickness—Au Naturel vinyl tile

KENTILE VINYL FLOORS

New! Kentile's luxuriously thick Au Naturel for extra wear and comfort underfoot. Has extra-deep texture. Helps hide uneven underfloors. Economical for both commercial and residential use.



FIRE DOORS

New from U.S. Plywood Corporation: the Weldwood® 9-foot wood-faced fire door.

1. Product description.

A wood-faced rated fire door in sizes from 4/0 x 7/2 to 4/0 x 9/0. Tested and labeled for Class "B" and Class "C" openings in offices and apartment buildings, hotels, hospitals, schools, institutions, and residences.

2. Uses.

Provides new design opportunities to architects who may have had to compromise their ideas previously when faced with a situation that demanded a rated fire door, yet would have preferred an elevation of straight vertical lines with floor-to-ceiling openings.

3. Construction.

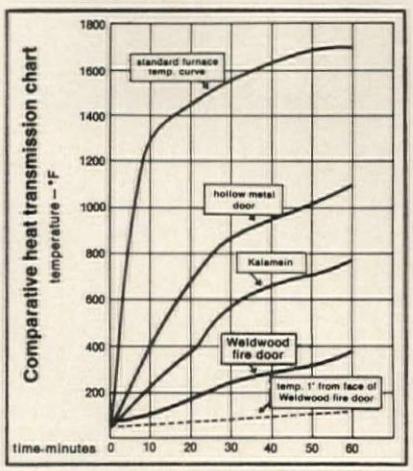
Of comparatively light weight, Weldwood 9-foot fire doors have an incombustible all-mineral Weldrok® core. All edges are banded with fireproofed hardwood. Kiln-dried 1/16" hardwood veneer cross banding is bonded to the Weldrok core.
Locksets. U.S.G. Series 161 cylindrical type with a 1/2" throw.
Closers. Surface-mounted, through-bolted.
Faces. All species of wood, specially selected for the beauty of grain and figure. Can be supplied unfinished or prefinished. Also available with factory-applied Permaply® surface. Permaply is a high density cellulose fiber layer impregnated with phenolic resin which is suitable for painting. It eliminates checking, minimizes grain raise, and is highly resistant to chemicals.
Vision Panel sizes. 100 sq. in. maximum (5" x 10", 10" x 10", 8" x 12"). Can be two 5" x 10" panels per door.

4. Applicable standards.

The Weldwood Fire Door is approved by Factory Mutual Laboratories, New York City Board of Standards and Appeals (Approval Calendar No. 75-63SM and 143-54SM).
Tested and listed by Underwriters' Laboratories, Inc. for fire resistance, heat transmission and structural integrity, and labeled for 1-hour Class "B" vertical shaft openings; for 3/4-hour Class "C" room and corridor partition openings.

5. Comparative heat transmission chart.

Weldwood Fire Doors' extremely low rate of heat transmission provides a substantial margin of safety in the reduction of fire spread. This chart, compiled from official tests, compares the heat transmission rate of a Weldwood Fire Door with those of hollow metal doors and Kalamein doors. It shows that in tests by Underwriters' Laboratories, Inc., the temperature rise of Weldwood Fire Door's unexposed face is less than 250°F, after 30 minutes in the test furnace, while the temperature rise in the test furnace is well over 1500°F. Moreover, after a full hour's exposure of one face to searing 1700°F flame, the temperature rise is only 120°F at only 1 foot from the unexposed face of the Weldwood Fire Door.



6. Installation.

Weldwood Fire Doors can be supplied ready for installation; machined to your specifications for listed hardware and openings.

7. Availability and technical services.

The Weldwood 9-foot wood-faced fire door is available through 135 U.S. Plywood Corporation branches. In addition, our Architects' Services Representatives will be happy to assist you with design and engineering problems and suggesting specifications.

8. Guarantee.

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A·I·A Journal

FEBRUARY 1966

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Cover: Main dining room of New York's Hotel Majestic, designed, and probably drawn, by John Edelmann (p. 35) for architect Alfred Zucker. From *Architecture and Building*, XV, Sept. 5, 1891

LOOKING AHEAD TO MARCH

Wanted—Honesty and Consecration: The ever-increasing difficulty to communicate is apparent in liturgies as well as in church buildings, and even in theology. "Sacred emptiness" will remain the predominant attitude for the foreseeable future, says the late Dr. Paul Tillich in this brilliant probing of two principles—honesty and consecration—which he feels should control religious art generally and church architecture particularly. It comes from a man who lived up to his 14th year in the parish house of his father and whose "love for architecture never died."

Education and the Architect's Wallet. What *is* the relationship between an architect's level of education and his level of earnings? A husband-and-wife team who surveyed the Cincinnati area have discovered that their study raises more questions than it resolves. But two points become clear: "Additional education in the form of a master's degree increases an individual's value if not the quality of his work; and the profession must become more concerned with its educational establishment and the earnings of the people involved."

Color and the Sense of Space: Architects, being only human, pride themselves on having excellent taste in color; still, Faber Birren declares, they often deal with forms as though they were colorless. The author-consultant reveals several facts and phenomena which an architect ought to recognize so that when he does express himself with color in space, he will do so with competence.

Some Lessons from Management Psychology: There is a good chance that the crucial and revolutionizing events that have taken place in the field of management in the last 30 years are about to be re-enacted in the field of architecture. A George Washington University team, working under a Public Health Service grant, have come up with some of the ways in which psychology and its research findings, old and new, can make a fruitful contribution to architectural thinking.

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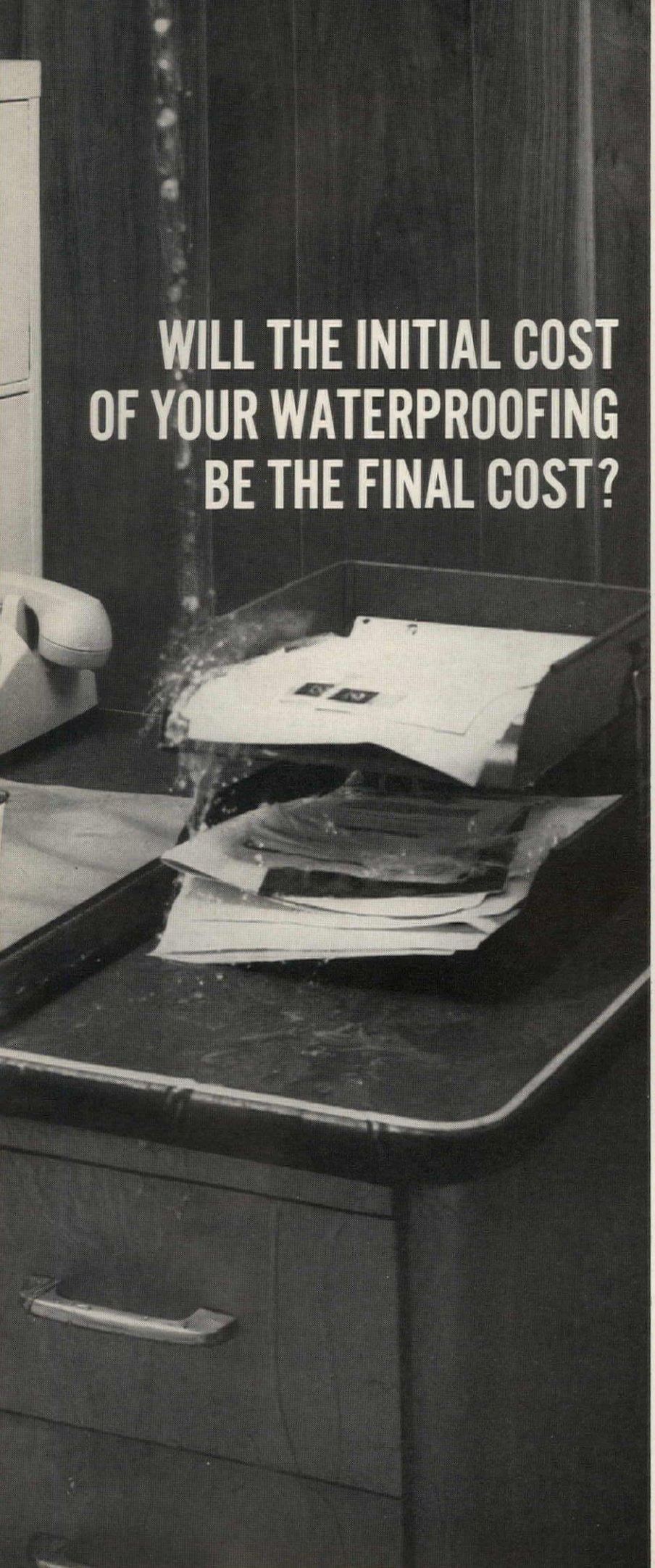

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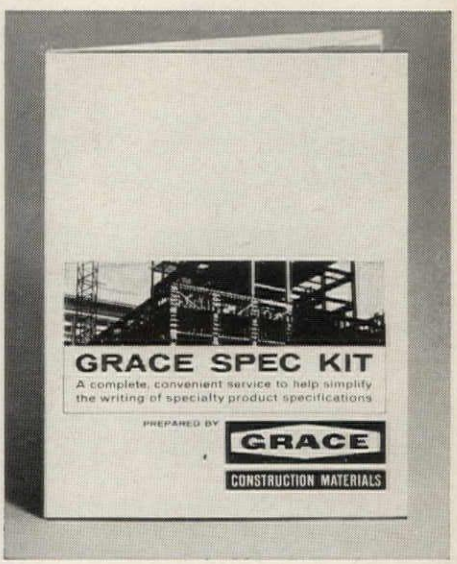

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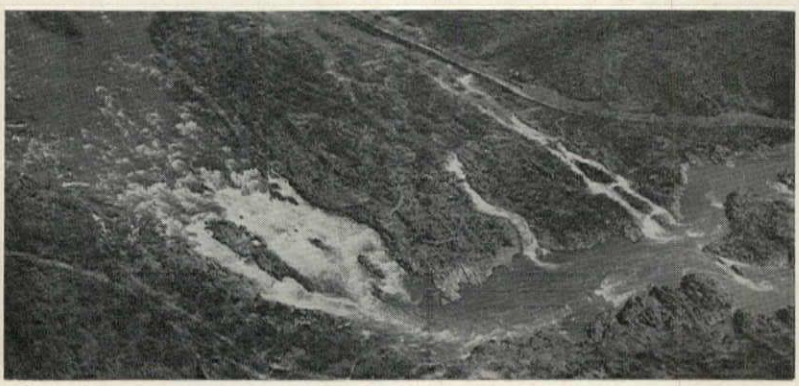
COMMENT & OPINION

Like Father, Like Son: Publication of the December lead-off article regarding Frederick Law Olmsted has prompted an inquiry about one of Washington's most popular tourist attractions. Olmsted Island, formerly Falls Island, at Great Falls on the Potomac some 12 miles upstream from the nation's capital, was renamed last year for the son (1870-1957 who followed in the footsteps of his celebrated father, America's first professional landscape architect.

The junior Olmsted also acquired



a noteworthy list of credits. Considered the founder of the National Park Service, he framed the language of the 1916 congressional act establishing that branch "to conserve the scenery and national and historic objects in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

What Others Are Saying: One way a magazine or an organization can help keep itself informed on the pertinent developments and issues is to employ a clipping service, which scans hundreds of newspapers and other media for items of interest to the particular client. The AIA JOURNAL has a special service of its own in terms of readers who often take time out from a busy professional schedule to pass along usable information. From a member in the Pacific Northwest, for instance, comes a clipping of an editorial written by James Welch for the *Salem Capital Journal* and reprinted in the *Eugene Register Guard*. It's worth another go-around here:

"Not since Frank Lloyd Wright has there been a vigorous spokesman for beautification of our cities.

"A visitor from another planet, reading and hearing all that has been said about our cities these past few years, might have assumed that almost no one cares that they're dismal places.

"But now the group that should have most to say about cities is saying plenty.

"The American Institute of Architects has found new zeal, commenting regularly on a variety of topical situations and encouraging better city planning through awards to cities which bootstrap themselves.

"And the strong voice is Morris Ketchum Jr., New York architect who is now president of AIA. He . . . has an almost Wright-like ability to say things with blunt eloquence.

"For example, here's a recent quotation which should be on every city hall bulletin board in the country:

" 'The city is the natural gathering place for our thinkers, our innovators and our specialists. It is where education flourishes and art is born. It is the generator of our national wealth. There is no reason why it should be dirty, ugly and generally unlivable. It should be, in fact, our greatest work of art.' "

Building the Great Society: Another interesting piece to come across our desk appeared in the December 1965 *Diplomat* magazine. Francis Brennan, writing under the heading "Hard Questions for Great Builders," raised some points about environmental realities in general and about the architectural profession in particular when he declared:

"There are only some 20,000 registered architects in the US [Best estimates set the figure at about 30,000.—Ed.]—hardly an adequate reservoir for the battalions of master planners that will be needed in the next couple of decades. . . . When one considers the vast social responsibility an architect bears, not only for easing the problems of the present but for anticipating the needs of the future, one cannot help concluding that he is grossly underpaid, grossly underestimated and woefully mistreated. How long will it take to correct these inequities and restore the architect to his ancient (and well-paid) post at the elbows of the princes?"

An Idea Grows: Back in December 1962 the JOURNAL published "the first of several articles on the design of cities and towns." The "several" grew into a dozen installments bearing the title "Urban Design: The Architecture of Towns and Cities" and, after some revisions by author-illustrator Paul D. Spreiregen AIA, became a book issued by McGraw-Hill last fall. To kick off the theme "Making American Cities More Livable" in its January 8 edition, *Saturday Review* published excerpts from the book.

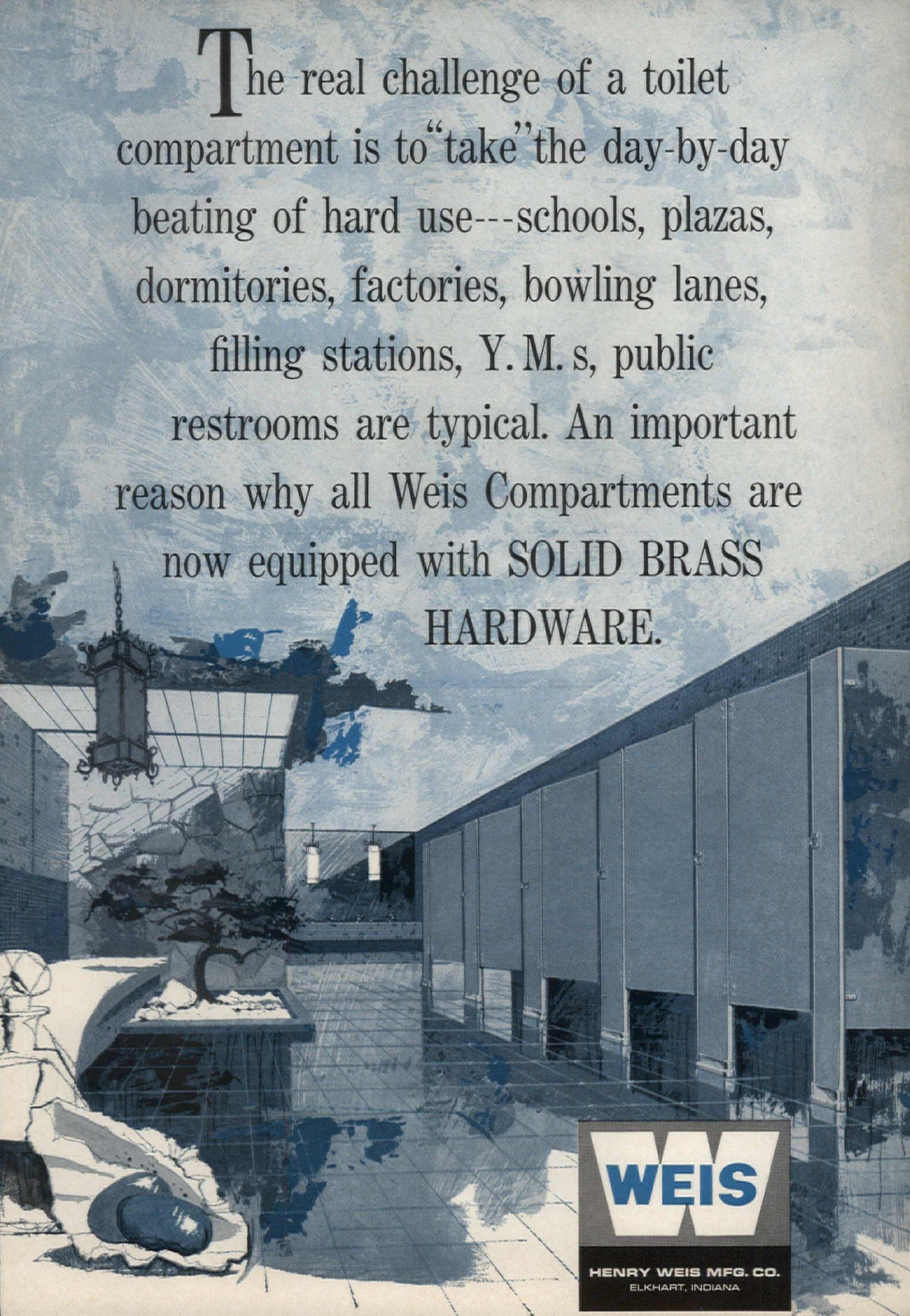
Reprints of the follow-up series, Urban Design Worksheets—No. 6 is appearing in this issue—can be obtained by writing the director of Urban Design Programs at AIA.

Forever the Image: The advice given by panelists at a recent public relations seminar sponsored by the National Society of Professional Engineers might very well have been directed to the architectural profession. The engineers were warned that if they want to get anywhere in a PR program, they have to "become some kind of a social force or get involved in social issues today."

CBS Vice President Theodore Koop urged his audience to "comb all the prominent workers in your organization to find even three or four people who can make a worthwhile appearance on TV or radio."

The man who helped develop the "Mr. Novak" program for the teachers, John Cox of the National Education Association, pointed out that "it doesn't matter what you do with publicity, it's your policies that dictate what people think of you. It's what you do that counts, it's not what you say about it. So many associations want to conduct one kind of policy and want the press operation to convince the people they're conducting another."

ROBERT E. KOEHLER
Editor


The real challenge of a toilet compartment is to "take" the day-by-day beating of hard use---schools, plazas, dormitories, factories, bowling lanes, filling stations, Y. M. s, public restrooms are typical. An important reason why all Weis Compartments are now equipped with SOLID BRASS HARDWARE.
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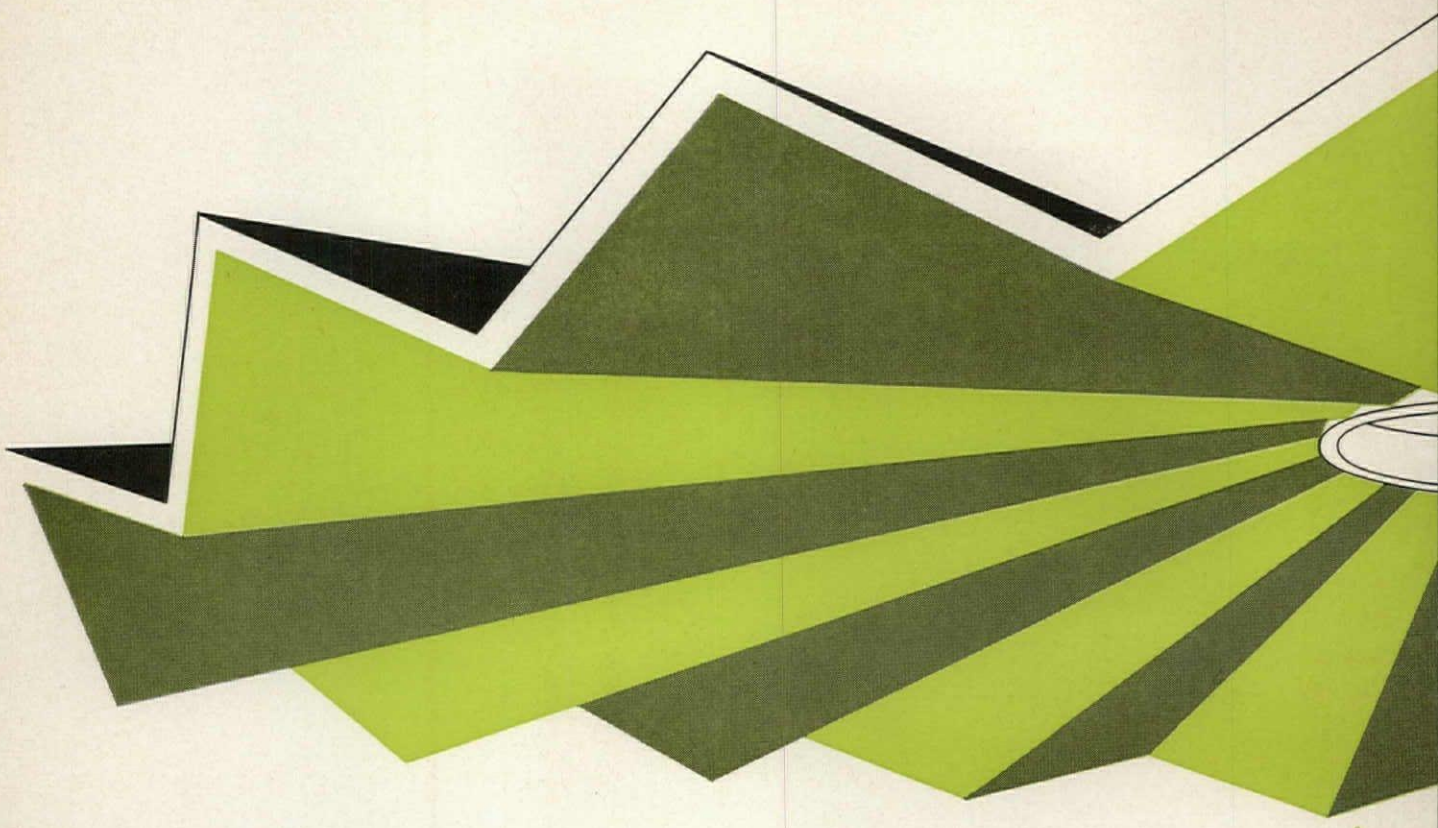
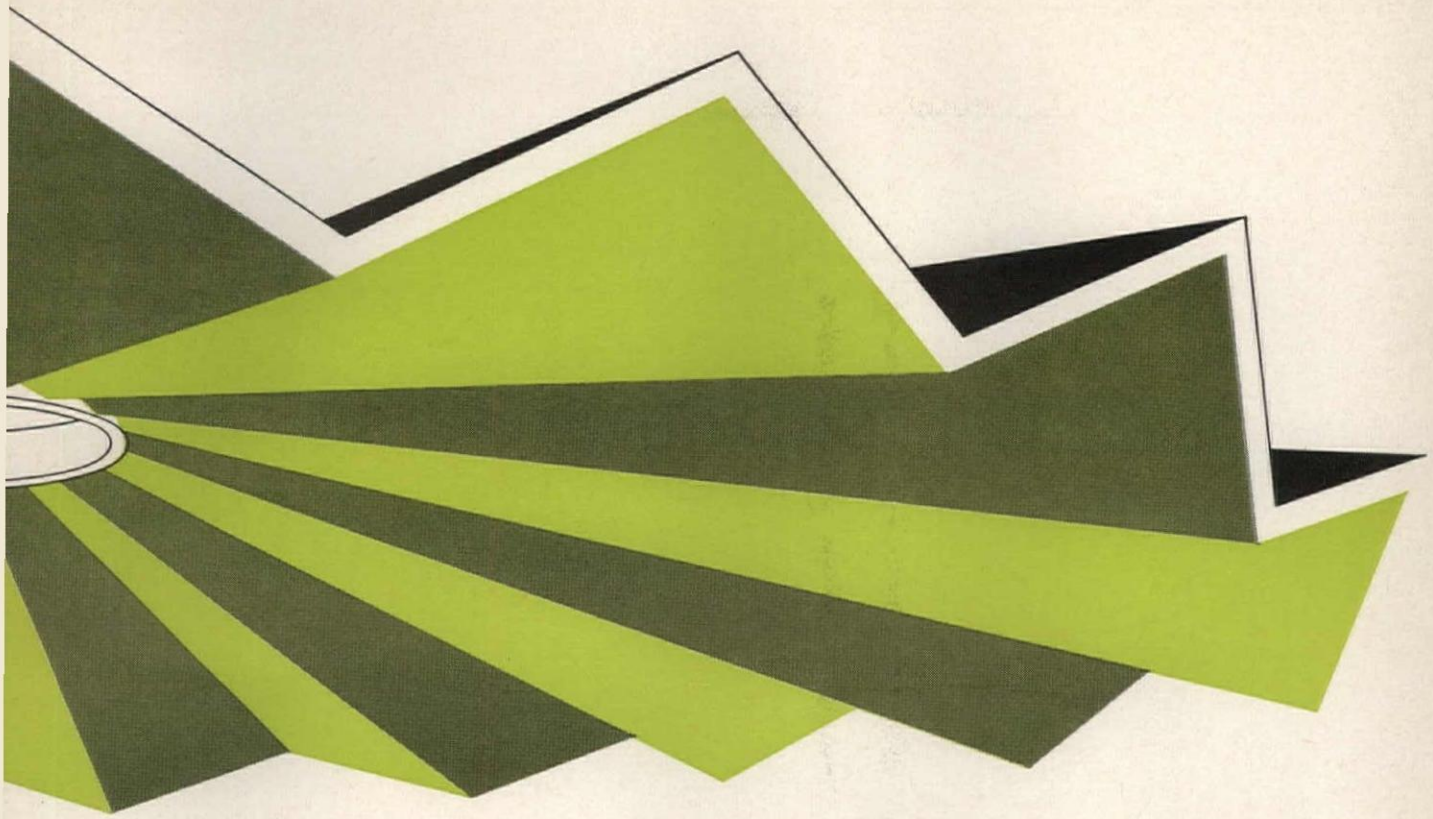


the most exciting ideas take shape in plywood



Whirlpool Employees Credit Union Building, St. Joseph, Mich./Edward R. Duffield, Architect/Holland Construction Co., Contractor/Plywood Components Corp., Fabricator

The jaunty cap on this glass-walled office building is a plywood radial folded plate. Its use here proves the versatility of the design idea, more often seen in the august context of churches and public buildings. This plywood roof cost less than any alternative and went up faster. Besides saving money, radial folded plates give large clear-span interiors because no center supports are needed. For more about this and other time-saving, high-strength plywood building systems, send for the new, free booklet "Plywood Construction Systems." We're at Tacoma, Wash. 98401 (USA only).

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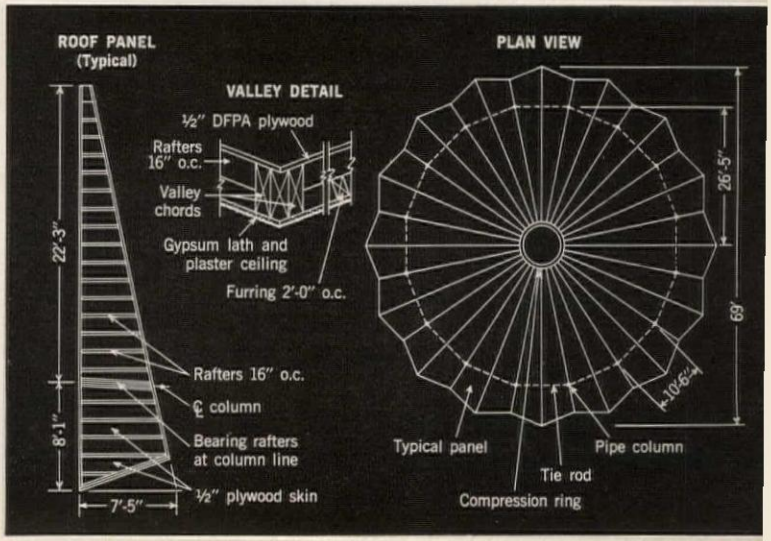


NEWSLINES

Pusey Is Convention Purves Lecturer; Medal Winner, Plans Made Known

The president of Harvard University will give the Purves Memorial Lecture and a West Coast photographer will receive a medal at the AIA's 98th convention.

Theme for the June 26-July 1 Denver convention is "Technology, Environment and Man."

It is a theme that involves the opportunities and challenges confronting the space-age architect and the adaptation of man to his environment in a period of rapidly changing science and technology.

Pusey

Dr. Nathan M. Pusey will deliver the lecture in Arnold Auditorium, U. S. Air Force Academy.

Pusey is the first convention speaker to be announced. Made known at the same time is the winner of the 1966 Photography Medal, Morley Baer of Berkeley, Calif.

Baer

Baer, 49-year-old native of Toledo, Ohio, and holder of a Master of Arts degree from the University of Michigan, is the first winner of a 1966 Institute honor to be revealed. He is distinguished for his photographs of architecture and nature.

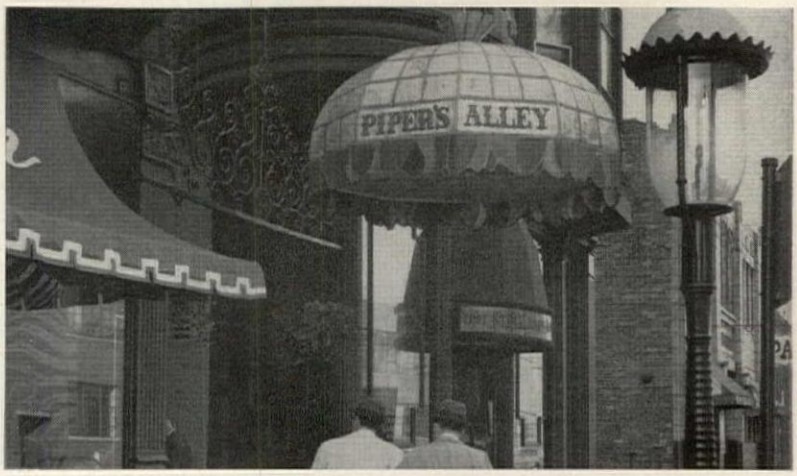
The program is aimed "at the diverse interests of the whole Institute membership," Institute President Morris Ketchum, Jr., said. "I hope," he added, "that all AIA members, and especially those who have never been to a national convention, will consider the unusual features of the Denver convention."

Ketchum noted "The Mile High City's" geographical centrality and its recreational and tourist advantages, the latter suggesting a combined convention-vacation trip.

Some highlights of the Rocky Mountain gathering are the President's Reception Monday (June 27) evening in Central City, the colorful old first capital of Colorado; and Wednesday's AF Academy tour.

Workshop sessions, sidelined last year because of the unique nature of the joint convention-Pan American Congress, will be resumed.

The workshops will deal with: urban design for city and small community, cost of services and organization for practice, emerging techniques of practice and construction contract methods etc.



Victorian Splendor; Symbols That Insult Thee Not

Is there a trend toward the opulent in the popular air?

Chicago's Piper's Alley, the entrance to which is shown above, is said to be a favorite attraction.

The 22-store Victorian-styled complex has enclosed brick walkways, elaborate but mellow gas lamps and three restaurants, one of which, This Old House, is termed a conservatory of Victorian splendor "in the Warner Bros. manner."

Clean-lined contemporary design could be heightening the public's taste for embroidery. And "colonial" may lack the enrichment that is needed.

An Edwardian glass shade such as the one above can indeed be an exquisite counterpoint over a modern dining table, and 19th century buildings surrounded by uncompromisingly modern structures are taking on the appearance of Louis Sullivan jewel boxes.

A public relations firm in California reaches back farther in time, offering heraldic designs to decorate buildings.

The firm says there is a growing trend to "dress up large, monotonous areas of walls with colorful designs as a valuable sales aid." However, says the firm, "many of these designs have no meaning and are insulting to the sophisticated."

And so, designs such as that at left. The inscription: "By my strength I will make thee safe."

cities

Abrams, Koch, Galbraith Urge New Approaches

More state and federal monies for the city, urges Charles Abrams, newly-appointed chairman of New York Mayor John Lindsay's housing and urban renewal panel.

And, suggested Abrams, there ought to be an overhaul of "demon-

Continued on page 16

"Now, can you cap this?" the architect asked

Back in 1908, when architects Palmer & Hornbostel of New York City designed the New York State Education Building at Albany, hand craftsmanship in terra cotta for buildings of classical design was an art mastered by many. Recently, when Charles S. Kawecki, chief architect of the Department of Public Works, New York State, needed 54 new column caps, and 1,000 lineal feet of ornamental cornice for the building, Federal Seaboard was able to meet his specifications by combining traditional craftsmanship in clay with modern manufacturing methods. Whatever *your* needs today—ornamental sculpture, bas-relief or perforated facades, polychrome panels or colorful smooth surfaces in thicknesses ranging from 4" to ⅜" in units large or small, Federal Seaboard will custom-make modern architectural terra cotta to your precise specifications. And you have every color under the sun from which to choose. Write for our file of creative applications, or tell us what you have in mind.

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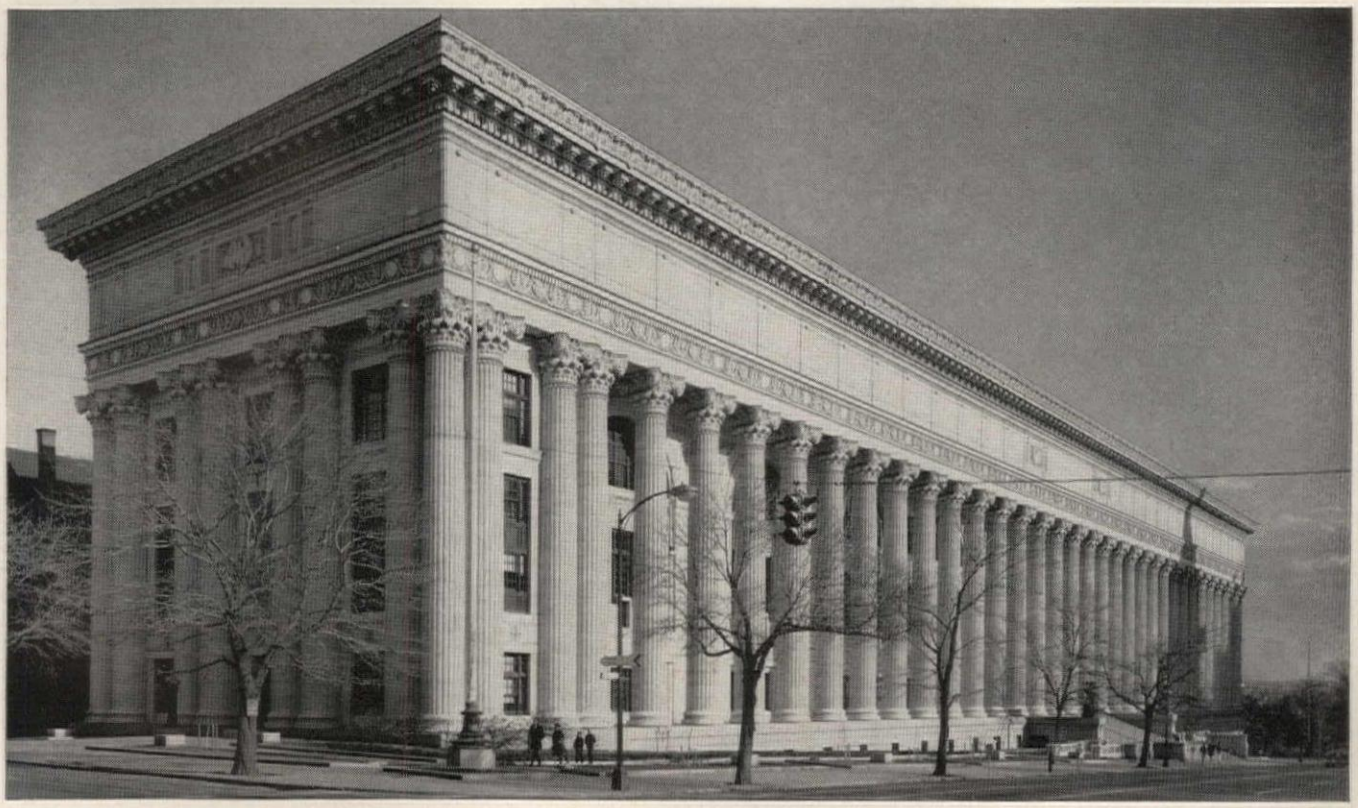

CALENDAR

Feb. 21: Mason Contractors Association of America Convention, Washington

March 20-23: Solar Energy Society Second Annual Meeting, Somerset Hotel, Boston

May 8-12: ASLA Annual Meeting, Yosemite National Park, Calif.

May 15-21: Mid-Pacific Conference on Landscape Architecture, Hawaiian Islands

May 21-27: Fifth International Congress of the Precast Concrete Industry, Royal Garden Hotel, London

June 11-18: Fifth Congress of the International Federation of the Prestressed Concrete Industry, Palais de Chaillot, Paris

AIA Regional and State Conventions

March 16-17: Michigan Society of Architects, Statler Hilton Hotel, Detroit

April 13-15: Gulf States Region, Hot Springs, Ark.

May 10-12: Wisconsin Chapter, Lake Lawn Lodge, Delavan

May 20-21: Tennessee Society of Architects, Claridge Hotel, Memphis

July 21-23: North Carolina Chapter, Grove Park Inn, Asheville

AIA Committee and Related Meetings
(At the Octagon unless otherwise noted)

Feb. 10: Government Liaison Committee

Feb. 11: AIA-AGC Liaison Commission, NSPE Headquarters, Washington, D.C.

Feb. 14: Architects/Engineers Liaison Commission, NSPE Headquarters, Washington, D.C

Feb. 15: Industrial Architecture Committee

Feb. 23: Committee on Religious Architecture

Feb. 25-26: Esthetics Committee

March 3-5: Honor Awards Jury

March 4: Interprofessional Commission on Environmental Design

April 11-15: Jury of Fellows

April 14-16: Urban Design Committee

Competition

March 1 (registration): Design of community center incorporating fallout shelter. Contact: A. Stanley McGaughan AIA, Professional Adviser, National Fallout Shelter Design Competition-Community Center, 1341 New Hampshire Ave., N.W., Washington, D.C. 20036.

Tours

Feb. 13 and Oct. 9: Mexican Architecture and Interior Design Seminar-Tours. Two weeks each. Contact: T. H. Hewitt, Apartado Postal 5-251, Mexico City, D.F.

March 26: Architects' Trek to the Treasures of Egypt and the Middle East: 22 days, the tour leader to be announced. United States Travel Agency, Inc., 807—15th St. N.W., Washington, D.C. 20005

Modern Door Control by

LCN

Closer concealed-in-door

Dorado Beach Hotel
Dorado, Puerto Rico

Toro-Ferrer, Architects

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Application Details on Opposite Page

Newslines *from page 12*

stration projects" such as the urban renewal program and the War on Poverty.

"The cities are performing their historical function as havens for the poor and oppressed, but what they need are not a few pilot efforts but more funds to improve their existing school systems and to meet their policing, relief and other commitments," he said.

With cities becoming financially strapped there is not enough money to pay for these basic services, Abrams said, adding:

"The plight of the city dwellers cannot be dealt with if the cities are financially crippled.

"But the cities have been given only the limping public housing program, the groping urban renewal program and the War on Poverty, which, while well-intentioned, is less a 'war' than a series of skirmishes, and which, unlike the Peace Corps, is not designed to supplement, finance, expand and improve existing programs but to innovate demonstration projects and pilot efforts."

Abrams, chairman of the Division of Urban Planning of Columbia University's School of Architecture, expressed his views in the *Columbia University Forum*.

National Emergency. Elsewhere on the city scene, Carl Koch FAIA told a Milwaukee gathering that "housing has clearly reached a state of national emergency."

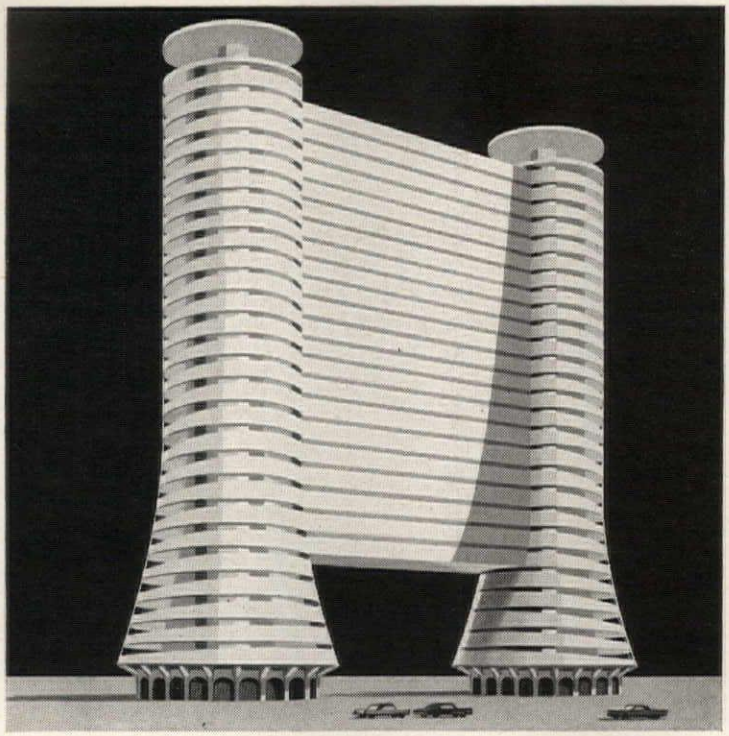
"This crisis," Koch said, "is based on the combination of a continually mounting population explosion, a high percentage of housing that is substandard (25 percent or 15.6 million dwellings) and an even higher percentage (60 to 70 percent) of Americans who can't afford to live in current new housing without subsidy."

The Boston architect proposed assembly-line methods. Only with such an approach and "other characteristic processes, such as quality control and stockpiling, can new houses be built to meet the paying power of the majority of our citizens," he said.

Depression Comparison. Deep concern with the environment was also registered by Harvard's John Kenneth Galbraith in a lecture in New York. "As in the 1930's the world faced an economic crisis, so now it faces a crisis of urban growth," Galbraith said.

And in Washington, D. C., a California industrialist and former

Continued on page 20



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For further information on communications planning,
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Newslines *from page 20*

merger results in "a greatly strengthened organization," said Urban America President Stephen R. Currier and ACTION President John H. Muller.

Initially, the new organization will have an annual budget of more than $1 million for its combined program.

Andrew Heiskell of New York was elected chairman of the Board of Trustees. Currier was named president and Muller was elected chairman of the National Council —an advisory group of 100 prominent business and civic leaders and members of the design professions to be appointed by Urban America's 24-member Board of Trustees.

Staff members of both of the merging groups will be retained, Currier said, and all existing programs will be continued while officers and the board map final details of both the structure and strategy of the new organization.

Stanton Honored for Aid To Arts, Other Fields

Dr. Frank Stanton, president of the Columbia Broadcasting System, has received New York City's highest award, the Gold Medal, for significant contributions to the communications industry and the arts.

Stanton was cited for having helped achieve a "vastly wider appreciation of the place of the arts in our society and for his priceless contributions" in other fields.

He was hailed for having enhanced New York with the new CBS building. The 38-story black-granite tower, designed by the late Eero Saarinen, has won several design awards and already is a New York landmark.

Educators Form Group For Better Housing

To promote better housing for Americans is the objective of a newly formed organization, the American Association of Housing Educators.

Educators interested in family housing problems formed the AAHE during a conference at the University of Missouri late last year.

The AAHE will promote housing education and develop guides to strengthen housing research and teaching.

Continued on page 86

First Honor Award Winner* • by I. M. Pei & Associates and King & King

Whether the competition is local, regional, or national, an impressive number of award-winning buildings are Mo-Sai. Other than Mo-Sai's intrinsic high quality, the resemblance ends there. Let's look at some of the distinctive Mo-Sai features on this award winner. Above and below Mo-Sai windowall units are exposed Mo-Sai structural beams. On either side of the windowalls, monolithic Mo-Sai panels with double returns form the structural fin walls. On each corner of the building two 10-foot 6-inch by 32-foot-high Mo-Sai wall units with an incised design enclose stairways. Mo-Sai cast in the shape of 'I' beam cross sections forms the balcony railing, while Mo-Sai facia panels encircle the roof slab.

Could this building have been so beautifully expressed in anything other than Mo-Sai? *1965 A.I.A. Competition

School of Journalism
S. I. Newhouse Communications Center
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BOOKS

Metropolitan Parking Structures; A Survey of Architectural Problems and Solutions. Dietrich Klose. New York, Washington: Frederick A. Praeger, 1965. 248 pp. $18.50

Almost any journal these days contains an article decrying the paralysis caused by disrupted traffic. One has only to watch automobiles pouring out of big-city parking lots during the rush hours to realize that the parking problem has reached a state of crisis. With the forecast that by 1970 200 million Americans will own 100 million cars, it is expedient, indeed, to give grave thought as to where these cars will be parked. In this book Dietrich Klose, an architect in Hildesheim, who previously taught urban planning at the technological institutes of Karlsruhe and Stuttgart, presents 80 answers to the parking dilemma.

Before getting directly to practical solutions the author writes lucidly of such matters as the revolutionary changes brought about in the motor age. He discusses the structure of cities so cogently that any planner will benefit from his comments. He thinks it is not necessary to sacrifice urban values to wrongly interpreted traffic needs, and that we can recapture the charm of urban living enjoyed before the advent of mechanized traffic. One necessity is a revolution in parking concepts. We can conquer the problem if we really want to, Klose believes, and he calls for a citywide coordinated and controlled system of parking facilities buttressed by sufficient financial aid and technical organization.

He deals first with structural problems of parking facilities, primarily in the central business district, and analyzes such matters as the site of parking facilities and their relation to both vehicular and pedestrian traffic; straight ramps, helical ramps and ramped floors; multistory and underground garages. He then considers (and the major portion of the book is given over to this development) parking facilities in conjunction with particular building types such as department stores, administrative buildings, banks, hotels and housing developments. The book is profusely illustrated with more than 700 diagrams and photographs.

MARY E. OSMAN

Continued on page 92

Since **HOPE'S** *1818*

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Photo by Mr. Phokian Karas

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Timely Performance

TIMELY PERFORMANCE is an important consideration in the negotiation of any agreement. In the construction industry, agreements between owner and contractor often specify that the construction of the project will be complete within a certain number of calendar or work days or by a certain date.

A *Penalty or Bonus* clause may also be included to encourage early completion; or the agreement may contain a *Liquidated Damages* provision to emphasize the necessity of timely completion.

Such provisions may properly be included in agreements covering the furnishing and delivery of a detailed, specified commodity, where the buyer (owner) has pre-determined and pre-specified all work to be included. The seller's (contractor's) services are then rendered in response to documents that clearly specify exactly what the buyer wishes to purchase.

Owner-Architect Agreements. Occasionally an owner proposes that similar clauses *relating to the timely performance of the architect's professional service* be inserted in the owner-architect agreement. Such a proposal assumes that professional architectural services, as evidenced by drawings and specifications, are commodities that may be traded in the marketplace. This, of course, is a faulty assumption. Drawings and specifications are instruments of service prepared by the architect as a means of providing professional services to the owner. They are not commodities; they are the instruments by which the architect practices his profession, and remain his property whether the project for which they are prepared be executed or not.

Further, the architect's services, like all professional services, encompass an intimate relationship between client and professional advisor. If these services are rigidly scheduled by contract device, the relationship is compromised and tends to degenerate into an unsatisfactory and unproductive exercise in meeting deadlines.

Time of Performance. For these reasons, the AIA owner-architect forms of agreement do not contain Time of Performance statements. If the owner requests that such a provision be inserted in the owner-architect agreement, the AIA "Architect's Handbook of Professional Practice," Chapter 9, page 6, says:

> The services shall be performed with reasonable promptness consistent with the complexity of the project and the time required for approvals. Upon request the architect will prepare for the owner an estimated time schedule for completion of the construction documents.
>
> In preparing this schedule the architect must make clear that it is only an estimate. He cannot guarantee the schedule, nor can he contract to perform accordingly since neither he nor the owner has prior knowledge of the complexity of project design, nor any indication of the time that will be required for the owner's approvals.

Penalties, Bonuses, Damages. Penalty-Bonus clauses, or Liquidated Damages provisions, are totally unacceptable in professional services contracts. Such stipulations serve only to accelerate the degeneration of client-professional relationships that may be initiated by a Time of Performance provision. More important, any form of Penalty-Bonus or Liquidated Damages in a professional services contract is *unprofessional in concept.*

It is a fundamental departure from the traditional and honored client-professional relationship of trust and confidence. It compromises this relationship by questioning the professional's ability to perform on time—one of the very abilities for which the professional was initially selected.

Further, any form of Penalty-Bonus or Liquidated Damages in a professional services contract is *inhibitive of professional performance.* It places a premium upon time performance at the expense of quality performance. It is diametrically opposed to the concept of professional services; i.e., well-considered and timely advice based upon thorough analysis.

Professionals subjected to such a clause must subordinate all other considerations to that of completing the work within the allotted time. For the architect this means minimizing his concern for the design of the client's project so that he may concentrate solely on "getting the job out." This penalizes the concerned architect, the imaginative architect, the thorough architect.

Inequitable Stipulations. Finally, any form of Liquidated Damages clause in a professional services contract is *inequitable in operation.* It stipulates dollar damages for the nonperformance of one party —the professional, without stipulating damages in kind for nonperformance of the other—the client.

While dollar damages can be pre-evaluated for those instances where the client is denied occupancy, they cannot be pre-evaluated for those instances where the professional is delayed through no fault of his own.

Their evaluation must wait until after they have occurred since the professional lacks any real time-control over the client's review and approval process, but must retain his professional staff while awaiting the client's decision.

Recommendations. Timely performance on the part of both parties to the contract is a proper consideration during the negotiations leading to the execution of the contract for professional services. Thereafter this question is properly left to the good faith relationship that must pervade any agreement for professional services.

For the architect and his client, this requires discussion of the very real difficulties experienced in delays in professional services—delays occasioned by the owner as well as the architect, and the recognition that these difficulties cannot be removed by agreements incorporating arbitrary completion dates with bonuses for early completion or damages for late completion.

Such discussion will reveal that the ultimate solution lies in an initial recognition of the trust and confidence inherent in owner-architect relations, accompanied by realistic and efficient discharge of respective responsibilities during the programming, budgeting and scheduling, production, approval, and construction contract phases.

ROBERT J. PIPER, AIA
Administrator, Department of Professional Services

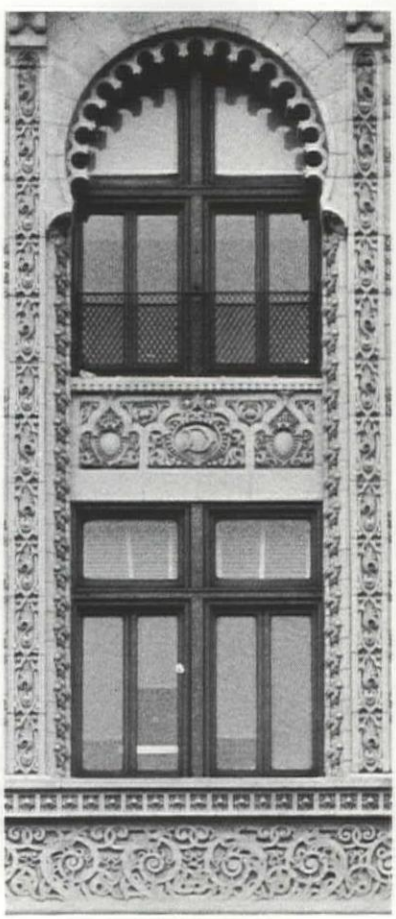
EDITOR'S NOTE: This study is a product of research and discussion by the AIA Department of Professional Services.

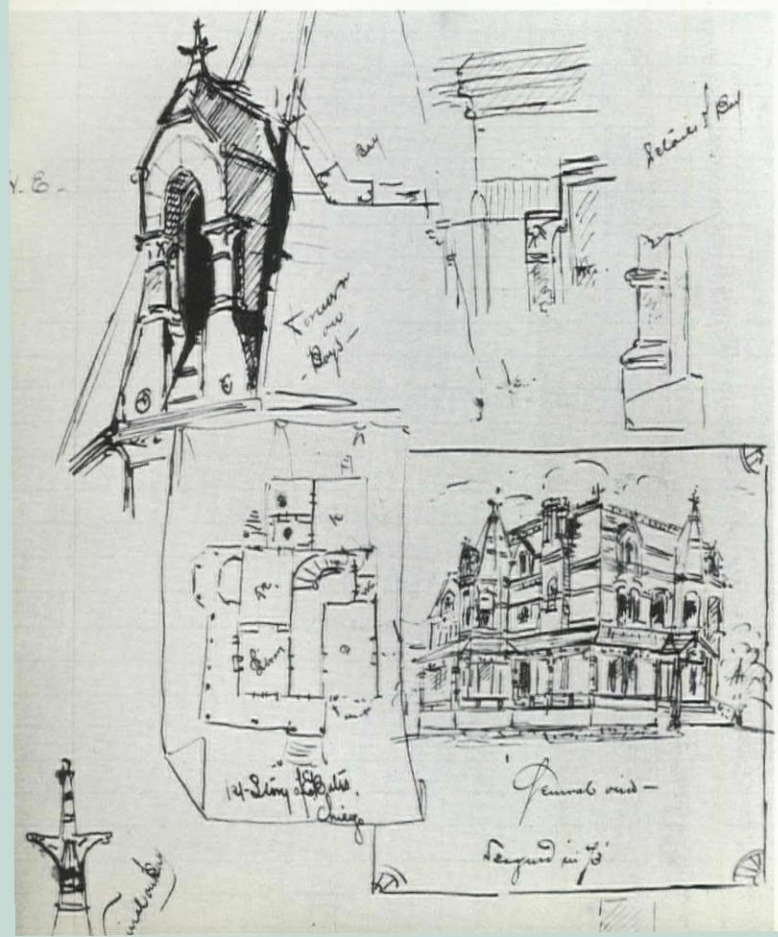
A·I·A
Journal

In Search of John Edelmann

Architect and Anarchist

As known by every reader of Louis Sullivan's "Autobiography of an Idea," first published serially in what was then called the JOURNAL of The American Institute of Architects in 1922-23, that great architect and theorist credited his friend and chief mentor, John Hermann Edelmann, with inspiring his own famous doctrine, "Form follows function." Sullivan's biographers have said much about Edelmann's influential relationship with their subject but nothing about Edelmann's own career. They simply knew nothing. And yet John Edelmann in his own right was an important figure in social as well as architectural radicalism. This much has been determined by the authors, Donald D. Egbert of Princeton University and Paul E. Sprague of the University of Notre Dame, who became interested in Edelmann in this way: Egbert, preparing a series of volumes about social radicalism and the arts, was surprised to find in the autobiography of American anarchist Emma Goldman references to John Edelmann as her friend in anarchism. In reading a pamphlet on American labor a short time later, Egbert happened to notice the name of one John W. Edelman, who dropped the second "n," and wrote to the union official asking if he knew anything of Sullivan's friend. He was astonished to find he was in contact with the architect-anarchist's son. Egbert learned that a daughter and brother-in-law were also living and he enlisted the collaboration of Sprague, then preparing a Ph.D. dissertation under his supervision on Sullivan's ornament, in further investigating the life of Edelmann. With great difficulty, they gathered considerable information, but gaps still exist. The authors, who plan a monograph on Edelmann, ask the assistance of anyone having information about the man.





BY DONALD D. EGBERT
& PAUL E. SPRAGUE

LOUIS SULLIVAN, in a youthful judgment, was sure he would never be his equal as an architect, so strongly did he esteem John Edelmann.

Edelmann, Edelmann, Edelmann—Frank Lloyd Wright kept hearing the name as he worked in Sullivan's Chicago office, long after Edelmann left Chicago behind him.

Edelmann was only 21, and Sullivan, 17, when their paths first touched in 1873. It was then that the boy went to work for Chicago architect William LeBaron Jenney. Edelmann happened to be foreman of the Jenney drafting room, and Sullivan soon became the boss' friend and disciple.

The man who was to influence Sullivan so greatly had come to Chicago after serving as an architectural draftsman in his native Cleveland.

Evidently seeking to widen his horizons and further his education by moving to Chicago—so largely destroyed by the fire of 1871—Edelmann found employment with the firm of Burling, Adler & Co. That was in 1872. The next year he joined Jenney, and the next formed a partnership with Joseph S. Johnston, who worked with him as a draftsman for Burling, Adler & Co. and who then had in hand the commission for a church already begun on Chicago Avenue for the celebrated evangelist Dwight L. Moody.

Meanwhile, Edelmann and Sullivan remained good friends during and after Louis' year at the Ecole des Beaux-Arts in 1874-75. Their favorite meeting place was the Lotos Club, an athletic club on the Calumet River south of Chicago, to which John had introduced Louis.

From this early period we can identify about 10 designs with which John Edelmann was in some way connected. Most of them were recorded as sketches in a notebook he and Sullivan kept at their clubhouse; the others were published in obscure periodicals.

A pencil sketch (upper left) of John Edelmann, done in 1880 by his admirer, Louis Sullivan. Sketches (left) by Edelmann of the house of E. Bates, Chicago. Ornament (below) of J. B. Perkins' Gilman Building in Cleveland. On previous page, detail of Decker Building, New York.

Of them all, only a residence for one E. Bates, designed by Edelmann while still with Burling, Adler & Co., and Moody's Tabernacle, designed by his partner Johnston, were ever built. Without exception, the various designs show buildings in a polychromatic Gothic Revival style common during the 60's and 70's.

While the color on the exteriors resulted mainly from contrasting white stone with red brick, that in the interiors was achieved largely by painted decoration. Some of the polychromy in the auditorium of Moody's Tabernacle, no longer standing, was furnished by frescoes designed by Edelmann's young protege Sullivan, and consisted of conventionalized flowers.

Edelmann's own designs of this period are not particularly distinguished, but his influence on Sullivan, by which the younger man was motivated in the direction of the Gothic Revival with its overtones of organic functionalism, and away from the classicism of Paris, was of immense significance for the impressionable fledgling architect —and, for architecture's history and theory.

John Edelmann left Chicago in 1876 to return to Cleveland, apparently in response to the death of his German immigrant father and a decline in the practice of Johnston & Edelmann. In Cleveland he soon found work as a draftsman. However, ill-health—believed by his son to have been the onset of epilepsy—compelled him to give up architecture temporarily. He is believed to have moved to a farm in either Iowa or Wisconsin (accounts differ), devoting himself to breeding horses.

During this time, 1877-79, he apparently developed his interest in radical social ideas leading to his support of the Greenback, populist, and single-tax movements, of Marxian socialism, and—finally —of philosophical anarchism.

By early 1880, his health restored, Edelmann returned to Chicago, and immediately was hired as office foreman by his previous employer, Dankmar Adler who a year earlier dissolved his partnership with Burling. At Edelmann's suggestion, Louis Sullivan now sought employment with Adler as a draftsman, and was hired. So once again, John appeared at a moment critical in Louis' career.

Underway in Adler's office were at least three projects: a remodeling of the Grand Opera house and construction of the Borden Block and Borden residence. The degree of participation of Adler, Edelmann, and Sullivan in designing these buildings still remains something of a puzzle. However, the Borden buildings do reveal a compromise between the Victorian Gothic and the French Second Empire styles—as is reflected in their combination of polychrome Gothic character and abstracted Gothic vegetable ornament with mansard roofs (in the case of the residence) and generally classic restraint (in Borden Block).

Yet Adler's own designs, while he was still with Burling, had been more or less in the French Empire style: he never dabbled in Gothic detail or in polychromed surfaces.

When early in 1881 Edelmann again returned to Cleveland, he did so only after making sure that Adler would replace him with Sullivan as office foreman. Two years later the famous partnership of Adler & Sullivan was formed. Yet even as late as 1886 the firm was still producing buildings in a polychrome style; and only about that time did Sullivan's ornament finally begin to lose the Gothic Revival character which it so largely owed to Edelmann.

Back in Cleveland, Edelmann joined the firm of Coburn & Barnum as foreman and supervisor of construction. While with the firm he is said to have designed, in the fall of 1881, the pavilion for President Garfield's catafalque, and to have supervised the construction of two buildings for J. B. Perkins, a Cleveland capitalist. He may have had some influence on the design of the second of these buildings, a double building called the Blackstone and the Perkins-Power Blocks—a possibility suggested by its combination of mansard roofs with polychrome treatment in a manner similar to that used at the time in Adler's office where Sullivan was the designer.

Edelmann is also known to have been designer and sculptor of a bust of the jurist Blackstone for the Blackstone entrance and of an arm and hammer for the entrance to the Perkins-Power Block. The character of the ornamentation on these van-

Rosenfeld Building (left), Chicago, by D. Adler & Co., 1882; Blackstone and Power Blocks by Coburn & Barnum, 1881.

ished structures, so far as can be made out from poor photographs, suggests that he may have designed it as well.

The diversity of Edelmann's interests no doubt accounted for his inability to pursue any single course for more than a few years at a time. Besides being an architect, construction superintendent and sculptor, he was an excellent free-hand artist who could sketch a landscape in rapid penstrokes or execute an entirely competent watercolor scene with great facility.

He made for the infant son of Perkins an alphabet book in watercolor using figure-types from

architecture and the building trades as his subject matter—"Architect," "Carpenter," "Draughtsman," "Owner," etc. To the illustrations for this book he appended diminutive floral designs which cannot be readily distinguished from the ornament of such early buildings in Chicago by D. Adler & Co. as the Borden Block of 1880 or the Jewelers' Building of 1881.

The same ornament is also found on three buildings in Cleveland designed and built by Edelmann as Perkins' architect which he became in 1881-82. These- -the Gilman, Wilshire, and Stephens & Widlar Buildings—were constructed in 1882-83. (The Gilman Building, still standing, has been much remodeled; the Wilshire and Stephens & Widlar Buildings have been demolished.) Sullivan is said to have designed the ornament of the Wilshire facade, and he may well have done so, since the arrangement and distribution of the Wilshire's ornament as well as its architectural style are so similar to those of the Rothschild Store Building, an Adler commission built in Chicago in 1881.

The great difference in character between the Wilshire, Gilman and Stephens & Widlar Buildings on the one hand and the earlier Blackstone and Power Blocks on the other seems to indicate that John Edelmann had not been assigned sole responsibility for designing the earlier buildings as a member of Coburn & Barnum's staff. The three later buildings for which he himself had the commission—although still polychromed and still exhibiting the Edelmann-Sullivan Gothicized ornament—were conceived in the spirit of the new commercial structures in Chicago, such as the first Leiter Building, designed in Jenney's office, and the Borden Block and Rothschild Store, designed in Adler's office.

In the three Cleveland buildings, as in their Chicago counterparts, rectilinear qualities were now predominant: their facades, though still of masonry construction, similarly were constructed with massive, widely spaced piers between which were placed broad bands of windows.

By mid-1883, the buildings for Perkins were complete, and Edelmann, presumably finding no further work in Cleveland, returned to Chicago where he is said to have helped design the Pullman

Building as an employee of S. S. Beman. But after the spring of 1884 we have no sure further record of him for 3½ years, until he reappeared in Brooklyn. In January 1888, he wrote in a letter from Brooklyn to his former client, Perkins, that he had done only one good building so far in the New York area—a statement suggesting that he had settled there at least by early 1887. And since a family tradition has it that he had come to New York to participate in single-tax advocate Henry George's campaign for mayor, we may assume he was in New York by the fall of that year. During the period from 1884 to 1886 he could have worked as a draftsman in the Chicago area, where —obituaries suggest—he might even have made some early sketches for his friend Sullivan's Auditorium Building. Or he may well have spent time in the country again, recovering from a recurrence of his illness.

In any case, it seems evident that during these years his enthusiasm for progressive and radical causes increased considerably, culminating in his move to New York in 1886 to take part in the Henry George campaign.

Certainly, during the late 1880's and throughout the 1890's Edelmann worked in New York, living sometimes in the city and sometimes in New Jersey. He married Rachelle Krimont who, like her husband, was interested in radical social movements. Indeed, they are reported to have first met at a single-tax rally where John made a speech.

Married about 1890, they lived in Forest Hill, now a part of Newark, until 1894, when John built a simple and inexpensive shingle-style house for his family in Arlington, now a part of Kearny, N.J. And for this house, probably as a belated wedding present, Sullivan sent a cast of ornament he had designed for the Wainwright tomb in St. Louis. It was placed as a frieze in the living room, where it still remains.

The depression of the 90's must have been hard on the Edelmanns' family finances, since around 1896 they were forced to give up their house and return to New York City. Their two children had been born in New Jersey—their son John in 1893 at Forest Hill, their daughter Sonia in 1895 at Arlington.

We cannot be sure what Edelmann did from 1887 through 1890, but entries in the New York directories suggest he attempted to establish an independent practice. In this effort he appears to have been unsuccessful; there is evidence that from 1891 through 1893 he was employed at least much of the time by a New York architect named Alfred Zucker. Edelmann designed interiors for the Hotel Majestic carried out by Zucker in 1891-92, and is said to have designed the entire Decker Building built by Zucker in 1892-93.

The Decker Building in New York, the chief extant structure believed to be Edelmann's design, is a curiously exotic work that in style is half Islamic with Venetian touches and half original. Even its ornamentation is no longer closely related to the Edelmann-Sullivan ornament of the early 1880's.

Instead, it too seems partly historical—an eclectic mixture of Islamic, near-Venetian and classic—and partly original. Both the building (which today lacks the cupola of the illustration) and its ornament suggest an inability on Edelmann's part to grow architecturally, to mature as his former protege Sullivan had so successfully done in his own buildings of the early 90's. Nevertheless, some of the decoration does resemble, in a less successful way, the highly original ornamentation of Louis Sullivan.

That Edelmann was, no less, at least Sullivan's equal as architectural renderer and even his superior as freehand artist is indicated by a series of his pen-and-ink drawings and a watercolor surviv-

Detail, ornament by Sullivan, Jewelers' Building, Chicago.

ing from this period. Two of his pen-and-ink renderings of contemporary buildings exist only in the form of illustrations to his one known architectural article. This, entitled "Pessimism of Modern Architecture," appeared in the *Engineering Magazine* for April 1892. It reflected his pessimism in the face of nearly all recent architecture other than that of H. H. Richardson and especially of Louis Sullivan.

The three illustrations consist of a cut showing a detail from a Richardson building and reproductions of Edelmann's own perspective renderings in pen-and-ink depicting two of Sullivan's works, the Wainwright Building in St. Louis and the Schiller Building in Chicago.

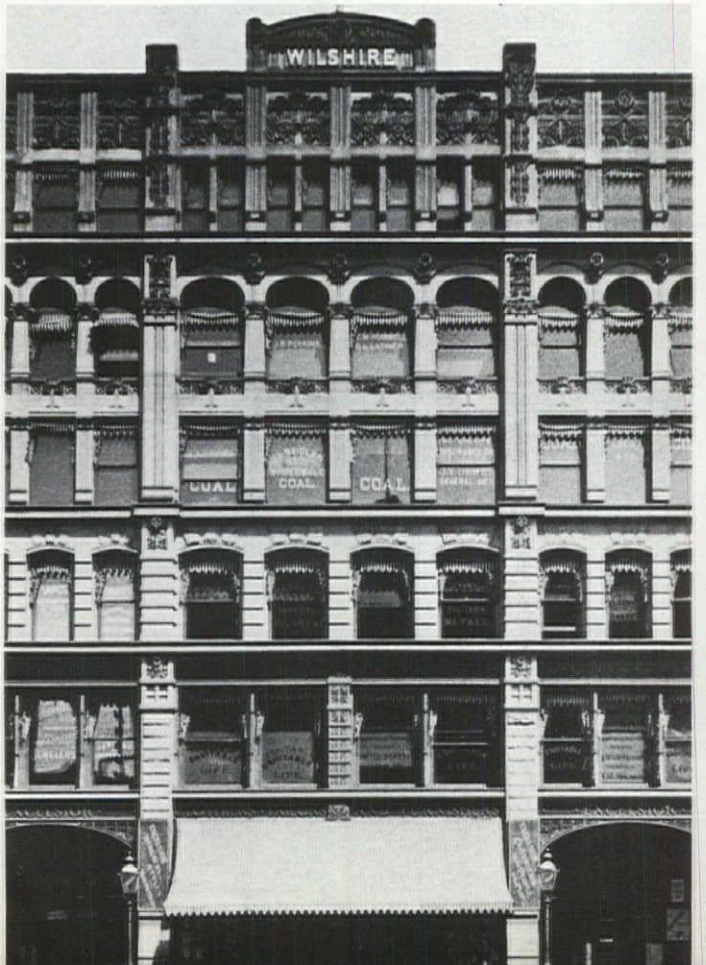
From the 1890's there has also come down to us a series of 11 good-sized freehand drawings in pen-and-ink, which survived, along with a watercolor, in the possession of members of Edelmann's family. Four of the pen-and-ink drawings represent imaginary scenes of Venice, probably inspired by Edelmann's own work on the Decker Building, or by the influence on him of the preceding building on its site which was in a more completely Venetian style. The remaining seven sketches and the watercolor all depict trees in harmony both with that love of nature and with the related "organic" conception of art which Edelmann had imparted to Sullivan.

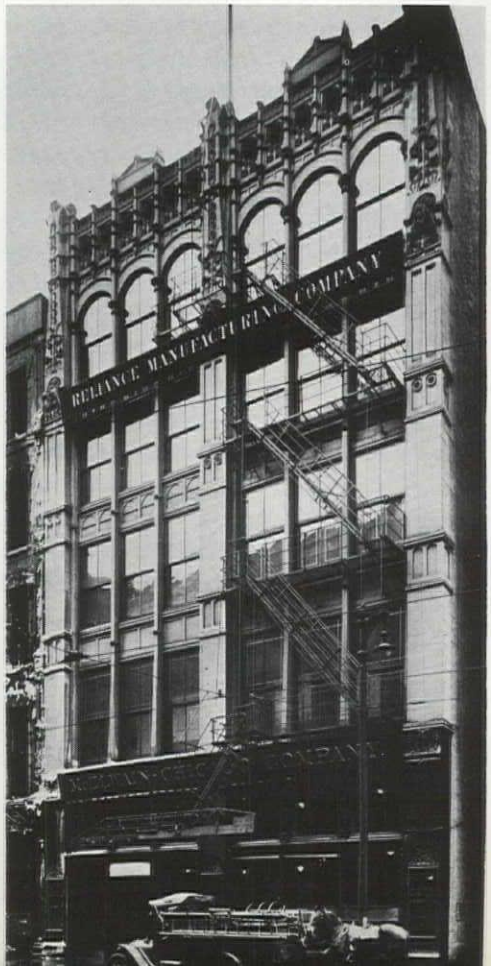
Although, as we have seen, Edelmann performed work for architect Zucker at least from 1891 to 1893, a family belief is that he worked for McKim, Mead & White during the late 80's and the 90's. The distinct recollection of his much younger brother-in-law, who as a lad lived with the Edelmanns in Forest Hill and Arlington from about 1892 to 1895, is that throughout all of that time John Edelmann was commuting to McKim, Mead & White's office in New York—yet for at least part of that period we know he was employed by Zucker.

The possibility arises, therefore, that Edelmann had space in the office of McKim, Mead & White, working partly for them but also independently whenever he could get his own jobs as designer or superintendent of construction. On the other hand, this hypothesis is not supported by a list of employees of the firm, which records Edelmann as having been employed, fulltime, between September 1896 and the end of 1897. In this period he apparently did interior design for Stanford White's library for New York University. By January 1898, however, he had struck out for himself, and from then until his death maintained an office in New York while also at times working as superintendent of construction for other architects.

Throughout his New York period—until his health began to fail toward the end of the 1890's—Edelmann remained extraordinarily active in radical circles. Some time after the Henry George campaign he joined the Socialist Labor Party. But in 1892 Edelmann and several friends were expelled

Wilshire Building in Cleveland (left) by Edelmann with the assistance of Sullivan, 1882-83, and Rothschild Building, Chicago, by D. Adler & Co., 1881. The Wilshire's ornament as well as its architectural style is similar to Rothschild's.





from that organization because of their increasingly anarchistic views.

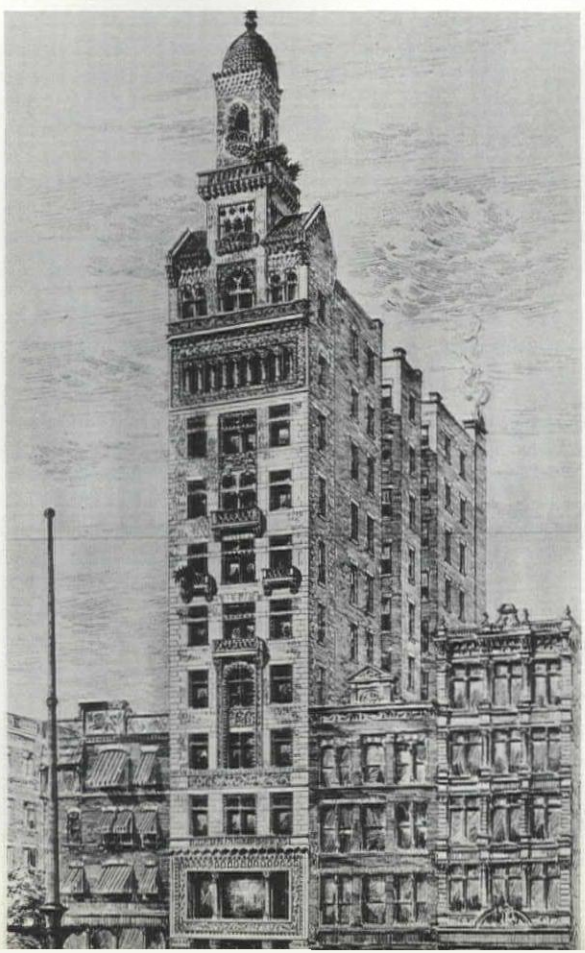
In the same year, he and his friends founded the Socialist League in New York, apparently naming it for the English organization founded in 1884 by William Morris, Eleanor Marx Aveling (Karl Marx's daughter) and others, but in 1889 taken over by anarchists.

It was also in 1892 that John Edelmann began contributing to *Solidarity,* newly founded anarchist periodical. Early in 1893 Edelmann, again with friends, took over the task of publishing and editing it, but lack of funds soon forced them to suspend publication. He managed to revive the periodical briefly in 1895 (when it was the only anarchist paper published in English anywhere), and again in 1898, but each time funds soon ran out.

The third and last effort had been undertaken at the urging of the noted Russian anarchist, Prince Peter Kropotkin, who donated the necessary money by turning over the fees for two lectures he delivered in New York late in 1897, at which time he stayed in the Edelmann home. This was John Edelmann's last attempt to publish the periodical, for he now knew that his health was failing, and he worked desperately to provide for his family.

In the summer of 1900, the 43-year-old Edelmann's ailment, apparently affecting his heart, caught up with him. On July 12, 1900, as New York suffered in the grip of an intense heat wave, he collapsed and died in an elevator at 142 Fifth Ave. He had just left the office of a builder for whom he had prepared a set of plans for some now unknown building.

Decker Building in New York, showing signs of Venice, was designed in 1892-93 by Edelmann for Alfred Zucker.



Thus ended the career of an unusual and gifted man, whose varied talents and interests prevented him from making a deep impression in his own right as an architect, but whose stimulating mind had done so much to nurture the genius of Louis Sullivan.

Late in 1903 or early in 1904, John Edelmann's widow took her two small children to live in England where she had a well-to-do brother. Outside of his own family, Edelmann's career was soon forgotten and was not to be recalled until the early 1920's when Sullivan, in his "Autobiography of an Idea," wrote about their early years together in Chicago.

Edelmann's few surviving buildings, and the photographs and drawings of those either vanished or unbuilt, testify that he never became the architectural genius Louis Sullivan thought he would. Sullivan in 1874 wrote to his brother Albert from Paris: "You can make up your mind that my reputation as an architect will always be inferior to his."

Nearly half a century later in his autobiography, Sullivan forgot this youthful statement, and declared that he had "soon noticed that while *he himself* had a clear program in life, John had none. . . . Louis saw that John was merely drifting." Nevertheless, Sullivan did not fail to pay wholehearted tribute to Edelmann's outstanding brilliance as thinker, theoretician, and teacher, and at least implied that Edelmann's "drifting" was the result of his extraordinary range of intellectual, cultural, and social interests.

"And be this said here and now," he wrote, "the passing years have isolated and revealed John Edelmann as unique in personality among fine and brilliant minds. Be assured he will not turn in his grave, unless in bliss, should he hear it said that he was the benefactor and Louis the parasite and profiteer."

Even though the very range of Edelmann's interests undoubtedly did lead him to disperse his energies unduly, it enabled him to become the friend of some of the leading radicals of his time, including William Morris and the highly cultivated Peter Kropotkin, as well as to be recognized by Louis Sullivan—one of the great American architects and architectural theorists—as his chief mentor.

On this basis, surely, John Edelmann deserves study and recognition as one who played an important role in American social history while achieving major significance as a seminal and most influential personality in the history of modern architecture. ■

TEN SOURCES

BY PHILIP N. YOUTZ, FAIA

The dean emeritus of the College of Architecture and Design at the University of Michigan, who recently returned from a year's travel around the world, outlines the principles that set the background for integrating art and science.

THE SOURCES that influence an artist's work are often subtle and difficult to identify. Few architects are able to analyze the development of their spatial concept for a building. Nor is it easy to pinpoint just what experiences stimulate creative thinking and which ones lack the power of suggestion.

When pondering a design problem, the mind is apt to explore a good many tempting byways that seem to have no conceivable bearing on the task at hand. It may be rewarding to point out some of the sources for architectural development available to the modern designer in case he wishes to utilize them. It would be unwise to attempt to limit the territory over which his imagination is permitted to rove. Thus the 10 categories of design sources are chosen as guides and not as boundaries for his freedom of thought.

1 The first of these sources for architectural design is the architect's own cultural background. The arts are essentially a universal language of imagination and emotion but never a private matter, though some artists may rashly assert this claim. The architect's work may defy all the rules laid down by the critics but cannot escape the viewpoint of his age. We study his accomplishment in the light of history, and find that his gift of visual expression is in the development and direction of tradition. As an original creative personality, his is the ability to absorb the artistic legacy of his time and to contribute richly to its growth.

The artist's indebtedness to his social background exists whether, like Picasso, he leads a revolt or whether, like Manet, he does not entirely abandon academic tradition. Originality is not something starkly new and therefore unrelated to current cultural patterns but rather a restatement and extension of existing resources. The creative mind uses the sources which it believes will have continuing values for visual expression. The cultural heritage from which the modern designer draws his inspiration is a science civilization with its rapid expansion of knowledge and technology. The demand on the designer is to adopt a new code applicable to a scientific age, to the new philosophy, and to participate in the creation of a new cultural environment for man. The architect's task is to give form and beauty to this emergent scientific order by promoting a closer alliance between science and art. The need is to adopt a social, not a personal, attitude toward his art.

2 The second source is derived from anthropology. Architecture is one of the physical forms of culture, of the accumulated knowledge, behavior pattern and esthetic achievements of a given society at a particular place and period. As an expression of culture, architecture performs a wide range of functions from the utilitarian to the exalted. But the point which deserves particular attention is the part it plays in shaping, guiding and developing society. Buildings are active, not static, features of civilization. The main function of architecture is not its practical utility but its role in accelerating the cultural process.

3 The third source for architectural design is mathematics, not the theoretical or applied kind, but fun with figures such as those conducted by Martin Gardner in the *Scientific American*. Apparently these mathematical games have intrigued people all over the world since early times. The Greeks enjoyed geometric games. The result was that they took a primitive wooden structure surrounded by log posts and developed it into the stone temple with all its complex modular relations and mathematical refinements.

The spatial relations in architecture have a mathematical aspect. These ratios rationalize design decisions. But the superior designer will not let numbers dominate him to the extent of numbing his personal sense of proportion—whence the suggestion for "fun" with figures rather than a too serious approach to mathematics, an abstraction that summarizes but does not duplicate reality.

4 The fourth source is structure; but the influence of structure today is vastly different from that at the turn of the century. Our new materials and modern engineering release the architect from his former limitations. Any building that lies within the range of economic feasibility now can be constructed. Almost any span can be achieved. Consequently a good deal of the adventure that attended erecting a building of unusual size or novel requirement has disappeared.

The new structures which have inspired the imagination of architects are the precast domes and vaults of Nervi, the cantilevers of Torroja and the thin shells of Candela. These men have used reinforced concrete in a daring and revolutionary way. Lift-slab reduced buildings to their architectural essence: floors and columns, thin horizontal planes floating on slender supports. As Wright, Saarinen, Yamasaki, Le Corbusier and Niemeyer discovered, concrete was one material which the designer could mold to express a vision. Mies van der Rohe shaped his forms in steel. In all these examples we are im-

Adapted from an address presented at the College of Architecture and Fine Arts at the University of Florida.

FOR ARCHITECTURAL DESIGN

pressed by the designer's ability to metamorphose familiar materials into structures that inspire wonder. Suspended structures still in the experimental stage will suggest more daydreams than any of the orthodox uses of steel and concrete.

5 The fifth source for the designer is physics. To the problems of materials, structures and mechanical services, physics supplies the theory which guides the architect in drawing up his plans. It provides a knowledge of the properties of materials. It allows an understanding of new building components and equipment and how they meet the problems of lighting, acoustics, airconditioning and sanitation. It permits easier analysis of contemporary developments.

Perhaps the most important reason for introducing architects to physics is that physicists are constantly working on new schemes and relationships. The process involved in developing a fresh concept in architecture closely parallels the task of solving a scientific problem, the two requiring highly fertile imaginations.

6 The sixth source is the strong trend toward factory fabrication and site assembly. This technical change greatly alters the task of the designer. More time may be devoted to refinement of the plan and the outward expression of space and less expended on detailing or coordinating the work of different trades. Standardization may diminish the designer's control of the project. It makes architecture an impersonal factory product without the warmth and appeal that express the sensitivity of the designer.

If standardization may lead to monotony of shapes, the organization and uniformity of its elements can also produce the order and harmony of Bunshaft's Lever Building, Mies' and Johnson's Seagram Building and Pei's Municipal Art Center. All show the cumulative effect of repetition. Prefabrication has produced much ugliness but gradually the designer is regulating and sensitizing its products. The new architecture is honest and strong.

7 The seventh source for architectural design is city planning. Instead of limiting design to a single building, the architect thinks in terms of interrelated structures. He is concerned with the whole central core of a city, or an entire suburban satellite, or an entire campus. His drawings and models trace the visual and functional integration of metropolitan complexes that originally were a group of widely separated villages. They show how the city could be transformed. Urban planning for the designer is the opportunity to study and utilize large-scale compositions, not in terms of intimate design but of humanizing the larger environment.

8 The eighth source is automation applied to architecture. Today, the temperature of rooms is governed by the well-trained thermostat. Light can be regulated to a given number of footcandles. Window louvers have been designed to open or close automatically. Elevators are polite mechanical servants that move swiftly without benefit of any human agent. Doors spring open. These developments have implications for the architectural designer charged to provide a mechanical staff to wait on clients and their guests.

A pessimistic view is that people buy homes because of their dishwashers, washing machines and dryers, not because they are beautiful and restful. But this view highlights the need to shape architecture around the requirements and responses of people and less as an abstract design of individual taste or some geometric system.

9 The ninth source for the designer is transportation. Buildings are linked with the network of communication which surrounds them, but only a few architects have had the vision to develop these utilitarian aspects into design features. Few have been able to meet the challenge brought about by the ever-increasing number of automobiles.

The design of parking lots, for example, leaves much to be desired. Instead of interesting gardens, we may find acres of black macadam surrounding the shopping centers. Careful study could transform these ugly features of modern life into architecture, and avoid a current trend which is ruining a good many fine old public squares. By turning them into underground parking facilities, most of the soil is removed, and there is not enough left to provide for the root systems of large trees. We have the resulting anomaly of parks without shade, indeed with nothing but surface plants. The challenge of parking illustrates one aspect of linking architecture with transportation.

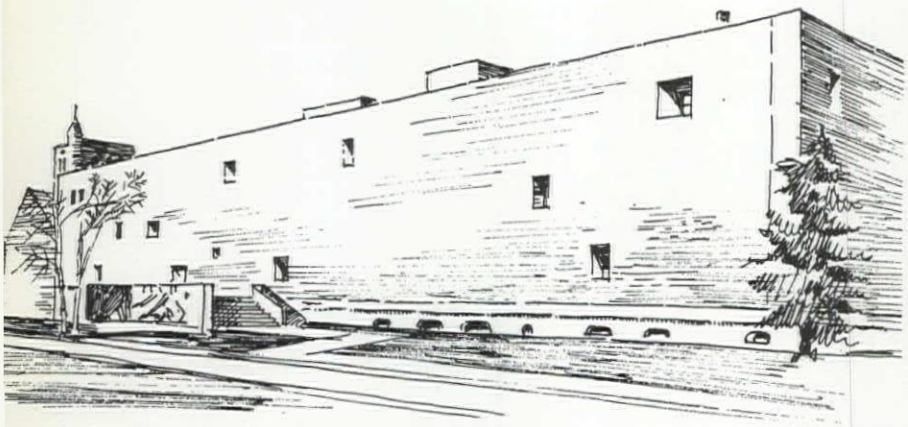
10 Finally the 10th source for architectural design is research. This orientation toward the future is a necessary product of the science revolution. Indeed one might say that the laboratory, not the library, is the focal center of modern thought. Research requires imagination, persistence, skill, initiative and luck. Art and science are not incompatible. In the field of research, in the testing and construction of experimental structures, a common meeting ground can be established for designers, students, scientists and technicians, well equipped to adopt an inventive approach.

The designer has vast resources from which to develop the architecture of this age, not only guided by esthetic values but also invigorated by the strong currents of our total culture. The Victorians attempted to separate and rarefy art with their slogan "Art for art's sake." The task is now to restore art to its function of humanizing all the processes of industrial civilization. The slogan should be "Art as a way of life." ■

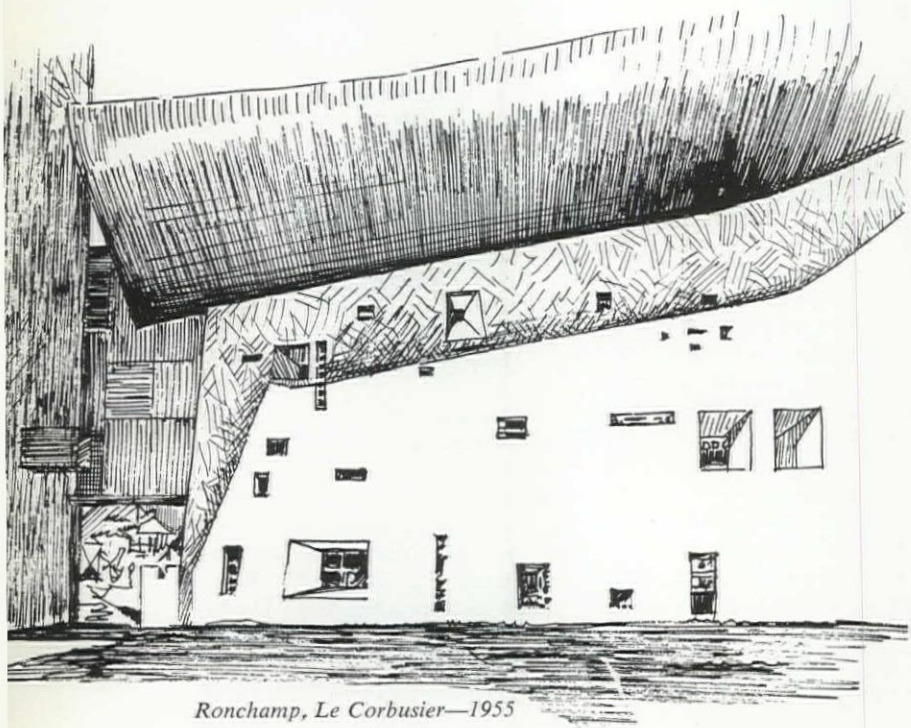
Zuoz, Engadine—16th Century

Historical Haphazard

BY ROBERT L. DURHAM, FAIA



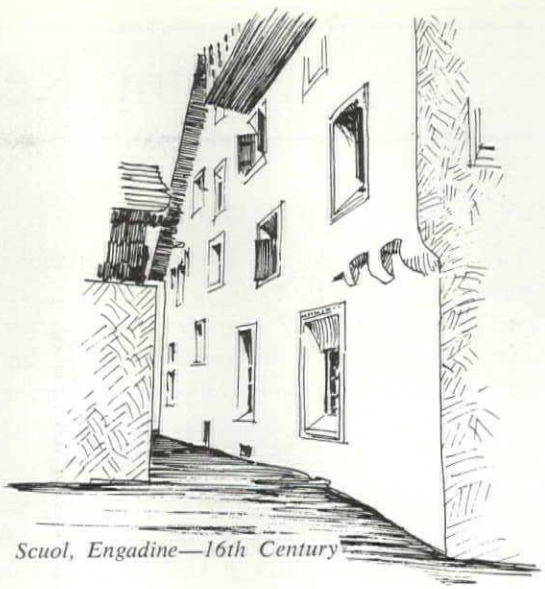
Olin Science Hall, Colorado College, Caudill, Rowlett & Scott—1962



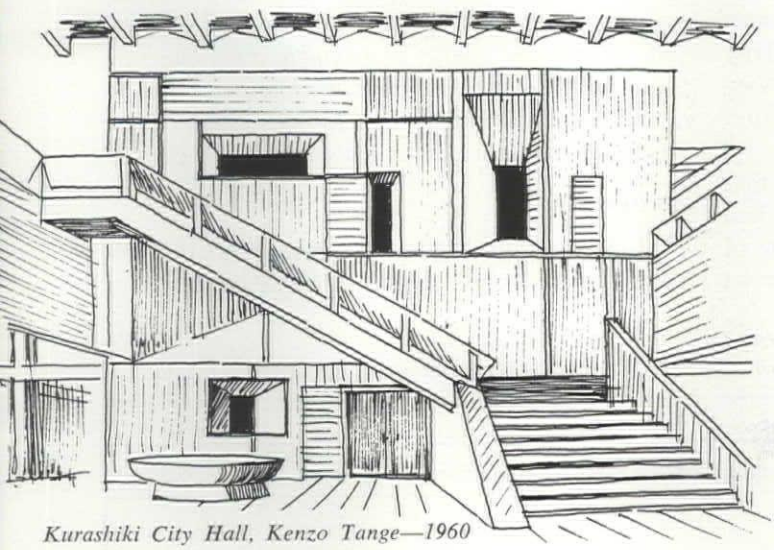
Ronchamp, Le Corbusier—1955

Random fenestration . . .
Charm in place of cadence,
and not so random as appearances
suggest, for light and view
and ventilation are
where they need be,
unhindered by the forces
of regimentation.
Ronchamp . . .
Indeed the most notable example,
and now, 10 years
after its completion,
emulated throughout the world.
A remote valley . . .
the Engadine in Switzerland,
its houses
with deep, splayed openings,
random in both size and placement
and in endless variety.
Relationships . . .
In time, these houses precede,
by four centuries,
the chapel at Ronchamp;
in distance they are
150 miles or so west of the
birthplace of the chapel's creator,
Le Corbusier.

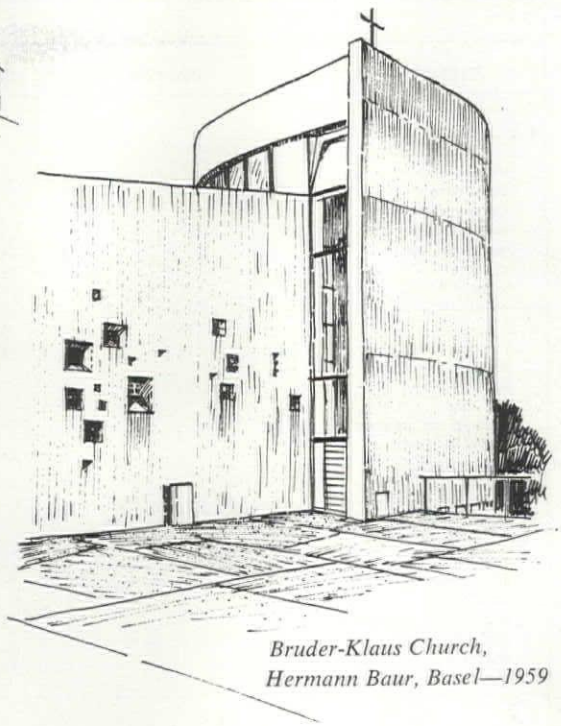
Zuoz, Engadine—16th Century



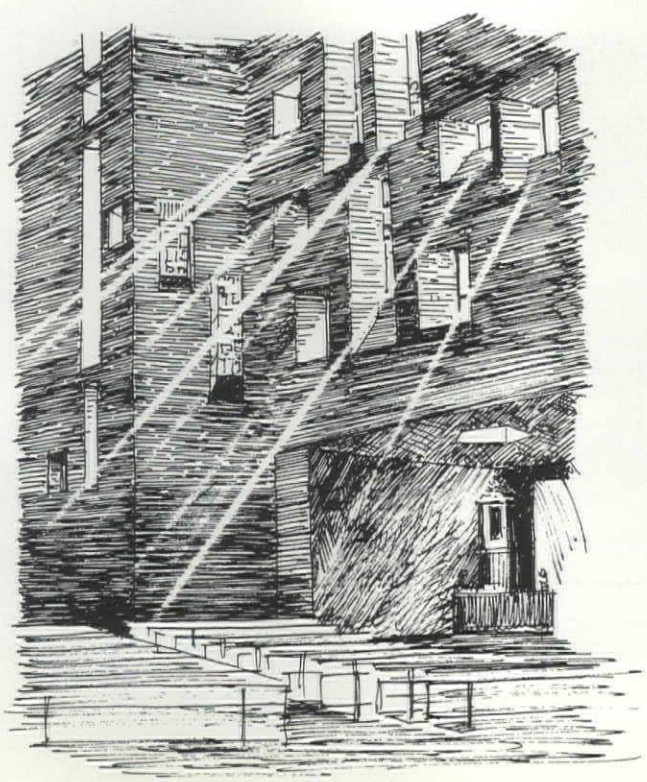
Scuol, Engadine—16th Century



Kurashiki City Hall, Kenzo Tange—1960



Bruder-Klaus Church,
Hermann Baur, Basel—1959



St. Alban, Cologne, Hans Schilling—1960

Putting Research to Work

BY ROSLYN LINDHEIM, AIA

"Only by systematically uncoupling spatial systems can we hope to break up the image blockage and allow architects to move forward to alternate design decisions." So declares the author, an assistant professor of architecture at the University of California, Berkeley, who headed a study sponsored by the US Public Health Service.

THE ORIGINAL purpose of this study was "to develop methods of analysis and research which could provide the architect with a sounder basis for arriving at design decisions." It was proposed to make a specific approach to this problem through a detailed analysis of the internal activity of one key department in a hospital. Radiology was selected because it provided in capsule form many of the problems of hospital design.

It became apparent as the study developed that we were dealing with many questions which had general concern for architects and students of architecture—questions such as how to study an existing organization; how to observe and record all the facets of this organization which might have relevance for design decisions; how to identify the problems; how to study the processes; how to free oneself from preconceptions as to how the spaces should be arranged and how to approach the problem analytically; how to evaluate the opinions of a client, be he a radiologist, a hospital administrator or a school superintendent; how to isolate prejudices from genuine ideas.

To approach this study we selected three radiology departments to use as our experimental laboratories: one in a typical community hospital, one in a university hospital and one in a hospital which operated a large prepayment plan. Our reason for choosing three vastly different types of radiology departments was to see if there were indeed common denominators to the X-ray system.

A Systems Bias

I use the word "systems" advisedly because our bias was to approach the problem of analyzing

Forms developed to facilitate the recording of information are important preparations for the gathering of data. . . .

SUB-SYSTEM _____ HOSPITAL _____ SHEET No. ____

TYPE OF ACTIVITY	ANALYSIS	OBJECTIVES	TIME LAPSE	REQUIREMENTS		
				INFORMATION	PHYSICAL	ENVIRONMENTAL
1 _____ who does what to whom method of operation machine, tool where when						
2 _____ who does what to whom method of operation machine, tool where when						
3 _____ who does what to whom method of operation machine, tool where when						
4 _____ who does what to whom method of operation machine, tool where when						

diagnostic radiology from a systems point of view.

By a systems approach, I mean more a state of mind than any specific amalgam of mathematical, scientific or technological methods. A system is a set of interrelated needs and activities linked together to accomplish a desired end. We approached the study of the activity system radiology by asking the questions: What is the desired end or function of the system? What are the sets of interrelated needs and activities which make up the system? What are the links in the system or the structure of the system? How are they interrelated? How are the parts or the subsystems put together? We further looked at a system as encompassing an overall view, and therefore recognized that the solution of our problem might lie not in its internal organization but rather in its relationship to the larger whole. Lastly, a systems approach—the identification of the various subsystems at work and their interrelationship—helped us develop a method for the preliminary ordering of facts awaiting description, interpretation and analysis.

Previous Knowledge of the Problem

So much for the systems bias. Our problem was first to understand radiology from the most mundane details of procedure to the larger questions of the rate of growth, development and prognosis for the future. Obviously, we knew something about radiology and didn't start from scratch, or we wouldn't have gotten the research grant in the first place. One of the strange idiosyncracies of the American research institutions is that in order for them to give you money to do investigation you are required to present your project in such a way that it would seem as if the research were already done. What you are going to do, where you are going to do it and, worse yet, what you are going to find and what significance it is going to have—all have to be incorporated in the original request. I have had previous experience in hospital design and have designed several radiology departments. But it became appallingly apparent to me that despite this I had little specific information as to process and procedure. However, I did know that:

1) Its primary function is to render service, and consequently its operating efficiency ranks high as a basic criterion.

2) It is undergoing constant technical change and that a flexible design approach is required.

3) It is utilized by patients in all states of sickness and health—the ambulant, the bed patient, the chronic patient, and by both inpatients and outpatients.

. . . . for they reflect precisely the information the research seeks and they accommodate the actual process of notation.

Sheet No.____

	HOSPITAL	Date	ARRIVAL TIME	FINISH UNDRESS.	UNDRESS. TIME	TO X-RAY ROOM	WAITING TIME	FROM X-R ROOM	EXAM. TIME	START DRESSING	WAITING TIME	FINISH DRESSING	DRESSING TIME
	PATIENT'S NAME	TYPE OF EXAMINATION											
1		Room No											
	Type of patient Transportation												
2		Room No											
	Type of patient Transportation												
3		Room No											
	Type of patient Transportation												
4		Room No											
	Type of patient Transportation												
5		Room No											
	Type of patient Transportation												
6		Room No											
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7		Room No											
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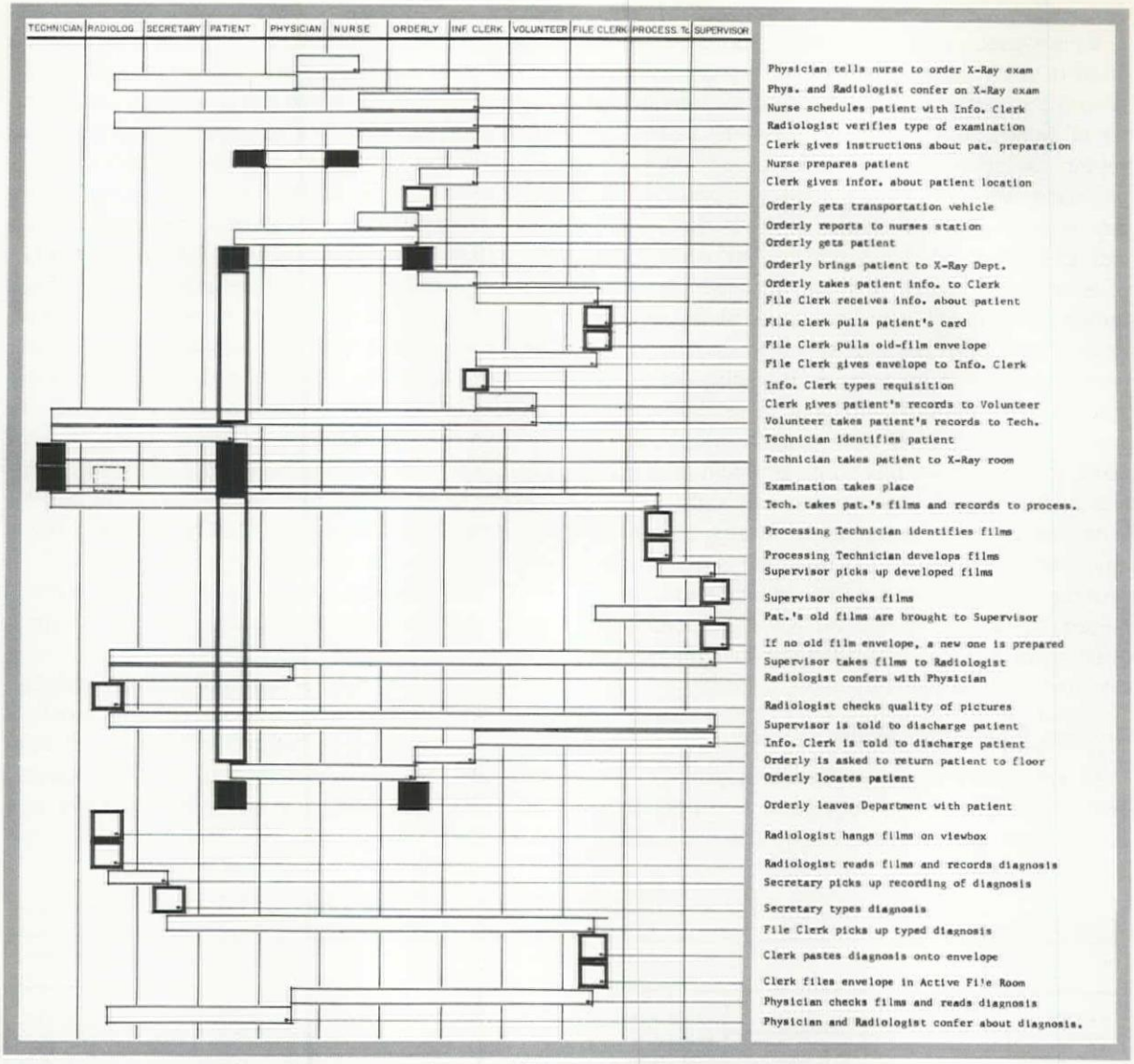
	Type of patient Transportation												



The above diagram illustrates the sequence of steps which take place to perform a typical diagnostic X-ray procedure in a hospital. (This does not include fluoroscopic examinations or special procedures.) It is significant to note that only the activities that require direct physical contact between people are those indicated by the solid squares. The other activities can be effectively accomplished by providing communication means for verbal and visual data.

4) Most of the current guides are designed by X-ray companies—the makers of the equipment used—whose image is influenced by their own particular equipment and not by the interrelationship of such a key department to the total hospital.

5) Major capital outlay in terms of plant and equipment is required.

6) This department always has to be next to surgery, emergency and laboratory as well as be accessible to both outpatients and inpatients.

7) There is never enough room to accommodate radiology, along with everything else, in a central priority location and still maintain flexibility and expansion potential.

To start our investigation, we spent many weeks in one of the X-ray departments. In an effort to minimize our nuisance value and to avoid patient embarrassment, we tried to blend into the background and look like doctors or technicians instead of architects. We put on white hospital coats and tried to be inconspicuous. It became quickly evident that what one sees depends on the training of the observer and what he is specifically looking for.

The planning of data-gathering and the proper interpretation of data taken from existing situations involve first at least a functional understanding of the overall operation. For this reason our observations took two forms:

· *general observation*—where the purpose was to become acquainted with the overall workings of the organization to identify problem areas for further study.

· *planned observation*—where the purpose was to obtain specific data. This type involved a knowledge of how the organization operated as well as of the specific functions you wished to observe. It

was necessary to plan ahead to consider what you wanted to observe, how you were going to collect it, where you would place people, what they would do, how they would or wouldn't get in the way.

We made several mistakes in our approach to observations. Whereas we felt correctly that it was first necessary to get a birdseye view of the situation, we were so anxious to be "scientific" and collect data that we started collecting long before we were ready; and in first instances the information we collected is interesting but really not fundamentally important for our architectural purposes. In addition, we made the mistake of spending too much time in one institution before going to another. When one becomes involved in the analysis of the way one institution works, he forgets that this is not the only way. We would, therefore, recommend that in order to get a birdseye view, preliminary investigations take place in several institutions before data is collected.

In the collection of detailed information, every minute spent in preparation more than pays off. The first problem is determining exactly what information you are trying to get. Then it is necessary to prepare forms so that you can simplify the actual process of notation. This is extremely important as there is no simple correspondence between the occurrence of an event and the recording of the event by an observer. Three processes are said to be involved: registration, interpretation and recording. All involve continuing evaluations made by the observer. Consequently, the simpler and more objective the task, the more accurate are the results.

The detailed observations made were concerned with two types of data collection: information which 1) involved value judgments and 2) was quantitative. Both types involve a good deal of preplanning.

We were anxious to obtain an accurate sample of all the activity which was simultaneously going on in the respective departments. To do this involved keeping track of specific individuals and following them. We had to identify who came in; how long they waited before being called; how long they took to undress; what type of exam they had and how long it took; how long they waited after the exam; how long it took to dress and leave. In the beginning we would have been totally lost if volunteers, technicians and nurses hadn't made sure we knew what was going on and kept filling us in with names and on what was happening. Toward the end, the combination of the adequate forms developed and the strategic locating of different persons made the timing and information gathering quite expert.

Even in something as apparently simple as recording the activities of the different personnel over an eight-hour day, preliminary preparation must be made. The fact was that despite all our efforts to remain in the background, we were still observing an organization which was different because it knew it was being observed.

I would like to briefly discuss two other problems of observation:

· *identification*—In any place where you are an outsider, you have the choice of being incognito or of identifying yourself and what you are doing. We were identified as far as management was concerned, but it in turn did not introduce us or our project to the entire staff. There were periods when the members of the clerical and technical staff thought we were efficiency experts in disguise. This image did not generate any enthusiasm.

· *personal involvement*—There is a danger of getting personally involved in the politics and personalities of the organization under study. The fact that you are an outsider, that you are aware of the problems and that you represent no job threat makes you the perfect person to listen to problems, complaints, strains and stresses. Moreover, you can be both misquoted and misused. It is best to remain as detached as possible.

A real obsession, and one which was very difficult for the persons participating in this project to lose, was preoccupation with quantifying objects while neglecting to look at all aspects of the situation. It was necessary, therefore, to actually structure the other type of observation. A form was developed which required the observer to record who, what, where, when and how and why. Then on a blank page we required each person to record what he thought—could it be done in another way, identify some of the problems, etc.

Interviews were conducted with all categories of personnel as well as with persons from other institutions. It became obvious that a technician knew more about some aspects of radiology than the radiologist and vice versa; that the receptionist and file clerk were aware, in some cases, of problems that the radiologist didn't know existed; that the patient's point of view might be quite different than that of any of the personnel.

It was significant that information given by radiologists was different than that given by the technician. For example, the radiologist was concerned with the attitude of the referring doctor to a delay in getting the results of the examination. He was concerned with the facilities for fluoroscopy, with intercommunication from his spot to all others (not vice versa). He was concerned with a vague concept of efficiency and inefficiency.

The technicians on the other hand were concerned with cleanup, with problems of getting patients on and off tables, with the parts of the machinery which allowed them to set dials and focus

easily, with morale. The receptionist worried about patients' waiting.

Everybody verbalized some aspect of patient comfort. The familiar refrain was that it should be homelike; patients shouldn't wait so long. But it was very difficult to obtain concrete suggestions for patient comfort. It should be noted that all the radiologists said it was necessary to see the patient before each examination; yet in most cases the pressures were such that the radiologist only saw patients while doing fluoroscopy and special procedures. It became apparent that the more each individual felt was known about his specific problem, the more he felt free to talk about it. It became evident that one was not dealing with a single entity called radiology but many different "radiologies," depending on the eyes of the viewer.

The great problem about interviews is how to isolate opinion from fact. If one gets the same answer to the same question from many different types of persons, it probably has validity. It takes a good deal of preparatory thinking to formulate the question so that the bias of the person being interviewed doesn't interfere with his judgment.

Under the onslaught of so many opinions and so much information, we were forced to find our way. In the effort to study all aspects of the organization, we found it necessary to periodically synthesize the information gathered in the form of graphic models in order to grasp the significance of the information as well as to determine what was missing. This constant interchange, necessary in order to describe the situation in model form and collect the data to make the model, forced us to analyze the problem. The stage of data collection, analysis and synthesis did not occur in tidy little packages of time labeled analysis, program determination, synthesis, etc. In fact, it became very difficult to distinguish one phase from another. At each stage of the collection of data, it was evident we were beginning to analyze it, and in the active process of analysis we got new ideas which were the basis of a synthesis and as well found loopholes in the information gathered.

The collection of information unfortunately cannot be designated to require a specified number of days or weeks. What one observes depends on how much one knows and what one is looking for. This changes as one's understanding of the problems develops. What a person sees at one state of observation is quite different than at another.

On the basis of our work we would recommend the following method of study of an organization:

1) Spend a few days in as many institutions as possible which are performing similar functions; try to understand the overall procedures and become acquainted with the personnel.

2) Find the table of organization and literally tail each type of person in the organization to become acquainted with the specific jobs he does and the problems he encounters.

3) Trace each activity and ask the questions—who, what, where, when and how, and, most important, could it be done in another way?

4) List everything in the department so as to determine the use for each item.

5) Interview as many persons as possible from various vantage points of the organization, and thus find the image of the place in the minds of the various personnel.

6) Check the methods by which the department keeps statistics about itself. So often significant factors of growth and change can be projected by the very statistics the departments has, although sometimes much manipulation is necessary in order to ferret out what you want.

7) Determine by what standards the department evaluates its own output.

8) Diagram the information flow.

9) Develop a picture of how the total process works sequentially. I would like to underline this because it somehow was so extraordinarily difficult to do. Everything so far showed fragments of information. To get an overall picture, it was necessary to see everything which happened, simultaneously.

10) Verify observations statistically—what people do, the time they spend doing it, etc.

So far I have been dealing with the problems of general observation.

Our next step was to uncouple or separate the various subsystems that make up the total radiology system.

The System of Diagnostic Radiology

The prime function of diagnostic radiology is to enable a trained radiologist to see parts of the human body hidden from the naked eye and to utilize this additional information to help diagnose a person's illness. To accomplish the above, it is necessary to bring together persons and machines, medical and technical personnel, past and present information so that the radiologist can simultaneously utilize the total available information for the purpose of making a diagnosis. Essential to success is quick transmission of the diagnosis to the responsible physician.

The numerous activities which take place in a diagnostic radiology department can be grouped under the following main categories:

- the activities necessary to get the patient and the X-ray machine together
- the activities required for the X-ray examination
- the activities involved in retaining the X-ray or fluoroscopic image

· the diagnosis
· the transmission of the diagnosis to the proper medical authority
· the storage and retrieval of the information obtained.

These are, in a greatly oversimplified form, the series of steps constant to all radiology departments. Various methods are used to accomplish these activities. For example, one radiology department could use a method of patient transportation organized through a central escort service; in another department the escort service could be part of the radiology department. But the basic activities are the same in all diagnostic radiology departments. Variations are in method only.

Sets Which Require Spatial Proximity

The sets of the system of radiology which require spatial proximity as a necessary condition in order to function may be identified as follows:

1) The patient, the machine and someone to both help the patient and run the machine (the technician) must come together. There is no way, yet, of taking a picture with the patient in one location and the machine in another; there has to be direct contact. The machines can be operated remotely, but someone still must help the patient on and off the machine.

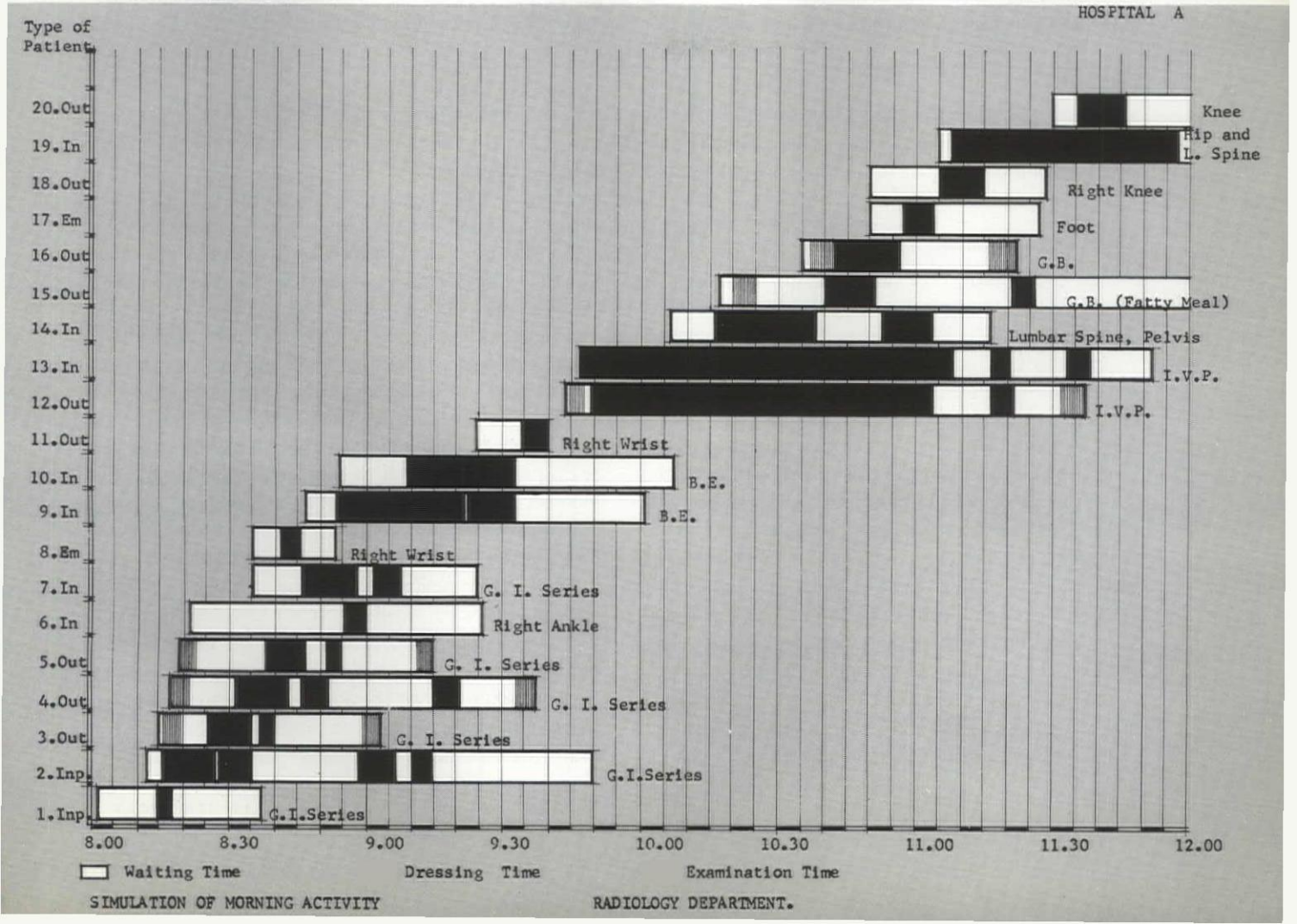
2) The film and the film-processing must come into contact. If a film is to be developed, there is no technique of developing it remotely. There are numerous alternate ways of developing film (Polaroid, manually, automatically), but contact must still be made between the film and the developing agent.

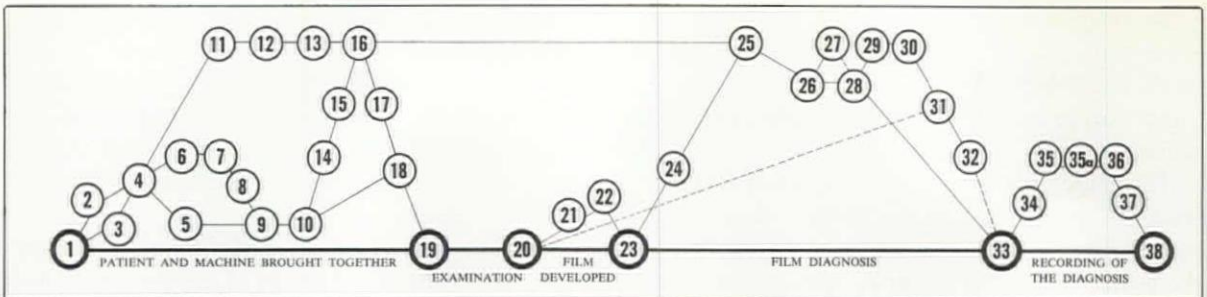
3) The radiologist in order to make a diagnosis needs the X-ray image of the patient as well as previous images and other pertinent information. He can get this image in a number of ways, but whichever way, the image is essential.

These then become the sets which require spatial proximity. Each of these sets has a series of secondary needs which demand spatial solutions. Thus when a patient, a machine, and a technician are brought together, the patient needs toilet facilities, a place to dress and undress (if the patient is an outpatient), etc. The machine requires a room with a lead lining (or the scatter of X-rays will become damaging), control booths to protect the technician and space for the machine requirements (transformers, generators, tube stands), etc. The film and the film-processing unit require their own sets of spaces depending on the method of processing, and the radiologist in turn will have his own space requirements for viewing the image.

If these are the only needs which have to be

It was found necessary to periodically synthesize information in the form of graphic models. Here a tremendous variation in the time required by different examinations, the waiting time and the type of patient are all seen at a glance.





HOSPITAL A

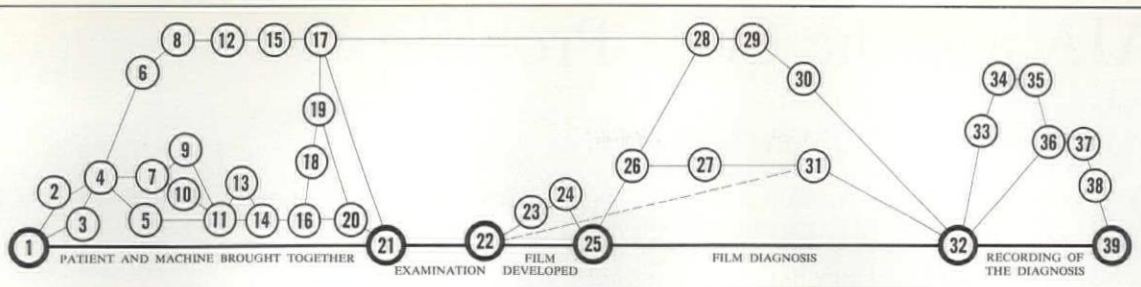
1	Physician has completed patient's exam.
1- 2	Physician tells nurse to order X-ray examination.
1- 3	Physician calls radiologist to check on X-ray exam.
2- 4	Nurse makes appointment with Central Appointment Facility by sending requisition.
3- 4	Radiologist verifies type of examination with CAF.
4- 5	CAF communicates confirmation to nurse.
4- 6	CAF sends patient information to master file.
4- 7	CAF sends requisition to in-patient information facility.
5-11	Nurse prepares patient.
7-10	In-patient supervisor checks requisition and plans schedule for patient.
10-11	In-patient information facility contacts nurses' station concerning availability of patient.
7- 9	In-patient information facility sends orderly to pick up patient.
9-11	Orderly reports to nurses' station.
11-13	Orderly picks up transportation vehicle.
13-14	Orderly locates patient.
6- 8	Master file clerk pulls patient's card.
8-12	Master file clerk gives information to file orderly.
12-15	Orderly pulls patient's old films and diagnostic materials.
15-17	Orderly takes films to assembly desk.
17-21	Clerk takes films to technician in charge of fluoroscopy rooms.
14-16	In-patient orderly brings patient to X-ray.
16-18	In-patient orderly brings patient's records to information desk.
18-19	Technician picks up patient's records.
19-20	Technician identifies patient.
16-20	Patient is waiting.
20-21	Technician brings patient to X-ray room.
21-22	Examination takes place.
22-23	Technician identifies the film.
23-24	Technician brings films to processing room.
24-25	Films are developed.
25-26	Technician inspects films.
26-28	Clerk brings films to assembly table.
28-29	New and old films are put together (if there are no old films, a new envelope is prepared).
26-28	Radiologist inspects films.
28-29	Radiologist tells supervisor to discharge patient.
29-30	Supervisor tells information desk to discharge patient.
20-31	Patient waits.
30-31	Information tells orderly to return patient to the wards.
31-32	Orderly leaves the department with patient.
28-33	Radiologist records the diagnosis.
33-34	Secretary picks up the recording of the diagnosis.
34-35a	File clerk brings envelope to file room.
35a-36	A copy of the diagnosis is pasted to the envelope by the file clerk.
36-37	File clerk files envelope in file room.
37-38	Physician checks the films and reads diagnosis.
33-37	Physician and radiologist confer.

satisfied by spatial proximity, then by implication, the other subsystems necessary to functionally satisfy the requirements of radiology do not demand spatial proximity to one another.

Links and Linkages

The various forms of links and linkages used to connect different activities are internally related to technological developments. It is now common practice to have verbal messages transmitted over intercom and telephone or written messages transmitted by teletype or pneumatic tube. Dumbwaiters, conveyors and elevators are commonly used to transport material objects of varying sizes. All of these ways of communicating messages and materials have modified the physical requirements for proximity between activities. Now there is a new technological development, closed-circuit television, which could become an additional and very important new communication vehicle. The possibility of transmitting picture images through space gives increasing freedom for radiological spatial organization. An examination of the requirements necessary to link together the activities of radiology shows the following. The processing of the film does not require a location next to the diagnostic rooms. What is required is that a method of transporting the exposed film to the processing room be available. In some cases locating it directly adjacent will be the best solution. But it is also possible that, in certain circumstances, the processing may be on one floor and the diagnostic machines on another, and the connection between the two may be by means of dumbwaiter or other vertical conveyance.

The filing system certainly does not have to have physical proximity to the diagnostic rooms or the radiologist. All that is important is that a method be developed whereby the image of the old films be at the required place at the declared time. In a like manner it is not an essential part of the system to locate the radiologist in close proximity to either the diagnostic rooms or the processing unit. The image of the developed film or the fluoroscopic image could be transmitted over closed-circuit TV to a radiologist located in another part of the building or even in another building. Already image intensifiers and TV are in-



HOSPITAL B

1	Physician has completed patient's exam.
1- 2	Physician tells nurse to order X-ray examination.
1- 3	Physician calls radiologist to check on X-ray exam.
2- 4	Nurse makes appointment with Central Appointment Facility by sending requisition.
3- 4	Radiologist verifies type of examination with CAF.
4- 5	CAF communicates confirmation to nurse.
4- 6	CAF sends patient information to master file.
4- 7	CAF sends requisition to in-patient information facility.
5-11	Nurse prepares patient.
7-10	In-patient supervisor checks requisition and plans schedule for patient.
10-11	In-patient information facility contacts nurses' station concerning availability of patient.
7- 9	In-patient information facility sends orderly to pick up patient.
9-11	Orderly reports to nurses' station.
11-13	Orderly picks up transportation vehicle.
13-14	Orderly locates patient.
6- 8	Master file clerk pulls patient's card.
8-12	Master file clerk gives information to file orderly.
12-15	Orderly pulls patient's old films and diagnostic materials.
15-17	Orderly takes films to assembly desk.
17-21	Clerk takes films to technician in charge of fluoroscopy rooms.
14-16	In-patient orderly brings patient to X-ray.
16-18	In-patient orderly brings patient's records to information desk.
18-19	Technician picks up patient's records.
19-20	Technician identifies patient.
16-20	Patient is waiting.
20-21	Technician brings patient to X-ray room.
21-22	Examination takes place.
22-23	Technician identifies the film.
23-24	Technician brings films to processing room.
24-25	Films are developed.
25-26	Technician inspects films.
26-28	Clerk brings films to assembly table.
28-29	New and old films are put together (if there are no old films, a new envelope is prepared).
29-30	New and old films are brought to reading rooms.
26-27	Technician tells in-patient information to discharge the patient.
27-31	Information desk asks orderly to return patient to floor.
30-32	Radiologist records diagnosis.
31-32	Orderly and patient leave the X-ray department.
32-33	Typist picks up recording of diagnosis.
33-34	Typist types diagnosis.
34-35	Clerk takes diagnosis to assembly desk.
35-36	Radiologist checks and signs typed diagnosis.
32-36	Clerk takes envelopes containing films to assembly desk.
36-37	Clerk pastes diagnosis to envelope.
37-38	Envelope is filed in active file room.
38-39	Clerk gives envelope to referring physician

tegral parts of fluoroscopy rooms. The video taping of fluoroscopic images is a real technical possibility since instant playback is possible.

From this we see that uncoupling allows us to free ourselves from many of the preconceptions that freeze design decision. It does not follow from this method of analysis that one or another design decision is the only way. For example, our study of radiology in no way intends to imply that a centralized radiology department is necessarily wrong or a decentralized radiology is necessarily right. It would depend on the department's size and relationship to other aspects of the hospital and the community.

In conclusion, I would like to say that spatial solutions to social processes develop over long periods of years and take on certain characteristic forms. A hospital begins to look a certain way; so does a school, a factory or a radiology department. These spatial patterns have a very strong hold on thinking and on attitudes. Spatial patterns become habitual and etched into the mind of the user. Solutions which are developed in response to specific needs are the exception rather than the rule.

Habits are formed in relationship to existing activities. Habits, by definition, lag behind new technology. It is extremely difficult for an architect to free himself from these preconceived images and to approach a problem from an analytic point of view. It is even harder to convince a client who has been used to working in one set of spaces that there are alternate, and maybe better, possibilities of spatial organization and arrangement unless you as an architect really can demonstrate a knowledge of his activities and problems as well as alternate methods to solve them. New forms do not get generated by new geometry but rather by new methods of spatial organization which are generally made possible by the advent of a new technology. The problem that faces us as architects is that visual patterns persist like vestigial characteristics long after their functional needs have changed. Only by systematically uncoupling spatial systems can we hope to break up the image blockade and allow architects to move forward to alternate design decisions. ■

Presented to the 1965 Architects-Researchers' Conference.

AIA and the Code Problem

BY RAYMOND ZIEGLER, AIA

The author is chairman of the Committee on Building Regulations, Commission on Professional Practice, Dean F. Hilfinger AIA, *chairman.*

THE INSTITUTE policy on codes and regulations was discussed in the April 1964 AIA JOURNAL and the conclusion was that it should be implemented.

This policy statement, repeated in the Guide that follows, sets forth certain basic requirements or prerequisites for adequate and reasonable building regulations. Its purpose is to provide direction for AIA members in their initiation or review of proposed changes in regulations governing construction in their community or state.

It is recommended that an architect, if called upon to review or comment on a code proposal, measure each against the five points contained in the policy statement. For instance:

1) Is the regulation based on a proven need and, if so, what is it? Does it meet the need in a way that permits more than one solution, thus allowing the exercise of individual initiative?

2) Has the regulation been written by professionals (architects, engineers) in such a way that it does not impose unnecessary restrictions? Are there adequate supporting data to indicate that it provides objective solution of a proven need?

3) Does the proposal duplicate or conflict with any existing regulations?

4) Even though the intent appears to be met, how will it be interpreted by the next administrator, inspector or plan checker?

5) When will the regulation next be reviewed? Can we live with the regulation until review?

Since the comprehensive codes are written largely by and predominantly through the building officials' organizations—Building Officials Conference of America (BOCA), International Conference of Building Officials (ICBO), Southern Building Code Congress (SBCC) and American Insurance Association—the AIA Committee on Building Regulations (CBR) concluded that the Institute should endeavor to become better acquainted with these code organizations. CBR members provide the AIA with direct liaison with these organizations.

However, the code organizations are decentralized and free of domination by any particular person or group, and effective liaison requires many AIA representatives in addition to CBR members. Appointment of such representatives to code organizations has been established, and additional appointments will be made wherever the opportunity is present. The latter are too recent to permit evaluation of this effort.

The CBR liaison program is directed toward the strengthening of existing code writing agencies. Each representative attends meetings of his assigned organization, participates in its activities, comments on proposals in light of AIA policy, initiates changes furthering that policy and reports to the CBR and his chapter. These activities will greatly increase the benefits received by the AIA as a result of his participation. The central purpose, of course, is to increase AIA influence on building codes in the interest of society and the design professions. Chapter-level liaison has now been established with the ICBO and similar programs are being set up with BOCA and SBCC.

Building codes are based in part on industry standards, which fact led the CBR to recommend renewed AIA participation in the standards review activities of the American Standards Association (ASA). The roster of ASA construction standard committees was reviewed to identify those essential to implementation of AIA policy, and AIA members now serve on each of the 16 key committees selected as well as on the Construction Standards Board.

The AIA Board retains the basic right and responsibility for review and approval of all AIA appointments. However, at its January 1965 meeting, the Board resolved "that the Committee on Building Regulations be and hereby is authorized to appoint representatives to serve as liaison with code groups and construction standards organizations under the provisions of the *Guide for AIA Representatives* with the understanding that all such appointments will be promptly reported to the Board, provided that authorized expenses shall be within the amounts appropriated for this purpose in the budget."

Members serving on AIA committees know that budget considerations limit many activities, and representatives appointed under the CBR liaison program generally serve without compensation. The willingness of AIA members to serve without reimbursement has been heartening. This eager acceptance of liaison assignments hopefully indicates the membership's interest in the "code problem" and will inject AIA's helpful counsel into code-writing activities.

Budget limitations preclude a meeting of all the liaison representatives for the purpose of briefing relative to AIA code policy. To provide such briefing, the CBR has therefore prepared "A Guide for AIA Representatives to Organizations Within the Jurisdiction of the AIA Committee on Building Regulations," from which the following excerpts are taken:

□

Cooperative activity is currently being pursued through AIA representatives to these groups:

1.2.1 *American Standards Association*
- Construction Standards Board
- Committees A10, A12, A17, A23, A39, A41.
- A51, A52, A53, A56, A58, A89, A113, Y1, Z20, Z97.

1.2.2 *American Society for Testing & Materials*

1.2.3 *Building Code Organizations*
- Building Officials Conference of America (BOCA)
- International Conference of Building Officials (ICBO)
  - ICBO Code Change Subcommittees
  - ICBO Chapters
- Southern Building Code Congress (SBCC)

1.2.4 *National Academy of Sciences—National Research Council*
- Subcommittee on Protective Structures of the Advisory Committee on Civil Defense

1.2.5 *National Fire Protection Association*
- Committee on Building Exits
- Committee on Heights and Areas
- Committee on Safety to Life

1.2.6 *Building Research Institute*

2. AIA Policies

2.1 Certain AIA policies and rules are to be followed by all who represent the Institute. These are subject to change by the Board, and requests for changes are best submitted by means of committee reports to the Board. The following are of particular importance to the Committee on Building regulations:

2.1.1 *Restrictive Legislation.* The AIA is opposed to any legislation, administrative regulations or standardization which would tend to retard the progress of building design. While furthering the simplification and standardization of elements of buildings, architects must at all times be free to exercise their abilities and judgment in the interest of advancing the art and science of architecture.

2.1.4 *Building Codes.* The AIA believes that codes and regulations relating to buildings must provide for reasonable protection to life, health, property and the general welfare while permitting the exercise of individual initiative on the part of the architect in selecting and improving design, materials, equipment and methods of construction in buildings. The AIA believes that codes and regulations relating to buildings should:

1) be based on proven needs and be so written that adequate performance for the use intended is the test of acceptability;

2) be written by competent professionals who represent broad experience and balanced viewpoints in order to prevent such codes and regulations from becoming overly lengthy, unnecessarily restrictive, subservient to special interests, or dictated by administrative convenience;

3) be administered by a single agency at the local level to prevent overlapping jurisdictions;

4) provide remedies, for all who might be aggrieved, through an appeal board including competent professionals to prevent improper decisions due to ignorance, misunderstanding or caprice;

5) be subject to periodic review and revision to prevent stagnation and obsolescence.

3. Committee on Building Regulations Policies

3.1 Decisions made by the Committee on Building Regulations in the course of implementing these AIA policies include the following:

3.1.1 *Code Unification.* The Committee on Building Regulations advocates improvement of and unification of the four existing basic building codes, namely:
- Basic Building Code (BOCA)
- National Building Code (American Insurance Association; formerly NBFU)
- Southern Standard Building Code (SBCC)
- Uniform Building Code (ICBO)

3.1.2 *Federal Codes.* The Committee on Building Regulations does not favor a Federal building code.

3.1.3 *State and Local Codes.* The Committee on Building Regulations offers no opinions or recommendations with respect to existing state or local codes except to AIA chapters upon request.

3.1.4 *Code Preparation and Amendment.* Architect participation in the preparation and amendment of building codes is highly desirable. Architects must take an interest in and exert leadership in these matters or conform to the dictates of others.

3.1.5 *Policy examples.* Performance statement vs. specifications. The Committee on Building Regulations emphatically favors the performance-type code statement and adoption of standards, where required, by reference. The Committee is of the opinion that building construction specifications are inappropriate for inclusion in building codes.

Most code-writing entities have limited means for providing technically sound regulations. This does not stem from any lack in ability or intent but rather from the vastness of the problem, the fragmentated nature of the construction industry and lack of adequate funds for objective research and testing.

At present there is no reliable source of data available upon which to base such fundamental code consideration as heights, areas, smoke venting, occupancy separations, etc. Codes and regulations are, as a result, often based upon guesswork and compromise and they are subject to the influence of emotion, prejudice and administrative convenience.

Several AIA members have expressed the opinion that more is needed than this liaison effort. The CBR firmly agrees with this view and is directing its efforts toward obtaining nonprofit foundation support of a program for building code improvement.

The Federal government is also interested in the problem. The well publicized report of the US Department of Commerce (LaQue) Panel on Engineering and Commodity Standards recommended that the building industry "as a first step toward the attainment of a workable uniform national building code, assemble a highly authoritative panel, at the invitation of the Department of Commerce and with the advice of the model code organizations, to extend the present investigation and to initiate appropriate action based on the present, and any new, findings needed to support the recommended establishment of a uniform national building code." President Johnson, in the March 1965 statement on the "Blueprint for Rejuvenation of Urban America," acknowledged the problem and requested the "creation of a temporary national commission to study and develop building codes, zoning regulations, taxation and development standards."

The 1965 Housing and Urban Development Act of 1965 contains the following statement:

Sec. 301 (a) The Congress finds that the general welfare of the nation requires that local authorities be encouraged and aided to prevent slums, blight and sprawl, preserve natural beauty and provide for decent, durable housing . . . [and] that there is a need to study housing and building codes, zoning, tax policies and development standards. . . . The Housing and Home Finance administrator is therefore directed to study the structure of 1) state and local urban and suburban housing and building laws, standards, codes and regulations . . .; 2) state and local zoning and land use laws, codes and regulations . . .; and 3) Federal, state and local tax policies with respect to their effect on land and property cost. . . .

This study will presumably be pursued by the Housing and Urban Development Department.

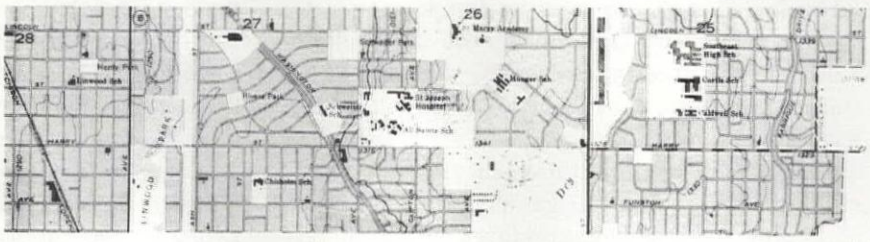
To date, neither state and local government nor the building officials organizations have resolved the code problem, and, as in so many other instances where state or local governments have defaulted their responsibility, the Federal government may feel it necessary to become much more widely involved. The AIA has long been opposed to a "Federal" code and believes a nonprofit foundation, well insulated against political pressures from both government and industry and free from industry's adamant objection to Federal involvement, can best provide the means of obtaining a solution to this national problem, thereby helping state and local government and the building officials organizations to meet their responsibilities. Deference of the foundations to Federal code programs could create a situation giving the AIA little choice but to support a Federal program for codes study and enforcement.

Local administration of codes is essential. However, establishment of national standards could, *if properly qualified and supported,* provide the material upon which the model code groups and local agencies could construct improved building codes.

The code problem is vast and complex; it cannot be solved by the architectural profession alone nor any other single element of the loosely organized construction industry. Architects can, however, provide objective analysis and advice to code-writing organizations and local governments that will help them to correct the faults and shortcomings of current building regulations. The expanding CBR liaison program is the vehicle that makes AIA assistance readily available.

This program has survived a long gestation period and, as with most newborns, should now be nurtured and guided so that it may grow in strength and influence. The "Guide" is in its first printing, and the communications system has not been tested, so adjustments and revisions are bound to occur. This is a dynamic program which must not be allowed to become static; increased code committee activity at the local chapter level should receive particular encouragement. Regional and state organizations should foster action at corresponding levels in government and in the building code organizations. AIA members should seek to increase their knowledge of code problems and objectives in order to take part in local code programs. The Committee on Building Regulations may be tapped by the membership as a source of information and advice on building regulations and related matters. ■

In the March issue, Robert Berne AIA, chief architect of the US Office of Civil Defense, discusses the report of a fallout shelter-building codes study.



PREPARED BY PAUL D. SPREIREGEN, AIA, FOR THE COMMITTEE ON URBAN DESIGN

Contracts and Office Procedures

BY JAMES A. HATCHER, AIA

A partner in the firm of Associated Planners, the author formerly was an associate member of Wittenberg, Delony & Davidson, Inc., of Little Rock, Arkansas, a firm he joined in 1957.

NINE YEARS AGO the architectural firm for which I worked decided to broaden its practice. We didn't know it then, but we began to provide what is now called comprehensive services—specifically, in urban design.

We quickly faced a whole new set of problems, many of which we did not anticipate. One of the first things we had to do was to *promote* planning and urban design, to find the clients willing to pay for these services. Once we found a client willing to pay, we had to decide how much to charge him. Having little experience on which to base this new lump-sum fee, we guessed at such factors as how much work was involved, how many meetings we would have to attend and how much travel there would be. In the final analysis, and after nine years of experience in urban design projects, we find that this remains the method with which we most frequently estimate our fees.

One of our first projects was a plan for a small college in central Arkansas. The plan would guide the expansion of the college, would relate the buildings and spaces, and would anticipate the college's needs over a period of 15 to 20 years. The plan was completed on a time-and-materials or cost-plus basis and, in retrospect, at a very moderate fee. This created one of the early problems we had to face. The client asked us to absorb the small planning fee, in return for which he would retain us for other architectural work at a standard architectural fee.

As soon as other clients learned that we offered planning services in addition to architectural services, they requested that planning be applied to each of their projects but at *no* increase in fees. We found ourselves rendering extra services at an increased cost to ourselves but without additional compensation. In short, we were not getting paid for all of our work on many of the smaller projects which involved planning. This led us to a change in organization.

We felt that we needed planning services connected with the firm but, at the same time, it had to be on a profitable basis. Consequently, we decided to form a separate company. Planning work could then be on a project-by-project basis, and we could render planning services for architectural projects—and be paid for both. This was the origin of Associated Planners.

The separate firm idea, however, has its coordination problems, which we have not fully solved. Nonetheless, it facilitated greater involvement in planning and urban design projects. It also enabled us to work with other architects who were reluctant to associate with another architectural firm on one of their projects. The separate firm did, however, solve one very critical problem: that of recruiting new personnel. Good, young talent was reluctant to join the parent firm because there was "too long a line" ahead. A new and smaller organization had far more attraction from a career standpoint.

We soon learned that most of our projects required a team approach. Much of our work involves one or more nonarchitectural firms such as

civil engineers or market consultants. On one project, the design of a downtown area for a city of about 100,000, the team consisted of our office, a firm of civil engineers and landscape architects, the city's planning department, the city's public works and engineering and traffic departments, a traffic-engineering consultant and the staff of the local urban renewal agency.

Our part in this project involved the preparation of the plan, the urban design details and the overall coordination of engineering elements. In this particular project, we carried the details of design down to the point of construction of actual street furniture, sidewalk surfaces and tree plantings. Our work also included design critiques of parking lots designed by the engineer. It also involved a number of meetings in which the design was presented to the public. From most standpoints, this project was a success. Our fee on this project was $58,000. A reasonable profit, about $7,000, was realized.

Another project was to plan a town center for a much smaller community. Our team then consisted of planners, our firm as project coordinator and urban designer, and a civil engineer. We were provided with the necessary topographic information. Market information was provided by the client. Our fee on this project was $4,500, for which we were to prepare the overall land-use plan and provide schematic designs. However, we became so interested in the project that we carried it beyond the schematic stages into the three-dimensional design of the town center. Consequently, our job costs exceeded our estimates, and we sustained a loss of about $5,000.

Significant in both of these projects are the team effort required and the responsibility of the project coordinator in design and in financial management. We learned that it is all too easy to go beyond the written requirements of a contract and that even small urban design projects must be carefully coordinated.

Different Types of Projects and Services

As a firm we have been involved in a variety of projects involving urban design in some form or other. In general, there are four different types: 1) college and university campuses; 2) other large institutional complexes; 3) urban renewal projects; 4) new towns and other private development projects. Each of these general categories involves a different service, particularly in urban design.

1) *College and university campuses*—These projects involve the programming of facilities and working with administrators. Academic decisions must be made and translated first into schematic plans and then into specific development plans.

2) *Other large institutional complexes*—One example of this type of project involved a state institution. Here, basically, was an architectural problem without a program. The problem was to build a completely new building complex while tearing down the old one—condemned seven times since 1930. The institution had to remain in operation all during construction.

Our services in this instance involved three months of analyzing operations, determining space requirements, scheduling vital functions of the institution and preparing the development and demolition plans. When the architectural design team took over, its translation of this program into real construction resulted in an outstanding solution and a design citation. Preparation of the development program and general planning involved services costing about $8,000.

The board of directors of this particular institution, incidentally, commissioned us to do the preliminary planning study for a very good reason. The State of Arkansas had a budget surplus for construction. Many state agencies were in competition for that surplus. The preliminary planning study was a major factor in getting the money.

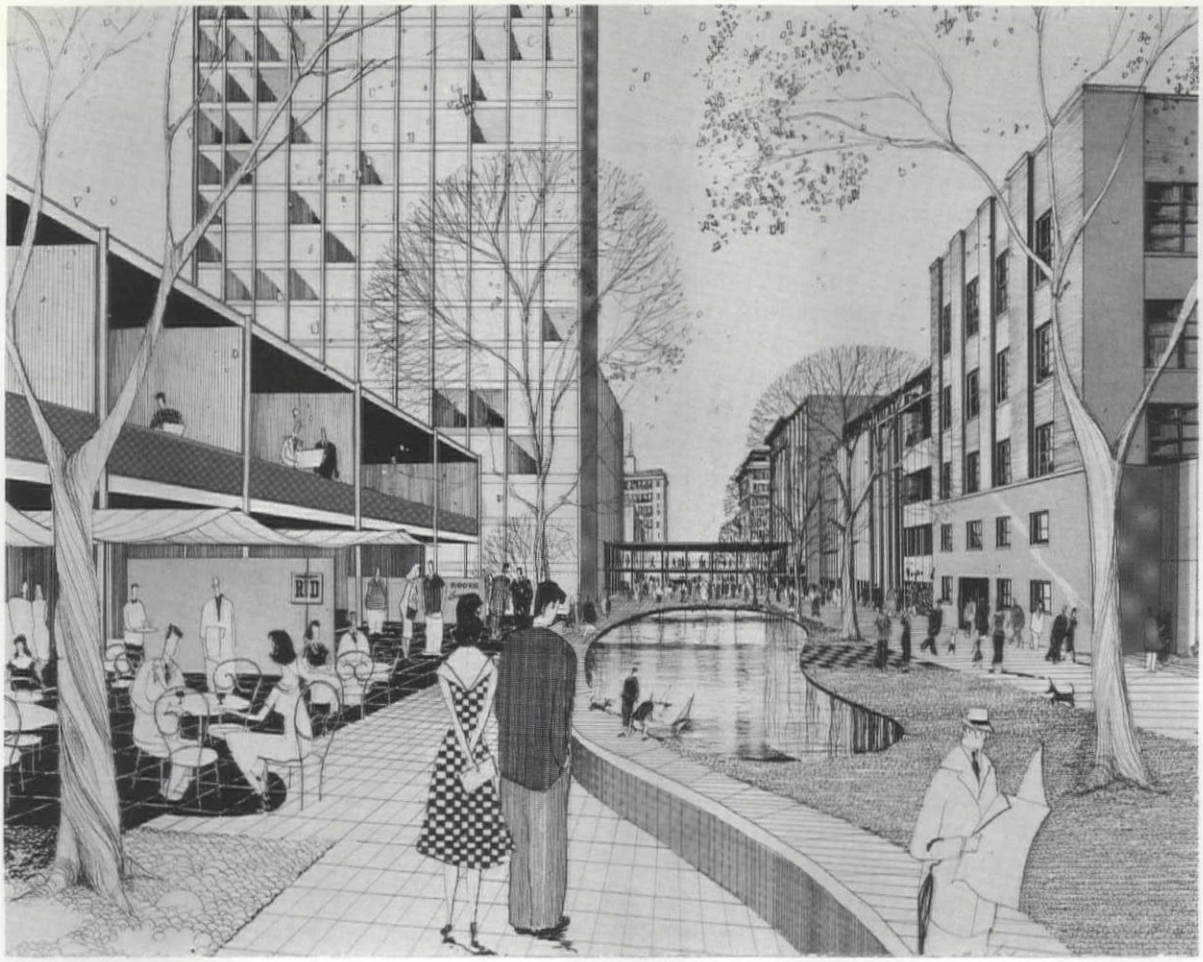
3) *Urban renewal projects*—Every such program needs urban designers on the team. The most successful projects are those which are closely controlled by a design plan for development.

It is important that public elements of these projects—walks, streets, landscape, building relationships, traffic and land use—be closely coordinated in a design plan. The privately built parts of the project must have the parameters of development that allow freedom of design while maintaining essential overall spatial relationships.

Fees for urban renewal projects involving urban design may vary widely, as does the scope of services. All these projects require lump-sum fees. Hence, the contracts must be specific in order to allow correct estimation of fees. Our firm has lost money on some of these projects and realized profits on others. The fees have varied from $8,000 to $130,000, depending on the size and scope of project services. The urban design team on this type of project consists of the administrative urban renewal agency, the planner, the designer, the landscape architect, civil engineers, traffic engineers, and real estate-market consultants and appraisers.

4) *New town and other private development projects*—The fourth major category of projects is a "glamour type" for several reasons: the red tape of government regulations are considerably less; construction time is usually speeded up; and, consequently, results are more quickly apparent.

The new town is a type of project which, more and more, requires the skillful coordination of a



team of talents. The design team of such a project on which we are currently working consists of the company engineering department, our firm as the planner/urban-designer member, an architect, a golf course architect, a landscape architect, a utilities engineer, a highway engineer and a law firm. The law firm may seem somewhat alien on a normal design team, but it was essential in preparing the legal framework for the design development. This involved translating the design concepts into a property owners' association and writing certain deed covenants.

A lump-sum fee on this project could not be estimated for urban design work so a cost-plus arrangement was used. Here on this same job we later became involved in a consultation type of service, on call. This relationship was established after we had finished the basic plan and its urban design concepts. By this means our services could be tapped as needed, to advise on a detail or make certain alterations. We could also undertake the architectural design of certain parts of the whole project. Several individual projects are now in various stages of design, working drawings or construction.

Some of the other private projects in which we have been involved include large-scale housing projects, shopping centers, parks, scenic drives and subdivision design. Our planning-design work usually stops with the development of the initial program and a schematic design. The clients include larger real estate firms and individual developers. The fees on these projects range from $1,000 to $10,000.

They are, almost always, cost-plus because of the indefiniteness of the scope of the work as well as the undeterminable number of coordination meetings and planning commission hearings. Understanding the various types of projects, the different types of clients and their requirements is very important. These considerations determine how the firm should organize itself for a particular job and the types of contracts to be used for them.

Types of Contracts and Fees

Basically, urban design work as we have experienced it involves four types of contracts: 1) lump-sum fees; 2) cost-plus fees; 3) percentage-of-construction-cost fees; 4) per-diem services.

1) *Lump-sum contracts*—These represent the bulk of our work and that of most other firms of similar practice, both in number and dollar-volume of fees. There are several reasons for this:

a) All Federally aided projects, such as urban renewal, require an "upset-fee" in the contract.

b) On projects which are large and which re-

quire a substantial amount of services, the client must know how much to budget for each item of service.

c) Lump-sum contracts make *us* plan our work more carefully—specifically in thinking through the details of the project and its complete scope. It is here that experience on other projects helps avoid the main pitfall of lump-sum contracts: underestimating our costs. We have underestimated projects for some of the following reasons:

- We were unable to determine or control the number of meetings with client or government officials.
- We did not budget for sufficient travel expense or for printing costs.
- We became involved in time-consuming presentations and promotion of the project.
- We did not properly anticipate work items that required substantial time for coordination with other professionals.
- We became so intensely interested and involved in the solution of the problem that we could not stop with the scope of services as specified in the contract.
- We sometimes lacked adequate cost records of experience on a similar job.

2) *Cost-plus contracts*—This fee arrangement has two sub-categories: a) the cost-plus fee with no maximum budget; b) the cost-plus contract with a specified maximum budget.

Usually, the cost-plus contract is used when the scope of work is rather indefinite or when services are rendered intermittently. This situation occurs when services are needed for limited design and for advice and counsel, and where the total-fee estimate is beyond the immediate possibilities of the client. By using a cost-plus unlimited budget on larger projects and a specified maximum on the smaller ones, the client is often able to realize substantial savings. Further, the architect is assured of a reasonable profit on the project—and the project proceeds where it might otherwise have been brought to a halt.

The cost-plus contract has been a much abused form from the standpoint of World War II government experience, but, properly used, it is a valid technique. Usually we base our fee on salary costs multiplied by 2.5, plus reimbursement for direct expenses such as travel and printing.

3) *Percentage-of-cost contracts*—Such a fee is used by most architects in their normal work and, where applicable, is the best method. However, in order to apply this type of fee arrangement there must be a construction-cost figure on which to base it. By and large, this can only be done in projects which the architect-urban designer carries to completion. Some projects which we have taken through the schematic phase only have been based on a percentage-fee arrangement. We do this by prorating the estimated construction cost into project phases. Partial fees are based on a proportion of the full fee according to the amount of services rendered. On small projects the full fee for complete services, from schematic design

through construction, must equal 10 percent in order to cover costs and make a reasonable profit.

In projects using Federal assistance, it is necessary to set a lump-sum maximum. This must be high enough to cover the partial fees based on a final cost estimate. Some of these contracts provide for a series of fees for the preliminary design phase and for subsequent contracts. This simply represents a series of contracts which, taken together, amounts to the more conventional comprehensive contract.

4) *Per-diem services*—The per-diem type of contract is most often used for additional services. Often, too, it is combined with one of the above types of contracts. It is also used as a separate consulting contract and for intermittent services. In our experience we have used it for services as a member of an architectural review panel, advising an urban renewal agency on the design elements of a competition involving several developers. Fees for such services usually will be $150 to $200 per day, plus direct expenses such as travel and lodging. On government contracts, an upset price or budget for a maximum amount must be included.

Some Contract Provisions

In reviewing a series of urban design contracts used by a number of different firms, I have found that the most consistent element is the inconsistency of the scope of services and that the majority employs a lump-sum contract as the method of payment. I have concluded that a standardized scope of services is very difficult to draft due to the diverse nature of projects and the variety of methods of performing them. There are, however, several things in the scope of services for urban design work that must be mentioned in arriving at an estimate of any lump-sum fee. These include:

a) A precise definition of work to be performed and the drawings to be furnished; and how extensive and elaborate any presentation drawings are to be.

b) A determination of the amount of coordination and/or presentation meetings to be attended. If this is impossible to anticipate, a meeting budget should be established with a unit cost per meeting over and above the basic budget.

c) Material to be furnished by the client, or service to be furnished by others, must be spelled out in detail. Who will furnish it and when?

d) Determination of whether model construction or printing of a report is involved and a reasonably accurate estimate of these costs.

e) In the case where the scope of services is somewhat indefinite, division of the contract into phases with provisions for renegotiation at the end of each.

f) Proper consideration for each service rendered. Some contracts involve a broad or schematic approach to the design. Some involve a more detailed preliminary design with the intent of using this as the basis for construction drawings. In such cases the fee for this phase is sometimes credited against the full fee for complete architectural services performed later. Another contract provision of importance is the method of payment. This has several variations:

- The monthly draw based on submitting a monthly statement. It is paid on the basis of percent of work completed.
- Specific fee by phase of job. This is paid on completion of each phase.
- Fee to be paid on specified calendar dates.
- Per-diem fee, payable at time of service.

Organization of the Office for Urban Design

All architects can become involved in urban design should they desire, but the proper team must be assembled. Not every architect or planner is also an urban designer. There are so many disciplines involved that an urban design team is, with few exceptions, a necessity. Teams may take one of several forms. If a large office is preparing a downtown plan, it will require a city planner, an architect, a landscape architect, a civil engineer, a traffic engineer, a utilities engineer, an administrative coordinator, and a real estate and market expert. A large firm may have several of these people on its staff, and may also use consultants. Usually an architect-planner makes the best team coordinator because of his knowledge of planning and his broad perspective of architecture.

The same project undertaken by a small firm—or even a one-man office—is possible when the firm or individual architect performs as a member of a larger team. This may be done either under separate contract or as a subcontract under the principal planning contract. I have worked on teams where we have been the principal contractors. Sometimes the contractual relationship makes the team function better, sometimes not. There is no one method that works best.

In our operation, we have usually been the project coordinator, though not always the prime contractor. This is because we are specialized in planning and design. We are usually hired to prepare the master plan and to function in other areas of our competence. We have also been a part of a team which involves at least one other firm, either architect or engineer, or both. Each project and situation requires a different composition and a different system of coordination team.

I would suggest that a firm contemplating this kind of work contact a planning firm or planning agency that participates in these projects. ■

Excursion into a Plastic Future

BY ARMAND G. WINFIELD

A consultant on plastics in buildings, architecture and the decorative arts, the author traveled through Russia in 1961 on a State Department grant as specialist-consultant with the "Plastics-USA" exhibit. For this glimpse into "the not too distant" future, he asks the reader to "forget momentarily" the burnability, inconsequential structural characteristics and other shortcomings of plastics.

PLASTICS are light, colorful and strong. They are transparent, translucent or opaque; they can be smooth or textured; they are solid or foam; they are moldable, malleable, inflatable, pliable, bendable.

But most of all, plastics are *plastic,* and plasticity in the hands of the designer seeking free, fresh and natural forms is a highly relevant quality.

What better material for an architecture that is plastic in *form* and *feeling?*

It is generally known that more and more plastics are being used in the building industry. Still, plastics represent only about 1 percent of construction materials.

What is needed for a plastics breakthrough is an understanding and exploitation of the nature of the materials. Instead of using them as substitutes for conventional materials, we ought to use them for what they are.

Five basic categories of uses of plastics in construction in the forseeable future are:

- Laminated sandwich constructions
- Combinations of plastics with senior structural materials
- Inflatable plastics and films
- Continuous sequence structures
- Cell-pod constructions.

Laminated Sandwich Constructions

Sandwich panels as we know them, consisting usually of rigid skins surrounding a core material, have limited use as curtain walls or partitions.

Tomorrow's panels will be more flexible and functional, and tomorrow's designer will have a greater choice. Panels will be structural, load-bearing members containing utilities in the core.

It will be possible to buy panels in a series of integrally placed units that can be quickly anchored in a base slab and to which a roof can be attached with equal speed.

Exterior and interior skins might be different in color and texture.

Adapted from a paper presented at the annual technical conference of the Society of Plastics Engineering, and named best in the discipline of plastics in building.

Perhaps the designer will specify good-weathering acrylic for the exterior and hard but colorful polycarbonate for the interior of the children's room.

Heating, plumbing, lighting and airconditioning facilities will be buried in the panels, with butt attachments joined as one panel is placed adjacent to the next (Fig. 1).

Radiant heat could well be spread throughout the panel, and so might electroluminescent lighting, giving a widespread, gentle light from all walls.

With greater architectural freedom through plastics, tomorrow's house can be of many forms. Windows and doors will be built into panels of various configurations according to the desires of the owner.

Another kind of panel for tomorrow's designers might be molded of low density, rigid, thermosetting polyester or urethane foam. These materials can be cast in a wide range of shapes, sizes and colors.

This panel would have the same freedom as the sandwich version and its insulation and sound barriers would be built into its composition.

Inexpensive, lightweight, exceedingly strong, the plastics can be colored, textured or finished during basic molding.

One of the most exciting potential developments is the use of a new, somewhat flexible styrene foam. The material, weighing from 2 to 6 pounds per cubic foot, can be easily bent or twisted into compound and complex forms and is load bearing.

Tomorrow it may be possible to take a 4- by 24-foot board of styrene, anchor one end to the ground, bend the board into a catenary arch and anchor the other end.

The result: an arch approximately 10 to 12 feet high by 8 to 10 feet wide (Fig. 2).

Picture a series of such arches sprayed with concrete or urethane

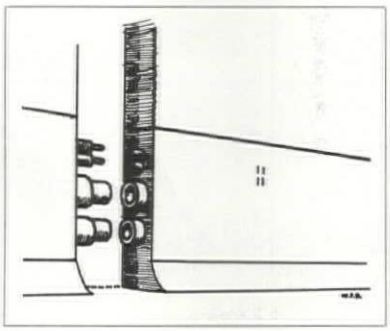


FIGURE 1

to form a structural crust. It is like putting up the insulation, then adding the structure.

Large structures might have a second story built in (Fig. 3). Forms can be catenary, round, igloo-shaped or, indeed, free (Figs. 4 and 5).

How much more achievable will the fluidity of some notable architecture of the past, such as Erich Mendelsohn's 1920-21 Tower of Potsdam (Fig. 6), be made by the materials of the future?

With this technique, structures such as that conceived by Enrico Castiglioni (Fig. 7) are possible.

Flexible foam liners could be used for a number of purposes, such as viaducts (Fig. 8) and second-story roadways (Fig. 9).

Inflatable Plastics and Films

That we have already seen much accomplished with air-inflated structures only portends toward a more promising future. Stadiums, shopping centers—even cities—may be encapsulated.

Heat-sealing techniques make it possible to fabricate intricate air-inflated boxes, tubes, arches, etc.

Collapsible forms for concrete, urethane, etc., are indicated. Bulk insulators are also suggested. Nylon-vinyl or tough polyethylene could be used as flat sack walls (Fig. 10).

Sprayed with reinforced thermosets inside as well as outside, the air sack would remain as insulation.

Experimental work in progress uses stretchable nylon in tent-like structures. The nylon is anchored and stretched over poles or guy-wires to form interesting structures (Fig. 11).

Known, but as yet not in practice, are methods of waterproofing nylon

FIGURE 2

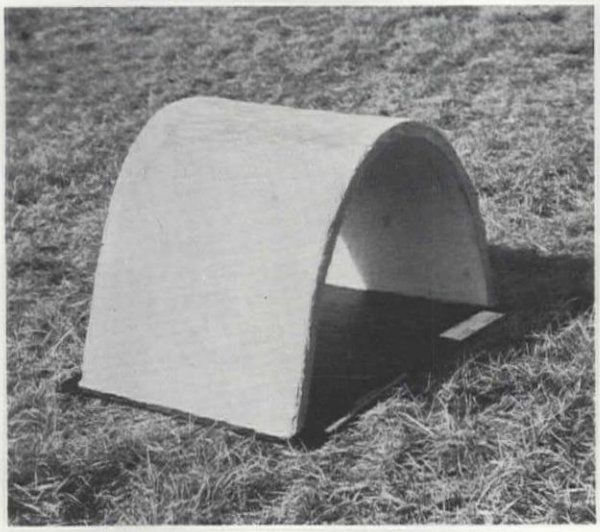


FIGURE 3

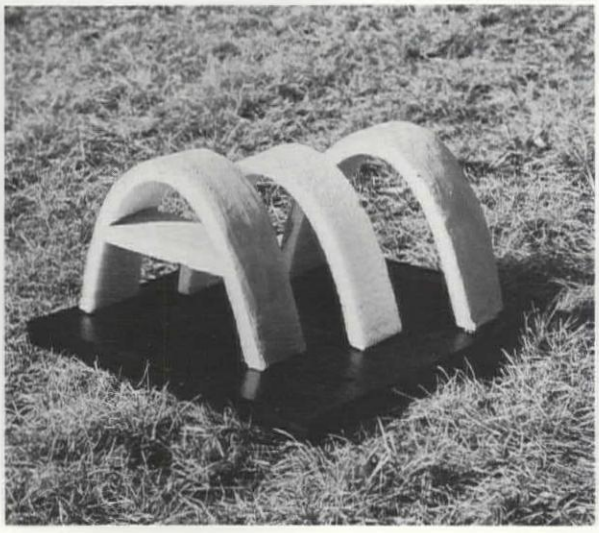


FIGURE 4

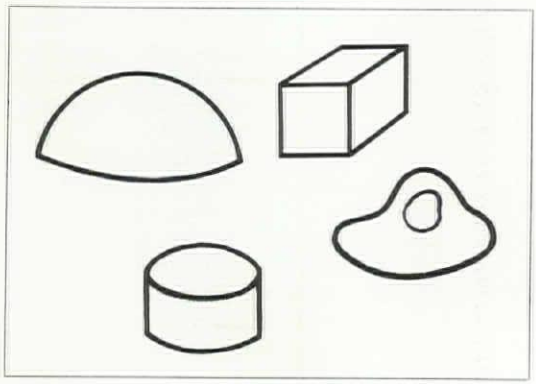


FIGURE 5

FIGURE 6

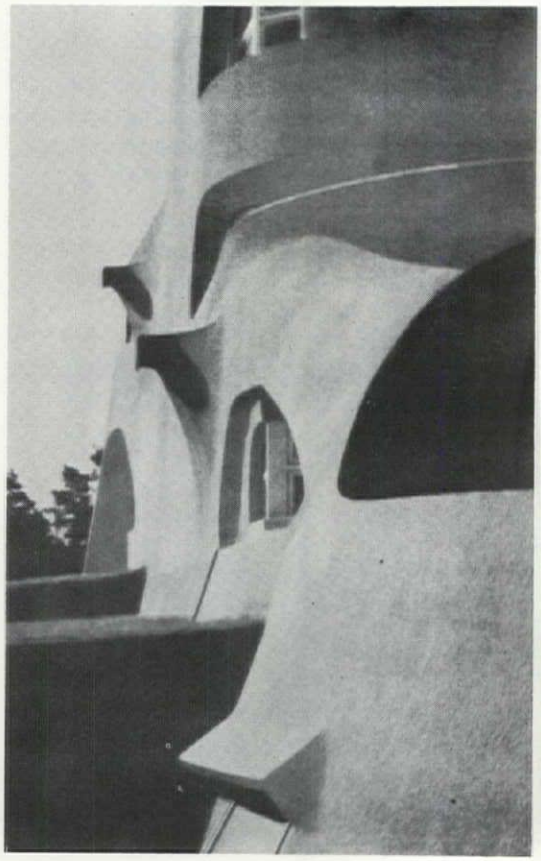


FIGURE 7

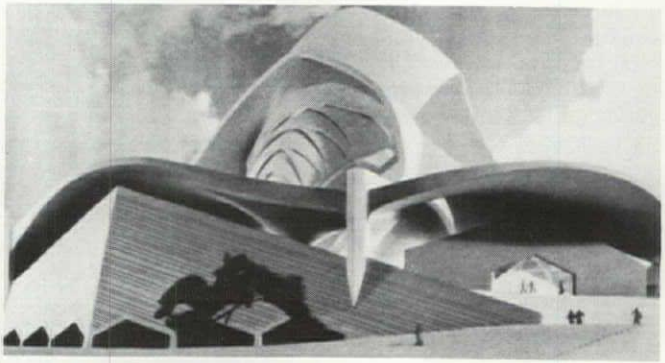


FIGURE 8

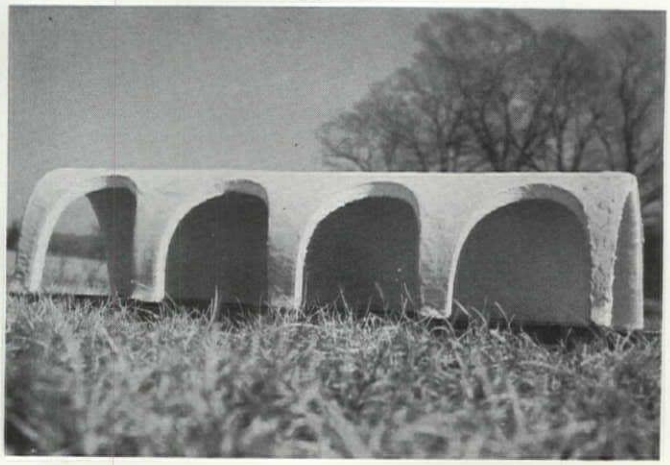


FIGURE 9

in its stretched condition, or solidifying the shape itself. But applications of this technology will come in time.

Film, tomorrow as it does today, will play a most important role in building. Thin polyester film is exceedingly strong, and even stronger are film laminates. Large cell, transparent styrene foam, a film variation, lends bulk to a structure while still maintaining a see-through quality.

Even stronger ionomeric films are coming into being. The new alloys of metal with plastics hold promise for tougher materials.

Tomorrow's film will have built-in qualities such as electro-luminescence, ultraviolet screening, black-out characteristics so light can be blocked or privacy assured at the flick of a switch.

Inflatable tubes can be used as lightweight semipermanent arches on which temporary roads or bridges can be laid.

Interesting, multiroomed, air-inflated structures using bulkhead door systems have resulted from experimentation in the United States and Germany.

Experiments with housing in Scandinavia (Fig. 12) indicate the practicality of clear film tent structures. Such research is expected to yield many future conceptions.

By using greatly enlarged versions of today's molding techniques, we can project several more building ideas. The Italians are already extruding walls, baseboards and corner moldings that can be cut to predetermined lengths, then snap-fitted to form rooms, partitions, etc.

Our extrusion technology today allows for complex extrusions, cross head extrusions and many tricky combinations.

Tomorrow will bring even further developments as this technology ages. It will not be uncommon to see—or buy—extruded rooms, houses, institutions, barracks, offices, etc.

With giant extruders at work, the size of a section required would be given to the manufacturer who would arrange the cutoffs.

Ends would be added and doors and windows routed into the extrusion or placed in the end sections (Fig. 13).

With new techniques constantly appearing, it will probably be possible to extrude foam between rigid wall membranes during the extrusion process.

And with the birth of giant filament winding machinery, it will be possible to wind pipes, tubes or profiles on a continuous basis and in incredible dimensions.

Imagine tubes 20 to 30 feet in diameter being made on a continuous basis. The winder is portable, and large tubes made of fiberglass reinforced polyesters or epoxies could be used for a multiplicity of functions in building, transportation and industry.

Visualize viaducts for water supply, or tubes for traffic running below earth and water.

The Soviets experimented with precast concrete tubes that were cast on land, then dragged to the river and placed in the bed (Fig. 14). It was then pumped out and a dry tunnel resulted. But think of how much easier, faster and lighter the job would have been if plastics were used instead of concrete!

Imagine a quick and economical

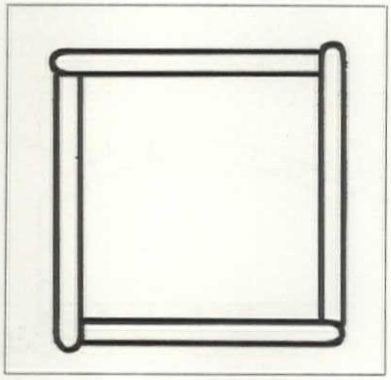


FIGURE 10

FIGURE 11

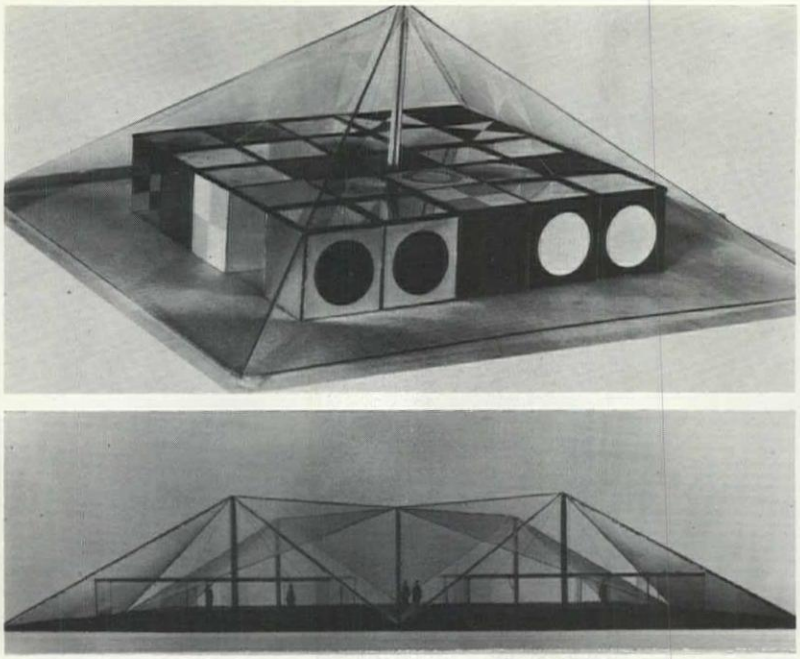


FIGURE 12

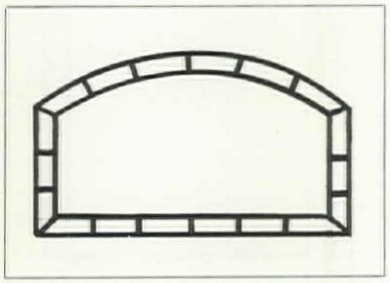


FIGURE 13

transportation system with cars propelled by air pressure or jet propulsion skimming from city to city through giant tubes (Fig. 15).

And such filament-wound tubes, squares—any configuration—could be used in constructions above or below ground.

Marina City is a pair of large cylinders. With endless filament winding, the future contractor could wind the large tubes, stand them on end and then add floors, apertures and other necessary elements.

With the use of interior lighting, controlled designed glass fiber bundles, airconditioning, etc., it might be possible to eliminate windows entirely. Or, with transparent glass fibers, it might be possible to make transparent or translucent walls placed as required.

Cell-Pod Construction

The Paul Gosch Towers, a vertical assembly of globular units or pods, had as its media of execution in 1920 such materials as iron, concrete, tile and glass. If only he had had plastics!

We may not be too far from the time of add-a-room housing. We are already blow-molding 100-gallon containers, and we are inserting metal parts into our molds.

In the future, we might develop giant blow-molding equipment to make rooms or pods with door and window framing inserted if needed.

A blown room or pod made of weather-resistant thermoplastic could be further insulated inside if necessary. The pods could be strung out on one level, or piled one atop the other.

Pod shapes could be varied; materials used, many; colors, unlimited; textures, endless.

Shapes made possible by these pod units could be the answer to an architect's dream—limited only by the machine's capacity to produce, the pods could be exotic or simple in form.

New materials and techniques should open the door to forms untaught by past experience.

In our ever-changing world we must be fluid in our ideas. We must keep abreast of changes in ideas, methods and materials.

Plastics meet the needs of the expansive future. Structurally, they leave much to be desired, but soon we shall have new materials stronger and more durable than now imagined.

We shall see prestressed fiberglass structures as we now see prestressed concrete. We shall see buildings and cities made of our materials and of the plastics materials yet to come.

An imaginative peek toward the future is exhilarating; a realistic look at the present, grim to begin with, is made even more so by contrast with the excitement ahead.

We are beginning to notice a relaxation, ever so slight, of the plastic bans of many building codes—a result of constant protestation by the plastics industry. As new codes are written, the stigma long associated with plastics wears progressively thinner. Small steps, it is said, often precede great leaps. ■

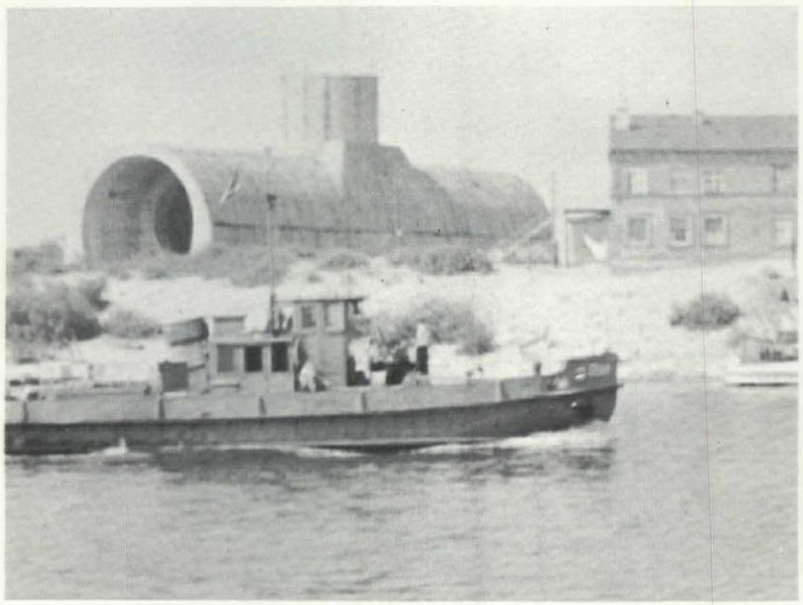


FIGURE 14

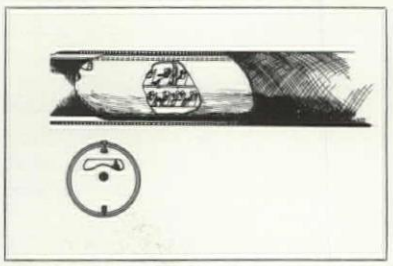


FIGURE 15

Editor: *Marcus Whiffen, College of Architecture, Arizona State University, Tempe.* **Contents:** *Excerptions from papers and the record of the AIA-ACSA Teacher Seminar dealing with most of the major topics receiving seminar attention.*

Cranbrook 1965

Structural Decisions and Tomorrow's Construction

Speakers
Richard Bender AIA
Cooper Union School of Art and Architecture
Richard R. Bradshaw
Van Nuys, Calif.
Raymond A. DiPasquale
Cornell University
William A. Fetter
Boeing Co., Renton, Wash.
James M. Fitch
Columbia University
James W. Fitzgibbon AIA
Synergetics, Raleigh, NC.
Bruce J. Graham AIA
Skidmore, Owings & Merrill, Chicago
Phillip R. Jackson
Jackson Construction Co., Newton, Mass.
Timothy E. Johnson
Massachusetts Institute of Technology
Charles H. Kahn AIA
North Carolina State of the University of North Carolina
August Komendant
University of Pennsylvania
Bruno Leon AIA
University of Detroit
William H. Wainwright
Geometrics, Cambridge, Mass.
Joseph C. White
Inland Steel Products Co., Milwaukee
Lev Zetlin & James E. Chaplin
New York City

EACH AIA-ACSA TEACHER SEMINAR has its own character as well as its own topic. It would not always be easy to find the right words to describe that character, but something of the essential nature of the 1965 seminar can be conveyed in a single word: dynamic. The forward-looking topic —when one comes to think about it, though, what topic connected with education is not really forward-looking?—doubtless had something to do with it; forceful chairmanship, the informed enthusiasm of the speakers and the participants' sense of involvement, not only in the discussions but also in the problems discussed, had much more.

Within the broad general framework of the topic and the narrower but closely interrelated subdivisions established by the planners of the program, room was found for much variety of subject matter. There was also considerable variety in the form of presentation. Audio-visual techniques, particularly film with spoken commentary, played an important part. And here is a problem for an editor, for with this kind of presentation the better the commentary, the more closely it is related to the visual material, the less suitable it is for transfer, unillustrated, to the printed page.

It is a problem to which this editor has no solution, and so the revelations in James Fitzgibbon's films of domes and folding structures, in William Fetter's computer-drawn simulations of the flight and landing of aircraft, in Timothy Johnson's demonstration of the sketchpad system in computer design projects, must remain revelations to the chosen few who were at Cranbrook (and those others to whom they may be granted elsewhere). The omission of so much material so vital to the theme inevitably unbalances the picture. However, the following excerpted points from papers (or from the transcription of the tape recording of the seminar) touch on most of the major nontechnical subjects that received more than passing mention. It is hoped that they will convey some idea of the climate of opinion that prevailed at Cranbrook '65.

THE CRISIS

A sense of crisis, the feeling that things cannot go on as they are, was expressed by several speakers.

Fitch: I think that architecture, like all human affairs today, is in a qualitatively new kind of crisis; I don't think that it is correct to say that our problems are just those of our grandfathers. The rate of change has accelerated to such a rate that I think architects, like the whole human race, confront problems that are authentically without precedent. And I don't think architects ought to be embarrassed by admitting that the profession is in crisis. It would be impossible that the profession not be in crisis when the whole human race is in crisis. And I think nothing is to be gained by pussyfooting around this issue; in fact, I think everything is to be lost trying to avoid it.

Komendant: We are not changed very much; but our attitude has changed; it has been changed by science. Science is dynamic, our society's dynamic. We still call it evolution, but it's not so. It's a revolution,—a continuous revolution.

Wainwright: Basically, I see the urban problem as the biggest one, these fantastic concentrations of people, and I think a great many of you will think of chosen parts of the country where these problems are already very big; but if you double the population in 40 years, that's 200 million people—in terms of building, a city of 5 million every year or 10 cities of 500,000 every year. And think about that. No one is fit to cope with this. And yet I don't think these are irresponsible figures; the doubling gives a conservative figure. I'm more inclined to applaud the urban problem; I'd hate to see that many suburbs. That would be ghastly. Somebody has said in one of these sessions that things respond according to crisis, that when the crisis comes along, we'll respond to it. Well, the crisis is when you see a crisis. There was a crisis in Hitler's Germany which wasn't really substantially worse by the time it got noticed. It was there for a long time.

You have to look around for crises. But the crisis is there; it's all there and 40 years is an insignificant amount of time. Just divide it up. How long does it take to have a building built? It takes about three years to build a $10 million building; that's only 37 years left. I think you should want to be a leader of this team; but to be a leader, you have to have a view of this society, you have to make up your mind what you think of it. You can't be too placid. You can't be going along asking people what they want, etc.; you've got to take some guesses. And it is always your responsibility, of course, to check up on these guesses, and this is not necessarily something you're able to do. But there are professional people who check up on guesses. We call some of them psychologists, some of them engineers. You can use these people; but you have to know how to ask them questions.

LEADERS AND LEADERSHIP

The need for leadership in the crisis was a recurrent theme. Most of those present, including all the nonarchitects, thought that the architect should be the leader, but there was some doubt as to whether he would be.

White: In this business of building apparently no one is in charge. And without leadership in any field of endeavor, chaos usually results. And I think the consensus here has been that we are in the midst of chaos. However, chaos is not a natural state. Normally it is replaced by order, usually through the emergence of a leader. Today the pressure to replace chaos with order in the building industry is increasing. And leadership is called for. We think that the architect can take the van, but if he doesn't, somebody else will.

Wainwright: There was a lot of talk in all these little conferences [discussion groups around the pool in the afternoon] that leadership is not important; we don't care who leads, we just want to be part of the team. Well, I think you *should* care who the leader is; I really think that it's a funny kind of human being that doesn't care who leads in the field where he's principally involved. Now I think what you do as an architect is basically you know that you're in charge of order. This is your area of concern.

Komendant: The engineer is a specialist. His field is getting narrower and narrower and narrower. What is required to develop a design he is without, because he sees only a very small section of our society and its needs. The architect's training is different. And there's no danger of engineering ever taking over architecture—never. If you should ask me, an engineer, to do a design in your field, I would gladly say no. You could pay me whatever you want; I would still say no.

THE NATURE OF THE ARCHITECT

More than one speaker saw the architect as a man with a split personality, though the uniqueness of the architect's qualifications and opportunity were also stressed.

Wainwright: The first thing Mr. Kahn said was that architects are always getting together and flagelating themselves. Why do they do this? A structural engineer, not speaking of this group,

said that he never saw such a bunch for devaluating themselves. I'm sure you've all said—I've said it myself—that you can't hurt the good student; and the other thing you say is, "I learned more than my students did this year." Well, you know this is nice modest behavior; but can you really look yourself in the eye as a teacher and go on for 40 years saying that we don't hurt the good student? It's not responsible. You need to work harder than that. It's nice to be humble, etc., but there's a little thing somewhere in William Blake where he says "Humility is only doubt, it does the sun and moon blot out." And you needn't be quite so humble. The other pole of architectural behavior is that we get very grandiose; we say we're the designers of the environment, the only people with a sense of creativity, and the whole world's going to hell and they won't listen to us. So here we go back and forth in a group that learns the most from the students and still wants to control the world. What kind of behavior is this? It is manic depressive, or something.

Fitch: I think that the profession of architecture differs in very important respects from any other profession in the modern world. And that its field or jurisdiction covers a whole range of experiences—of human experiences—from the poetic to the practical. This means that the architect's work is continuously subject to two sets of standards, two sets of criteria. One is drawn from the field of art, and one from the field of science and technology. And the reason that we often seem so confused and disorganized—the reason that we *are* so often confused and disorganized—is that we ourselves are constantly migrating between these two poles.

Wainwright: We have to double the square footage of building in the next 40 years because the population will double in about that many years. And if we don't do this, this architectless building *is* going to be our environment. We simply can't do what characteristically we've done, which is simply to build a monument. I don't think any of you disagree with this. Every architect says, "Oh yes, we should be concerned with the environment." What he means of course is: "You guys keep the noise level low so they can find my building." And this is wrong. Furthermore, I would ask you that you should expand out of the 10 percent of the building that you control to get the rest of it, not because I want to make you wealthy or anything, but because it should all be coordinated in some way, and you're the only person with the interest in coordinating. You're the only person who knows that there is going to be a problem; everybody will be interested eventually, but man shows an unfortunate ability to be able to stand anything.

SPECIALISTS OR GENERALISTS?

Should architects know more about less, or less about more?

DiPasquale: The AIA three-man commission said that the engineering schools are not doing the job; we know that, so who's going to pick up this burden of training those people to be specialists in the area of architecture? Architecture is very highly complex, it's too much for one person to fully comprehend; so we create this generalist, so to speak, in a typical five-year program, and then we begin to take those people that are so inclined and make them specialists in the area of architecture. Not to replace the engineer, but to do the kind of thinking that the engineer is not doing for us. In architecture, specifically in structures, to afford them an opportunity to do a better job of design, because they are more aware of structure.

Zetlin & Chaplin: The educator today is caught on the horns of a dilemma in determining the future trends: Should he offer specialized training or an overall education not limited to any specific field?

Taking a leaf from other industries which have made tremendous progress in the last decade, we would venture a recommendation for the future organization of the design and construction industry. On the one hand, we should have more members of the team who specialize in narrow fields; that is, people who know more about less. On the other hand, there must be developed a new breed of men who know less about more—a little bit about everything, if you will. This new breed will coordinate the work of the various engineering and architectural specialists.

Wainwright: We obviously should be generalists, although I personally prefer Bucky's comprehensive designer as a term, because we hide behind this "knows less about more" pretty often —and you know there's a certain threshold below which "less" is nothing. In regard to very many of the disciplines we have to know about as a whole, we frequently fall below this threshold. The generalist Whitehead said that the learning process was divided into the romantic, the specific and the general. Learning always has these three stages, and he said furthermore that you should always be in one of these stages; at every period of life you should be in the romantic period for one, the specific period for another and the generalist period for the third or fifth or sixth. In the romantic . . . well, you learn a little about the subject and you get very enthusiastic about it; you learn that the field exists. The specific is when you get down to work and find out all the little grubby details, and then you're able to gen-

eralize; but you see, Whitehead puts this after the specific stage and there's a reason.

You're going to generalize about sociology and structures and sewage and city planning, but what you have to know is the very essence of these things. You don't have to know the details, but you have to know how these things impinge on each other. And that's about the most important part. That takes care of the most fundamental understanding of things, what the nature of this impingement is. And this we tend not to know. We certainly tend not to teach it, but I think we should.

THE ARCHITECT AND THE ENGINEER

Some speakers stressed the differences between the two professions, some the resemblances. All agreed on the desirability of mutual understanding and cooperation.

Leon: Within recent years, a rapprochement has been taking place between engineering and architecture. This is, in my opinion, a sign of returning sanity on the part of architects, but it has not had unmixed blessings. The architect, trained with less understanding of the position of structure as an organizing medium, has used the forms and techniques brought to light by engineers in exaggerated manners, sometimes decorative, sometimes purely formalistic. The engineer on the other hand, being too prescribed in his relationship to building, has tended to overemphasize the factor of structure from too rationalistic a point of view. A further problem, complicating both viewpoints, has been the question of scientific information. The general myth that the "truths" of science are so fundamentally close to absolute truths that they are dogma is not only lacking in perspective but is akin to the absolutist philosophies of history. This debris of history has been given new form in this pseudo-scientific attitude or scientism. Its effect, when applied to architecture, has led to sterility and formalism. This basic misunderstanding of the tools of expression is aptly illuminated by Alfred North Whitehead's statement: "The greatest tools of the mind are abstractions, but the greatest sin of the mind is the intolerant use of abstractions."

Zetlin & Chaplin: With few exceptions, modern colleges and universities teach technical subjects to engineering and architectural students as if they were isolated, nonrelated subjects. The engineering student receives little information about the architectural field. Although the architectural student does receive training in the rudiments of civil engineering, all too often it is presented to him in a dull, routine manner. In some colleges, architectural and engineering student groups are completely separated, knowing nothing about each other's professions and disregarding and even harboring enmity for each other. A creative approach to construction requires the abilities of the entire team working in harmony and mutual understanding. This understanding of the potentialities of engineering by architects and of the potentialities of architecture by engineers should be fostered in our schools.

Bender: You can't come into a class of architects and say: "Now fellows, we're going to design a continuous beam, so you've got to know the three moments equations." Architects don't think that way. They don't take to that kind of approach, and, of course, they are right. Certainly students of architecture are different from students of engineering. They are in a terrific hurry to know everything; they want to know how to do this or that; they want to know how to use every new thing. They talk a different language, and the kind of information that engineers will accept, architects will not—and they shouldn't. They shouldn't want to be second-rate engineers; they should want to be a quite different kind of thing.

Architects can design superior structures, but they are going to do it out of broad theory rather than out of method or particulars. What's the point of teaching them all the intricacies of calculating loads and deflections, or stresses on structures, and having them repeat endless calculations over and over again? How often are these calculations just meaningless? How often do they fail to check with observed events? Most often in an actual building, the events don't even come close to the most carefully checked calculations. The architect's challenge is to learn to see with his own eyes and not through the eyes of some kind of mathematical method. There are many errors in buildings that are more important than errors in calculation. If you don't believe that, just come to the World's Fair.

THE ARCHITECT AND THE BUILDER

The need for the architect and the engineer to take questions of construction into account during the process of design, and for full collaboration between them and the builder, was forcefully advocated.

Jackson: To the architect and engineer I would assign the responsibilities of creative design, innovation, methods, optimum use of resources and the logistics of management and coordination. To the builder I would assign the responsibilities of ingenuity, applied technology, quality and cost control, and a firm belief in the professionalism of his work.

The embodiment of the structural form as the main esthetic feature of the building will create for the builder a different set of problems from those he has been accustomed to meeting. It also forces him to adopt a new and different set of standards for his work. The execution of the design of many of our future structures will place upon the builder, and for that matter upon the architect as well, the burden of developing new methods and new approaches. These buildings are more difficult to construct; the new shapes are more costly to produce; there must be added care and diligence given to the quality of the work because this is the finished product. There is no wall or facing to conceal the crudely built structural frame or to cover the poor texture of concrete poured with little care or consideration for its appearance. These structures can be efficiently and economically produced, but to do this we must discard the somewhat hit-or-miss approach to the construction of the job. The architect or engineer can no longer prepare his plans with the idea that how the thing is to be built should be the sole responsibility of the contractor and that any discussion or consideration prior to the time the shovel takes its first bite of earth is both unnecessary and inappropriate.

Bradshaw: The engineer today can indirectly control the job through his construction by building in certain features which the contractor is never aware of. Some of the most complicated buildings I've ever worked on to the contractor were very simple because we just tell him: "Do step 1, 2, 3 and 4 and you'll give us what we want." And when this happens the fear of the contractor is gone. Instead of thinking, "My god, I'm working with something here nobody's ever thought of before, or done before!" he looks at it and says, "I've got a bunch of curved pipe; I know how to make a curved pipe. I've got a bunch of shores of a certain length; I know how to do that. You say put the pipes on top of them; I know how to do that." So the fear factor is left out, and without it you get much better bids on your jobs—which is a very important thing because otherwise your concept may never get built.

THE BUILDING INDUSTRY

The shortcomings of the building industry were attributed to its being material-oriented, or at best product-oriented, instead of market-oriented.

White: The method of building today is very complicated for a couple of basic reasons, I suppose. First of all, it is craft-organized, and this presents lots of problems. This is an historical development, and it is a terribly inefficient way to do things. There are also more and more technologies involved, which also complicates the process. And I think that the industrial products that are available to the architects today reflect these two factors and are quite unsatisfactory. The building industry is very diverse, segmented; it is not the prime interest of any major industry. And I think this is quite important.

The steel industry, for example, is interested in selling steel, and we sell it to all industries, not just the building industry. Consequently, I don't think that the steel industry understands the building process today. And I think this is true of most industries. The problem is that if the industry is not material-oriented, as I think steel is, at best it is product-oriented, as in the steel products industry. It is not really market-oriented. And I think that is what it should be. I don't think that industry really examines the heart of the building problem, and it is not applying its potential to the solution of the problem. As a result, I think that building today is disorganized; it is expensive, it takes too long, it does not avail itself of existing technology, and, consequently, it does not truly meet the need—either today's or tomorrow's. And I think that a clear statement of need is imperative for the solution of any problem. I'm certain that you gentlemen who are involved in design understand this.

TECHNOCRATIC ARCHITECTURE

We can build anything anywhere anyone will pay for it. But should we?

Graham: The Boots office building in Nottingham, England, will run in cost about $20 a square foot. This is about the same cost as in the United States, and it has an awful lot of people in it; they're much more concerned about how many people you put per square foot than Americans are. But we found certain things that were interesting—that they had not had the experience of a glass wall in England. And it is curious how quickly, by demonstration, they were able to understand it and like it, while previously people had felt that the English wouldn't like it because of the climate, etc. I don't really think that that's true. I think that people in almost any part of the world accept the logical conclusions of a technocratic architecture.

Fitch: When Philip Johnson once said, in jest, that he could build a skyscraper out of pink velvet if he chose to, he really wasn't exaggerating. I haven't gone into the calculations, but I am sure that you could build a skyscraper out of pink velvet if somebody decided he wanted to do it. We decided to put a man on the moon, and if we can do that, we can certainly build a skyscraper out of pink velvet. The question is, should we build a

skyscraper out of pink velvet? and I think we would all agree and know that we shouldn't. We would say, that's bad. But, it is not enough to say that is bad; you have to try and define in precise terms what you should do.

STRUCTURAL SYSTEMS AND THE ARCHITECT

The case for structural systems is stated by the vice president of the engineering and product development division of Inland Steel Products, manufacturer of the system the First California Commission on School Construction Systems adopted.

White: I'd like to point out something about what we think the benefits of this system might be to an architect. Now first of all, you know there is an imposition of discipline on the architect. I'm not sure all of you like that, but you should think about it a little bit before you reject the idea, because architects are subject to a lot of restrictions to begin with, and in conventional construction I really think you're subject to a lot more restrictions than you would be if you had the use of a well-designed system. You have to make a couple of decisions first if you're going to use the system, and I don't know how restrictive these are; you'd have to figure this out yourself. First of all, it has to be rectilinear, it has to have a flat roof; you have to design on a 5-foot module, a 20-inch planning module, a 2-foot vertical module. And then if you can make those decisions, if you will allow this discipline to be imposed upon you; then I think you can feel free to go ahead, and for heaven sakes, plan the educational space that your client wants. And that really is important. Spend your time planning; and as you all know, the design process is a series of decisions. We think if you use the system you're able to keep a maximum number of alternatives open at every step in the process because everything is integrated, whereas normally you have to make a decision on form, you have to make a decision on a particular, maybe hand-made, component. Once you've made that decision, you're restricted at every phase, at every level of decision-making from then on. With a system, those avenues are kept open much longer, and it really allows you more freedom in decision-making.

THE FEELING FOR STRUCTURE

One speaker points to a feeling for structure as an educational aim; another detects a more general feeling for structure as a result of the increased exposure of the layman to structural forms.

Bender: What is it we should be aiming for in the architect's training in structure? Principally, it is a development of an intuitive feeling for structure as a sense of what's right in structure. A properly trained architect has to be pained by structural members that are forced and twisted in a building. He has to be pained at the thought of a structure living in some dark cavern, inside the house, tortured by all sorts of things going on; or it has to pain him to see that poor structure shivering out there in the cold because someone stuck it out there. On the other hand he ought to enjoy structure sometimes—a clear distribution of stresses, a good balance between loads and supports. It should give him some kind of pleasure, like a wine. It should be a positive thing to see a good structure.

Jackson: The Pantheon's hemispherical dome tapers from a thickness of 20 feet at the base to about 3 feet at the top. Space enclosures of similar dimensions and form today can utilize a parabolic shell only inches in thickness. Present-day structures and their components now tend to demonstrate not only our new concepts in design but also the theories and formulas developed centuries ago by such men as Euler, Bernouilli, Coulombe and the many others who have given us our first basis of determination of structural design. The designers of today's and tomorrow's buildings are becoming increasingly aware of the inherent grace and beauty of the pure structural forms and systems, and, as a result, we now are able to perceive in the finished form of some of our recent structures the actual workings of the buildings' structural components. Increasingly we can see the use of all members of the structure to assume their proportionate share of the imposed loads. The uncluttered forms of our structures allow the lay individual, with little if any background in architecture or engineering, to comprehend the physical workings of the structure regardless of the complexity of the design necessary to produce this part of the solution. I have noticed in the past few years an increasing understanding of the workings of structural systems by our field personnel, most of whom have a purely trade background. This I am sure is attributable to their continued exposure to structural forms in architecture.

STRUCTURE IN THE CURRICULUM

The optimism of one speaker was not shared by others who saw the need for radical change in the way in which structure is taught in the schools and for its integration into the teaching of design.

Wainwright: Structures is an interesting thing to run a conference on because I would say it is probably the only part of our curriculum which is at all defensible. At least it is the most defensible part of our curriculum. It is the part that is in the

best order, as you can see by the people who have made presentations here. If you were to talk about the design process or the mechanical process, I don't believe you would have anything like the number of intelligent, useful presentations of what we're doing back on the ranch. There are several reasons for this. Structure has an inherent attraction for most architects. Also, for a long time it was the only scientific part of architecture, and as you know, ever since Sputnik, everyone wants to be more scientific. I get the question asked, even by you people: "Are architects looking for a sort of saviour, a pseudo-scientific saviour, a kind of god that they hope to find in structure?" There are a lot of people asking engineers, "How can you solve my problem, how can you make my work significant, how can you clarify things?" And engineers are quite right in saying, "Well, we can't do this."

Bender: Of course we don't want to train second-rate engineers. Yet that's what we are doing most of the time. I would be interested to know where most of our structures courses come from. It has been my guess that they come from pages of an old specification that was lying around in some dean's office. Most architectural curricula read like the index to a book of specifications. They have structural and mechanical and heating and ventilating. And they are all broken up and put into different parts. I've seen in the last year, and maybe some of you have seen, the report of the AIA's Committee on Education, which has some wonderful pie charts where this is given some additional form. They have gone one step further and assigned dollar values or time values in terms of how much effort goes into these parts. So schools should adjust themselves and spend 40 percent on mechanical—for, of course, that's 40 percent of the cost—and 10 percent on structural, and 10 percent on conceptual design.

Leon: Inherent in the very process of separation in curriculum planning is the psychological implication of division between concerns for "design" and "structure" carrying forward to this day the tragic mistake of the last 100 years. This is not intended to imply that certain concerns should not be given at some time to various individuals, depending on their desires and abilities relative to more emphasis on certain aspects of the design process. However, this should have no place in the undergraduate process during the early years when the question of such abilities is still in doubt. Even when this is sensible, the total divorce between the two facets should not be allowed. Each individual, bringing to bear upon the design process his understanding of the total procedure despite his bias toward one or another aspect, can produce creative results. The usual result, so prevalent today, where the two men approach each other as enemies can lead only to superficial compromises. Yet the latter condition is precisely what we are producing by our present separations in the curriculum.

The lack of integration during the recognition and incubation periods of the creative process in school and in practice further complicates the issue. The typical design school establishes its design problems in such a manner that structural considerations, along with many others on occasion, are not considered until after the basic form is firmed up to the point where adjustments are only made at the sacrifice of the total harmony of the project. The habits generated by this approach naturally are continued after the young architect is in practice.

STRUCTURE AND SHAPE

The new structural developments have shown up the architect's ignorance of shapes, of the relationships between surfaces and lines and surfaces and surfaces.

Bradshaw: In the course of working with architects, I had detected something that ran like a thread through all, or many, of the buildings. At first I thought: "Well, they have a lack of knowledge of structure (which in many cases they do), a lack of the understanding of forces (which in many cases they do)." But there is something more than that. There is something more basic than that. I don't mean to minimize the fact that knowledge is certainly needed by architects in these particular areas. But the thing that was missing, I finally concluded, was a lack of knowledge of shape. Now this is rather surprising for the architects because they spend a great deal of time thinking about shape and form. It's actually a lack of knowledge of geometry.

By a lack of knowledge of geometry, I don't mean the formal ability to solve the equations or propositions or truths of geometry. This isn't it at all. I mean the lack of understanding of what the surfaces that are available to architects really are, and a lack of knowledge of the relationships between surfaces and lines and surfaces and surfaces. There's nothing particularly complicated about it; it is just an area which has been more or less left out of architects' education. In fact, until recently, until World War II, it probably wasn't necessary that it should be in their education. But with the advent of modern buildings, this fault in their education is revealed in many buildings. There are an awful lot of buildings extant in the United States today—some are well-known buildings, some of them are even considered to be quite outstanding buildings—which,

to a person who is a little more sophisticated in the knowledge of geometry and algebraic surfaces, indicate that these structures are really blind gropings. Things are done wrong. By that I mean things that are not done in the most simple and direct way. Possibly just a slight change in the surface, and the whole structure falls into line and makes sense from the point of view of stress analysis and of construction. . . .

If the geometry which is selected for a structure is an orderly, rational geometry, there's a pretty good chance that from there on the stress analysis will be orderly and logical and that the construction in the field will be a great deal more orderly and rational than with arbitrary shapes. Now I don't mean to say that I claim that all arbitrary shapes are bad. But I do believe that most of the arbitrary shapes that are used in our more spectacular buildings today, as in our more usual buildings today, are arbitrary, not because the architect really wanted exactly that shape but because he was not aware of the selection of other shapes very similar to it which would answer all of his needs and which would have been much more efficient structurally and much easier to construct. . . . Sometimes the feats that are performed are, from a technological point of view, a greater accomplishment than would be required with a simpler solution. But I don't think it is a proper procedure to build a problem in, then solve it and say, "Look how smart I am!"

INTUITION

This word, and the adjective derived from it, are among those heard at Cranbrook every June, and they were heard no less often in 1965 than in other years. Yet their use makes people feel uncomfortable and leads to qualifications and disclaimers.

Fitch: It is indeed fascinating to realize how we've used the word "intuitive" a number of times today. I think that's a very dangerous word. Most creation we call intuitive is really a summation of long experience. It may seem to the outsider that the act is intuitive. It may seem to the actor himself, the designer himself, that his act is intuitive, but in fact, it usually springs from a profound knowledge of the problem, based on continuous exposure to it.

Zetlin & Chaplin: Although we advocate creative thinking we do not advocate thinking based on pure intuition. Intuition and imagination should not be underplayed, but students should be impressed with the importance of systematic, scientific knowledge. Emphasis on intuition in the profession is fostered by many books and periodicals. The belief that only intuition and imagination are required to evolve new structural concepts is already well established. This notion prevails among many architects and manufacturers of structural products. With such a criterion, it is found only too late that many of the ideas are impractical. Had there been a better grounding in structural engineering and more awareness of its real potential, innovations with a sound basis would be evolved with less waste of effort. Reversing the emphasis, to place it on scientific knowledge as a first principle, with intuition as secondary, will result in a constructive attitude toward creativity among students and practitioners.

Wainright: The aim is to produce what we would like to call an intuitive grasp of structure. Intuition means you've done your homework.

SETTLING FOR THE FALLOUT

To judge from their reception by his audience, the closing words of the summation speaker expressed something more than a personal point of view.

Fitch: I was never sure when those simulated planes [in reference to a film] were zooming in on an airport to land or to bomb it. And this makes me view a lot of these things with a mixture of admiration and terror. I know that these techniques, if they are properly applied, can be used in the interests of this man. But I also know that they are not being used in the interest of this man —at least not wholly being used. And, I don't think that this is an aspect of our profession that we can continue to completely ignore. Because if this line of process continues, there are not going to be any more cities for us to worry about. And I don't know—thank God I am not involved personally in any such dilemma—at what point the individual designer has to decide these things. But one thing is clear, and that is that on a broad-range basis we the profession should not settle for the fallout—that's a phrase that's used repeatedly. For the scientific fallout is nothing but the crumbs from the military table. It may be that we need these appropriations for defense, but then we need comparable appropriations for something to defend. I don't think we should be content with saying: "Well, we spent $80 billion on the moon; a little of it is bound to trickle down to architects." We also should demand $80 billion for the earth.

Saving, Shaping Space

This impassioned plea for "the right to live in beauty," presented at a White House Conference on Health, is made by Philip Will Jr. FAIA, *former Institute president.*

MY CONCERN today is for man in space. . . .

Not the selected astronaut dramatically guided into the hostility of the expanding infinite, but ordinary unselected man who somehow struggles through an unguided life of quiet desperation on the finite planet of earth, where space is mutable but limited, where man multiplies but space can only be divided, where the only constant is change, and where the greatest force in nature, be it for good or evil, is not an act of God but the acts of man himself.

Technology today is able, the climate of opinion is receptive, and the desecration of our physical environment is now so visible that corrective action on an effective scale is at last possible—at least in part.

As a nation we can, we do and we will continue on an ever expanding scale to deal with the causes of disease and the physical hazards which maim and cripple.

Disease and injury can be diagnosed, the causes identified, and corrective action taken. Society accepts that such abnormalities are undesirable and unnecessary. But what of the accepted norms, the less obviously correctable conditions of man?

To what purpose health if there be no personal dignity in life? No amenity? No joy?

Is health the mere absence of illness?

Is well-being not a more comprehensive state wherein man's constructive capability, his creativity is released; where man may feel his personal worth, may aspire to achievement unobstructed by obstacles of his own making or stultified by squalor in a mean and crowded world?

Ugly and Irrational. My plea today is for a new right of man: *the right to live in beauty*. Or conversely a freedom: freedom from ugliness be it perceived by sight, sound, smell, touch, or taste. Only by living in beauty can man be counted civilized and achieve his highest potential.

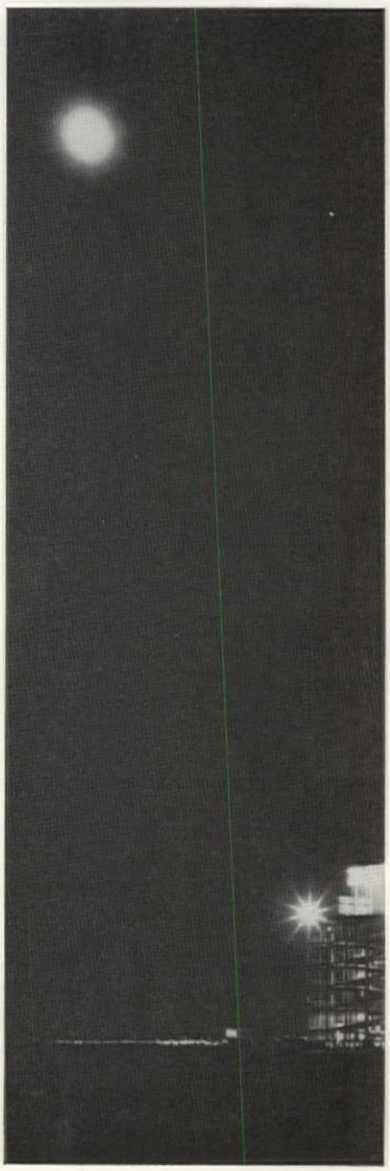
And for this the price is high. But the rewards are infinite.

Today we are prisoners in an ugly and irrational world of our own making. We boast of our mobility; but where is there to go? Lawbreakers are jailed. For a minimum of nine years the schools incarcerate our children. Older youth are barracked by the military.

We must work where our employer puts us. We must eat, sleep and procreate wherever shelter is available. To move about we must use whatever conveyance is provided.

What kind of freedom is this? Without privacy our dignity is destroyed. Without vistas our vision dims. Without space to live free of uncontrolled commercial vandalism our minds and spirits wither.

What escape is there from a man-made environment whose design is governed by expediency, private license and dollar morality?



Tolerating Asocial Use. Your speaker counts himself a conservative, yet asks: has not the time come when we must further limit the private right to exploit space on this shrinking earth?

Need we tolerate asocial land use or, in its more obvious forms, ugliness (plain or fancy)? Does a captive audience have rights? We accept the outlawing of offenses to the ear and nose. Is the eye less sensitive?

Space—its shaping, lighting, texturing, coloring, conditioning and, of course, its use—is the art of architecture. For the practice of the art it is easy to state a formula but difficult to apply it. Our concern is the response of man, both individually and collectively, to that which we create.

It helps to think of man as a complex bundle of sensory perceptors. He sees, he hears, he smells, he tastes, he touches and his brain synthesizes the messages his nerves transmit.

He reacts to architecture through a wide range of emotions.

By design we can create moods of reverence, excitement, despondency, power, even terror, and many more. With help from the behavioral sciences, the architect's approach becomes increasingly scientific, thus making the design of space, both indoors and out, of ever growing significance to the total well-being of man.

How, Not Whether. The need for and the importance of space for people can scarcely be overstated. For, if we accept even conservative demographic projections, by the end of this century we must double the physical facilities of our cities plus renewing the worn and replacing the obsolete.

The question is not *whether* we build but *how*.

The scope and the scale of construction staggers the imagination and will make our $40 billion ventures in outer space seem like the play of willful children.

We have the technology, we have the wealth. But will we pay the price?

The evidence is slim that in wisdom or determination we are now equal to a task which is nothing less than reshaping the life of an entire nation. ■


Frimark

Prestressed gull wings of this shopping center give clear spans of 125′ plus 7′ cantilever. Architects-Engineers: Boettcher and Simmon, AIA, Rockford, Ill.; **Prestressed Fabricator: J. W. Peters & Sons, Inc.,** Burlington, Wisc.

Prestressed Concrete Provides Column-Free Floor Space for Shopping Center

After investigating many construction methods, the architects selected prestressed concrete for the South Towne Shopping Center in Belvidere, Illinois. The principal reason: prestressed concrete allowed spacious, column-free areas, thus providing complete flexibility of floor space—a vital factor in large stores.

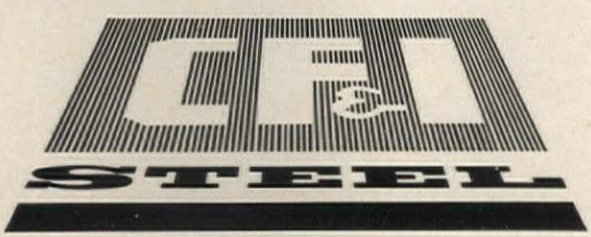
Second, prestressed concrete made important aesthetic contributions. Interesting features of this shopping center are the scalloped canopies over walks, entrances and shipping docks. They were obtained by using precast prestressed cantilevered gull wing arches supported on columns and beams. The prestressed members were sprayed with an acoustical treatment on the underside to provide an attractive finish.

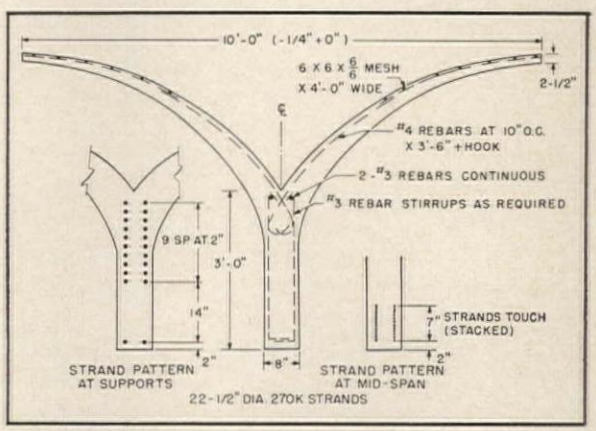
CF&I-Roebling, as a leading manufacturer of wire and strand, has had years of practical experience in prestressed concrete construction methods. We can give you complete, technical information, if you'll tell us what type of structure you are considering. We also can furnish you with the name of the nearest prestressed fabricator. Prestressing wire and strand is made in the U.S.A. by The Colorado Fuel and Iron Corporation, Denver, Colorado; Trenton, New Jersey. Sales offices in key cities.

C-3

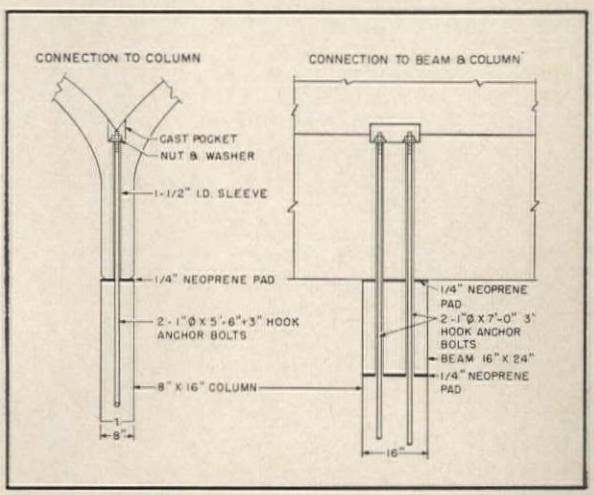
CF&I-ROEBLING

PRESTRESSING WIRE AND STRAND





Cross-sectional details of gull wing arches.



Sketch shows simple bolted connections for gull wings.

Stress in the Classroom

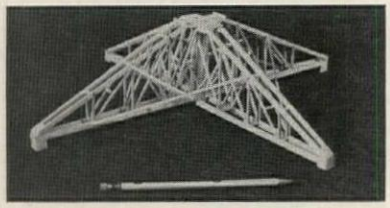
Architectural instructor Ronald Shaeffer describes an interesting demonstration of book theory

A TEACHING aid at the University of Florida has architectural students design, construct, and load-test balsa wood models to determine their optimum configuration for structural efficiency.

The basic premise is that structural efficiency is defined as the ratio of the ultimate applied collapse load to the dead weight of the structure.

The principal subject matter in the course is mechanics of materials.

The class was divided, for the one-week model project, into two- and three-man teams. Specifications said the structure was to span a one-foot-square area and be supported at the four corners by stationary ball bearings.



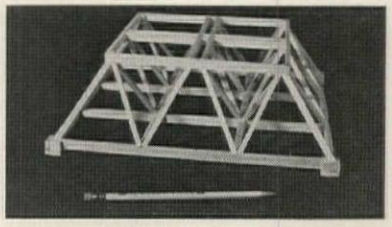
Crossed Pratt truss solution. Dead weight, 0.064 lbs.; load, 63 lbs.

The load was given as concentrated at the center of the square and acting on the structure through a bearing-plate washer. Maximum permissible dimensions were 16 by 16 inches in plan and 4 inches in depth.

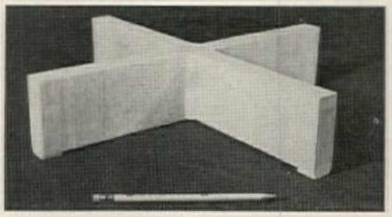
Only standard, hobby shop balsa wood was permitted, and the brand of glue was specified. Balsa is a poor material for such experimentation but cost factors led to its use for this project.

Because of balsa's unpredictable nature, students were dissuaded from attempting to design by any exacting theoretical techniques, but were asked to build and test prototype configurations on a trial-and-error basis.

Laminated "inverted spider" design ready for loading. Dead weight, 0.462 lbs.; ultimate load, 183 lbs.

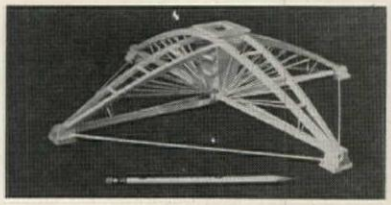


Pyramid space frame, above, 0.155 lbs.; load, 168 lbs., and multiwebbed hollow beams, 0.463 lbs.; 500 lbs.

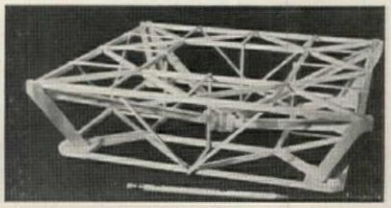


Each team was required to submit a one-page brief on its design and on the design's predicted behavior so approaches to the problem could be evaluated.

The structures were tested to total collapse by a gravity load increased in small increments to a pan suspended from the center of each structure.



Crescent design with radial tension members, above, 0.117 lbs.; load, 171 lbs., and space frame with diagonal tension members, 0.210 lbs.; 121 lbs.



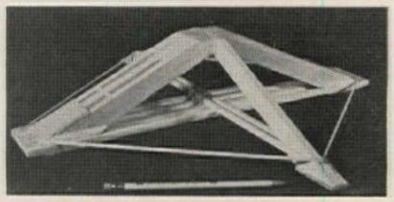
Central deflections were measured as the load was increased, but this was used primarily for determining yield load points and no deflection failure criteria were applied. Many of the deflection measurements proved to be meaningless because of the tendency for the supports to sink into the structure.

A variety of failure behavior was exhibited by the different solutions, including elastic buckling, tensile rupture, crushing (perpendicular to grain), and shear (parallel to grain).

The 11 designs varied from 0.064 lbs. to 0.749 lbs. in dead weight and from 63 lbs. to 945 lbs. in ultimate load capacity. The load-to-weight ratios ranged from 396 to 2290 and averaged 1162.

The gravity-loading system is not a good one for observing failure as it occurs. As soon as the one "weak link" in the structure fails, wholesale and abrupt failure usually results.

For projects in the future, we intend to use a testing machine with a constant cross-head speed for more observable failure patterns and the plotting of load-deflection curves.



Simple truss with lateral bracing. weight, 0.405 lbs.; load, 927 lbs.

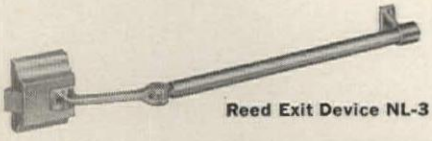
The projects have proved to be valuable stimuli for the individual investigation of structural theory. Students not only respond to the competitive spirit that develops but like working with *real* structures.

Such projects are particularly good at emphasizing the validity or lack of validity of certain basic assumptions and simplifications.

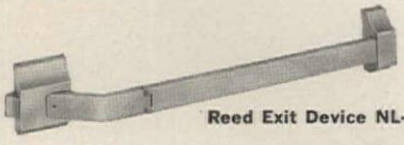
However, experimentation such as this would have little or no value without a solid foundation in the basic theories of structural behavior gained through traditional study approaches. ■

Loading "stress-skin" hollow pyramid. Only 0.081 lbs.; load, 102 lbs.

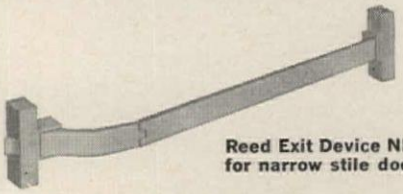
SAFE FOR 5-YEAR OLDS. Notice that this youngster opens the Reed exit device without the normal downward motion required by other panic devices. This is the straight-thru-safety action exclusive with all Reed panic devices. Even the smallest child can safely open the door.



Reed Exit Device NL-3



Reed Exit Device NL-30



Reed Exit Device NL-7 for narrow stile doors

WHAT IS STRAIGHT-THRU-SAFETY?

Push bar operation is in the same direction as exit travel. A mere touch of the bar in the same direction as the person leaving the building unlocks the door. There is no downward motion required; no motion that isn't natural to the person walking. Downward travel of a push bar can allow a child's hand to slip and crash through a glass panel. With the Reed exit device this possibility is eliminated and safety is assured because no downward travel is necessary.

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For more information on the complete Reed line, including narrow stile, standard, rim type, and vertical rod exit devices, write for catalog or contact your Reed Representative.

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2001

Newslines *from page 22*

Anyone interested in advancing knowledge in housing is eligible for membership. For information:

Prof. Tessie Agan, president, AAHE, College of Home Economics, Kansas State University, Manhattan, Kan.

Largest Suspended Roof Soon to Be Completed

Visitors to the International Petroleum Exposition in Tulsa, Okla., this spring will see, along with oil equipment, the largest suspended roof system ever constructed.

The system, spanning 484,800 square feet, functions as the total frame for the new $4 million Tulsa Exposition Center.

The structure is 1,200 feet long and 404 feet wide. Exhibitors will have 360,000 square feet of column-free area at their disposal.

The combination of steel box columns, built-up girders and prestretched cable is the work of Bert E. Griffin, architect, and David R. Graham & Associates, engineers.

Prestretched galvanized bridge strands, 140 tons in all, aid the tensioned outside columns in supporting the cantilevered girders.

The strand is attached to the top of the mast, 45 feet above the roof, and then connected to the girder. Three strands come back to the outside column. One strand is attached 54 feet in from the mast, and two others are attached 71 feet in from that connection.

Scrap Men Use Beauty To Screen Ugliness

Not just to shield, but to provide positive sight value—this is the objective of a pilot operation of the Institute of Scrap Iron & Steel.

The Green Screen plan calls for the individual scrap dealer to work out a design of plantings, landscaping and fencing suitable to his own operation. The aim is to cover *with beauty*.

It is a controlled effort to be supervised and publicized by the Institute and joined in by the American Society of Landscape Architects and the American Association of Nurserymen.

people

Eames Gives Advice To His Home Town

Charles Eames, in a letter to the *St. Louis Post-Dispatch*, said he was shocked to learn the old Post Office might still be destroyed.

"What kind of idiocy is this?" asked Eames, a St. Louis native now living in Venice, Calif. Eames ended his letter with this postscript:

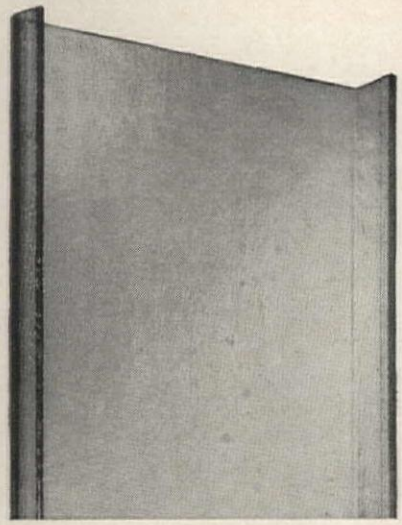
"If you do succeed in keeping that magnificent city block intact—then again, beware. In any programs of use you may consider, or any alterations that you may effect, do not abandon the disciplines that made this building a great one."

Sanford L. Berger AIA, partner in the firm of Stone, Marraccini & Patterson, has been named to the Berkeley, Calif., Planning Commission. . . . Max S. Wehrly, executive director of the Urban Land Institute, was awarded the American Institute of Planners 1965 Distinguished Service Award for his work in furthering planning.

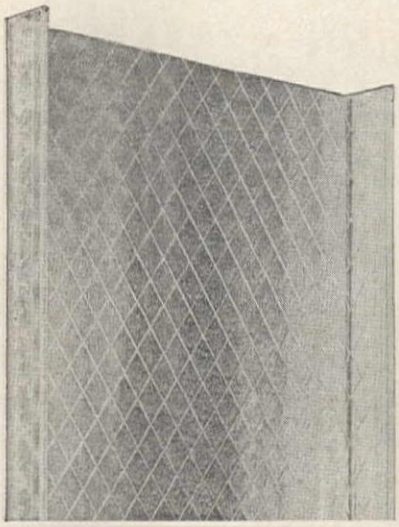
Charles E. Thomsen AIA, former associate editor of the AIA JOURNAL, has been appointed to the newly established post of executive director of the New York Chapter AIA. . . . George Hasslein FAIA, faculty member at California State

Continued on page 88

PROFILITE ...GLASS of the Future TODAY!



PROFILITE



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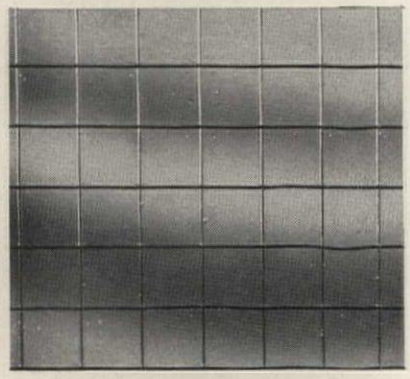

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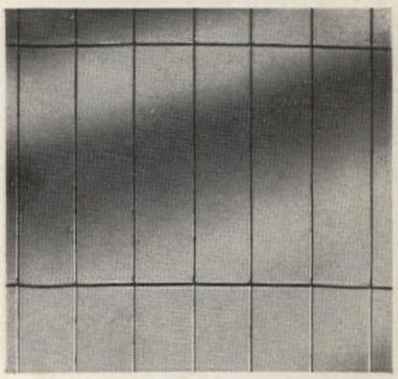

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Newslines *from page 86*

Polytechnic College, spent December in Israel as part of a US Department of Health, Education, and Welfare International Studies Project.

Francis D. Lethbridge AIA of Washington, D. C., was one of a dozen persons cited by *House & Home* for important contributions in housing. . . . Edward Hammarskjold AIA has rejoined the Detroit firm of Eberle M. Smith Associates after three years spent setting up the Department of Architecture at the University of Nigeria in West Africa.

Lives Lost to Flames Add Up to 12,000

Fire killed approximately 12,000 people in this country last year, only 100 fewer than the record total set in 1954.

Property destroyed by fire totaled $1.76 billion, according to the National Fire Protection Association. This also approaches an all-time high, $1.788 billion, set in 1963.

Both deaths and damages were up over 1964. But deaths in home fires were down by 50 from the previous year's total, to 6,500.

Mechanical Fittings Dominate Research Building

The area devoted to mechanical distribution in the Biological Studies Laboratory of the Salk Institute is greater than that devoted to research.

The wide, 9-foot-high piping spaces permit extensive changes in airconditioning and in many other services.

All services in the mechanical system are looped so that service will not be interrupted when changes are made for a particular research area.

Each laboratory has its own air supply and exhaust because of the danger of cross contamination. Supply air is 100 percent of the air delivered.

The mechanical flexibility in the building near San Diego is said to be essential in research laboratories because machinery and instrumentation required by the scientist change so rapidly.

The poured-in-place reinforced concrete building was designed by Louis I. Kahn FAIA.

Fact Sheet on Renewal, Housing, Is Available

A new fact sheet to acquaint the public with the principal urban renewal programs has just been published by the Urban Renewal Administration, Department of Housing and Urban Development.

"Summary of the Urban Renewal Program" incorporates changes resulting from the Housing and Urban Development Act of 1965.

The 15-page publication includes brief sections on how the federal government helps, what a renewal project involves, relocation assistance, planning for renewal projects, community renewal programs, planning assistance, open space acquisition, code enforcement, demolition grants and demonstration grants.

Also included is information on housing assistance programs such as rehabilitation loans, rehabilitation grants, public housing, and programs of the Federal Housing Administration and Federal National Mortgage Association; and such special assistance programs for educational institutions and hospitals, disaster areas, and areas designated as redevelopment areas by the Secretary of Commerce.

Subscriptions are available at no charge from the Urban Renewal Administration, Washington, D. C. 20410, or a HUD regional office.

education

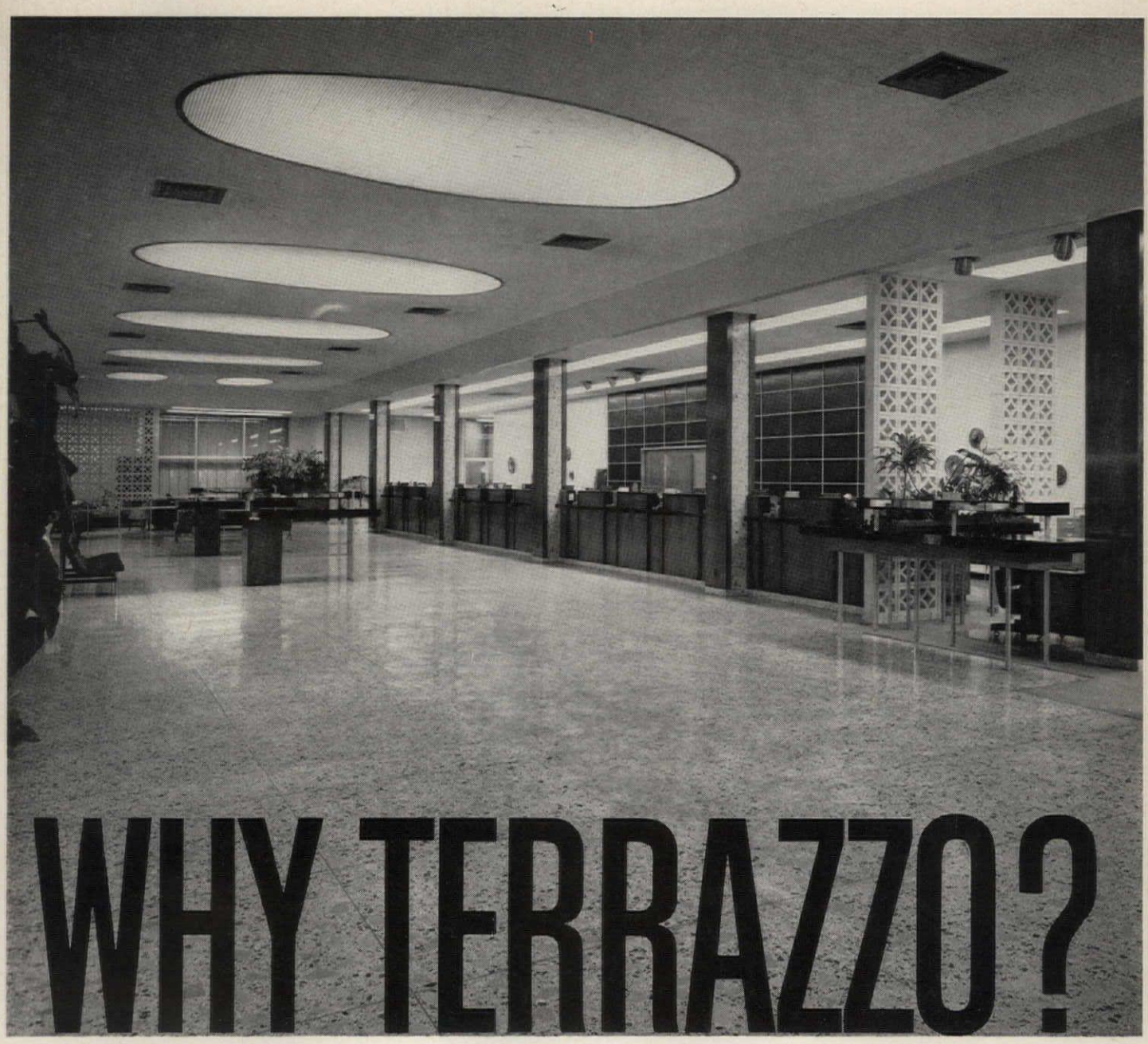
Region Planning Grows At Cornell, Penn State

Cornell University will focus attention on problems of regional growth by creating a new Division of Regional Studies in the Center for Housing and Environmental Studies.

Jack C. Fisher, assistant professor of city and regional planning in the College of Architecture, has been appointed assistant director for regional studies at the Center.

—— Pennsylvania State University has established an interdisci-

Continued on page 90



WHY TERRAZZO?

TERRAZZO IS BEAUTIFUL

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Newslines *from page 88*

plinary regional planning program leading to a Master of Regional Planning Degree.

—— The preliminary exercise of the two-stage competition to select the 77th winner of the Rotch Travelling Scholarship will be held in April.

Eligible are citizens under 31, whose architectural record includes study or experience of required times and degree in Massachusetts.

The scholarship stipend for 1966 is $6,000 and application forms are obtainable from Walter E. Campbell, secretary, Rotch Travelling Scholarship Committee, 711 Boylston St., Boston, Mass. 02116. Application deadline is March 17.

—— Programs for the $3,000 LeBrun Traveling Fellowship are available through the New York Chapter AIA.

The subject for the 1966 design competition is a small city library and museum. Renderings are due March 11.

Eligible are architects between 23 and 30 with at least a year and a half of office experience. The recipient of the award must use it for travel outside the country for the study of architecture.

Those interested should write to Harvey P. Clarkson, Chairman, LeBrun Committee, New York Chapter AIA, 115 E. 40th St., New York 16, N. Y.

AIA in Capitol Project Backs Plans for Mall

The Institute's influence in the enhancement of the nation's capital has widened with two developments.

The AIA has appointed a committee to collaborate on the Capitol's new Madison Library project.

It has lent its enthusiastic support to far-reaching plans to transform the Mall which stretches from the Capitol to the Lincoln Memorial into a viable urban—and national —park.

Legislation authorizing the library project required that J. George Stewart, Capitol architect, work with a committee appointed by the AIA.

Headed by Institute President Morris Ketchum Jr. FAIA, the committee also includes:

Charles M. Nes Jr. FAIA, first vice president and president-designate of the Institute; George E. Kassabaum, vice president of the Institute and chairman of its Committee on the National Capital; Nicholas Satterlee, president of the Washington-Metropolitan Chapter AIA; and Llewellyn W. Pitts FAIA and David N. Yerkes FAIA, directors from the Texas and Middle Atlantic Regions, respectively.

Unanimous Adoption. Ketchum and Pitts are ex-officio members of the Committee on the National Capital.

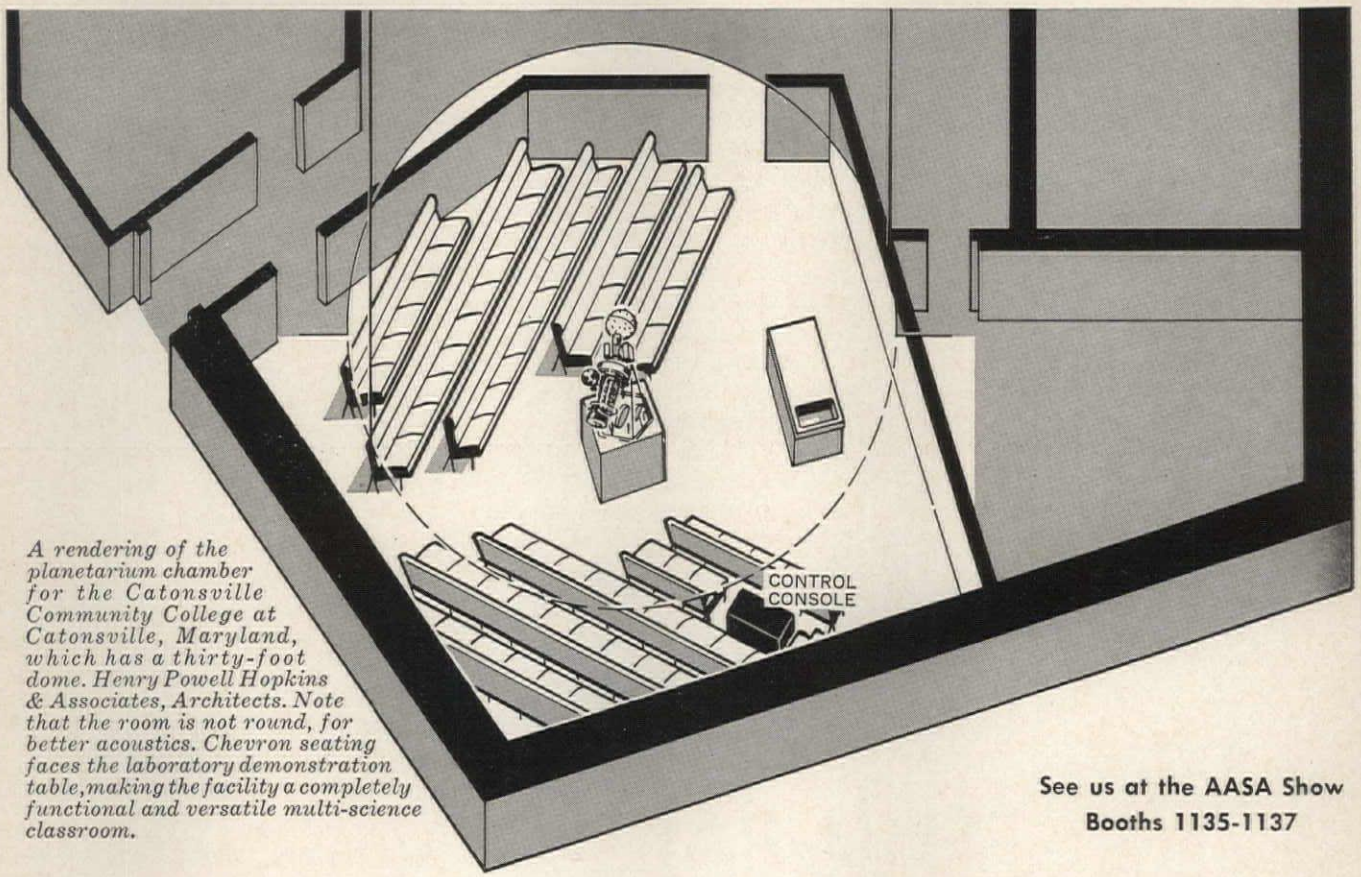
The Institute's Board of Directors, in its unanimous adoption of a formal resolution commending Mall proposals, said the plans "chart a course for the comprehensive planning and development of Capitol Hill and other important public areas."

Ketchum termed the proposal "magnificent planning, which, like all master plans, is flexible. The basic principles are admirable. The plan will convert the mall to a far more lively area, attracting people at all hours of the day."

John Woodbridge AIA, an associate partner in the firm of Skidmore, Owings & Merrill, which has been developing the plan for the National Park Service, called the AIA endorsement a big boost.

The endorsement was the AIA's second of major plans for the capital. The Institute also backed the Pennsylvania Avenue Plan. ■

How soon before you'll be called upon to design a large-group planetarium classroom?



A rendering of the planetarium chamber for the Catonsville Community College at Catonsville, Maryland, which has a thirty-foot dome. Henry Powell Hopkins & Associates, Architects. Note that the room is not round, for better acoustics. Chevron seating faces the laboratory demonstration table, making the facility a completely functional and versatile multi-science classroom.

See us at the AASA Show
Booths 1135-1137

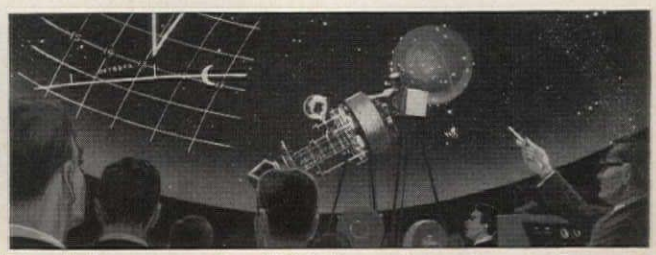
Maybe tomorrow!

An increasingly large number of school districts, educational complexes, individual high schools and junior colleges are now giving serious consideration to large-group, multi-discipline classrooms...an SLI Planetarium Classroom. In new buildings, or as an addition, it provides a maximum efficiency facility for achieving desired levels of comprehension of the fundamental common denominators of the sciences, in minimum time at minimum cost per pupil. And since a Planetarium Classroom lends itself to wide educational use at all levels, it has qualified for financing under federal legislation.

The SLI facility consists of: The A3P electro-mechanical-optical planetarium and selected auxiliary projectors, together with electronic controls housed in a separate operator's console; a perforated aluminum projection dome (simulated sky); forward facing seating; stereo sound system; lighting. Standard units are 24, 30, and 40 feet in diameter, designed for installation in square or rectangular chambers, two stories in height. And the cost is comparable to that of an equipped physics, chemistry or home economics classroom. SLI also furnishes telescopes and observatory domes compatible with every architectural style.

Write for your copy of the SLI Architect's Manual which gives complete planning factors, including preliminary drawings, chamber floor plans, and specifications. Your SLI representative will gladly furnish additional facts. Just write or phone. SPITZ LABORATORIES, INC., Yorklyn, Del. 19736. Area Code 302 239-5212.

SLI



PLANETARIUM CLASSROOMS Installed in nearly 200 school systems

Books *from page 24*

Foundation Construction. A. Brinton Carson. New York: McGraw-Hill, 1965. 407 pp. $16

Here is a comprehensive coverage of underground and underwater construction engineering developed from the point of view of the contractor. The book deals thoroughly with such topics as grouting equipment, vibratory pile hammers, underpinning, cofferdams, pile jacking, pneumatic caissons and the thaw-blast method for permafrost. It encompasses both the practical and the theoretical. The material is well organized and presented in such a way that only one subject is covered for each page of text, with a facing illustration.

Office Design: A Study of Environment. Pilkington Research Unit, Peter Manning, editor. Liverpool: Department of Building Science, University of Liverpool, 1965. 160 pp. 30 shillings

Pilkington Brothers, Ltd., in 1959 commissioned the University of Liverpool to make an investigation into factory design. The project was completed in three years, and a report was published subsequently. Here is another in its sponsored research, one of profound interest to anyone concerned with the systematic study of architecture. Although it is by no means a design manual, the report is of use to the architect engaged in making plans for an office building.

For more than three years a multidisciplinary research team comprising an architect, geographer, physicist and psychologist investigated office building environment in its physical, psychological and design aspects. They probed into location, design and performance of office buildings, office space and the people's attitude toward the offices they use. They asked questions such as what happens when an office worker moves from a small office into a larger one. Does his concept of himself change? Does he feel more or less ambitious in his new surroundings? The team investigates and reports on the total environment, including bodily comfort, esthetic sensibilities and social relationships, and how such aspects of environment are influenced and modified by a building's design.

Builders for Progress: The Story of the Associated General Contractors of America. Booth Mooney. New York: McGraw-Hill, 1965. 194 pp. $4.95

Here is the story of the growth and development of an organization concerned with the contracting industry. Its history reflects the history of the nation, of course, particularly those times of national stress such as the Depression, World War II, and the Korean War. We are afforded an interesting insight into the roles played by some of the AGC's dedicated leaders, for, as is inevitable in the history of any association, the individuals in it determine its course and its contributions to society. Mooney touches on some of the AGC's plans for the future. ■

LETTERS

Praises for December

EDITOR:

Regarding the article "Codes Go to the Fair" in the December AIA JOURNAL, I suggest that the thoughts (and opinions) be expanded and form the nucleus of a campaign by the Institute for modernization of building codes and building departments. There should be foundation funds available for such a worthy cause.

FRANK W. COLE, AIA
Washington, D. C.

EDITOR:

You are to be commended for publishing the excellent article on Frederick Law Olmsted by William H. Tishler, associate affiliate of this Society. It is just one more example of the sincerity of the AIA's policy of interdisciplinary collaboration and cooperation.

LYNN M. F. HARRISS
Executive Director
American Society of Landscape Architects

EDITOR:

Your December issue was noteworthy, particularly Dean Kamphoefner's remarks on "The Schools and the Profession" and Neil E. Gallagher's observations on the Comment & Opinion page. Concerning the latter, Dr. Martin Meyerson, whom I greatly esteem, is so right: "There is no feedback." We learn so little from our colossal "fail investments." Let us look forward to a better future.

RICHARD J. NEUTRA, FAIA
Los Angeles, Calif.

Eugene's Population Explosion

EDITOR:

The Institute's recognition of Eugene's community effort [Nov.] has been most gratifying, and we hope this stimulus will serve as a kickoff for further improvements.

I am sure the city is gratified, too, to find that its 1960 population has grown to 160,890. Unfortunately, we have to confess that this applies to all of Lane County, while Eugene currently admits to 71,900 citizens.

I should also point out that although things do grow well in the Willamette Valley, the walnut tree has taken some 90 years to achieve its present size; also, that the landscaping for the Civic Center with the exception of the alleys and the most recent county parking area was the work of Lloyd Bond & Associates.

Current interest in the visual arts suggests the importance of mentioning that sculpture appearing in the park blocks area is the work of Tom Hardy and Jan Zach and that several other artists are represented in the various buildings.

JAMES LONGWOOD, AIA
Past President
Southwestern Oregon Chapter AIA
Eugene, Ore.

Earthquakes and Design

EDITOR:

The October issue carried Mr. Hixon's story entitled "How to Design Against Earthquakes." It advances a pleasant theory that different building shapes respond variously to seismic loads, and he draws theoretical proof from singular occurrences.

Our local structural engineer, Stanely E. Hendes, was in Anchorage six days after the shake. He found that although this theory may have substance, the structural failures occurred where there were observable failures of structural design, construction and inspection, including the examples noted by the author.

You may feel that a professional journal should not leave the singular view stand alone and thus mislead your readers who are unfamiliar with earthquake practice.

ROBERT I. HOYT, AIA
Santa Barbara, Calif.

EDITOR:

In India there is a notion in influential circles that architects have little part to play in designing against earthquakes. Mr. Hixon brings to the fore the role architects can play, and his conclusions should be of great interest to our readers as we have many regions where buildings have to be designed against seismic forces. I shall be grateful for permission to carry the article in our magazine.

D. N. DHAR
Editor, Indian Architect
New Delhi, India

'The Virile Roots': A Rebuttal

EDITOR:

After reading Mr. Kulski's article "The Virile Roots" in the December issue, one feels he has made observations and touched upon issues too important to let pass without comment.

One cannot dispute his historical analysis of the 19th century architects and their effects upon us, but I, for one, do take exception to his view that the international or European school of architecture with its admitted elements, and I quote, "intellectual, rational and sophisticated qualities, lack life." What is the learned author's definition of life?

The author then goes on to say: "The American architects' greatest contribution is the freeing of design from academic sterility and reducing it to its basic principles. The insistence upon freedom as the necessary condition for any continuity and the need for *human passions* and *emotions* as the basic stimulus for expression compromise the philosophy which provides our architecture with the spur of life."

There is no doubt that the 19th century pioneers such as Wright and Sullivan freed us from the academic formulas of the past, but so did Behrens and Gropius.

The issue which Mr. Kulski has raised and which cannot go unnoticed by any thinking architect is whether we wish to create our building forms or environments with the intended purpose of stimulating the passions and emotions of the people who will inhabit the environment, or, on the other hand, feel we can satisfy human needs by intellectual, rational, unemotional approaches to their problems.

Mr. Kulski has chosen the emotional approach, as his article indicates. His allegations that the intellectual, rational approach lacks life is disconcerting inasmuch as it is these very qualities that have created and given life to the industrialized society we practice in today.

The article ends with the bland assertion that poetic emotionalism in 20th century architecture is or will be its descriptive characteristic. One can only point out to the author that the 20th century has over 30 years to run, and any prognosis of the course it will take in our rapidly changing society should be tempered with reserve.

The merit that such an article like this has is that it points out clearly that we architects are dealing with forms that affect human emotions. With the modern advances of psychology and psychiatry, we cannot say anymore that it is our professional task to play on these emotions like a musical conductor of an orchestra. Rather, we must turn our attention to the study of these emotions and motivations to see how our forms affect human beings. We must turn our attention to designing not necessarily the poetic atmosphere that Mr. Kulski advocates but environments that

meet the total requirements of man.

As professionals we should ask the question: What is the nature of the emotional and cerebral reaction induced into the mind of the viewer of our creations? For this answer, we architects must turn to a study of psychology and view these tools of modern knowledge, not with the passionata of some surrealistic artist but as coolly and rationally as possible.

One can only conclude this appeal to reason with the observation that the argument of logic vs. emotion has been going on since the times of Plato and Homer and, despite Mr. Kulski's article, is not yet settled!

One can only hope that the JOURNAL one day will see fit to present the rationalist's point of view about the desired effects and goals of architectural forms, relative to the emotional and unconscious reactions of human beings in various environments—the nature of the stimuli of certain forms and their short- and long-term effects on the human psyche. Then, as professionals, we can decide whether these psychological reactions best meet the requirements of the programs and advance the interest of the client and the society in which he dwells.

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Architect
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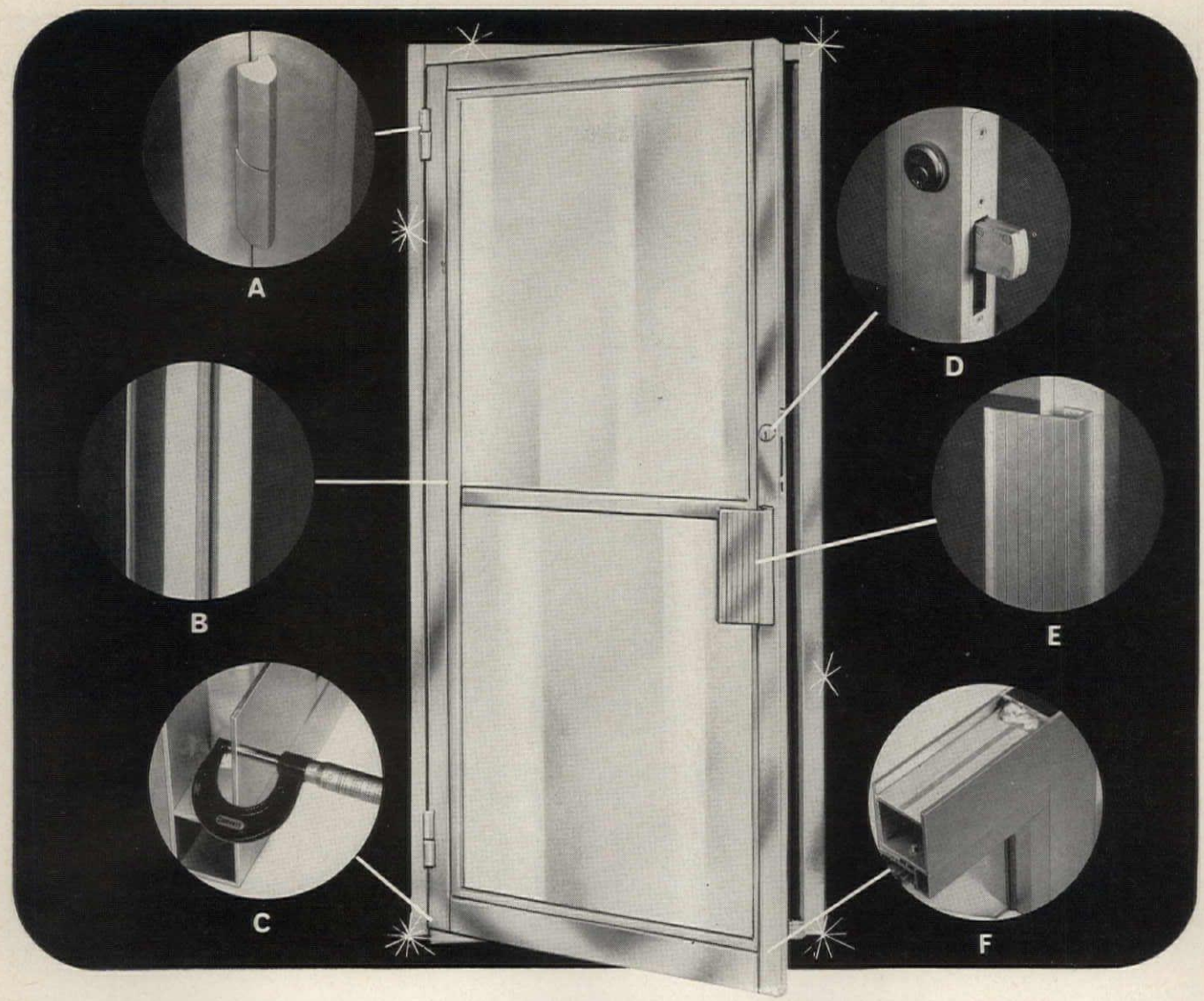

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