

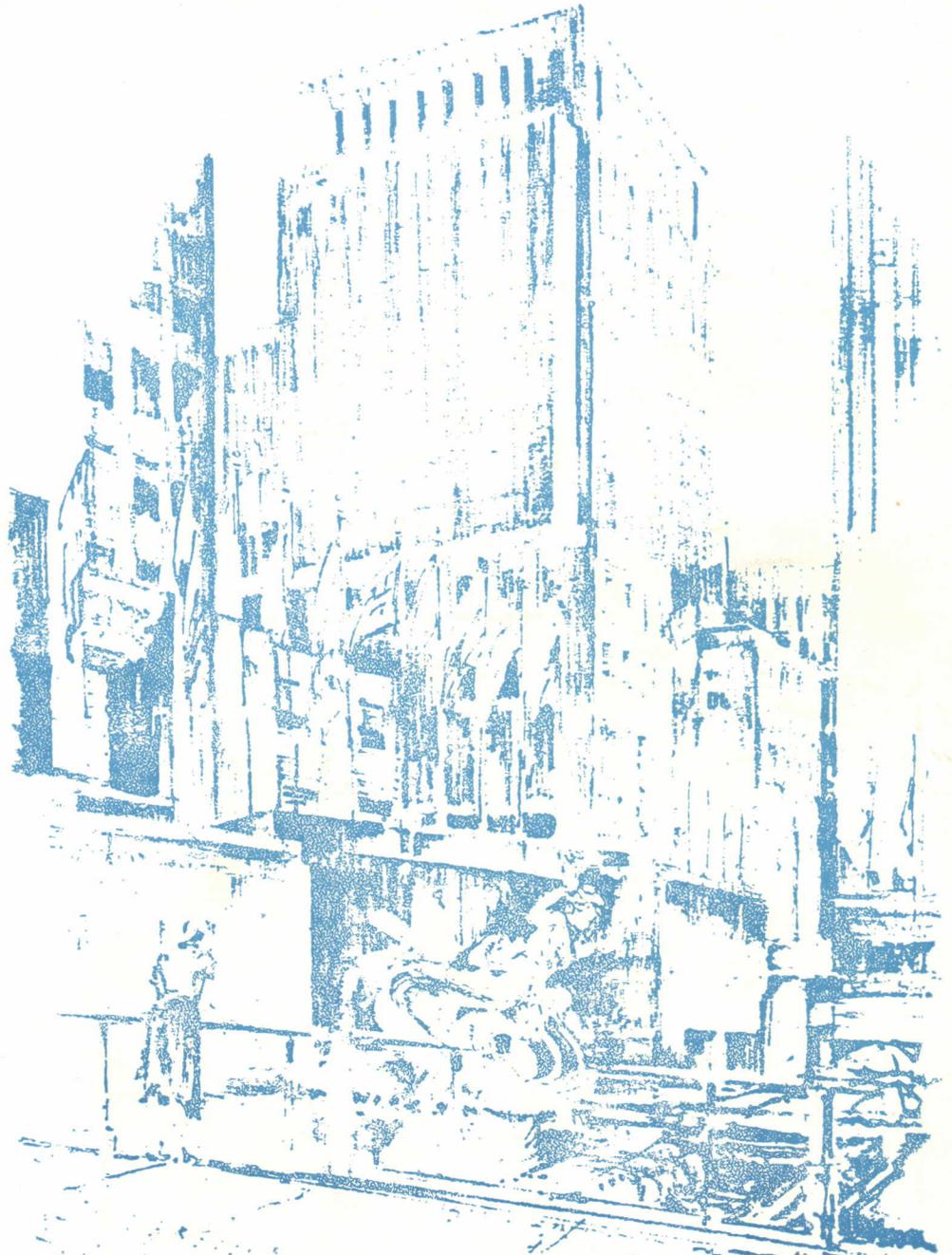


A · I · A

December 1961

Journal

OF THE AMERICAN INSTITUTE OF ARCHITECTS



**Travel Sketches** • Operation Buffalo • The Architect Looks at Himself • Responsibility  
The PHA and the Architect • Office Personnel Relations • 1961 Rome Prize • Termites

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**THE COVER**

Rockefeller Plaza, as captured in pen and ink by Roberto Alvarez Espinosa, Honorary FAIA, whose travel sketches appear in this issue of the *Journal*.

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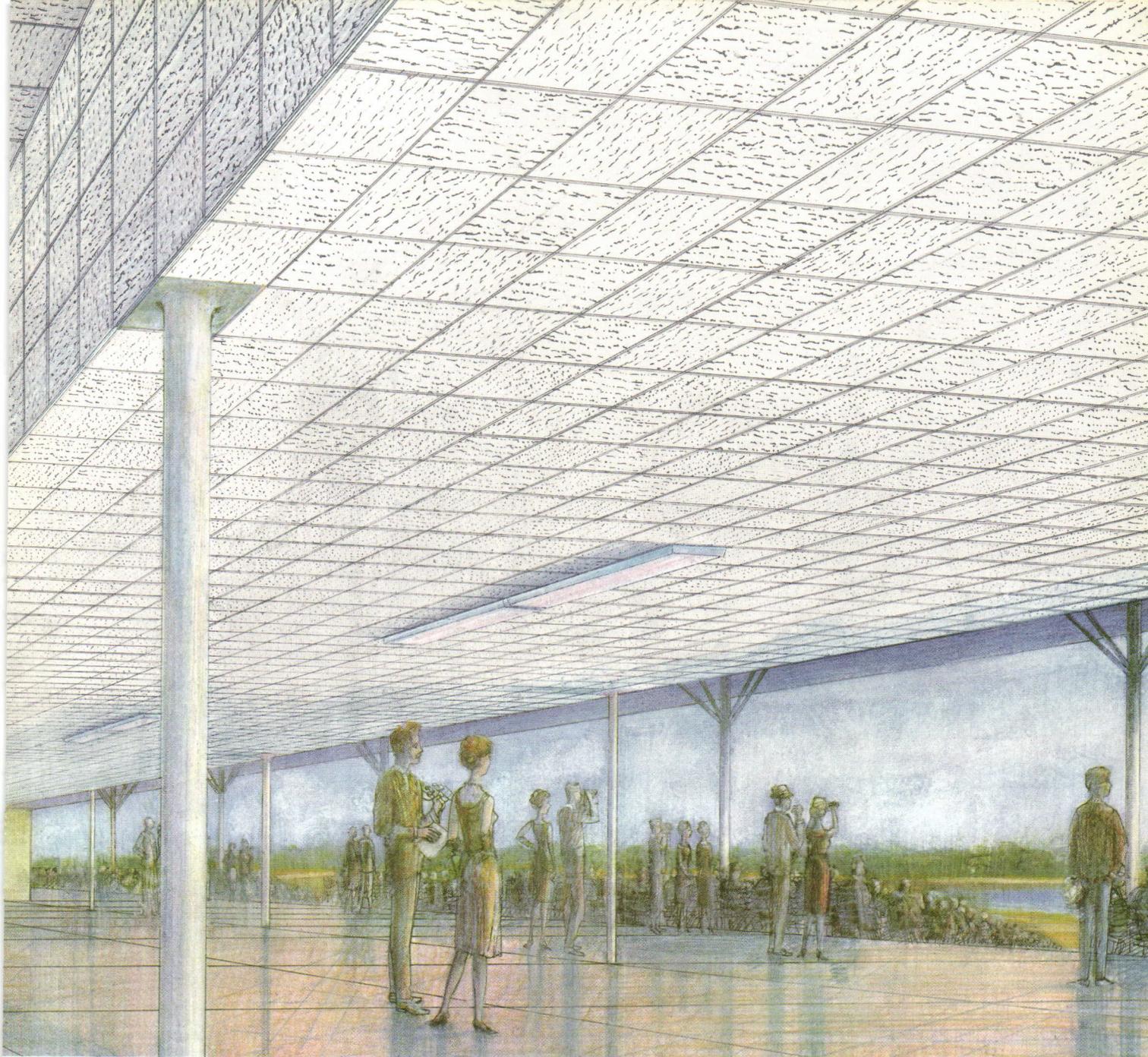
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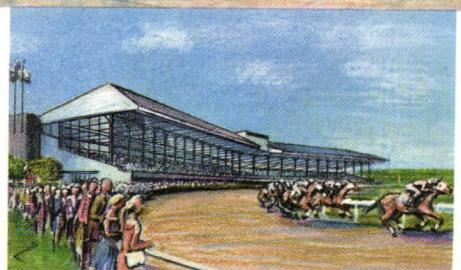
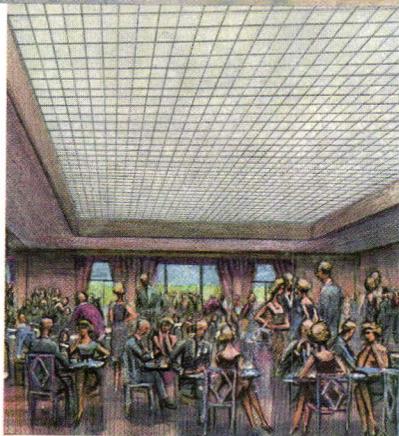
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# Letters

## The Young Adventurers

EDITOR, *Journal of the AIA*:

It was an agreeable surprise to again come upon the evidence of a former teacher's wisdom. Long ago at Columbia University Edgar I. Williams left a deep impression not only by what he said, but the good humored way in which he managed to bridge the gap that often exists between the two sides of a teacher's desk.

"The Young Adventurers" voices a doubt which other teachers share about the schools' success in "teaching" architecture. He refers to it as the "process of introduction to the subject." I would like to see him or someone as well qualified develop this thesis which I believe is the nexus of architectural competency in America.

In my opinion, in so far as architecture lends itself to teaching in a school, the means must be reduced to terms of the student personality, talents and ideals. The means must before all else take account of the student as an individual with his own laws of development. It is this continuing process of growth of the creative faculties—different for each person—which we as teachers should try to nurture. Occasionally a student may advance by the accretion of factual information or their organization in a monodimensional presentation on paper. But unlike mathematics, a "right" answer to an architectural problem is one which is unique each time a solution is attempted.

Progress through an engineering school can generally be marked according to the completion of *a priori* goals with absolute values successively attained by a group of students. Progress through an architectural school cannot be posited by "goals" except as they are indicative of trends in directions relative to the student's position in a flux of heuristic purposes.

These may be tentatively identified as the social context of architectural endeavor. Until the student is immersed in it as an architect, the teacher must, among his other roles, assume that of the social order. The teacher should not only be able to express what a client wants, but what the community should have or like to have the architect create. (Dispensing "grades" cannot be compared to an architect's fee. Money has a universal value compared to "marks" that are valueless outside of the school system.) The teachers should have a vision of what America ought to be like; he should be so inspired that he will be accepted by the student as surrogate for society and also its leader.

Sir Raymond Unwin's words, like the question of "Where should the accent be placed in our day and age?" could be the beginning of a useful contribution to the future of American architecture. The shoehorning of students into unimaginative curricula (ie: any curriculum which leaves out of account the student as an individual) is not architectural education, or evocative of the beautiful or in the traditions of America.

Teachers may use architecture old or new, community planning, mathematics, technology or theories of esthetics with which to communicate ideals and ways to strive for them. The problem seems to me to be to assess the individual needs of those to whom these means may be applied, rather than a choice of media for a group of "young adventurers."

MILTON D. LOWENSTEIN  
Tempe, Arizona

## Symmetry in Nature

EDITOR, *Journal of the AIA*:

As Mr Greeley well notes in the *Journal* of the AIA for July, nature does indeed, reacting to the forces of light and gravity, impose symmetry on her flora. But nature, too — when light is diminished or abnormal wind force added — can indulge in asymmetry.

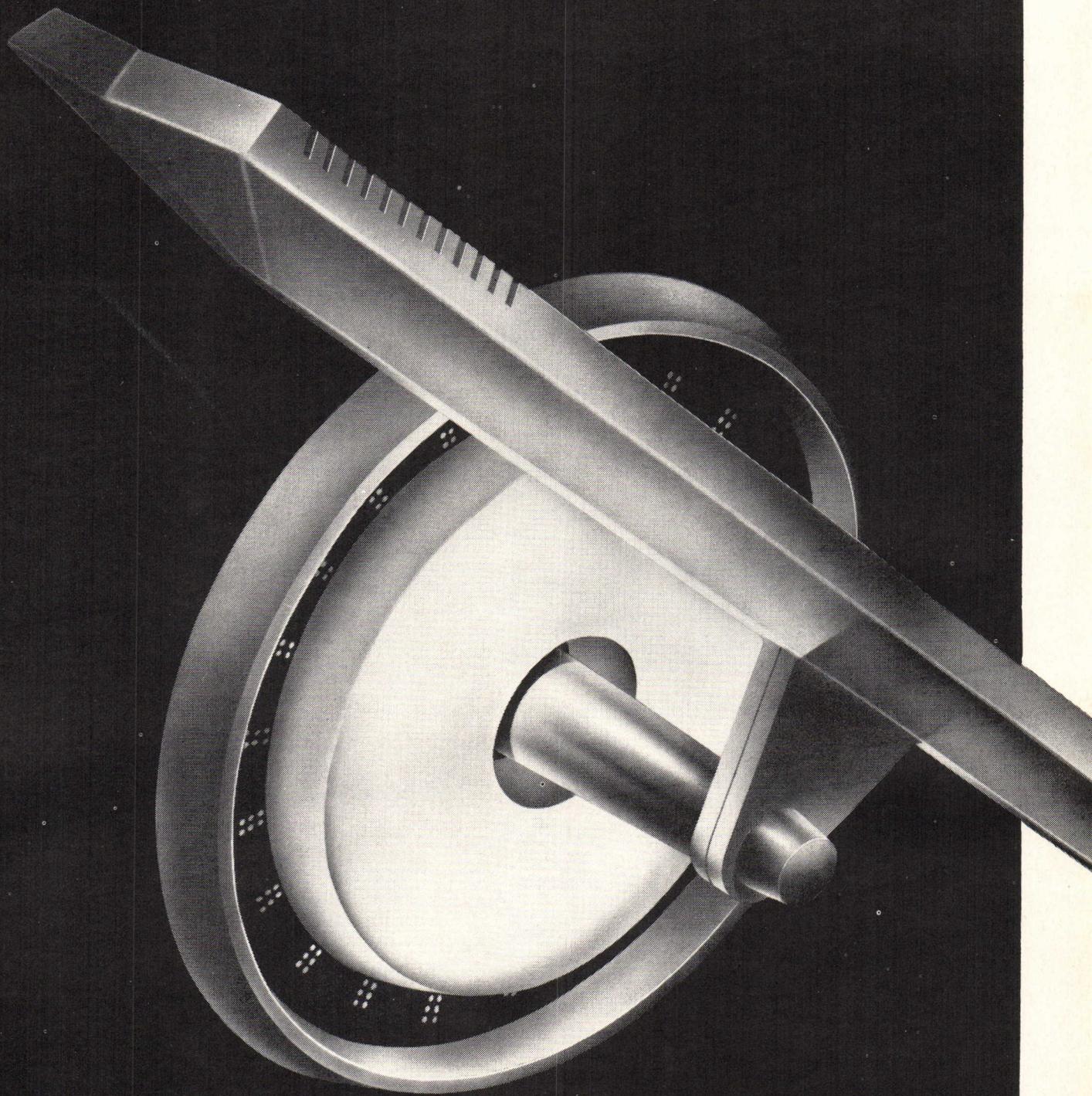
The tree at timberline and the Monterey cypress on the California coast are twisted out of symmetry by wind and storm. The crown of *Caesalpinia coriaria*, the divi-divi tree of Curaçao, is drawn into a lopsided horizontal streamer by the constant pull of the trade winds. And the tree or shrub carelessly placed too close to a building grows out of symmetry of necessity, as does the tree at the verge of the forest.

These instances are noted only to point out that nature is easily forced out of her serene symmetry; and too often, unhappily, where plants are related to structures, it is the architect who is culpable. Take, for example, the integral planter boxes placed under an extended overhang. Here even the Japanese yew, so tolerant of restricted light, can only die. Or the tree well in a pavement so close to a building that the tree must lean out of natural perpendicular to expose leaves to overhead light.

I do not know if the rudiments of plant growth are surveyed in our schools of architecture. From the evidence, I rather suppose not. Then, certainly, the architect who involves plants in his design should — as Sir Edwin Lutyens consulted with Gertrude Jekyll — consult with a horticulturalist before he falls into disappointing error.

CHESTER P. HOLWAY  
Cooksville, Wis.

(Continued on page 10)



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**"Constancy is the foundation of virtues."**

—Francis Bacon

The virtues of superior architecture—the excellence of line and mass, of color and of function—reflect not only the architect's ideas, but their execution as well. Every material part of a building must be constant to the specifications, and constant through time as well, or the ideas will be unfulfilled and their virtues unexpressed.

In order to provide the necessary constancy, the Quality Verification Council of the Porcelain Enamel Institute has undertaken a program of quality research and certification for architectural porcelain enamel. The QV program provides for unannounced inspections by an independent consultant to verify the continuing capability of participating companies to meet the established QV standards.

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## The Written Word

EDITOR, *Journal of the AIA*:

Having just cram-read both the September and October issues of the *Journal* tonight, I feel compelled to comment on the general ineffectiveness of most contributors' presentations and to applaud the lucidity and rhythmic balance of Mr Fred Smith's "The Struggle for Redevelopment."

If only more authors of occasional articles could be so well-informed about the *style* of thinking, not only the subject matter. What Mr Smith has to say must, in my mind, take second place to the splendid *way* in which he presents his case.

Whatever happens to free speech when a man comes to grips with a request for a written contribution? Out come the long-dormant rules of writing, I fear, and off goes the vitality and simple pertinancy to be replaced by dogged sincerity and an awful urge to frown about the matter at hand.

I hope for an enlightening to descend on future contributors and look forward with pleasure to more from Mr Smith.

JOSEPH HUDAK  
Brookline, Mass.

## The FDR Memorial

EDITOR, *Journal of the AIA*:

Under your editorship the *AIA Journal* has assumed a pre-eminent position. Your recent editorial re: the FDR Memorial Competition is the best written on the subject. Am particularly in sympathy with your consideration of *site* and *approach*, in short, the landscape architecture of the Memorial.

RICHARD HAAG  
Seattle, Wash.

## Masterly Production

EDITOR, *Journal of the AIA*:

A little late I am on this, but I have not quite caught up on my mail. The Urban Design issue of the *Journal* is the kind of masterly production we would benefit greatly from if there were more of the same. Congratulations for a very good piece of work.

NICHOLAS SATTERLEE, AIA  
Washington, DC

*(Continued on page 12)*

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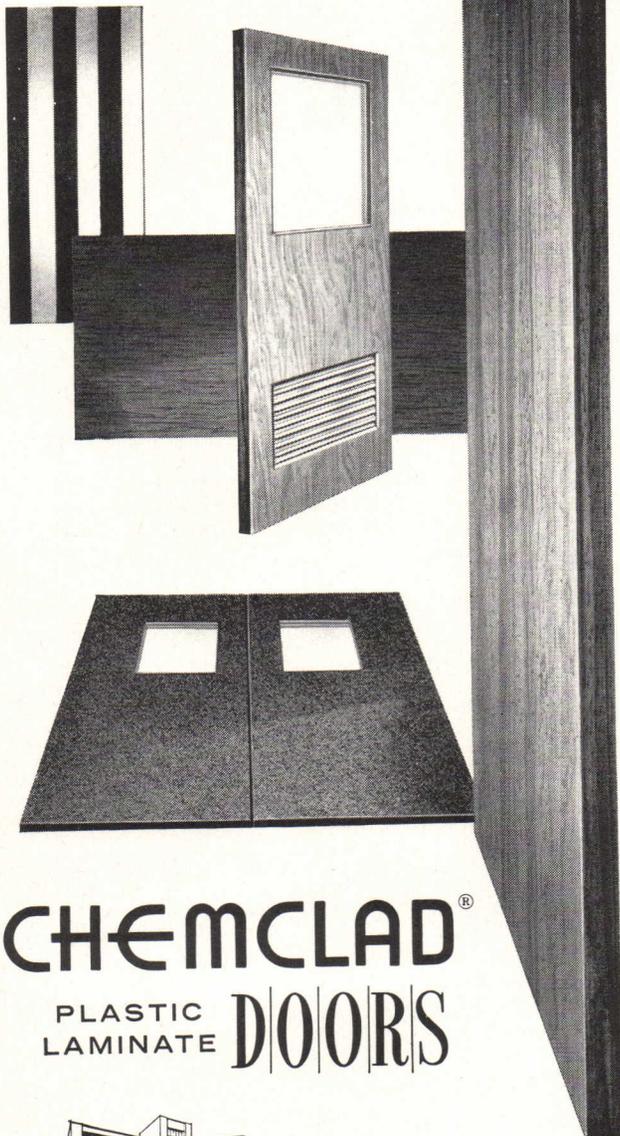
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## Letters *(Continued)*

### Housing for the Aging

EDITOR, *Journal of the AIA*:

Mr Kassabaum's excellent article on "Housing for the Aged" in a recent number of the *Journal* failed to mention one phase of the subject which I feel is of importance. His article covered the problems of old people who cannot or do not wish to live with younger members of their family. It is quite true that the three-generation family living in one dwelling is fast disappearing, but there is still a proportion of families who would wish, or at least be content, to have three generations living together if only they could find suitable accommodations.

At the turn of the century this was common in the four and five-story brownstone houses in New York. Since that time the trend has been towards smaller and fewer rooms. In the older buildings there was ample space for the grandparents to have a floor to themselves and consequently they had a measure of privacy and would not necessarily interfere with the living of the children and grandchildren.

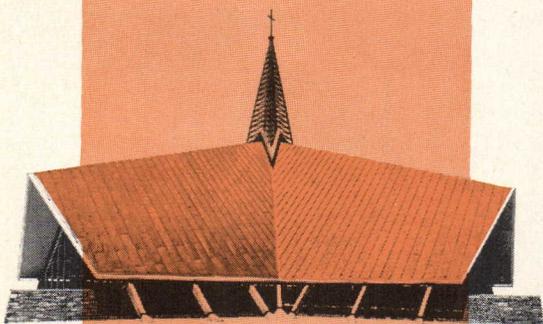
I believe the disappearance of spaciousness makes it virtually impossible today for the three-generation family to live in peace. However small the minority, an attempt should be made to solve the problem of their housing. In some European countries the Governments make a special effort to maintain the continuity of life of older people in the environment and among the associates to whom they are accustomed, thus avoiding the disruption of their living, which is bound to occur if the old folks have to move into entirely new surroundings.

This might be done either in free-standing homes or apartments. In the former case the older folks might live in a separate wing, having their own living-room, kitchenette, bedroom, bath and storage, with a private garden. There could be a door between their portion of the dwelling and that of the younger generation. The advantage to them would be obvious. In the absence of servants, their children would be free to go out evenings with the older people acting as sitters, and the children would also be able to help the grandparents conveniently in case of illness. A somewhat similar arrangement could be worked out with two adjoining apartments of different sizes. In this way, where it is desired, the family could remain an entity instead of being split.

EUGENE HENRY KLABER  
Quakertown, Penna



**CHRIST CHAPEL,  
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## Second Edition of "Building Products Register"

As the 1962 "Building Products Register" comes off the presses, orders for copies are pouring into the Octagon daily, according to Robert Berne, Head of the Architectural-Building Information Services Department. Distribution of this new, greatly improved book will begin about January 1. Copies will be sent automatically to all first edition subscribers and to all known AIA offices. To be sure that your office is included, simply tear out and return the coupon at the bottom of page 114 in this issue of the *Journal*.

With emphasis placed on more intensive use of this proven time saver, improvements in the new book have been directed towards making it easier for the architect to use. Format has been standardized on the left-hand page so that similar information for each product may now be found in the same place throughout the book. The user need not refer constantly to the headings at the top of the page once he becomes accustomed to finding data in the same location. Abstracts of standards and association literature have been increased considerably and each one is numbered for more rapid reference. A trade names index has been added to the introductory material, in answer to popular demand, so that a product may be readily referred to even though the manufacturer's name is relatively unknown.

To assist the architect in attaining optimum use of this valuable volume, the Architectural-Building Information Services Department will, from time to time issue suggestions and hints on how to use the "Building Products Register" to greater advantage in order to derive the fullest benefit from its continued use.

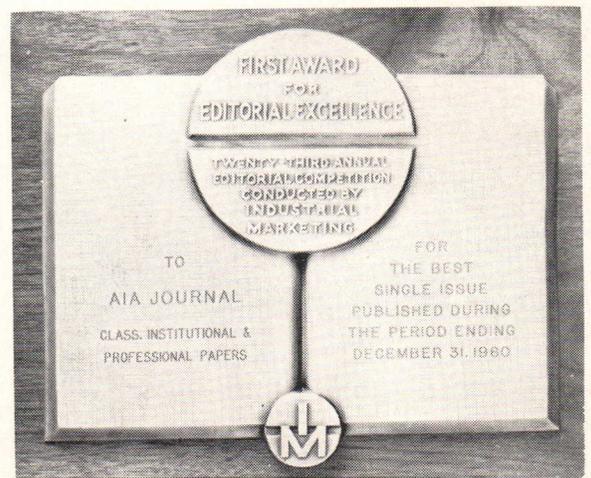
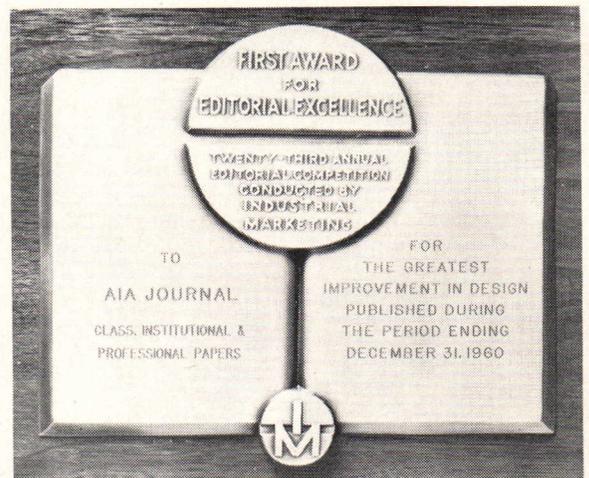
## British Architects' Conference

The following communication has been received from G. R. Ricketts, Secretary of the Royal Institute of British Architects: "May I draw your attention to the fact that the British Architects' Conference in 1962 will be held July 10-13 in Coventry. A Conference Executive Committee has been set up and has begun to make the necessary arrangements. The Conference theme will be "Building and Planning in the Motor Age," and there will be Discussion Groups held on the fol-

lowing sub-divisions: residential areas, city centers, small towns, miscellaneous matters such as motorway landscaping, bridge design, service stations, street furniture, etc. The Conference will follow closely on the consecration of the new Cathedral in Coventry and a visit to the Cathedral will be included in the program.

"We shall be very glad as always to welcome as delegates to the Conference any members of The American Institute of Architects who are in this country at that time. Copies of the program may be had by writing directly to the RIBA, 66 Portland Place, London, W.1, England."

The two First Award bronze plaques presented to the *AIA Journal* in the 23rd Annual Editorial Competition conducted by *Industrial Marketing* magazine. (See opposite page.)





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ARCHITECTURE

IN THE NEWS

THE AMERICAN INSTITUTE OF ARCHITECTS

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FOR IMMEDIATE RELEASE

New York, N. Y., November 30, 1961 -- The AIA Journal today received two First Awards for Editorial Excellence in Industrial Marketing's twenty-third annual editorial competition for business publications.

The AIA Journal is the only publication to win two plaques, awarded by two different juries, neither knowing of the other entry.

One of the First Awards is for "the best single issue" and the other for "the greatest improvement in design." The AIA Journal was thus singled out twice from among nearly three-hundred institutional and business magazines which entered.

The awards were given for the AIA Journal's March issue devoted to Urban Design.

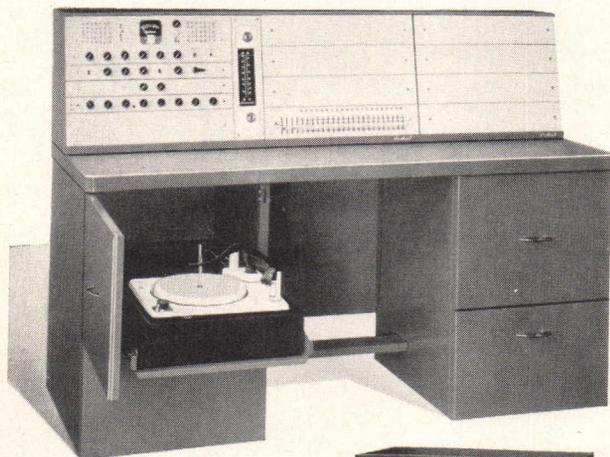
The Awards, in the form of two bronze plaques were presented today to AIA Journal representatives at a special Winner's Luncheon at Waldorf-Astoria Hotel in New York City.

The AIA Journal received an IM Award of Merit in 1960. "It seems we are stepping up," the Journal editor quipped.

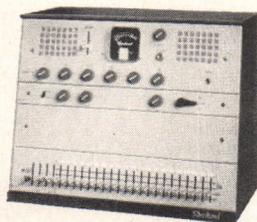
"IM's double recognition in a nation-wide contest, "he added, "is another indication that the AIA Journal has become a major voice in its field -- telling and selling the architectural profession."

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## News (Continued)

### Church Architectural Guild Convention

Philip Will, Jr, AIA President, will give the keynote address at the annual conference of the Church Architectural Guild of America to be held at the Cleveland-Sheraton Hotel, Cleveland, Ohio, March 20-22.

The Conference is planned to stimulate creative and practical thinking by architects, ministers and lay people concerning the basic relationship of architecture and planning to the needs of the church.

Included in the subjects to be discussed will be "Survey of Contemporary Architecture," "Church Architecture, Office Procedures," "Financing the Building Program," "The Church and Its Community," and others. There will also be exhibits and a program of European churches photographed in color by Robert L. Durham, FAIA. The theme of the Conference is "One Church—One Architecture?"

### Nominations Open for Reynolds Award

Nominations are now being received for the 1962 \$25,000 R. S. Reynolds Memorial Award.

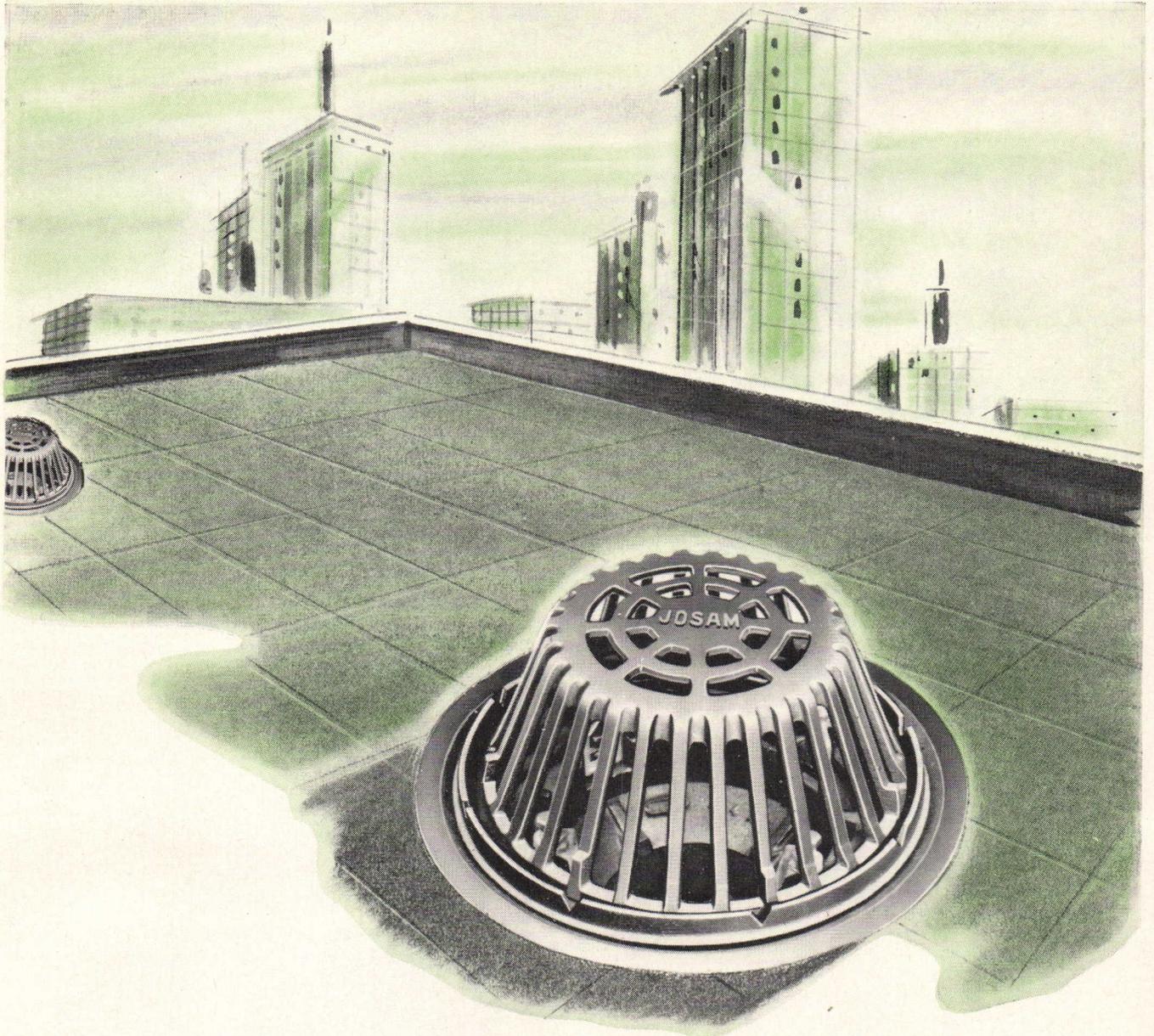
The award, largest in the field of architecture, is presented to the architect who, in the opinion of a special Reynolds Award Jury, has designed a significant structure in which aluminum has been used creatively. In addition to the \$25,000, the Award includes an original piece of sculpture designed by a prominent contemporary artist.

An architect may be nominated by anyone, including himself or his firm. Preference is given to buildings completed during the past three years.

Nominations will be accepted until December 18, and may be made by writing to Reynolds Award, AIA, 1735 New York Avenue, NW, Washington, DC. Nominations must include the architect's name and address, name and location of the building, date it was completed and the name and address of the person making the nomination. On receipt of nominations, the Institute will communicate directly with the nominee, sending him an official data binder.

### AIA Membership Pins Now on Sale

The new AIA membership pin featuring the AIA eagle and column symbol atop the letters "AIA" is now available to all members for \$3.00 each. Displayed at the Philadelphia convention, the pin replaces the maroon octagon-shaped pin. It measures one-half in in height. Orders may be placed directly with the Institute.



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## News *(Continued)*



### Urban Affairs

Federal government officials in housing and urban affairs were the guests of the AIA Urban Design Committee at an informal luncheon at the Octagon early last month. Shown above (from left to right) is Dr Robert C. Weaver, Housing and Home Finance Agency Administrator, chatting with Charles Blessing, AIA, AIP, Executive Director, Detroit Planning Commission, and Carl Feiss, AIA, chairman of the AIA Committee. In the picture below a joke is shared by AIA President Philip Will, Jr, FAIA; William L. Slayton, Commissioner of the Urban Renewal Administration; Dr Weaver; Mrs Marie McGuire, Commissioner of the Public Housing Administration; and James B. Cash, Jr, deputy commissioner of the Federal Housing Administration.



Below AIA's 1956 Gold Medalist Clarence Stein, a corresponding member of the AIA Urban Design Committee makes a point to Matthew L. Rockwell, committee staff executive and Thomas B. Thompson, AIA, the newly appointed deputy commissioner of the Public Housing Administration.





A · I · A

Journal

The AIA Journal has carried many stories of AIA Chapter activities in creating plans for the redevelopment of their cities. None have been more outstanding than the civic contribution of the Buffalo-Western New York Chapter. The story is told by the Waterfront Redevelopment Project Coordinator

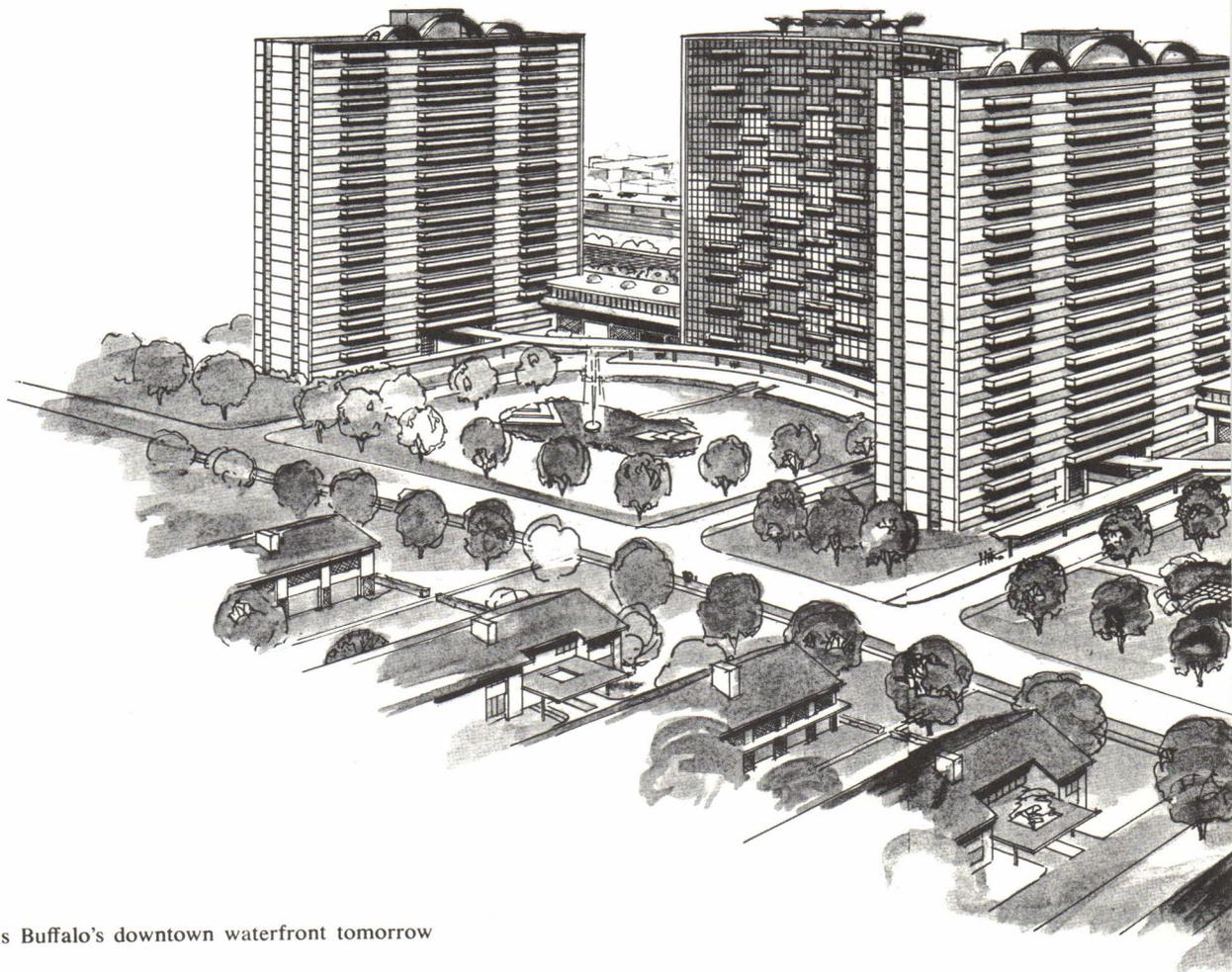
## Operation Buffalo

*The Story  
of AIA Chapter Planning  
in Buffalo, New York*

by **Milton Milstein, AIA**

► Until recent years, Buffalo, like many of this country's major cities, seemed hopelessly caught in the grip of slums and blight. The continuing process of decay nibbled away ceaselessly at so many areas of the city, that it became difficult to choose points of effective attack. New slums were forming almost faster than old ones could be treated and no unified attack could be mounted, until the Federal Government instituted a national program of Urban Renewal which could lend financial assistance. Buffalo had been in no position to finance large-scale projects of slum clearance and rehabilitation. Except for a series of public housing projects, both state and Federally-aided, covering a period of some twenty years, nothing effective had been planned or executed in a comprehensive or total approach. Important as they were, the public housing projects could not do more than spottily correct small localized areas while providing decent living quarters for families of sub-standard income.

Also, to make matters worse, the post-war period witnessed a common population phenomenon, the flight to the suburbs of higher income groups and the growth and shift of lower income groups within the city. With this came the inevitable loss of real estate values and further property decline. The shrinking tax base and the threat to the city as the socio-economic base of the metro-



This is Buffalo's downtown waterfront tomorrow

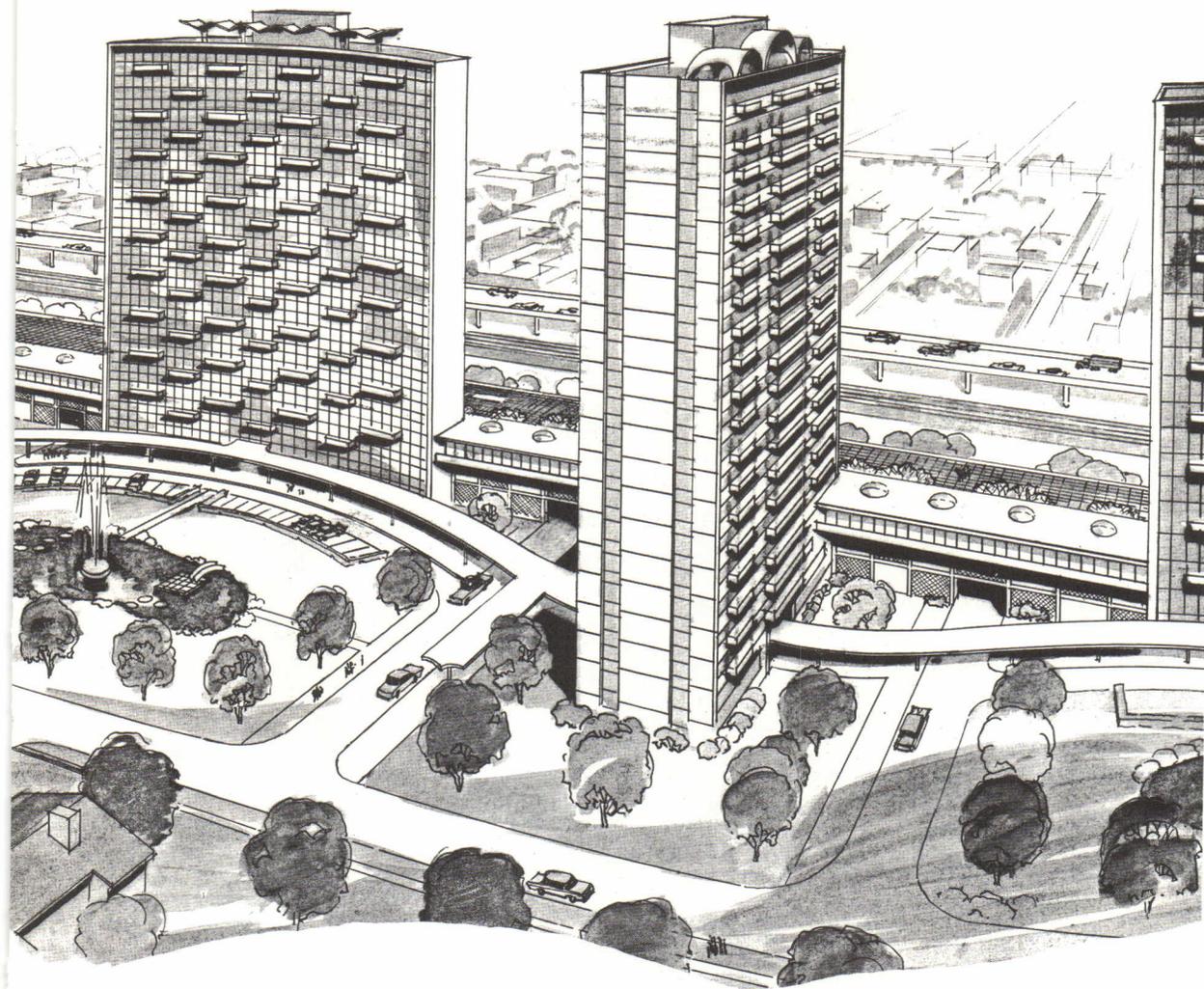
politan area took on an alarming aspect, for it posed a question also, as to the survival of the central business district, neighborhood business areas, the cultural, social and entertainment centers of the city. Suburban shopping plazas blossomed overnight with their attractions of easy access, free parking and fresh architectural design. These were sledge hammer financial blows to a beleaguered city, truly a city in ferment.

Clearly, a plan of action was urgently needed—a community plan of action. Teamwork by citizens and government was obviously the only sound approach. The city administration in 1957 engaged city planning consultants Keith and Feiss, to survey the city's present and future. In 1958 Nat Keith and Carl Feiss published a momentous report known as "The Future of Buffalo." This document diagnosed the city's ills and prescribed a ten-year plan of action by which citizens and government could lift themselves by their bootstraps and reconstitute the city as a healthy and prosperous community. The plan called for urban renewal in its total approach; redevelopment, rehabilitation and prevention of blight. In addition, the report covered regeneration of business and industrial properties, traffic and transit, plans for new growth and administrative changes with respect to city planning.

It is to the credit of the present city administration and to various citizen organizations that excellent progress has been made in the past four years toward achieving many of the Keith-Feiss Report objectives. Five redevelopment projects are in various stages of study or execution, a master plan is in preparation for the entire city and administrative measures have been taken to improve city planning procedures.

It is not a self-serving declaration to state that for sheer constructive effort on the part of citizen groups, the Buffalo-Western N.Y. Chapter of the AIA stands high on the list. It chose as its contribution the Waterfront Redevelopment Project, an urban renewal program deemed by the city to be an undertaking of the first magnitude in revitalizing the downtown area.

Its importance is two-fold in primary objectives and proliferate in secondary benefits from achieving these objectives. The Waterfront Redevelopment Project area lies between the Central Business District and the Lake Erie Basin. It is a 190-acre site composed of two main areas resulting from bisection by the Niagara Thruway. Part of the project area now consists of deteriorated housing, the other of slips, docks, RR property and certain commercial-industrial installations. As a first objective, this land properly redeveloped



could be made to provide tax revenues of \$2.5 million a year, instead of the present \$500,000. The plan to redevelop the major part of the project area for middle- to high-income housing will broaden the tax base and beautify the now ugly waterfront.

The second objective is to provide a new trade area for the Central Business District which is struggling against a business decline due largely to suburban shopping centers and a changing customer market. A reversal of the suburban trend must be encouraged to refresh the business outlook.

Achievement of both these objectives is soundly based, for the project has the approval of the Urban Renewal Administration and the enthusiastic support of the city's business interests. \$12.056 million of the \$16 million which is required for land acquisition and clearance has informally been reserved by the Urban Renewal Administration. Formal application documents will have been submitted and the capital grant should be made, by year's end.

The foregoing facts cover quite simply the City of Buffalo's problem and the program of action employed to solve it. How the architects played their part in a major contribution is more of a human interest story, however, and is proof

positive that the AIA can play a major role in its communities across the country. This is another instance of inspired public service.

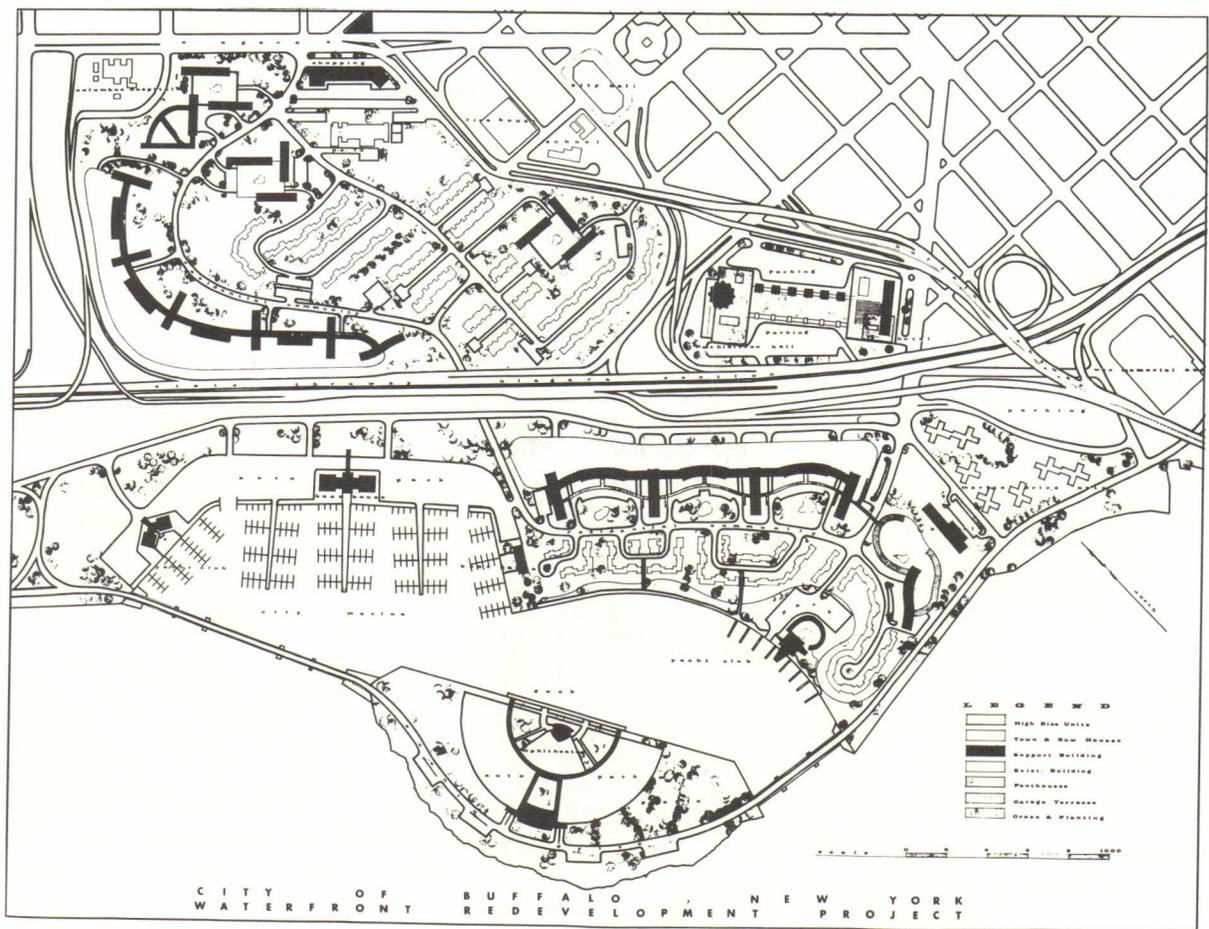
In 1958 at one of our Chapter meetings the Civic Design Committee (later to become the Urban Design Committee) was requested to embark on a study of the Buffalo Metropolitan Area program for growth and development, "so that it might consider a positive course of Chapter activity of community value on this important subject." A report of committee findings some months later indicated much to be studied and learned before we could consider taking any steps toward professional planning on a voluntary basis.

The year 1959 was spent by the Committee in further study of past and current planning surveys, reports and programs. Discussions with City Planning Agencies, City Planning Consultants, Keith and Feiss, a seminar on the subject, and further investigation of renewal problems finally led to a decision early in 1960 to undertake the Waterfront Redevelopment Project.

The timing was perfect, for just when we had reached the conclusion that a Chapter project was desirable, the City's Planning Agencies approached us for assistance. The City of Buffalo was in the unique position of undertaking the preparation of a Federal Grant Application, with-



A group of high-rise apartments will stand to the Northeast of the lakefront luxury group



out sufficient financial resources to make land-use studies. The Common Council in 1959 had authorized the transfer of \$100,000 to the Board of Redevelopment to undertake required survey and planning of the area, with a view to later qualifying for capital grant reservation on a three-quarter basis. The appropriation was sufficient only to cover consultant's and engineering services, but not to provide land-use studies necessary to the application. The City was unable to raise further funds and it was at this point that the architects stepped in with their voluntary contribution of professional skill and talent.

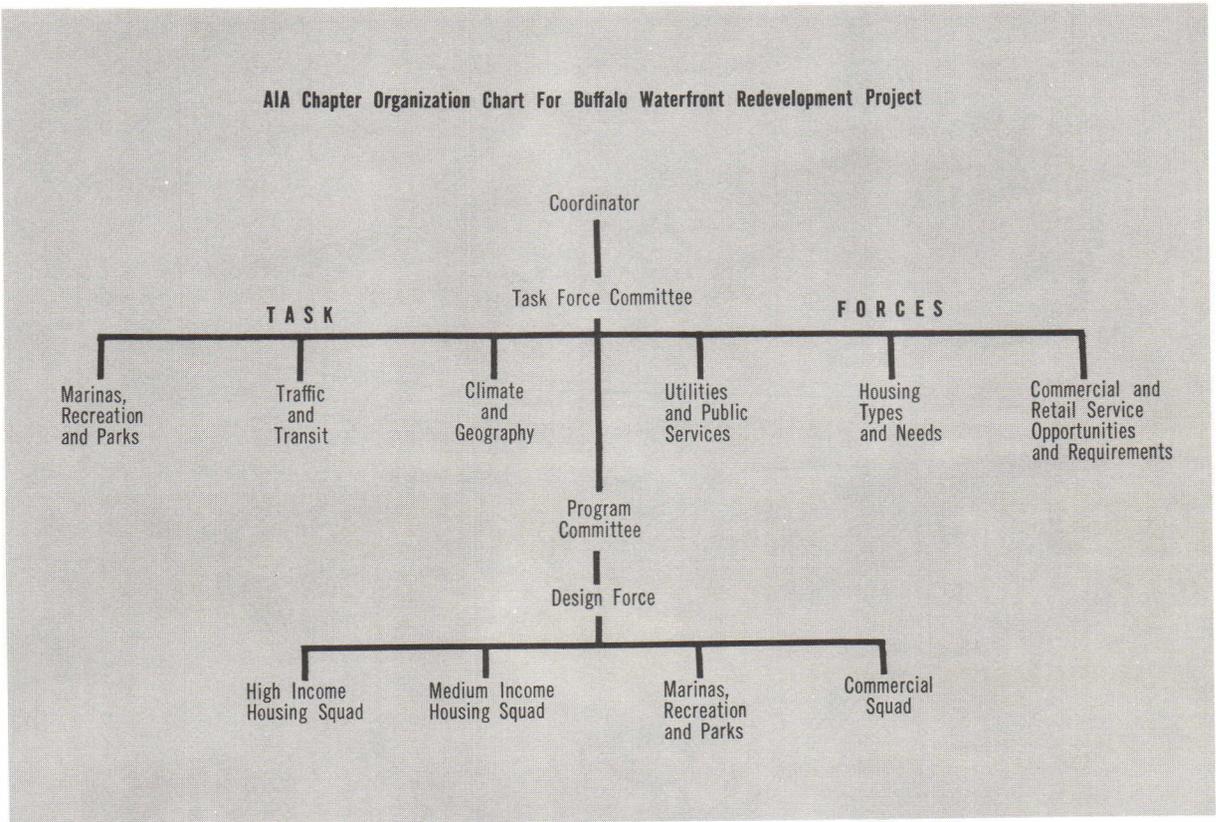
When we approached the task, few of us realized the totality of the planning problem and the extensive period of study which would be required. Over a period of nine months, approximately forty chapter members spent an estimated total of 4,000 man-hours in completing the submission of documents. To our best knowledge, ours is the first Chapter in New York State to undertake such a study and we trust this will serve as an inspiration to others. It has proved to be more than a civic contribution—it has been an education to all architects involved. Surely the intricacies of urban planning are better understood now than before, and we possess a much better grasp of renewal planning procedures and practices.

Our submission consisted of two parts:

- 1 A text comprising:
  - a Objectives and Task Force assignments
  - b Task Force surveys and reports
  - c A program of planning requirements
- 2 Planning and Design Studies comprising:
  - a Project site plan
  - b Parcel plans
  - c Dwelling unit studies for various building types—for high- and middle-income groups
  - d Perspective and elevation studies of program elements

A local newspaper report sums up the philosophy of the project design: "One of the principal factors, they [the architects] feel, in establishing a counter-trend to the suburban movement, is the creation of a new mode of city living—an atmosphere of suburban amenities in an urban setting; the charm and privacy of the small community home combined with the conveniences and interest of the city. This kind of living can be provided by modern planning and design techniques in the field of metropolitan housing. For example, in their study of the 190-acre waterfront project, the architects are incorporating varied building types such as high-rise or multi-storied elevator apartment buildings, town houses, two-story garden-type

AIA Chapter Organization Chart For Buffalo Waterfront Redevelopment Project



apartments and single-story court-houses. Each type is carefully related to the other and suits the varied needs of middle-to high-income families. Most buildings will afford excellent views of the waterfront, will be oriented for sunshine and prevailing winds and be provided with patios, gardens, greenbelts, community swimming pools and club houses. Private marinas are being planned for tenant boating enthusiasts. Multi-level parking and shopping services are being placed convenient to dwelling units. Protected walkways will interlace buildings and project facilities, to furnish all-weather comfort to the pedestrian. Heated entrance walks, interior climate control, superior lighting of buildings and grounds and project-supplied services, would top off these features as lures to the disenchanting suburban dweller.

"Looking beyond the immediate project area the architects envision the beautification of the long-neglected waterfront. They visualize for the central city, a continuity of beautiful waterfront, two miles long, from Times Beach to the new pumping station northward. Construction of a causeway looping the old harbor breakwater, from the mainland bordering the mouth of the Buffalo River to the foot of Georgia Street, could provide Buffalo with an artificial island park for viewing the beauty of Lake Erie. New, attractive marinas for small boats would decorate the shoreline to serve a growing outdoor sport."

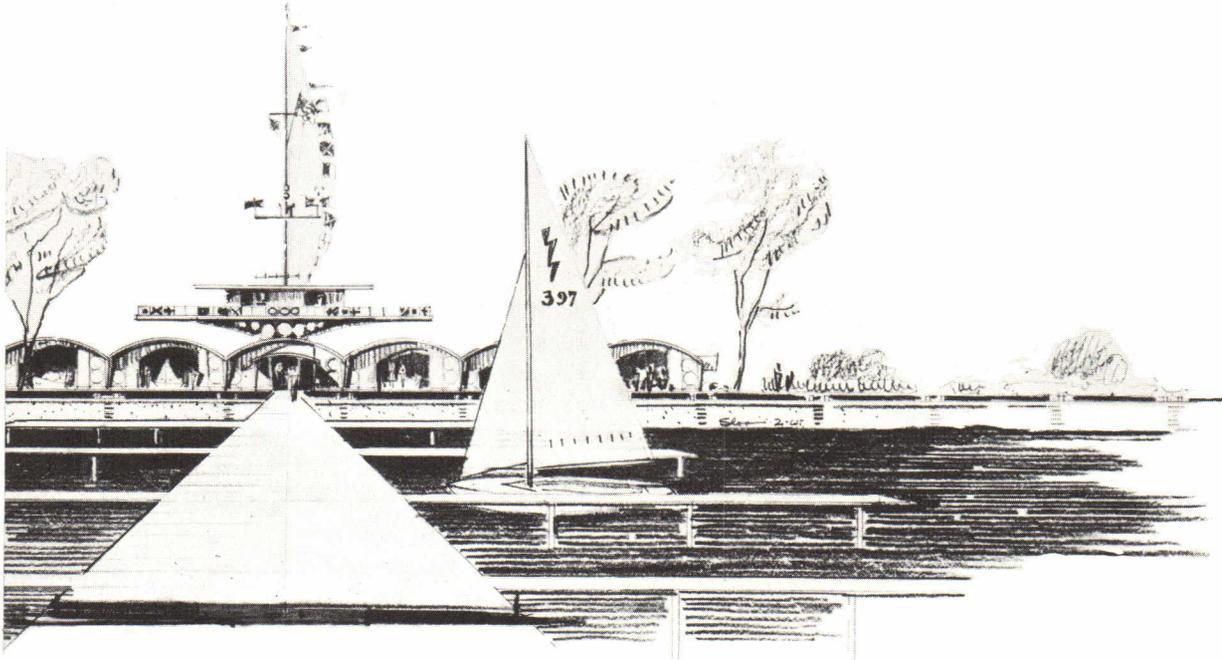
Chapter organization for the group effort worked out quite well. The writer served as Proj-

ect Coordinator and can attest at first hand to the efficacy of organization and method. The accompanying chart shows the chain of command and procedures followed.

Perhaps the most difficult problem encountered was sustaining drive and interest over a period of some nine months. In almost all cases members worked in their spare time, evenings and Saturday mornings. In certain cases, key men in task force groups gave unselfishly of professional time during their working day. To keep interest alive and at a good pitch, task force and study-group leaders met frequently with the Project Coordinator to keep things moving, and news bulletins were issued periodically. Work was carried on in private offices and the drafting room of the City Planning Board. The Chapter was grateful to receive the close cooperation of the City Planning Board, Board of Redevelopment, Buffalo Municipal Housing Authority, Board of Education and many other city agencies.

Project work was formally turned over to Mayor Frank A. Sedita on February 10, 1961. Mayor Sedita publicly expressed his gratitude on behalf of the City of Buffalo on a television program two days later. It was the privilege of the writer, our Chapter President, Guy Baldwin, and a stalwart of project progress, Jack Highland, to participate in this program at the Mayor's invitation.

Official and public reaction to the Waterfront Redevelopment Project was enthusiastic to a de-



A new 800-boat public marina is situated along the Erie Basin at the Northwestern corner of the development

gree never expected. Since the study was first undertaken, both of our local newspapers devoted extensive coverage to our efforts with approximately fifteen separate releases, all unsolicited. Mention was also made of our project in a *New York Times* release. Since completion of the study, the writer received many phone calls and letters commending the Chapter for a worthy civic contribution. It is an unusual fact that not one adverse comment has been heard or received, regarding our project. Instead, interest has been sustained and is growing.

The Project Coordinator and the Chapter President accepted joint invitations to speak before:

- The Chamber of Commerce Breakfast Club
- The Buffalo Consistory of the Masonic Order
- The Main St. Business Association
- The Construction Industry Employers Association
- The Buffalo and Erie County Planning Association
- The Executive Committee of a leading banking institution
- The Building Owner's and Management Association

Also, we appeared by invitation on a half-hour TV program with Eugene Fitzgerald, Director of the City Planning Board, to discuss the Waterfront Project, as a public education service. On another occasion it was our privilege to present our Chapter's work to the Housing and Redevelopment Committee of the Greater Buffalo Develop-

ment Foundation, at the invitation of Melvin H. Baker, Foundation Chairman.

The Chapter's sketch studies have been on display in various places throughout the city and are still being sought by interested Civic organizations. A model of the project area should be completed under separate contract in a few months and, this too, will be prominently featured.

The Greater Buffalo Development Foundation, a group of prominent business, banking and professional leaders has sponsored the printing of an impressive sixteen-page brochure describing and illustrating the Waterfront Redevelopment Project, with full credit being given to our Chapter, including a list of all participating members. This will be distributed to key firms and individuals whose support in the redevelopment effort is considered important.

Without laboring the point, it can be stated conservatively that the past year's project effort has netted the Buffalo-Western NY Chapter the finest public relations in its history. We have achieved new professional stature through the various public contacts aforementioned and through exhibits of our work in public places. We have also assisted the City in better public relations through the coincidence of our work with the "Boost Buffalo" campaign, the current effort to raise Buffalo esteem amongst its citizenry.

As "creators of man's environment" architects have assumed a proper role of leadership in planning for the future of Buffalo. ◀

# The Architect Looks at Himself

by **Carleton Monroe Winslow, AIA**  
and **Edward C. McDonagh, Ph.D.**

► What is the proper function of the architect in society? To what extent is the architect fulfilling this function? How can the architect improve his value to society?

These questions, and others, served as bases of an investigation of what, in sociological terms, is called the occupational subculture of the profession of architecture. This exploratory investigation is part of a large continuing study of the professions in the Department of Sociology at the University of Southern California under the direction of Dr Edward C. McDonagh.

British sociologists have been interested in the social grading of occupations. It should be noted here that British sociology has produced one study on architecture published in 1960, "The Development of The Architectural Profession in Britain," by Barrington Kaye, Senior Lecturer in Education, University College of Ghana. Sociologists are beginning to recognize that while small in number, compared to organized labor, and small in economic power, compared to corporations, the professions have tremendous influence in importance. It thus appears that there exists a definite challenge to deal with the professions within the framework of sociological theory.

There has been much concern in the last few years about the public image of the architect. The central concern of this article is how the architect regards himself and how he *thinks* the public regards him. The sociologist regards the practice of architecture as part of a large occupational subsystem within society. This paper in no way attempts to deal with the large occupational subsystem of architecture but limits its area of investigation to individuals who have met the requirements of the Department of Professional and Vocational Standards of the State of California and have therefore been legally certified as architects.

The data for this study were gathered through the use of a mailed questionnaire to 440 architects selected at random from the list published by the Board of Architectural Examiners. Some 142 replies were used in the discussion that follows. Since the profile and attitudes of non-responding architects might differ from the responding archi-

**TABLE I**  
**Age Distribution of a Selected Group of Architects**

Age Category	Frequency
25-29	2
30-34	25
35-39	37
40-44	22
45-49	17
50-54	13
55-59	10
60-64	7
65-69	2
70-74	3

**TABLE II**  
**Percentage Distribution of Father's Education of a Selected Group of Architects**

Educational Level	Percentage Distribution
1st grade to 8th grade	30.6
9th grade to 12th grade	29.1
College or better	38.1
Other (private school or other indefinite answer)	2.2

This interesting study of the architect's own view of his position on the ladder of our society has been prepared jointly by a well-known Beverly Hills architect and a member of the Dept. of Sociology at the Univ. of Southern Calif.

ects, some caution must be used in generalizing these findings to the profession at large. However, there is some evidence that attitudes and opinions of persons who do not respond to mailed questionnaires are not necessarily significantly different from those cooperating. (This evidence is substantiated in a forthcoming article by Edward C. McDonagh and Abraham Rosenblum, "Differences and Similarities in Responses to a Mailed Questionnaire and Subsequent Interviews," *Public Opinion Quarterly*.)

Background questions revealed that the architect in the sample is typically a forty-three-year-old male with 2.2 children and 5.1 years of educational work beyond high school. His father did not go beyond high school and is involved in a white-collar occupation. Our typical California architect is a member of The American Institute of Architects, the Republican party, and a conservative Protestant church. Tables I through VI show the distribution of the architects with respect to these various characteristics. It should be emphasized that architects possess a wide variety of interests.

Ninety-eight of the 142 responding indicated that, as young men, they had considered an alternate career. The majority of these would have chosen a career in natural science or engineering, with smaller groups considering the arts, social science, and commerce. This question was followed by the question, "If you were to change professions now at no change in income, what would you choose?" It is interesting to note that college level teaching was chosen by twice as many architects as any other single occupation. The next most popular was engineering. The unrelated fields of medicine, law, and business ranked as well as the related field of contracting. Forty-nine architects would choose a field unrelated to artistry, engineering, or construction.

"Would you encourage your son to be an architect?" In response to this question, 91 replied "yes," 44 replied "no," and 7 failed to respond. Forty-one of the architects replying "yes" qualified their answers with such comments as: "Yes, if he had an independent income."

Comparative professional prestige was explored in a ranking question. The architect was asked to

**TABLE III**  
Occupations of Fathers of a Selected Group of Architects

Occupations	Frequency
Professional Men	23
Business Executive or Owner	17
Small Business, Salesman, or White Collar Workers	52
Farmers and Ranchers	14
Skilled and Unskilled Labor	26

**TABLE IV**  
Educational Attainment of a Selected Group of Architects

Educational Level	Frequency
High School	2
College	
1 year	2
2 years	5
3 years	6
4 years	28
5 years	54
6 years	24
7 years	14
8 years	3
9 years	3
10 years	1
11 years	2

**TABLE V**  
Political Affiliation of a Selected Group of Architects

Affiliation	Frequency
Republican	76
Democrat	34
Independent	5
Left Winger	1
Non Partisan	1
No response	25

**TABLE VI**  
Religious Affiliation of a Selected Group of Architects

Affiliation	Frequency
Catholic	14
Protestant	78
Jewish	5
Others	14
No stated religious affiliation	31

**TABLE VII**  
Professional Second Choices of a Selected Sample of Architects

Profession	Frequency
Lawyer	9
Business Executive	13
Dentist	3
Minister	2
Social Worker	2
Medical Doctor	9
Engineer	15
High School Teacher	1
College Professor	34
Contractor	10
Other	26*

\* Of these, 19 were related in some way to artistic endeavor.

**TABLE VIII**  
Prestige Ranking of Nine Professions by a Selected Sample of Architects

Rank	Profession	Score*
1	Medical Doctor	977
2	Architect	927
3	Lawyer	767
4	Engineer	660
5	Business Executive	657
6	Minister	581
7	Dentist	498
8	High School Teacher	451
9	Social Worker	316

\*The score in the above table was obtained by assigning a weight of 9 for each first place received, a weight of 8 for each second place received, etc. The addition of these totals gives the score.

**TABLE IX**  
Public Ranking of Nine Professions in the Opinion of a Selected Sample of Architects

Rank	Profession	Score*
1	Medical Doctor	1044
2	Lawyer	913
3	Business Executive	837
4	Architect	692
5	Dentist	630
6	Engineer	618
7	Minister	614
8	High School Teacher	285
9	Social Worker	196

\*The score in the above table was obtained by assigning a weight of 9 for each first place received, a weight of 8 for each second place received, etc.; the addition of these weights gives the score.

place nine professions in rank order according to how much prestige he personally felt was attached to each. The architects were then asked to rank them according to how they felt the public would rank them. Table VIII shows that the architect in the sample ranks himself just under the doctor but ahead of the lawyer, engineer, and business executive in that order. When asked how he thinks the public would rank the list, he places himself below the doctor, lawyer, business executive, in that order, but ahead of the dentist and engineer. The high school teacher, social worker, and minister score low. It is interesting to note that the architect places the business executive well down the list but thinks the public would place him high. A few questioned the inclusion of the business executive in a list of professions, indicating that the occupation has not attained full professional status. The most striking feature of this question is the comparatively low opinion the architect has of the public image of the architect. The extent of this concern about public image is revealed in the open-ended questions quoted at the beginning of the article and which will now be dealt with in turn.

*"What is the proper function of the architect in society?"*—Most dictionaries define an architect generally as one who plans or designs buildings and superintends their construction. Some architects in the sample perceived their proper function in terms of this definition, but the vast majority feel that the proper function for the architect is the planning and organization of the total environment. Eighty-four persons defined the role of the architect as something more than a dictionary definition. Of these, fifty-six actually used the word "environment" in some context. Some of these responses in abridged form are:

- Plan environment to uplift spirit.
- Provide beautiful environment for mankind.
- Shape environment through social sciences.
- Design the total environment.

Other definitions not using the word "environment," imply the same thing. Some of these are:

- Have a better life through good architecture.
- Guide regional growth.
- Lead community toward finer life.
- Make for physical and spiritual planning.
- Form culture.
- Recreate in physical form our democratic philosophy.

Forty respondents took a more modest position with respect to the architect's function. Some of their responses are:

- Create beautiful buildings.
- Work for construction industry.
- Design better buildings.
- Create individual buildings.

Build cheapest shelter.

Solve clients' problems.

Enrich the community with beautiful buildings.

Eighteen people did not respond to this series of questions.

"To what extent is the architect fulfilling this function?"—Of the 84 respondents who defined the architect's function in terms of the extended service discussed above, only 23.8% feel the architect is fulfilling his function to any extent at all. Some 76.2% feel he is not fulfilling his function to any appreciable degree. Of the 40 people who take the more traditional view of the architect's function in society, 50% feel he is not effective at all. Combining the two groups, we find that 72.8% feel the architect is only "scratching the surface."

"How can the architect improve his value to society? The answers to this question can be divided into two categories: (1) "Improve the architect himself or improve the organizational aspect of the profession, and (2) educate the public." Seventy-seven respondents feel the an-

swer lies in some form of self-improvement. Of these, 21 mention civic and social participation by name. Of the others, 15 mention organizational improvement, and 41 feel the architect must take steps to improve his ability. Some responses were: "Conduct his practice as a profession instead of a dog fight," "Reorganize his profession to involve total control of construction industry," "Practice more social and political participation," "Get off his high horse," "Satisfy the emotional needs of people," "Be more aware of political and social changes," "Make full speed to beauty," and, finally, "Educate."

From the above it can clearly be seen that the architects who make up the sample are ambitious in the projected scope of the profession, pessimistic as to their present position, and divided but full of ideas on the best way of achieving professional success on a broad basis. The most striking feature is the extent of the expansionistic attitude within the profession. One man felt that nothing less than "Rebuilding the entire planet" was the architect's responsibility. ◀

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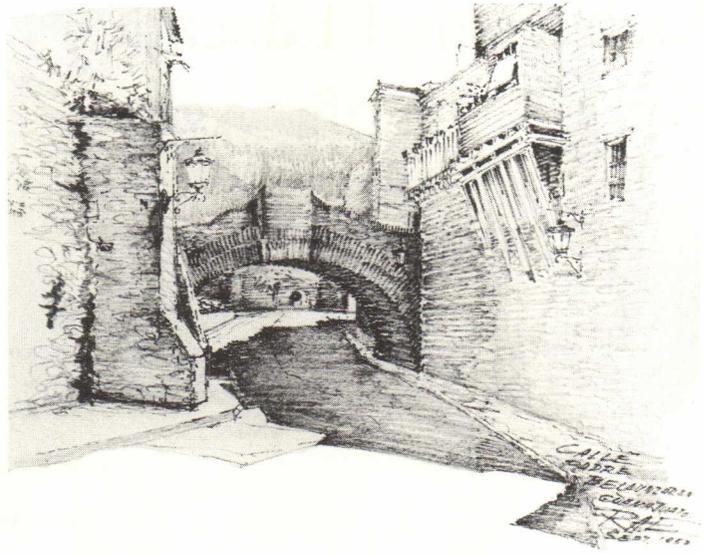
## Travel Sketches

BY ROBERTO ALVAREZ ESPINOSA, HONORARY FAIA

*Consulting Architect, Mexican Ministry of Public Works;*

*Past President, Sociedad de Arquitectos Mexicanos*

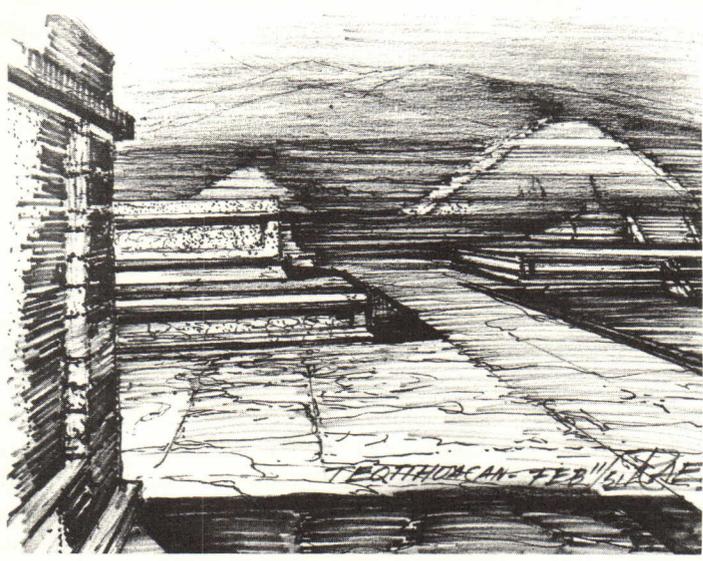
Sketch at left: La Salle Street, Chicago. At right: Street scene, Guanajuato, Mexico



Oaxaca, Mexico



Pyramids, San Juan Teotihuacán, Mexico



# Architectural Education For A Scientific Age

by P. N. Youtz, FAIA

► Architectural education has made remarkable progress since the turn of the century; but it must continue to forge ahead if the profession is not to become obsolete in the next few decades. Recognizing our accomplishments first, architects have liberated themselves from bondage to period styles and have embraced contemporary forms. The buildings of our day are fresh in design and betray no dependence on prototypes exhumed from library sources. Our more competent architects are skilled students of contemporary institutions and understand how to express their complex requirements in flexible floor plans and attractive exteriors. The architectural garments of our day are nearly always comfortable and practical. With increasing frequency we achieve costumes which have grace and flow.

Encouraging as is this contemporary orientation of architects, we should not overlook the weaknesses of the profession. Too many practitioners cling to the egocentric philosophy that design is an expression of personal preference or idiosyncrasy, not the reflection of social requirements, urban setting, cultural context, structural system, and mechanical needs—all unified and interpreted by art. In a democracy such as ours, an architect is not a subjective dreamer but a civic leader helping the institutions in his community to build wisely and imaginatively the schools, libraries, theaters, banks, stores, and homes which they need for healthy economic growth. The contemporary architect should be keenly alert to serve his public and merit its confidence. He should have a well-

**Mr Youtz, Dean, College of Architecture and Design, The University of Michigan, contends that the architect of today and tomorrow must be competent in all the many complex phases of the building arts and sciences, and that the schools must re-tool and equip themselves to turn out such well-rounded men, even though it may result in an eight-year course**

developed sense of social responsibility as well as a discriminating feeling for good design. He is not only an artist but a competent advisor on real estate improvement and urban development. When entrusted with a commission for a new building, he will consider not only esthetic factors, but also structure, mechanical equipment, costs, prospective income, financing, transportation and the relation of his building to a comprehensive community plan. The modern architect is not an individualist but a trained team worker. His designs may originate in his own visual imagination but they are conceived in terms of their social application, in light of their service to society. Like the other performing arts, successful architecture depends on leading and pleasing an exacting audience.

Another shortcoming of the profession is that too few architects have the education or the desire to design complete buildings. They depend on a group of consultants and specialists to do a large proportion of their work. Many architects think they have done their job when they have completed the visual design. A structural engineer lays out the foundations and the steel frame, a mechanical engineer prepares the drawings for plumbing, electrical work, heating and cooling, an acoustical man does the sound control, a specialist writes the specifications, and some expert makes the preliminary estimates. But if architecture is to continue as a profession, all of the work connected with the planning and design and supervision of a new building must be done under the direction of a

man or firm expert in all phases of the building process. The architect cannot hope to stay in business unless he qualifies as a master builder capable of rendering a complete service.

One more criticism of the architectural profession that should be mentioned is its failure to assimilate and apply the new technologies and sciences of our age. Both practitioners and teachers have been so preoccupied with the art of building design that they have neglected the rapidly developing science of building construction. We give lip service to the statement that architecture is both an art and a science but these two elements have not been amalgamated. From the classic period down through the renaissance the architect was proud to be both an artist and a scientist. Vitruvius wrote that an architect should be a philosopher, by which he meant a lover of knowledge, technology as well as esthetics. Leonardo da Vinci demonstrated how fruitful it was to combine the imagination of the artist with the observation of the scientist. In the best periods of architecture there has been a wedding of art and science and a recognition that building design depends on both insights.

The architectural profession today is in about the same situation as the medical one at the turn of the century. The doctor practiced a traditional art with few scientific tools to enable him to make accurate diagnoses or to apply effective treatments. The modernization of medicine was not easy because superstitions and folkways take on a patina of sanctity with long observance. But the advances in the biological sciences pointed out the direction that medical students should take. The gratifying result has been that medicine in our time has evolved from a profession that was largely a practical art to one that is becoming more and more an applied science. As used in a medical context, the word "art" means a traditional or empirical procedure that is unsupported by scientific theory and experimental evidence. The amazing lengthening of life expectancy where modern medical care is available, is convincing evidence of the value of the scientific revolution in this profession.

There is no doubt that the training of students for building design needs a similar modernization. However, the problem in architecture is not to eliminate art but to supplement it with a broader spectrum of science. As far as the term art applies to rule-of-thumb practices, the architect can very well emulate his medical colleague and discard this obsolete lore. But art in the sense of design is one of the most precious contributions of architecture to society. The architect is well aware that man does not live by bread alone. The space and frame of a building offer poor hospitality if they do not nourish perception and evoke wonder. The

mute music of architecture in no way conflicts with the new technologies. Rather, science offers the architect the same power and control that it conferred on the doctor. The student of design has felt thwarted by mathematics, physics, statics, and mechanics because he has received a smattering, not a grasp, of these essential subjects. Once assimilated, technology enables the architect to design with daring and confidence.

The image of the architect as master builder has been preserved by the friendly services of structural and mechanical engineers. These well-trained, often anonymous men, have worked out most of the problems of modern steel or reinforced concrete construction as well as those of airconditioning, sanitation, lighting and acoustics. But now that the pioneer job is done, and each new building involves only the repetition of familiar calculations, the engineers are seeking more adventurous careers in industry, electronics, aviation, rocketry and research. In many communities it is difficult to find structural engineers and impossible to hire mechanical ones. The architect must either stand on his own two feet and do his own structural and mechanical design or depend on the help of commercial agents selling products of the construction industry. If he chooses the first alternative, he becomes the master builder in fact, not merely in name. If he selects the second one, he is denying his client the disinterested professional service to which the latter is entitled and for which he has contracted.

The voluntary abandonment of the structural and mechanical fields by engineers tempted to greener pastures, offers the architects an opportunity to take over the control of structural and mechanical design, thus strengthening his competitive position in the building industry. If the architect is able to produce complete working plans in his own office, he can give his clients better service. At present the esthetic design, structural layout and mechanical work are frequently turned out by different firms with the unfortunate result that they do not fit together harmoniously. Working plans prepared in the architect's office under his competent supervision should attract lower bids because of fewer discrepancies and ambiguities in the drawings. If he is able to offer a total integrated service to his clients, the architect will be in a position to compete successfully with package dealers and contractors invading the architectural domain. If the plans are properly coordinated, the completed building will represent the architect's vision, not his frustration; his power, not his impotence. The architect can only compete in the modern scientific world by possession of superior knowledge and by applying this to his client's total building enterprise.

In proposing to give the architect a more thorough training in the science of construction, we must enrich rather than reduce his instruction in art. The prestige of the profession rests on its high ability in esthetic design. But we must consider design problems not merely as a chance for attractive sketches or models but as an invitation to think out a building as a whole—setting, character of the institution, plan, structure, mechanical equipment, exterior, furnishings, cost and earnings. In architecture we are not concerned with art for art's sake but with art as a polymer for bonding all the discrete elements of a structure into a total environment for man. This might be called a functional view of art. The concept is broader than the term "applied art." We see functional art or design in a Gothic cathedral. It is the esthetic organization that produces harmony among the various parts.

This integration of art with science will widen the architect's outlook. The public admires his ability to visualize possibilities in site and building development but the architect is criticized because he tries to solve all problems in terms of esthetic design alone. This sensitivity to form is commendable but many complex issues that are connected with buildings and their environment require a precise knowledge of real estate, structures, cost, and urban development. Though design potentials should be kept in mind at all times, in many situations the determining factors are quantitative not qualitative ones.

The appearance of a street and its use as an axis are design considerations, but we must also know its car capacity and whether at certain peaks it becomes a bottleneck. The latter data may or may not corroborate an esthetic judgment, but it cannot be ignored. An architect should be aware of all aspects of a building situation if he is going to counsel his client wisely.

What type of curriculum is needed to prepare the architectural student for a successful career in a scientific age? The responsibilities of the architect have so greatly increased that the first prescription is that he should receive longer and wider training. The prospective architect should have a pre-architectural, full four-year college program before entering a four-year graduate professional school. In some universities an undergraduate degree is already a prerequisite for architectural students. So the eight-year requirement providing for four years of liberal college education followed by four years of professional training is not an innovation. Most accredited institutions at present offer a five-year course for architectural students fresh from high school. The first year usually is devoted to academic not professional work. So the actual architectural program is of four years duration.

The purpose of requiring four years of pre-architectural college training is to develop in the student intellectual maturity and wide interests before he attempts to cope with technical professional problems. Liberal colleges give students an introduction to the humanities, physical sciences, biological sciences, social sciences and the arts. Such institutions offer a curriculum which is opposite in aim to that of the professional school. Their program is general not vocational. The liberal college should supply the future architect with a wide panorama of human thought which he now conspicuously lacks because of his early professional specialization. A man with a B.A. degree is not likely to become merely a skilled draftsman content to draw neat lines on paper all his life. Valuable as is this graphic virtuosity, it does not produce architects. What is important for the stature of the architect is the kind of college training that gives him an understanding of the society and culture which he plans to serve.

### Content

What should be the content of a pre-architectural college training? Architecture is a science and an art so it is important that a student become acquainted with these two contrasted patterns of thought. The liberal college can help to prepare the prospective architect by offering him one course each year which will directly contribute to his profession. These courses are mathematics through calculus, freehand drawing, physics, and painting or sculpture. The order in which these subjects are studied needs careful consideration. Mathematics should come before physics because its use will be required in the latter course. But a year is interposed between mathematics and physics so that the introduction to physical science will serve incidentally as a refresher course to recall the mathematics taken earlier, thus insuring that the latter will still be useful in the future structural courses encountered in professional school. Similarly the art courses are spread out with a year's interval between them so that the creative experience will be as extended as possible. Of course ideally the pre-architectural student should study science and art simultaneously throughout his college course if this arrangement could be fitted into an all too crowded undergraduate curriculum.

Mathematics through calculus is the first required course for the pre-architectural college student. It seems advisable to begin with this subject while the student still remembers his high school geometry, algebra, and perhaps trigonometry. This will make the subject easier for even those students who fear any study connected with numbers. But we must frankly admit that there is a problem

in teaching mathematics to prospective candidates for the design profession. Too many high school graduates have developed a prejudice against arithmetic in all its forms. This might have been avoided if they had experienced the fun of analyzing problems graphically as well as algebraically. They should have been taught how to draw mathematical constructions as well as how to calculate. The ancient Greeks developed their mathematics geometrically and this is still a good educational approach to the science of numbers. The tedium of calculation can be reduced if the students early acquire the use of the slide rule and adding machine (or abacus). These mechanical aids can eliminate much drudgery and turn mathematics into an absorbing and instructive game. Another aid to learning is for the instructor to select problems connected with architecture and the construction industry. If the student keeps a notebook, he will find that this becomes a valuable handbook for later use and that the study of abstract relations gains meaning and interest from its professional application. The student should never lose sight of the purpose of the course which is to develop mathematics as an accurate and familiar language for the expression of his imagination. Unless the architect becomes fluent in this language, he has no way of controlling or realizing his designs. Architecture without mathematics degenerates into fantasy.

The second course which pre-architectural students should study is freehand drawing. The pencil is mightier than the pen in the hands of the architect. But drawing should be of a creative character. Sketching teaches observation, a sense of proportion, and an understanding of space. Mechanical drawing does not fulfill this function, and often a student who has submitted to this discipline too early or too long loses his native capacity for the free development of form. Some skills such as those related to the visual arts must be acquired young, or at least are most easily learned early in life. While freehand drawing is recommended as a college course the young architect should begin to use a pencil in kindergarten and continue to draw throughout his professional career.

The third college course for the pre-architectural student is physics. Physics is the foundation from which the applied science of architecture has developed. All the later professional courses in structural and mechanical theory are based on this physical science. Indeed physics is to architecture as biology is to medicine. As in the case of mathematics, it is essential that the teaching of physics be oriented toward architecture and that the problems presented be drawn from the broad field of building construction. Too many architectural students miraculously pass college physics without

the least suspicion that the subject has anything to do with architecture or engineering, so this relation must be stressed by the instructor. Winston Churchill remarked that wars were too important to be entrusted to generals. Mathematics and physics are too important to modern architects to be left to mathematicians and physicists; such courses may have to be taught by architects. The student who keeps a careful notebook in physics as related to architecture possesses an invaluable handbook for structural and mechanical design. An excellent text in physics for prospective architects is White's "Modern College Physics," though the instructor must point out the applications to architecture and supply the problems from structural and mechanical theory.

The fourth pre-architectural course recommended is painting or sculpture. The choice between the two depends on the individual's needs. Both teach the principles of form and light and shade. Painting adds the richness of color. Sculpture stresses the importance of the third dimension. These two visual arts have much to teach the future architect, and without them, he will have difficulty in understanding his own spatial art. Indeed the fundamental principles of all the visual arts are similar. Consequently it is often of educational significance to view one's own compositions from the standpoint of an allied art. But another cogent reason for students to study painting and sculpture is the possibility of utilizing them in architecture. At the moment the building art is starkly unadorned but in the past and probably in the future painters and sculptors will collaborate with the architect. An architect cannot be said to be educated who does not have an acquaintance with the whole field of the visual arts.

### **Graduate Professional Program**

After successfully completing his undergraduate college course the student is ready to cope with a four-year, graduate professional program in architecture. What should be the nature of this training? Briefly, it should reflect the total activities and services of the profession. It should enable the student to grasp the obligations and opportunities of the profession as a whole. In order to obtain this goal we must think not of separate conventional courses but of a curriculum that is unified and organic. The architectural profession needs students who have breadth of understanding and the capacity to undertake with success the solution of a wide variety of problems,—artistic, structural, mechanical, economic and social. To cover such a large field with success, artistic ability alone is not enough. Even when this is supplemented with some skill in structural and mechanical design, a student is not yet prepared to practice

architecture. Initiation into the economic requirements of building design will help him to protect his client's investment but this still does not make him a well-rounded architect. A sound background in the social sciences is essential in addition to all these other prerequisites for professional competence.

To prepare the future architect to carry out the broad duties of his profession, the new curriculum should be divided into five general fields of study which should have equal teaching emphasis and equal class time. The student should devote one day a week throughout his four years to the following subject areas, namely; *visual, structural, mechanical, economic, and social design*. These five divisions should not be treated as separate courses but be conducted simultaneously as a connected and interacting course of study. They provide a way of examining all the more important facets of architecture. In many instances the student should have the opportunity of analyzing his design problems from all five angles. Thus from the first day to graduation, the student will be encouraged to think of the practice of architecture as one connected pursuit, not as an aggregate of unrelated activities.

The best way to approach these five fields of architectural study is to consider them as opportunities for design. Each of them imposes some limitations on the designer but each of them requires his analysis and decision. Problems in these five areas can only be solved by creative thinking. In the past we have been too prone to associate imagination with visual design and to regard structural, mechanical, economic and social design as routine activities, to be delegated to others. This attitude is characteristic of some gifted designers who think of themselves as sculptors, and of architecture as fine art free of all practical and technical requirements. But most offices are guided by men of balanced judgment who apply their imagination and knowledge to their client's total needs.

Taking up the five areas of instruction in order, —under *visual design* are grouped the usual problems in architectural composition and site layout; the relations with the allied arts such as landscaping, painting, sculpture, and interiors; and certain graphics that probably can be "learned by doing" more successfully than as separate courses. The importance of visual design is well recognized by the profession. But the relationship with the allied arts which also contribute to visual design has too

often been ignored or forgotten. Courses in graphics tend to become ends in themselves when actually their purpose is communication.

In order to strengthen visual design so that it will be something more than a paper pattern or the stuff of dreams, the student needs might be called content. In the past this was supplied by archeological studies of historic buildings with the result that until very recently architecture still wore period dress. Today we can provide this content by courses in structures, mechanics, real estate economics and social sciences. The source of a student's design concept now stems from the specialized requirements of a contemporary institution, not from an historical model that may be completely inappropriate. The student who is acquiring new knowledge in the particular fields related to architecture has far more to say than the designer who spends most of his professional career bent over a drawing board. We can expect from him plans that are organic, buildings that are structural, elevations that interpret visually the culture of our day, and projects that can be financed and built.

For the student, visual design reinforced by the simultaneous study of structures, mechanics, economics and the social sciences takes on a new reality. He is released from the make-believe atmosphere of the school and shares in the affairs of the real world. The result should be to improve student performance. The new curriculum should help schools to train the majority of their students instead of merely the gifted few to become acceptable visual designers. The added element of realism may be all that is needed to awaken the natural abilities of many students that the schools fail to reach.

Collaboration between architects and those practicing the other visual arts often enriches a project and brings satisfaction to a client. This relation between architect and landscape architect, sculptor or painter, is a delicate matter that demands an appreciation of the role of each of the arts involved. Students should have the chance of testing the value of such joint effort and of learning the procedures likely to make such a professional marriage successful.

The second field of education in which the architectural student should be proficient is *structural design*. The aim of this division of the curriculum is to produce well-grounded structural analysts who can figure the stresses in structures

## ARCHITECTURAL EDUCATION FOR A SCIENTIFIC AGE

### Four-Year Undergraduate Pre-Architectural College Curriculum

Divisions	Pre-Arch Requirements	Literature	Sciences	Arts	Physical Education
Subjects			Typical Liberal College Program		
1	Calculus				
2	Freehand Drawing				
3	Physics				
4	Painting or Sculpture				

### Four-Year Graduate Professional Architectural Curriculum

Divisions	Visual Design	Structural Design	Mechanical Design	Economic Design	Social Design
Subjects	Building Design	Projections	Sanitation	Functional Plans	Economics
	Site Layout	Statics	Heating	Zoning	Sociology
	Allied Arts	Materials	Cooling	Cost Estimates	Politics
	Landscaping	Structural Theory	Lighting	Income Forecasts	Geography
	Painting	Concrete	Electrical Work	Mortgages	History
	Sculpture	Building Frames	Acoustics	Real Estate Management	Anthropology
	Interiors	Building Technology	Elevators	Taxes	Philosophy
	Perspective	Structural Problems	Mechanical Problems	Building Codes	Psychology
	Shadows			Specifications	Planning Problems
	Rendering			Insurance	
	Visual Problems			Contracts	
				Supervision	
				Real Estate Problems	

Note: Each of the above five divisions occupies an equal share of the student's time, so as to provide a balanced educational program. The five divisions run concurrently so that they can cross-fertilize each other. In all five divisions the emphasis is placed on design. Typical subjects are listed by way of illustration.

as competently as any engineer. The architect may wish to avail himself of the engineer's specialized knowledge, but the architect himself should have the knowledge that will enable him to understand and to solve structural problems. With a good background in college mathematics and physics, this goal should be an attainable one.

The subjects to be grouped together and taught under this head of structural design are statics, strength of materials, structural theory, concrete

theory, structural design of building frames, building technology, etc.

Such courses are most meaningful as a sequence and taken in conjunction with visual design problems. In addition to these standard topics, there should be time to present some special structural problems such as earthquake, hurricane and fall-out protection.

One of the strange loopholes in the law is that an architect is not held accountable for his errors

of judgment in visual design. He may perpetrate any transgression of good taste which his client condones without legal retribution. But the law holds the architect responsible both for structural and mechanical design. A building must not endanger life, health or property. The law places the architect in the position of highest authority on structural design—the person on whose shoulders rests the credit or blame for success or failure of his buildings.

The third area with which the student architect must become familiar is *mechanical design*. This includes heating and cooling, sanitation, electrical work, lighting, mechanical equipment such as elevators, and acoustical control. In this area the architect's responsibility under the law is nearly as exacting as in the case of structures. In a modern building the investment in mechanical equipment usually amounts to thirty per cent of the total construction cost. Buildings are becoming machines for living, though they were far from that goal when the phrase was coined. Yet in the past architects have frequently neglected this type of design and delegated it to the product manufacturers.

Which of the mechanical amenities, plumbing, heating, air conditioning, elevators, acoustics or lighting does most to satisfy the tenants of a building is a debatable question. Certainly the reputation of an architect often depends on how successful these mechanical services turn out to be. A building may be recognized as a supreme work of art but if it is not properly heated and lighted, the owners are likely to tear it down and replace it by a structure of mediocre design with sufficient BTU and foot candles to satisfy the creature needs of its occupants.

#### The Fourth Division

*Economic design* is the fourth division of the architectural curriculum. This is another category long neglected by the profession. It includes cost estimates, income forecasts, mortgages, real estate management, taxes, building codes, specifications, insurance, contracts, and supervision. All these constitute the business approach to architecture. To retain the respect of the investor client, the architect must be knowledgeable about these factors which determine the earnings of a building.

The prime criticism of the architect by businessmen is that he is not practical. By this they mean that he is preoccupied by the visual design and is too often oblivious to the economic design which they regard as of supreme importance. Architects need not become real estate or banking experts but they should be familiar with business and its architectural requirements. The trite remark is that the student will learn economic design after

he leaves school. But too often ignorance in this field causes the failure of a promising architectural firm.

The fifth division is *social design*, by which is meant the social sciences—economics, sociology, geography, history, anthropology, philosophy, and psychology. These are the sciences that deal with man and man is the architect's ultimate client. Whether the student concentrates on one discipline or samples several, he will discover a base line for surveying contemporary society.

The direct application of the social sciences to architecture may be of secondary importance but these fields of study are of immense value in giving the architect a sound perspective on his culture. More and more the architect deals with corporate clients, not individuals. A large section of his work is for municipal, county, state, and federal agencies. The social sciences are a good guide to the intricacies of governmental affairs because they free the practitioner from red tape and turn his attention to principles. The corporate image of a community can best be grasped from a carefully documented social study.

This five-fold graduate professional curriculum has three advantages. First, it promises to place the profession in control of the building enterprises. The architect will no longer be dependent on others to do his legitimate professional work. He will regain the knowledge to make him master builder in fact as well as in name. Second, it will give the creative teacher a chance to breathe reality into the curriculum. Schools will come to grips with real social problems instead of playing with paper architecture. Third, it will improve the architect's service to his community. He will approach his design problems as an all-around man, not simply as an esthete.

This outline presents a balanced curriculum based on the actual demands placed on the practicing architect. Equal time is allotted to the study of the architect's various fields of competence. The aim is to make him aware of his total professional obligations. Our preoccupation with visual design to the detriment of other types of design has been corrected. We have stressed the importance of the other areas of design. Our purpose is to present the student with a total picture of his profession.

Of course, in this age of specialization, few persons after graduation will undertake all the types of work which the curriculum describes. The profession is spacious enough to offer work for men of contrasted talents and abilities. No one can say which of the five divisions of design is most important. But if we neglect any one, the profession will suffer. Far from minimizing the role of visual design, the new curriculum will bring to it a new reality and depth. ◀

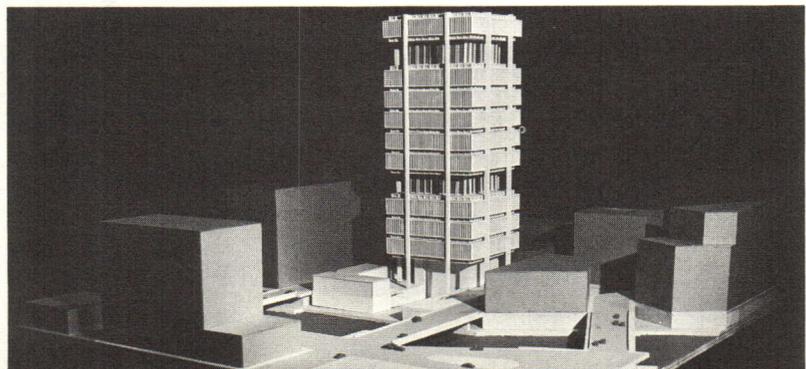
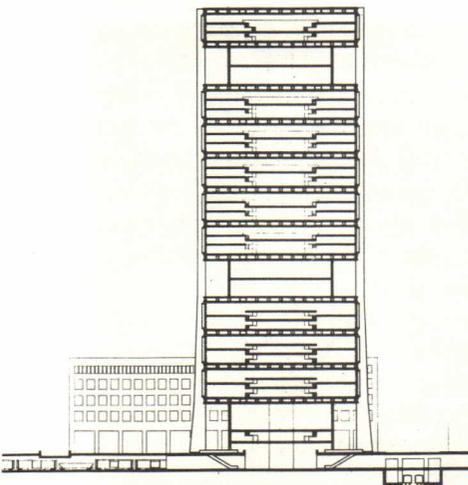
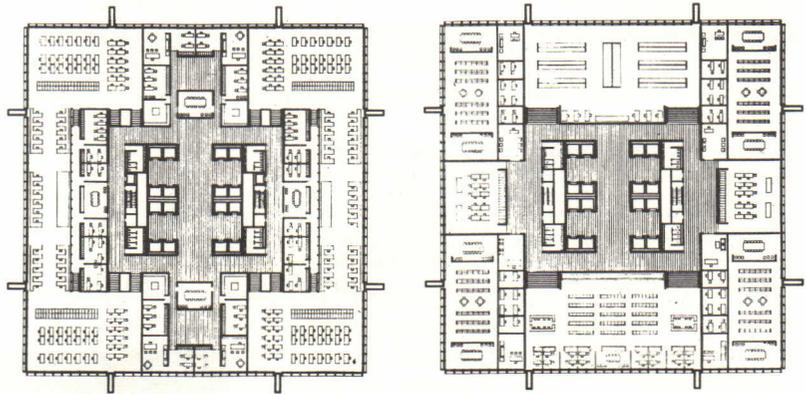
# The 1961 Rome Prize

Three winners were chosen this year by a jury consisting of William Platt, FAIA, Chairman; Richard W. Ayres, Edward L. Barnes, Nathaniel A. Owings, FAIA, and Robert Venturi. We publish one project from each portfolio

Charles T. Stifter, New York, NY

Massachusetts Institute of Technology, M of Arch, 1960

Multiple-Story Urban Office Building—an attempt to re-examine the organization and planning needs of the contemporary office building. Fundamental planning unit is three stories in height with a potential of 66,000 net square feet per unit. Depending on the needs of specific tenants, floors may be located at one-half story intervals, allowing combinations of spaces up to three stories tall. Local circulation can occur within these areas to facilitate more efficient vertical communication, thereby releasing the primary elevator system for express traffic. The structural system is related to each unit by a series of trusses, each carrying local loads of three stories. The loads from each truss are then transferred to both the central core and an exterior column system. Within the depth of the trusses are mechanical equipment and ducts.

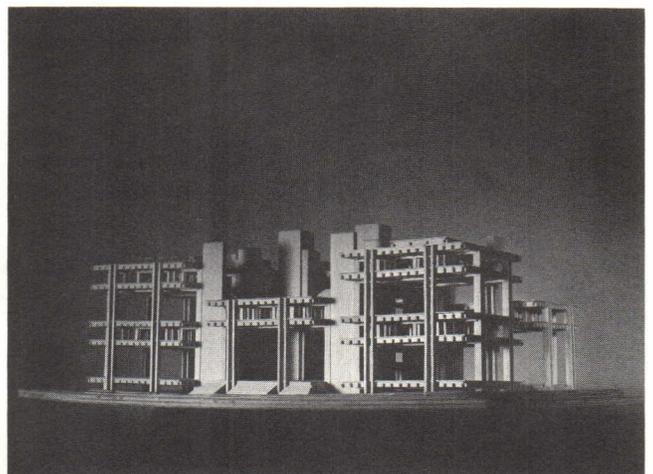
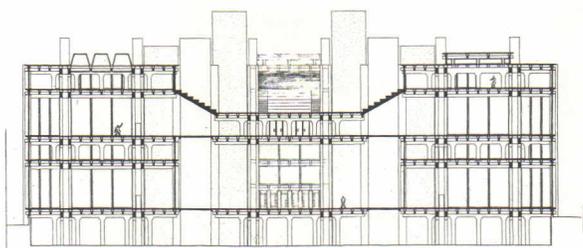
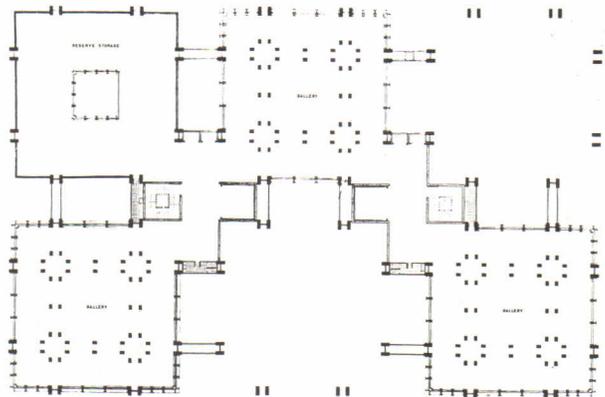
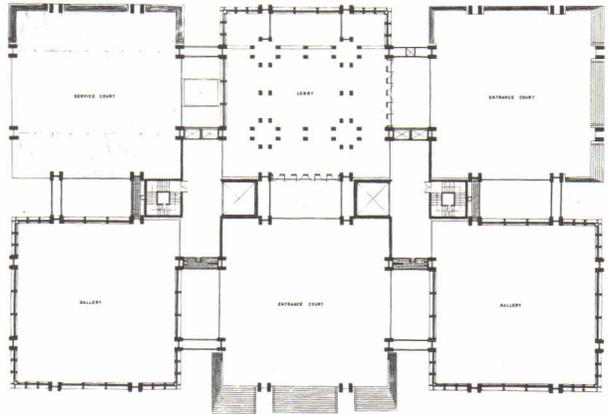


# The 1961 Rome Prize

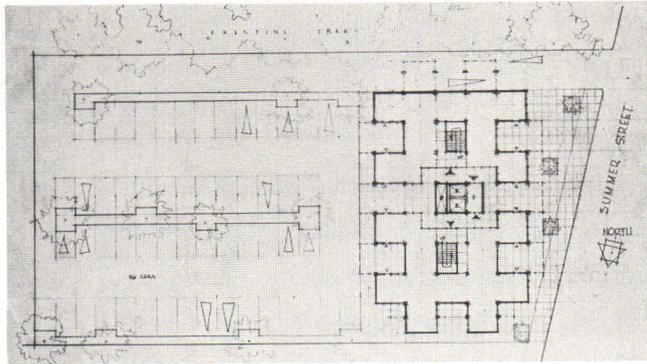
**Robert M. Golder**, Philadelphia, Pennsylvania

University of Pennsylvania, B. Arch, 1960

A Museum for the Delaware Valley Art Foundation on Logan Circle, Philadelphia. The building is to project the aims of the Foundation: "A synthesis of the arts." Space is required for exhibition of objects of contemporary life from paintings to automobiles. Specifically required are a reception hall, exhibition area, storage, administration, eight studios, a 400-seat auditorium, library, cafeteria and physical plant.



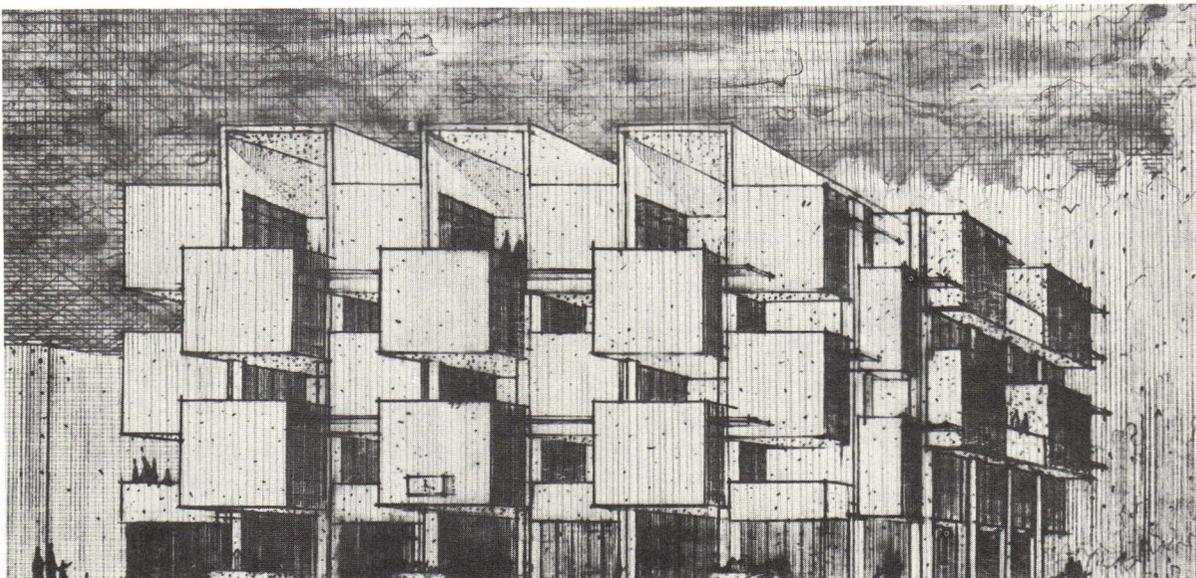
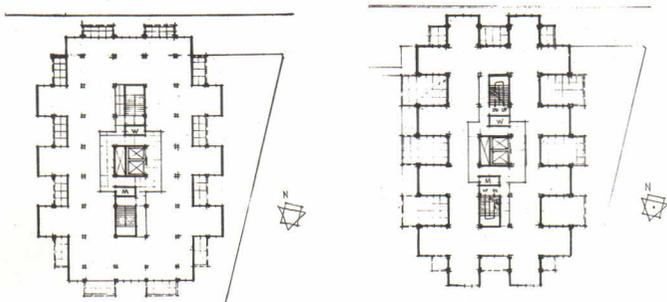
# The 1961 Rome Prize



**Bernard N. Steinberg**, New York, N.Y.

Mass. Institute of Technology, M. Arch, 1960

Five-Story Office Building On Summer Street, Stamford, Conn. This project was developed with the following considerations in mind: western exposure; relatively uninteresting immediate environment; valuable first floor store space. The solution has opaque (concrete or precast concrete) wall panels at the East and West facades and expansive glass areas at all other places. The building focuses in upon itself over balconies. The sun is kept out and the uninteresting views are made secondary, causing a community spirit to be developed within the building. Note that the ground floor is three islands.



**ART MEANS LIVABLE CITIES**

by *Marya Mannes*

I think all young Americans should be taught the basics of architecture, decoration and city planning. For if they were taught these, the new generation could not tolerate the proliferating ugliness of their towns and cities. I know of no other so-called civilized society that has so blighted its land as we have.

Nearly every main street in America is an affront to the senses, with its poles and wires and neon lights and jumble of signs and planless clutter—a testament to haste and greed, to the absence of human dignity and the simple amenities of living. A testament, indeed, to the kind of paradox in which a city can support a splendid art museum and opera house, but permit its periphery to remain hideous with car dumps, billboards, hot-dog stands, and all the marks of a rootless and artless society. As for most of our public statuary—it is, quite literally, for the birds. The pigeons know bad art when they see it.

No, art doesn't mean just galleries or concerts or plays: it means cities where people can live in long perspectives, gaze into clear fountains and sit in the shadows of trees. It means daily pleasures of the eye and ear and touch, a constant awakening of the senses to the excitement of living. But these senses must first be trained to awareness.

*The above three paragraphs are from "They're Cultural, But Are They Cultured?" by Marya Mannes, from The New York Times Magazine, July 9, 1961.*

*Coming in the January*

**The Architects' Plan for Boston**

by *Robert S. Sturgis, AIA*

The Chairman of the Committee on Civic Design of the Boston Society of Architects tells the story of how the architects of Boston have contributed a plan to recreate a city of which all citizens can be proud.

**The Restoration of the Nichols-Rice House**

by *Harvin C. Moore, AIA*

The Houston Chapter's Preservation Officer describes and illustrates a restoration project planned, directed and supervised by the AIA Preservation Committee.

**An Approach to Architectural Education**

by *William White Carver, AIA*

An Assistant Professor at Montana State College sets forth his theories on architectural education, in the second in the *Journal's* current series on that always hot topic.

**Toward a Dynamic Architecture**

by *Martin Bloom, AIA*

A young architect explores the profession's contribution to urban design. The first chapter of a book under preparation.

**A Guide for Planning the Roman Catholic Church, I**

by *Brother Cajetan J. B. Baumann, OFM, FAIA*

The first of a series of guides for planning churches of the various faiths, prepared by the AIA Committee on Religious Buildings.

**Correctional Architecture**

by *Clinton H. Cowgill, FAIA*

A supplement to the articles on correctional architecture published in the July *Journal*.

# The PHA and the Architect

by Marie C. McGuire

Mrs McGuire, Commissioner, Public Housing Administration, has written this article for the AIA Journal to set forth the extent to which the PHA is eager and willing to co-operate with the architect and with the AIA

► Throughout its turbulent twenty-five years of existence, the public housing program has been consistently supported by The American Institute of Architects. The same cannot be said of all other segments of private enterprise engaged in the creation of homes for the people of this country. At this time, as the new administration's expanded housing program moves forward, the support of the architectural fraternity is needed more than ever before. Building design, in my opinion, is the paramount factor that will determine whether our program fails or succeeds.

I am certainly aware of the criticisms of the design of public housing, many of them with justification. At a recent luncheon meeting with members of the AIA Committees on the Public Housing Administration and Housing for the Aging, we discussed a great many of these and what could be done, in cooperation, to overcome the design errors that prompted them.

It has been said that in the development of public housing, architects' fees are too low to cover the necessary research and time that is required to produce well-designed developments. Attention has also been directed to the charge that there is an excessive amount of red tape or routine processing that causes unnecessary delay. At the same time, many dedicated architects have expended freely their own time and effort beyond the dollar return. They have expressed the view that if the Public Housing Administration could eliminate unnecessary delays in the early planning of the development, the present architects' fees would not be low. The Public Housing Administration is now working on this problem.

We are reviewing all of our procedures to see which are essential and which have caused unnecessary delay. Our procedures will be tightened and the delay eliminated.

The Public Housing Administration can control its own policies and functions. It can control local housing authorities' policies and functions only to a statutory extent, but—and this is where we have been missing the boat—it can influence and stir the imagination of local housing authorities to a far greater extent, and we intend to do so. Unfortunately, too often in the past local housing authorities have looked to the Public Housing Administration in Washington for leadership, and found it lacking. We intend to remedy this situation. Also, where there is a need for leadership, for guidance, the Public Housing Administration will seek to provide it. In the field of public housing design, this need for leadership has certainly long been felt and with the cooperation of The American Institute of Architects we intend to fill this need.

I think that the basic mistake in public housing design, from the PHA point of view, is that in many cases we have attempted to build living environment and housing on standards alone. We have been guilty of over-emphasizing pure economy without realizing that good architecture and good design are not necessarily more expensive. Fortunately, this thinking is now behind us.

We are soliciting the assistance of The American Institute of Architects and the deans of outstanding schools of architecture to help us to analyze our present procedures so that we will achieve more original approaches in the design of public housing.

## The Profession

Along this same line, we intend to re-examine our standards of construction and update them so they will be consistent with contemporary and reasonably foreseeable future standards of living of the American people. Basic standards should be positive ones, not negative and restrictive, and should afford the architect the maximum area for ingenuity and originality. They should convey to LHA's the fact that PHA is interested *not* just in cutting costs regardless of results, but in helping them to develop better housing. Standards should



Architects: Nodman, Thompson and Krocher and Marman & Mok, Associated Architects



Photo above and at right: Nodman, Thompson and Krocher and Marman & Mok, Associated Architects

be goals for attainment, with the local building code as the minimum.

Other study areas are being considered. For instance, we are thinking of conducting a national re-examination of existing low-rent housing developments. The LHA's would be invited to express what they consider superior and what they consider inferior with respect to the developments which they own. Management and maintenance aspects will be brought to bear on design effectiveness. The LHA's would also be invited to state what changes they would make in design if they were starting anew.

We are looking into the possibility of entering into specific cooperative arrangements with a half-dozen selected LHA's whereby each would select

an architect capable of superior design within the perspective of the Authority's objectives as the primary criteria for selection. The LHA would negotiate fees on a one-time basis for each contract independent of the approved PHA or AIA scales. The architect would study the LHA's goals, including actual orientation into LHA operations. The history of these experiences would be carefully recorded. If this proved successful in producing superior design, PHA might consider revising its policies to eliminate promulgation of a standard scale of fees which is directed to the average and gets average service. As in other professions, the fees paid might reflect degrees of competence and the total product would thereby ultimately cost less.

The Public Housing Administration intends to prepare and distribute materials, possibly with joint AIA sponsorship, on how LHA's should go about selecting architects, what criteria and considerations should prevail, and how decisions should be made among competing value judgments. We intend, also, to encourage the use of new materials and new methods of construction by publication and liaison with research resources. In addition, we are examining the possibility of loosening the guide specifications by adding more optional items to all of the present divisions to permit use of new building products making it clear that the guide specifications are only that and not a substitute for the creativity of the architect.

Our goal is to see how much of the present manual can be put aside and yet not lose the substantial structure that is the object of the design. In our review, we must not lose sight of the fact that public housing financing extends over a forty-year period. The public housing developed must therefore be substantial since it must be in good condition at the end of this financing period, and for many years thereafter.

In our process of self-examination, which is currently under way, I would like to emphasize this point. The Public Housing Administration's approach to the over-all design of public housing developments will be a much broader one. We will no longer be thinking of economy for economy's sake; of design for maintenance's sake; or of housing for mere shelter's sake. The Public Housing Administration will be looking to architects and to local housing authorities to produce the type of public housing that will be a credit to the community, that will become a part of the community and thus eliminate many of the social difficulties that arise because of institutionalized appearance and isolation from the community.

This new outlook does not mean that the Public Housing Administration will ignore the importance of economy in design or the other factors that I



have mentioned, but they must be viewed as part of a total picture and not restrict our outlook to the narrow viewpoint of the particular interests involved.

Quite properly, when public funds are involved, we must look for the most economical way to fill the need, but this must be economy commensurate with the goal of a fulfillment of the living environment of the tenants of public housing. I firmly believe good public housing design is not incompatible with economy. We must also seek public housing design that makes the maintenance function easier. We intend to eliminate from the public housing program the so-called box cars and fortresses of very stiff unattractive buildings. Such dwellings will not be built as they were in the past, because they were cheap to build and cheap to maintain. However, a proper emphasis on the economy of design and the design for ease of maintenance must be considered. It must not, however go to the point where the architect feels that he can build for the client only unattractive, dull, maintenance-free projects.

For example, when the public housing program first started, concrete floors were universally used. Today, such floors, even for the low income, are hardly acceptable and we are turning to other kinds of floor treatment which will be more liveable and more desirable in dwellings of any kind. This is being done even though there is no question that concrete floors are probably the cheapest treatment in terms of maintenance. Thus, the errors of the past must be incentives for improved design in the future.

### **In the Past**

In the past, public housing was designed as a project. It was designed as an isolated part of the community, which the impersonal giant hand of local/Federal government put into place completely ignoring the surrounding architectural features of the city involved. Our approach to the placement of public housing and to its design today must be to make the public housing development a part of the total architectural picture of the community. We must relate the buildings to the community and the people who will find shelter within the buildings to the facilities that are available throughout the community.

Achievement of these objectives was most effectively demonstrated by a colleague of yours in San Antonio, Thomas B. Thompson, AIA. In his design of Victoria Plaza, which shelters elderly persons of low income, Mr Thompson coordinated design, site placement, and the community and its services in the building of this fine apartment.

While public housing designed to shelter the elderly requires certain special considerations,

many design factors also apply to public housing for younger families. For example, it is desirable to locate the building as close as possible to the downtown area. However, usable sites may not be available. In that case, the second-mile circle may be all right, providing transportation passes the door and runs on a regular schedule.

The dwellings should be located as close as possible to neighborhood churches, variety, drug and grocery stores and near areas of activity.

While public housing generally is in the lower income neighborhoods, the importance of status must be remembered. Above all things, people want to be proud of where they live; this does not mean "swank," but it does mean absence of serious and spreading blight.

In addition, recreational opportunities must be available in the community. If not safely available in the neighborhood, provisions must be made so that children may play in an area on the development grounds. In her booklet, "Housing Design: A Social Theory," Elizabeth Wood points out that, in proper locations, game facilities such as shuffleboard courts or horseshoe pits should be provided for. This must be considered. She also raises the point that perhaps, like our British cousins, some provision should be made for the American counterpart of the English pub, since drinking beer in company is recreation. Whether this would meet with public approval has yet to be seen, but it is something to think about. After all, when a group of neighbors outside of public housing gather at the local tavern to watch a ballgame and have a few glasses of beer, this is not looked upon as anti-social behavior.

These are some of the areas of public housing design that the PHA is investigating. We are reviewing our present policies to eliminate cumbersome procedures. We are concerned with architects' fees and contracts. We are seeking cooperation from professionals in the architectural field and we are encouraging the expression of the views of local housing authorities throughout the nation. We intend to open up channels of communication that have too long been closed. We are throwing out the concept that new ideas, because they are new, are inherently bad, and we will strive with members of The American Institute of Architects to achieve, for public housing, the proper place that it should enjoy in the American scene. However, we must always be mindful of the fact that a public housing development may be only as good as the architect who designs it.

In this sense, The American Institute of Architects has had placed upon it a great responsibility which I am sure it will meet and toward that end the Public Housing Administration offers its complete cooperation. ◀

# “Responsibility”

Three addresses, by an Owner, a Builder and an Architect

delivered at the 1961 Convention of the New Jersey Society of Architects and  
the New Jersey Chapter AIA

## The Responsibility of the Owner

by Frank P. Woodruff, AIA

Mr Woodruff, Second Vice President, The Prudential Insurance Company of America, is a graduate architect and licensed in New Jersey, and has been with Prudential since 1930

► Responsibility—that is quite a word. Funk and Wagnall’s definition is as follows: “The state of being responsible, or accountable, capable of responding to obligations by moral law or ethical principles or ideals, a duty, trust or obligation, ability to meet business obligations, ability to pay or fulfill contracts.” The definition is all-inclusive and its meaning and implications are broad.

Some years ago, in 1947, the Prudential embarked upon a program of decentralization. At that time it was announced that we were going to build a new Regional Home Office in Los Angeles, California. A *major decision* presented itself with this announcement. Two choices were available: One was to expand our own Architect-Engineer’s Division, which I headed at that time and which was staffed with a competent, well-trained group of architects, engineers, draftsmen and other technicians, who were completely capable of producing the necessary plans and specifications and to supervise the construction of this Regional Home Office. (One of our major competitors in the insurance industry was using its own technical organization to design any structures which it built at that time.) Or, secondly, to select an architect to design and supervise the proposed Regional Home Office for us.

It was my recommendation to George Potter, who was our Vice President in charge of this phase of operations at that time, that we select an architect from the area where the building was to be built. This recommendation was accepted by the Company, and this policy has been followed ever since. It was a sound decision. It spread the work among many architects. It gave the company the benefit of designs and ideas from different architects from different parts of the country. Each of the architects had his local prestige to maintain. He was familiar with the local customs, practices, the obstacles, the problems, the building regulations, interpretations and knew the officials in the area. I might add that the decision certainly has not hurt the individual architect nor the architectural profession. We realized that it was our responsibility to select the best qualified architect in the area. We interviewed as many as ten architects in some instances before making a selection.

Many of the men selected to be our architects were young men, some were older, some had small organizations, some headed up larger offices. Many were Fellows of The American Institute of Architects at the time we selected them; many others have since become Fellows. All of them did an outstanding job for Prudential. Both the exterior design and the interior planning of our buildings have received much favorable comment and have been widely publicized. By having been built by architects from the local area, our buildings have been readily available for showing by our architects to their prospective clients. Prudential has been benefited by their work and the prestige of the architects has been enhanced. Fifteen years and 175 million dollars worth of work later, we are glad we made the decision we did in 1947, to employ architects local to the area where our buildings were being built.

During the preparation of plans and specifications by our architects, the Prudential again had to make a second major decision and, again, two choices were available: One was to select a nationally known builder as was being done at that time by one of our largest insurance competitors and let that builder set up an organization and build for us wherever a structure was scheduled to be erected. Or, secondly, to select a local builder. The Prudential accepted our recommendation and chose the latter approach. We obtained from our local architect his recommended list of builders in the area that he believed would be competent, would have the proper organization, the financial stability and the know-how to build our building. In the makeup of this list of builders, we followed the sequence of preferences: Builders local to the city where the structure was to be erected, if there were sufficient builders having the necessary capability in that area. If not, then the list was broadened to include the metropolitan area around the city: If this was not sufficient, we then broadened it to include the entire state and lastly, where it became necessary, we used the entire area which would be served by the Regional Home Office being planned. This might include from two states to as many as ten or twelve states.

The decision made in connection with builders has never been regretted. I can assure you that terrific pressure was put upon the Company to include in the list of builders for each Regional Home Office, those nationally known building firms who certainly have the ability, the know-how and financial standing, regardless of whether they had an established office in the area where the structure was to be erected. We explained our policy to them and we resisted the pressure.

I have been asked not only to point out the good things which we as owners have learned about architects and builders, and nearly everything has been good, but to also point out any problems in the hope that by pinpointing these problems, the owner-architect-builder team will be helped. You will note that thus far I have used the word builders; I have not used the word contractors. We believe that we see indications of a trend, which fifteen years ago was far less apparent, indicating that general contractors are ceasing to be builders and are more and more becoming brokers.

Until a few years ago, builders, or if you prefer, general contractors, were accustomed to performing at least one and often many phases of the project with their own employees. Some contractors did their own masonry and brickwork, others did their own form work, some did their own form work and concrete work, others performed their own carpentry work, and some contractors did their own stone and marble setting as well as

many of the other important phases of the project. I am certain that when a substantial volume of the work was performed by a contractor with his own employees, he maintained a more vital interest in the scheduling and the progress, and the workmanship of his various other subcontractors. If they fell behind, it hurt his own employees. Today there is a trend to subcontract practically every phase of a building project. If this trend continues, it won't be long before there may even be a new specialist, one who subcontracts the "clean-up-of-a-job site." There may one day even be a specialist that will take over the "supervision of the project" and the contractor will cease to have general superintendents on his own payroll. Perhaps I have exaggerated a bit but if so, it is done to emphasize the need there seems to be to stop or slow down the present trend toward contractors becoming brokers and not builders.

The Prudential has awarded the vast majority of its construction work on a lump-sum competitive basis, letting the work to the lowest bidder. It has been our responsibility to try to obtain fair, competitive bidding: First, by selecting only well qualified builders who will submit proposals on carefully prepared and complete plans and specifications. Second, in most of our jobs instead of holding back ten or fifteen per cent retention, we have withheld ten per cent only until the project is half done and thereafter if the architect concurs, no further retention. In other words, at the end of the project five per cent has been withheld instead of a full ten per cent. Third, in order to create interest on the part of the builder and his subcontractors to have ample materials available at the job at all times, we pay for the full value of all material delivered either to the job site or to an acceptable storage location. Fourth, if the project appears to require a long period for construction, we ask the builder and his subcontractors to submit their proposal based upon wage rates in existence at the time of bidding and then reimburse them for the increase in wage rates for those employees *at the job site*. We believe these features have enabled us to obtain more favorable bids and to take some of the gamble out of bidding on our construction projects.

Our architects have all done an outstanding job for the company, but each year it appears to be more difficult for them to prepare complete plans and specifications which are so carefully coordinated that there will not be claims for extras or arguments between them and the builders, concerning the intent of the documents. I feel certain that this problem has to a great degree come about by the increase in mechanical features which have been added to present-day buildings, such as airconditioning, dehumidification, concealed fa-

cilities for wiring, electronic remote controls and automatic devices of one type or another. These mechanical features have become so elaborate and so complicated that I am certain that many architects do not have in their organization anyone who can be completely certain that these features have been properly and completely dovetailed and coordinated with the architectural and structural components of the building. The majority of architects use consultants for the design of these mechanical features. I believe the day has arrived when a new specialist is needed in every architect's office (and he won't be easy to find), one whose sole duty it will be to coordinate the architectural, structural and mechanical plans and specifications. Perhaps both our architectural as well as our engineering schools could help develop these much-needed specialists.

This increase in mechanical features has caused in our judgment another problem for the architects to solve. This is in connection with supervision. I am certain that the owners in recent years are spending a great many more of their dollars for architectural fees due to the great increase in mechanical features now incorporated in buildings. I am afraid that the skill of the architect's supervisor at job site has not kept pace with the technical problems brought about by these mechanical features. Either the architect's consultants should spend more of their time supervising in the field or the architect should supplement his staff with mechanically trained supervisors in addition to those who are familiar with the normal architectural and structural problems at the job site.

We owners could be much more helpful to the architects and to the builders if only we would make up our minds on what we wanted and when our minds were made up did not change them again. I am not certain that we will ever reach this Utopia as it's extremely difficult to convince an owner, or a tenant in an owner's building, that no changes should be made and that decisions must often be given to his architect and builder four to six months in advance. An owner can't realize that this much lead time is required to prepare drawings, order material and obtain delivery even on a simple change. Our company, because of the volume of building we have done for the last thirty-five years, has had a technically trained staff familiar with the architectural profession and building business. Most owners are not that fortunate nor could they justify the expense of their own trained staff to handle the amount of building in which they become involved. As a suggestion, possibly the architects together with the builders could sit down and work out a detailed statement which could be given to each new owner as a guide to him in connection with the obligations of an

owner. The architects have several fine pamphlets which tell the owner how to go about selecting an architect. A pamphlet telling an owner what items he must handle, what data he must obtain, what decisions he should make and a timetable when decisions are needed, and generally how to be helpful to his architect and his builder, would be appreciated by most owners.

Another responsibility, especially on larger projects, is the scheduling of job meetings at regular periods. It is important that at each of these meetings, *the same representative always be present* from the architect, from the builder and from the owner. The architect should prepare minutes of each meeting (and these should be the "Official Minutes") and he should issue them to the owner and to the builder within forty-eight hours and the builder and the owner should read them promptly and if they do not clearly spell out their understanding of the decisions made at the meeting, the differences should promptly be made known to the architect.

Another item which we as owners do not understand is why a builder can submit a quotation on a new project regardless of magnitude in a period of three or four weeks, or quicker, but if a minor change comes along upon which the owner desires an estimate to help him decide whether to proceed with the change or not, it often takes from weeks to months to obtain this estimate. And once it is submitted to the owner, the owner is invariably given one hour or one day to decide whether to accept it or not, with a warning that if he does not immediately give his answer he will jeopardize the progress of the work and incur extra costs.

Here is a responsibility directed to producers who are in attendance. Please have all your salesmen *technically trained and completely familiar with your product* and please don't let an architect or an owner use your product *if you know that it is not the proper one*, just for the sake of making a sale.

To summarize, the owner should strive to better understand the architects' and builders' problems and cooperate with them, make decisions promptly, avoid making changes if at all possible, and pay bills promptly.

The architects should strive to better coordinate their drawings and specifications, particularly due to increased volume of mechanical features presently being used in buildings, and they should provide better supervision at the job site. The general contractors should take more personal responsibility for the construction of a building, the coordination and control of their subcontractors and then perhaps instead of calling themselves "General Contractors of America" they would then truly be "Builders of America." ◀

# The Responsibility of the Builder

by **William F. Blanchard**

The Wm. L. Blanchard Co. of Newark, New Jersey, is one of the oldest and best-known construction firms in the East, having been in business since 1860

► A discussion of responsibility in the construction industry is concerned with a very broad spectrum of topics which generally affect the interests of architects, owners and contractors. At the risk of becoming over-technical I have decided to discuss only one or two particular problems in some detail rather than attempting to cover the broad field.

I am particularly concerned about the failures encountered in our modern buildings which come about so often as a result of increasing complexities of design. In years past, the chief difficulties in building production were encountered in the mechanical and electrical systems. Today I think we are facing the prospect of greatly increased problems in structural and architectural features of our modern buildings.

A good example of this is window-wall construction. This has become almost a dirty word in our trade because of the high percentage of failures brought about by the expansion and contraction experienced in long and high window-wall panels on multiple-storied structures. Almost all of these kinds of window-wall installations have leaked and caused contractors and architects enormous problems. Now that the problems of window-wall are being solved, the flat, repetitive type of window-wall seems to be going out of style and more advanced systems of fenestration appear to be in vogue.

There is the immediate prospect that structures employing prestressed and precast concrete will be increasingly popular. I had a chill last week when the Portland Cement Institute sent us a bulletin discussing "The corrosion of prestressed wire," and while I have not had an opportunity to read it, I am not looking forward to the prospective diffi-

culties which it discusses. Thin-shelled concrete roof structures are being constructed with thicknesses running down to a fraction of an inch in new structures in Mexico and South America. In Paris an eighth wonder of the world has been built, an exposition hall of more than five acres whose main supports touch the ground at only three points and whose clear spans between these triangular legs are in excess of 700 feet.

The structural complexities of the new buildings will challenge all the abilities of the engineers and architects and builders. I happen to feel that very few of us are fully prepared to accept the responsibilities inherent in these amazing new structures.

Contractors are particularly concerned about the kind of failure that occurs when a first-class architect designs a fine building for a good owner, and in executing his design employs top engineers to design, let us say, the air conditioning system; and after all the best available personnel has performed a conscientious design job the installed system fails to work as anticipated. Let us consider for a moment who is responsible when a well-designed job like the new hotel three blocks north of here is completed and when on a warm afternoon the temperature in the southerly tier of rooms reaches 85° instead of the 75° temperature designed for the particular outdoor conditions prevailing. Failures of this sort are so common that if we reflect about it for a moment we can readily determine where the responsibility lies.

The immediate job following a failure of this type is to discover the exact nature of the fault. The cause of the failure will eventually become apparent to one of our experts, or if not to one of them, to some expert outsider who is brought in to determine the exact cause of the trouble. If, in the case of our hotel failure example, we discover that a supply duct which brings cool air to the southern tier of rooms is undersized and should be at least 12" x 24" instead of 8" x 20", we may assume that someone back in the early design stages of this hotel committed an innocent error in design which produced our cooling deficiency problem.

The courts in New Jersey have decided in a great many cases that there is a definite obligation on the part of a contractor to point out incorrect elements of design as soon as they are discovered. If the general contractor, or his airconditioning subcontractor, or the sheet metal man who constructed the ducts for that subcontractor, had at any point in the progress of the work become aware of this deficiency, then the failure rests squarely on his shoulders. This, of course, is a very difficult thing to prove.

However, if we can assume that proof has been accomplished, then we can finally determine the point of responsibility. But, New Jersey law puts a tremendous burden of legal responsibility upon the contractor. He is responsible not only for defects in workmanship but also for failures in performance if he has not reported deficiencies which have come to his attention or might reasonably have been known to him.

As a practical matter, the type of failure described very frequently becomes the burden of the architect and his engineer and the explanations most frequently have to be made by him to the unhappy owner. It has been brought out that New York courts have recently held that fundamental responsibility for shortcomings of experts retained by the architects are still the prime responsibility of the architects. A great many New York architects have gone into special insurance coverage to protect themselves against suits for failures caused by their experts.

While our attention has been primarily centered on the complexities of mechanical and electrical failures, the spectacular structural shapes of the new buildings seem to promise a change of emphasis in the very near future, but no great change in the underlying problems of legal design responsibilities.

A special type of legal responsibility has been imposed on the contractors through a series of misunderstandings. Permit me to read a clause which is not an excerpt from anybody's specification but is a composite taken from a great many specifications.

"The Contractor agrees to indemnify and pro-

tect the Owner and Architect against all liabilities, claims or demands for injuries or damages to any person or property growing out of the performance of this contract. The Contractor further agrees to furnish insurance carrier's certificate showing that the Contractor has adequate Workmen's Compensation, Public Liability, and Property Damage insurance coverage." In effect the contractor agrees to pay the whole cost of injuries to employees of the owner and the architect, as well as third parties, and to assume property damage responsibilities without limit. While the contractor is poorly trained to place an actuarial valuation on this unlimited risk, most casualty insurance underwriters, who are best qualified to make this evaluation, hesitate to do so. Most casualty insurers will underwrite the risk imposed by this paragraph with the greatest reluctance. It is nearly impossible to establish a fair rate for the risks involved. When the clause is properly covered by insurance the average cost for a new building on an open site is about \$2500 of premium per million dollars of building cost.

This is an example of the type of clause used by a great many architects in an effort to extend to their owner an ultimate form of protection against almost anything that can happen without carefully analyzing what it really means. You will note that in the second sentence of the paragraph the architect makes sure that the contractor will have the standard form of workmen's compensation and liability insurance. He may also go further and ask the contractor to furnish owner's public liability and property damage insurance, which is simply an expensive way of having the contractor provide coverage which most owners can and do buy for themselves at a lower rate.

But the first sentence in which the words "agrees to indemnify and protect the owner . . ." appear is the one which seriously concerns us. It makes the contractor a party to contractual liability of unlimited scope.

The contractual liability clause is most dangerous when it passes unrecognized for what it really means. Most contractors do not clearly understand the meaning of these clauses and since they do not

recognize the potential danger they seldom take the trouble to insure the risk. It is interesting to note that while the clause appears thousands of times in various forms, a certificate of insurance covering this clause is seldom requested. It is evident that a great many specification writers do not fully understand the subject of contractual liability any better than the contractors do. I think it is safe to say that well-informed contractors view the contractual liability clause as a dangerous catch-all which provides little real protection to the architect and owner, was invented in the first place to permit subrogation of insurance company claims against contractors' insurers, is a major financial threat to any contractor covered by it, and finally is so completely unfair that it should not be embodied in the specifications.

The excellent General Conditions of the Contract for the Construction of Buildings prepared by The American Institute of Architects does not contain a contractual liability clause and within my memory never has. The clause first appeared in the fine print on the reverse side of the purchase orders of large corporations. Unfortunately it began to appear in recent years in the body of specifications put out for bids by a great many architects.

On Thursday you had a discussion of package proposals and the increasing number of buildings which have been both designed and built by package contractors. Following it I was handed a quotation by Charles Luckman, AIA, taken from his speech of Feb. 23, 1961 at the University of California entitled "The Architect as Designer." It does a great deal to indicate the importance of the volume of work done by the package contractor.

"This is the cause for which I plead tonight. How far the 'architect as designer' has failed in this total concept might be measured by the fact that in 1960, architects took part in only one-third of \$56 billion worth of construction in the United States. The remaining two-thirds, or \$38 billion, was done by contractors, engineers, 'package dealers,' and designers who possess poetic license but not an architectural license."

These figures are so shocking that I believe the contractors and the architects together must do something to reverse the trend. The importance of the individual architect must be emphasized. We have a clear obligation together to impress upon our construction owner the idea that the strong architect and the responsible contractor, working as a team, can produce the best buildings at reasonable cost. ◀

## The Responsibility of the Architect

by **Harry M. Prince, FAIA**

**Harry Prince is a former President of the New York Chapter AIA and of the New York State Association of Architects**

▶ A cynic, fond of paradoxes, observed that owners, architects and builders are inseparably divided. There is truth in the jest. Economics, legal and moral obligations have relentlessly drawn them together. In this togetherness, diverse beliefs in what does or does not consist of "extras" keeps them ever apart. To try and make order out of

these apparent contradictions, there has been assigned to me for discussion, the responsibility that we, as architects, owe the owner.

The position of the owner in the building field is most important, but variable. Many an owner takes part in building only once during his lifetime. Even those who are continually engaged in building are frequently but the customers of the varied branches of the building field, rather than active components. As the architect's client, the owner may be a potent influence, temporarily. As a group, however, they strongly influence building in many ways.

Everyone here, I am sure, is aware of The American Institute of Architects' standards of professional practice and obligations of good practice which require that the profession of architecture be composed of men of highest integrity, business capacity and artistic and technical ability. An

architect's purpose, according to the Institute's standards, must be above suspicion; he must act as professional advisor to his client, the owner, and cause the owner to feel that the advice of his architect not only is absolutely unprejudiced, but his duty also carries with it the moral responsibility to exercise judicial functions between client and contractors. These responsibilities of the architect to the owner can be properly discharged only when the motives of the architect, his conduct and ability are such as to command the respect and confidence of not alone the owner but of the contractor as well. The relationship of the architect to the owner depends, I repeat, upon good faith, yet it should be borne in mind that an architect must, nevertheless, protect the interests of the contractor as well as those of the owner.

The architect is not acting in the best interest of his owner when the architect condemns workmanship and materials that are faulty because of his own mistakes. It is a similar disservice to the owner to call upon a contractor to make good the oversights and errors by the utilization of general or "grandfather" clauses in the contract documents which call upon the contractor to provide workmanship and materials for items the architect had forgotten to include. This is dishonest and assuredly not in the best interest of the owner. It is a clear violation of fair play, as well.

The architect who can never make up his mind as to the material to be used and then specifies an "or equal" is also doing his client-owner an injustice. It is the duty of the architect to discuss materials with his owner prior to the writing of specifications and to make suggestions as to what, in his opinion, is the best selection for a particular use and then specify that make or material. Likewise "alternates." What started out to be a helpful device to meet the owner's pocketbook has deteriorated into an outrageous drain on the contractor. The architect's responsibility to the owner should be to discourage alternates as an imposition on both the architect and the contractor—a sort of double service for one fee.

In the June issue of Harper's magazine there is a rather startling article by Daniel N. Friedenberg, a real estate operator, predicting a coming bust in the real estate boom. To put it mildly, this article by Mr Friedenberg has stirred up a great deal of discussion. John Crosby, in the *New York Herald Tribune* of May 31, in commenting on the context of the Friedenberg article, comes to the conclusion that "Real estate speculation has always attracted some of the biggest scoundrels in the world." Crosby also refers in his article to a vast number of what he calls "sleazy" buildings that have gone up.

While I am not yet ready to join with these esti-

mable gentlemen in their predictions or castigations, I do, on occasion, ask myself where the architect is deficient in his obligations to his clients, and if he is doing all that he should toward trying to preserve some sense of esthetic values for his community as a part of his overall responsibility as an architect.

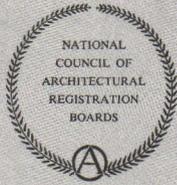
One might rightly ask also, if the architect is performing his full responsibility when he acquiesces to a design and plan which is nothing more than a series of drawings showing a maximum land-use enclosed in an outer shell of thin veneer skin which someday may leak like a sieve. Is he performing his professional duties and responsibilities to the owner when, solely because of the cost factor he permits a defective airconditioning system to be designed by his engineers and approves shop drawings without test, which may substitute inadequate mechanical equipment for the specified items?

Is the architect performing his professional duties in accordance with Institute standards, when he certifies upon completion of a structure that it is in full accord with his plans and specifications when he is fully aware that substitutions have been made by the owner during construction without his advice or consent—or should we recognize that possibly there is something wrong. Wrong, not only inside the profession, but outside as well. If the level of remuneration we receive from our client-owner is not adequate, then are we morally wrong in accepting a low commission to perform an incomplete service when we know in advance the fee inadequacy makes it impossible for us to fulfill our responsibilities and obligations.

While I reiterate my disagreement as to the coming bust in the real estate boom, predicted by Mr Friedenberg, I do venture an opinion that unless we submit ourselves to a re-evaluation and self-analysis, we will certainly find a growing appeal to owners to use unit design-construction services, on the assumption they will receive a greater degree of responsibility from the architect-engineer-builder. This is, of course, a fallacy, for even with some apparent weaknesses, the architect of integrity—and he is still in the great majority—holds his responsibility to his client-owner as a professional duty and trust to be maintained impartially, unmarked by any selfish profit motive.

Every profession bears a national responsibility beyond the individual's response to the routines of his calling. The measure of such responsibilities is the measure of his professional stature and professional freedom. If we architects fail we become nothing but employed technicians; not a profession, but a trade.

The answers, I hold, are up to us. I am positive we can and will meet the challenge. ◀



A. Reinhold Melander, President, Duluth, Minnesota; Chandler C. Cohagen, 1st Vice President, Billings, Montana; Paul W. Drake, 2nd Vice President, Summit, New Jersey; A. John Brenner, Secretary, Phoenix, Arizona; C. J. Paderewski, Treasurer, San Diego, California; Earl L. Mathes, Director, New Orleans, Louisiana; John E. Ramsay, Director, Salisbury, North Carolina; George F. Schatz, Director, Cincinnati, Ohio; Walter F. Martens, Past President, Charleston, West Virginia

## Annual Renewal of NCARB Certificate

by **George F. Schatz, AIA**

**George F. Schatz, AIA, Cincinnati, Ohio, is currently serving as a Director of the National Council of Architectural Registration Boards and as Vice President of the Ohio State Board of Examiners of Architects. He is a member and past Vice President and Treasurer of the Cincinnati Chapter of the AIA**

► This age of jet travel and super highways has markedly extended the geographic limits of the practice of the average architect. Specialization in particular architectural fields together with the expansion of nation-wide corporate business has increased interstate architectural practice to a considerable degree. Each year more and more architects are applying for registration outside their home states. On the other hand state legislations stick firmly to their singular policies of "states-rights."

The individual state boards are charged to protect the life, limb and welfare of the people of their state and it is their obligation to determine the qualifications of the architect who requests permission to practice within their jurisdiction.

For the qualified architect, it is the NCARB Certificate that provides the means of a quick and sure determination of the applicant's eligibility for reciprocal registration with the least amount of effort and time on the part of the architect. However, the NCARB Certificate can not be an instrument of force and acceptable to all state boards if the information contained in the Record is not current.

It has been a requirement that each Certificate holder have his Record reviewed and brought up to date every five years. The lack of funds necessary to maintain personnel in the Council offices to service the ever-growing number of Certificates has made it currently impossible to keep abreast with advising each Certificate holder of the neces-

sity of up-dating his Record. This has been a problem to many architects who on short notice receive a commission in a state in which they do not have registration and find that upon requesting reciprocal registration it is necessary to bring their Records up to date before registration can be received. This takes time on both the part of the architect and the Council office, for there is no way of determining the present competence and standing of the architect satisfactory to the individual state boards other than through contact with the architect's clients and his fellow architects.

It has been the concern of the Council to provide better service to the Certificate holder who on occasion might, through compulsion, accept a commission or even start construction in a state in which he was not registered while awaiting the up-dating of his Record.

Then, too, there is the problem of the individual state boards who, having issued reciprocal registration on the basis of a NCARB Certificate, have no means of determining the status of these architects when they request annual renewal of their registration. The renewal of these registrations are normally automatic, issued upon request and upon payment of a renewal fee and with little evidence as to the applicant's standing or competence. It is quite possible under these procedures that reciprocal registrations could be renewed to architects who have been determined unqualified, found guilty of mal-practice or even had their registration revoked in another state.

It was through the concern of the Council to constantly improve its service to the individual architects and to its member boards that the members of the Council Board of Directors and a special committee on the periodic review, after considerable study, presented to the 1961 con-

vention at Philadelphia a resolution which was accepted by the convention body. This resolution has resulted in new provisions that will, when fully operative, accomplish the necessary periodic reviews automatically at five-year intervals and thus eliminate delays at a time when the architect has need for immediate action on the transmittal of an application.

For this purpose, an annual renewal procedure for Council Certificates, similar in some respects to the renewal of a state registration, will go into effect on January 1, 1962. This new procedure, which will make it possible for the Council offices to have Records and Certificates always ready for immediate transmittal of an application to a state board, will require an annual supplementary affidavit from the Certificate holder and an annual renewal fee of \$10.00.

The annual affidavit and annual fee are not optional or suggested, but are mandatory requirements to keep the Certificate in force, and will be in effect on January 1, 1962. Each Certificate holder will be contacted and advised of all details prior to that date. Certificate holders have been urged in earlier articles to notify the Council offices of any change of address since their last correspondence with the Council.

The above procedure will make it possible for the Council to prepare and distribute to its Member Boards each year, a complete list containing the names of all Certificate holders who have submitted the required annual affidavit and have paid their annual renewal fee to keep their Certificate in force. This will make it possible for the individual state boards to quickly determine the standing of its applicants for renewal of reciprocal registrations. It is only logical that when a NCARB Certificate, that renewals should also be related to the current standing of the Certificate.

The Council has always recognized that state boards, to properly process reciprocal applications, must have information on recent experience as well as a carefully documented record of past accomplishments.

The annual supplementary affidavit will be in essentially the same form as the one that has been used for the five-year periodic review, but it will be much easier to prepare since it will involve a brief recording of recent experience with current references to facilitate the necessary direct confirmations by the Council offices.

Some Certificate holders may question the necessity of contacting their clients on the basis that a questionnaire may give the client the impression that the architect he has selected is not fully qualified or that he is under investigation

by his profession. This mistaken intent for the reason of the reference is not possible, for a special Council Committee on the Periodic Review has made every effort to obviate any possible misunderstanding on the part of the client and have developed a clear and concise request for information.

The present form used for the client reference merely states that the architect wishes to make the formal record of his education, experience and professional standing current for use in making applications for registration to additional state boards regulating the practice of architecture. The inquiry form also informs the client that his architect has previously been issued a Certification of national scope. The project and other information submitted by the Certificate holder is stated on the form with the request that the client briefly confirm the statements of professional services rendered, adding any further comments he may wish to make in regard to the manner in which those services were performed.

It is a matter of record that the great majority of clients contacted seem eager to go out of their way to give their architect a highly complimentary reference, adding many laudatory comments. In many cases the client has indicated interest in knowing that the architectural profession has regulatory requirements and has expressed pleasure in being in a position to assist the profession.



Marsh Photographers

The author,  
George F. Schatz

Then again there are the few clients who are not so complaisant and unequivocally present evidence of incompetency or lack of integrity on the part of the architect. It is the pattern of this type response that signals the state board to carefully investigate the architect before issuing or renewing his registration.

It is through the cooperation of every architect who holds the NCARB Certificate and the members of the individual State Boards that the architectural profession will maintain the high standards of professional practice and self discipline necessary to guarantee a high level of performance to the nation as a whole. ◀



# A Manual on Office Personnel Relations

by **Ronald Spahn, AIA**

The reader is urged to bring the following article to the attention of his Chapter President and Executive Committee. The Architectural Practice Committee is most anxious that this survey be pressed to an early completion, and to this end a personal letter to each Chapter President is now being mailed

► Through its considerations of matters of personnel relations the Committee on Architectural Practice found a growing need, particularly among younger and smaller firms, for a manual setting forth office policies. While there can be no standardization of this document, the preparation of one requires some knowledge of prevailing practices within the area. The compilation of such information is a task that has been undertaken by some Chapters; others may be concerned with the problem. The Committee on Office Practice has studied the matter of suitable coverage for such a manual and suggests for the use of Chapters a form of questionnaire through which may be assembled useful information for the practitioner in the preparation of his personnel policy statement.

In reviewing the suggested questionnaire the Chapter Committee on Office Practice will find that it will be necessary to tailor it to local situations. Local conditions and problems will dictate certain additions and omissions. The form offered will, at best, serve as a check-list for Chapter polling of management policies.

It is recommended that the form adopted be reasonably simple and uninvolved to encourage a high percentage of response. However, so far as possible, the questionnaire

should be worded to require only the briefest answer. Simplicity and directness of reply will also be desirable as the sponsoring committee tabulates its results.

## Form of Questionnaire Personnel Policy Statement

*For the use of Chapters in assembling information that will be of assistance to architects in preparing personnel policy statement.*

Respondents shall indicate size of office by circling group designation (A-B-C-D) below based upon the total number of persons in organization:

A	B	C	D
(2-5)	(6-15)	(16-50)	(over 50)

### I Policy Manual

- a Does the office issue to employees a personnel policy statement?
- b If so, is it adequate for the needs?
- c If not, is one desirable?

Comment:

### II Tenure

- a Does the office have a stated policy regarding temporary and permanent employment?
- b What is the length of trial period for new employees?
- c What length of notice is given for termination?

Comment:

### III Hours

- a How many hours in the work week?
- b How many days in the work week?
- c Normal working hours are from \_\_\_\_\_am to \_\_\_\_\_pm.
- d What is the length of the lunch period?
- e Do all technical employees observe the same normal hours?

Comment:

### IV Wage Provisions

- a What pay periods are observed? (Weekly, monthly, etc)
- b Are wage schedules reviewed at stated intervals?
- c Are cost of living increases granted?
- d Are increases based on tenure?
- e Are increases granted on basis of ability?
- f Increases are granted on combinations of \_\_\_(c), \_\_\_(d), \_\_\_(e).

Comment:

### V Overtime

- a Is overtime paid at the regular rate?
- b Is overtime paid at a premium rate?
- c Is there a break in rate at certain pay levels?
- d What periods are used in computing overtime? (Monthly, quarterly, etc)
- e Is time for meal included when overtime exceeds given number of hours?
- f Is meal allowance paid when overtime exceeds given number of hours?

Comment:

### VI Vacations

- a What is the established policy of the office?
- b Are vacations scheduled at the convenience of the office?
- c May they be split or taken piecemeal with office approval?

- d Are vacations increased by long tenure?
- e Is vacation time accumulative? Is there maximum accrual?

Comment:

*VII Holidays*

- a How many paid holidays are allowed per year?
- b How many part days are paid per year?
- c How many religious holidays are paid per year?
- d Does the office extend time-off for the day intervening a holiday and week-end without deduction?

Comment:

*VIII Sick-Leave*

- a Does the office have a stated policy?
- b How soon after start of employment does it become effective?
- c How many paid days of sick-leave are allowed?
- d Is sick-leave accumulative? Is there a maximum accrual?

Comment:

*IX Emergency Leave*

- a Is time allowed for family emergencies without deduction?

- b Is other time off for personal reasons deducted?
- c Is other time off for personal reasons charged to vacation time?
- d Is other time off for personal reasons made up off-hours?

Comment:

*X Severance Pay*

- a Is severance pay granted when discharged for lack of assignment?
- b Is it paid when employee leaves of own volition?
- c Is payment made when employee is discharged for reasons?
- d What is basis for determining amount of severance pay?

Comment:

*XI Withholding Taxes and Social Security*

- a Statement of policy in accordance with Federal, State and Local law. (Information to be included in manual. Requires no answer in questionnaire.)

*XII Unemployment and Workmen's Compensation*

- a Statement of policy in accordance with State and Local law. (Information to be included in

manual. Requires no answer in questionnaire.)

*XIII Hospitalization*

- a Is there a Group Plan available through the office?
- b Are premiums deducted in full from wages?
- c Are premiums deducted in part from wages?

Comment:

*XIV Life Insurance*

- a Is there a Group Plan available through the office?
- b Are premiums paid by office?
- c Are premiums paid in part by office?

Comment:

*XV Other Fringe Benefits*

- a What other fringe benefits does the firm offer?

Comment:

*XVI Privileges*

- a What is the policy of the office on coffee breaks?
- b What other privileges are granted?

Comment:

**James D. Marshall**

James D. Marshall, Executive Director of The Associated General Contractors of America, passed away Friday, November 3 at a Washington hospital, following an operation. He was seventy-four years old.

A native of Red Falls, Minn., Mr Marshall studied electrical engineering at the University of Minnesota. He was president of the Minnesota Electrical Contractors Association, chairman of the Minnesota section of the American Institute of Electrical Engineers, and manager of the Governing Board of the Minnesota Federation of Architectural and Engineering Societies.

Mr Marshall was connected with the Associated General Contractors of America since 1925, when he became manager of the AGC of Minnesota, then known as the Northwest Branch. He moved to Washington in 1934 to take up the duties of manager of the Heavy Construction and Railroad Contractors' Division of the AGC. He had charge of the many intricacies of definition and operation connected with this branch of the industry in dealings with the National Recovery Administration. He supervised preparation of the subdivisions of

the code for this branch of the construction industry set up under NRA.

Following the NRA period, the work which Mr Marshall had done in defining this branch of the general contracting industry received the recognition of general contractors. He was entrusted not only with the continued work of this group, but with the handling of labor relations, which became increasingly important in the years after the end of NRA. This led to the establishment of the Labor Relations Department of the AGC in 1937 which handled matters as the AGC deemed necessary with units of organized labor. Mr Marshall assumed charge of the labor relations work as it related to the Building and Highway Divisions, as well as the Heavy-Railroad Division.

He became assistant managing director of the AGC in 1940 and Executive Director in 1953. Three years later, in 1956, Mr Marshall assumed full responsibility and authority as chief executive in the management of the association.

In May 1961 he was named construction industry member of the Missile Sites Labor Commission created by President Kennedy.

He also represented the AGC on many committees and special groups in the federal government and in private business organizations. ◀

# A Watched Pot Does Boil



► I am convinced that our profession is in the process of a vital rebirth. The thinking is going on, the ideas are being expressed, actions are being proposed. Yes, there is some confusion—a confusion of words. Meaningful things are beginning to happen as we hit on the right words that make everyone understand and see what to do.

A major part of my job is attending meetings of AIA components and committees, making speeches—and listening. I keep asking myself “What is the single most significant thing that came out of each meeting?” It begins to add up.

This is the central thesis for all that is being said: America’s urban civilization presents the most complex design problems in history. What *are* the problems inherent in meeting the needs of this civilization for a satisfactory total physical environment? What will this society require in terms of professional design services? How must architects be educated to perform their proper role in design? How can the public be educated to understand its need for architects?

Within the answers to these questions lies the definition of what the AIA must be and do. Only by charting and enacting a program equal to this task can the AIA insure its vitality and growth.

The classic concept of a professional society or trade association is little better than a fence-building operation. It derives its program from the complaints of its members who want to be protected from the harrassments of everyday practice and business competition. Meeting these problems as they arise becomes a kind of brush fire fighting operation. Before anyone realizes what has happened, the total energies of the society’s officers, committees and staff are consumed in attacking symptoms of a profession’s ills to the extent of its total resources for the society’s work. No one has the time to stand back and see the big central concept of the profession’s future. No one can find the funds to initiate new basic programs.

This is the threshold on which the AIA now stands. It fulfills the function of a classic professional society. Its “angry young men” are saying what I have said above (except that this rather inept but adequately understood appellation in-

cludes some of our most prominent members). We seem to be making ready for a big leap forward.

Take, for example, the running start now underway to promulgate “expanded architectural services” and to revise the Mandatory Standards to cover the ethical aspects of this modern concept of practice. In one sense this scarcely transcends the brush fire fighting concept because the motivation appears to be simply to meet the challenge of the package dealer. But within this move lies the full potential of meeting the demands of today’s society for new kinds of design services. One characteristic of today’s society is that it is an *economic* society whose construction originates in new economic methods.

The fire hose being brought to play on this big brush fire can also start a flood toward the future.

Now consider our decision to appoint a three-man commission to study specialization in architectural practice and education. Much has been said about the needs of our complex profession for men trained by schools which are not exclusively concerned with majors in design. No definitions of specialization rose above pedestrianism until a member of the AIA Committee on Education said, “We are talking about the *art* of architecture, the *science* of architecture, and the *administration* of architecture.” Suddenly collegiate stature is given to an educational concept and we begin to act upon a major problem.

There continues to be discussion about the structure of the AIA. In September I heard the proponents of one idea present their reasoning to members of a Board committee. A part of what they said tied in with what I heard other members saying about AIA activities in research and in design. These men are asking for a society that is more than the classic fence-builder. They want a mechanism with energies, means, and procedures to *advance the professional competence* of its members. They anticipate the future; approach it from different angles with different words. In the aggregate these words become significant and have one meaning translatable into action. W.H.S.

# Library Notes

## Drawing and Related Techniques

The present list includes books on various aspects of drawing, primarily architectural drawing. It does include books on pen and pencil drawing and some on painting as well. All books listed are available to Corporate members of the Institute on loan at the regular fee of fifty cents for the first volume and twenty-five cents for each additional.

ABERCROMBIE, TOWNE R.

Applied architectural drawings. N.Y., Bruce, 1931. 156 p.

ADKIN, W.W., AND OTHERS

Pencil techniques in modern design. N.Y., Reinhold, 1953. 122 p.

BISHOP, ALBERT T.

Composition and rendering. N.Y., Wiley, 1933. 128 p.

BUCK, RICHARD S. AND OTHERS.

Shades and shadows for architects. N.Y., McGraw-Hill, 1930. 134 p.

CLUTE, EUGENE

Drafting room practice. N.Y., Pencil Points, 1928. 306 p.

FAREY, C.A. AND A.T. EDWARDS

Architectural drawing, perspective & rendering. N.Y., Scribner's, 1931. 96 p.

FIELD, WOOSTER B.

An introduction to architectural drawing. N.Y., McGraw-Hill, 1932. 103 p.

FORMAN, ROBERT

Over the drawing board; an introduction to architectural draughtsmanship. 2d ed. London, Cleaver-Hume, 1959. 120 p.

GUPTILL, ARTHUR L.

Drawing with pen and ink, and a word concerning the brush. N.Y., Pencil Points, 1928. 431 p.  
—Freehand drawing self-taught. N. Y., Harper, 1933. 135 p.

HALSE, ALBERT O.

Architectural rendering; the techniques of contemporary presentation. N.Y., Dodge, 1960. 277 p.

HORNUNG, WILLIAM J.

Architectural drafting. 2d ed. N.Y., Prentice-Hall, 1955. 221 p.

HOWARD, HERBERT S.

Useful curves and curved surfaces. Brooklyn ?, 1959.

MARTIN, C.L.

Architectural graphics. N.Y., Macmillan, 1952. 213 p.

MORGAN, SHERLEY W.

Architectural drawing; perspective, light and shadow, rendering. N.Y., McGraw-Hill, 1950. 227 p.

RAY, JESSE E.

Graphic architectural drafting. 2d ed. Bloomington, McKnight & McKnight, 1960. 256 p.

SHELTON, EDGAR G.

Architectural shades and shadows. N.Y., Van Nostrand, 1931. 159 p.

SVENSEN, C.L. AND E.G. SHELTON

Architectural drafting. N.Y., Van Nostrand, 1929. 206 p.

TURNER, WILLIAM W.

Projection drawing for architects. N.Y., Ronald, 1950. 107 p.  
—Shades and shadows, their use in architectural rendering. N.Y., Ronald, 1952. 115 p.

## Pencil Drawing

GUPTILL, ARTHUR L.

Sketching and rendering in pencil. N.Y., Pencil Points, 1922. 186 p.

HOBBIS, CHARLES I.

Pencil drawing for the architect. London, Tiranti, 1954. ? p.

SALWEY, JASPER P.

The art of drawing in lead pencil. N.Y., Scribner's, 1921. 224 p.

WATSON, ERNEST W.

Course in pencil sketching. N.Y., Reinhold, 1956. Book 1: Buildings and streets; Book 2: Trees and landscapes.

## Perspective

BEAL, GEORGE M.

Perspective; a practical development of basic principles. Ann Arbor, Mich., Edwards Brothers, 1950. 52 p.

BRAHDY, JOSEPH

Perspective drawing. N.Y., Van Nostrand, 1929. 104 p.

DE POSTELS, THEODORE A.

Fundamentals of perspective. 2d ed. N.Y., Reinhold, 1951. 30 sheets.

DOBLIN, JAY

Perspective; a new system for designers. N.Y., Whitney, 1956. 66 p.

FREESE, ERNEST I.

Perspective projection. N.Y., Pencil Points, 1930. 43 p.

MOREHEAD, JAMES C.

A handbook of perspective drawing. 2d ed. Houston, Elsevier, 1952. 168 p.

MYERSCOUGH-WALKER, RAYMOND

The perspectivist. London, Pitman, 1958. 266 p.

PARKER, STANLEY B.

The vertical vanishing point in linear perspective. Cambridge, Harvard, 1947. 37 p.

TURNER, WILLIAM W.

Simplified perspective; its theory and practical application. N.Y., Ronald, 1947. 236 p.

WATSON, ERNEST W.

How to use creative perspective. N.Y., Reinhold, 1955. 160 p.

WHITE, GWEN

A book of pictorial perspective. N.Y., Morrow, 1954. 77 p.

## Blueprints

DARZELL, JAMES R.

Blueprint reading for home builders. N.Y., McGraw-Hill, 1955. 138 p.

KENNEY, JOSEPH E.

Blueprint reading for the building trades. N.Y., McGraw-Hill, 1944. 96 p.

## Painting

BIRREN, FABER

Creative color. N.Y., Reinhold, 1961. 128 p.

CHOATE, CHRIS

Architectural presentation in opaque watercolor, theory and technique. N.Y., Reinhold, 1961. 158 p.

GUPTILL, ARTHUR L.

Color in sketching and rendering. N.Y., Reinhold, 1935. 348 p.

HERBERTS, KURT

The complete book of artists' techniques. N.Y., Praeger, 1958. 351 p.

KAUTZKY, THEODORE

Ways with watercolor. N.Y., Reinhold, 1949. 106 p.  
—Painting trees & landscapes in watercolor. N.Y., Reinhold, 1952. 111 p.

NORDMARK, OLLE

Fresco painting; modern methods and techniques for painting in fresco and secco. N.Y., American Artists Group, 1947. 126 p. G.E.P.

# Book Reviews

**Kirchenbau.** Reinhard Gieselmann & Werner Aebli. Zurich, Verlag Girsberger, 1960. 150 pp illus. 8¼" x 8¼". \$9.00 (Distrib. by W. S. Heinman, 400 East 72nd St, New York 21)

Although the text of this little book is in German, there is an eight-page English summary, and the illustrations have English as well as German captions. The cuts are on the whole clear and well-reproduced, and the book is attractive in format.

The authors trace the place of the church building as a city structure from the Gothic age through the Baroque period into modern times, with plans and sketches relating the church building to the town plan.

They then go on to illustrate nearly a hundred contemporary church buildings in Europe and the Americas. Although there are few buildings here that have not been illustrated before, not too much space is given to the well-known text-book examples such as Notre Dame de Raincy and Ronchamps, and there are many lesser-known buildings of great interest. One of the most valuable features of the book is the fact that plans of all buildings are included, and in many cases over-all site plans showing the building's relation to streets and surrounding structures. J.W.

**Modern Architecture in Britain.** Trevor Dannatt. London, Batsford, 1959. 216 pp illus. 7½" x 10". \$12.75

A representative survey of contemporary work since 1945, based upon a ten-year retrospective exhibition (1956) by the Arts Council of Great Britain supplemented by more recent examples. Categories include:

Industrial and service buildings  
offices, shops and showrooms  
buildings for education  
housing and individual homes  
social buildings and groups

There are 88 examples illustrated by over 100 plans and sketches and 350 good photographs. This book

is actually a practical guide, the data on each example include an indication of location with respect to nearest railway or London Underground station. These data also include several hundred words of descriptive material on each example: site, materials, planning notes. One rather irritating feature is the omission of identification on the last page of an example when it appears facing the first page of the next item. The confusing implication is that they belong together and the reader is frequently trapped by these insoluble puzzles.

A quite fine eighteen-page introduction by Sir John Summerson discusses the whole contemporary architectural development in Great Britain (late 1920s to date). He has a light, firm touch in dealing with the rather self-conscious groupiness of the developing welfare state. A quote from the final part of this excellent paper, on the current status of the architect, seems in order:

"... The architect is no longer the master of a small hierarchy of obsequious crafts. He is the coordinator in a sphere which has no clear hierarchy and where many of the contributory skills are as developed and as specialized as his own. He stands in a challenged, critical position and only his own analysis and appreciation of it will pull him—and architecture—through . . ."

Sir John also has cogent words on the architectural program, and on form as the architect's unique contribution. E.P.

**Portals West.** E. Geoffrey Bangs, San Francisco, California Historical Society, 1960. 88 pp illus. \$10.95

The preface of this book seems to tell the entire story: "... an attractive glimpse in pictures and an instructive presentation in prose, of the development of the architectural styles of California in the last half of the nineteenth century . . ."

This is a book for the lover of California or the admirer of architects of the past who sometimes

caricatured, often copied, but were never dull. Mr Bangs has selected thirty-six photographs of buildings, many of them anonymous and of no historic import other than their "character." The purpose of the collection is to stimulate a growing awareness of the rich background of our architectural heritage and to create a more widespread appreciation of provincial architecture.

The photographs are sharp and clear and the text accompanying each picture gives a brief history of the area, or of the building if available. Many of the photographs, however, will sadden the heart of the lover of old buildings, for some of them are beyond repair and are awaiting only the next heavy wind for their farewell.

Only one thousand copies of the book were published by the California Historical Society, but if you can get your hands on one the pleasure you'll get from drinking in old architecture will more than offset the high price tag. N.C.B.

**From Stones to Skyscrapers.** Thea and Richard Bergere. New York City, Dodd, Mead & Company, 1960. 90 pp illus. \$3.50

For junior highschool or highschool students—or perhaps Aunt Clara who is proud of her architect nephew—this is probably one of the most interesting books ever written on the history and progress of architecture from the stone age to the geodesic dome.

The husband and wife team responsible for the book (she did the text, by the way) have set down in simple, easy-to-read language just what architecture is, how it developed and where it might go. The architect in practice might wince at the overly-simplified text: "Almost everywhere we go there are buildings. We live, work, play and pray in buildings . . ." But, as an introduction to the profession, the book is top-flight. Mrs Bergere has also provided a glossary of architectural terms from abacus ("a slab, the uppermost member of a capital") to voussoirs ("the wedge-shaped blocks forming an arch or vault"). The text ranges from the pyramids to the Yale hockey rink, with all of the stops in between.

What makes the book a little jewel are the magnificent drawings by Richard Bergere that illustrate the text, and it seems almost a shame that they are not a book in

themselves. There are over one hundred of these exquisite drawings of cathedrals, Greek, Roman and Indian temples, details, cross-sections, museums and office-buildings.

"From Stones to Skyscrapers" adds an important component to the building of a greater understanding and appreciation of architecture for the layman. N.C.B.

**Renaissance Europe.** Harold Busch and Lohse Bernd. Introduction by James Lees-Milne, Commentary by Hans Weigert. New York, Macmillan, 1961. 180 pp illus. \$10.00

These 186 superb photographs, many of lesser known but always strikingly beautiful buildings and details, give a vivid impression of the incredibly creative variety of Western European architecture in the fifteenth and sixteenth centuries which no nomenclature, not even the word Renaissance itself, can adequately cover. Lees-Milne's brief introduction doesn't try; it merely traces the spread of the Renaissance spirit from Brunelleschi's Florence northward to Inigo Jones's England. The editors' annotations and Weigert's informative captions give a scholarly accent to a most handsome and enjoyable volume. W.V.E.

**Herbert Bayer: Book of Drawings.** Foreword by Otto Karl Bach; introduction by Herbert Bayer. Chicago: 1961: Paul Theobald and Company. 42 loose leaf reproductions in a 10¾" x 11½" portfolio. \$10.00

Herbert Bayer, the graphic artist, who both studied and taught at the Bauhaus in Germany, is perhaps best known in this country for his sparkling advertising designs for the Container Corporation of America. His just published collection of almost uniformly enchanting drawings remind us that, like his Bauhaus colleagues Moholy-Nagy, Josef Albers, and Xanti Schawinsky, he is equally sparkling when he produces art for its own sake. I'm afraid, though, he is just about the only one among the better known artists today who still hold

with the Bauhaus tenet of erasing the arrogant distinction between "fine" and "applied" art. There was great hope for our visual culture, or so it seems in retrospect, when the Bauhaus masters turned out canvasses and posters, drawings and book jackets, stage designs and commercial exhibits, sculpture and furniture—"everything from the coffee cup to city planning," as Mies van der Rohe put it—with equal verve and success. They cared little whether their work was destined for the museum, the store window, or the kitchen. The artist's function in society, they held, is not as a decorator but as a vital participant.

This tenet, I believe—and it seems Bayer does too—is as valid today as it was in Weimar and Dessau. But the gap between "fine" and "applied" art is again dangerously widening, the former retreating into total abstraction, the latter slithering back into vulgar stylishness. The influence of the Bauhaus people themselves has waned to the vanishing point. Moholy-Nagy died sixteen years ago. Albers and Schawinsky have turned their backs to the world and face only their canvasses. And if there are any new, younger men to take their place, men who can give us a good chair or a fresh magazine ad along with a good painting, manufacturers and art directors don't seem to encourage them. Purpose and non-purpose in art, at least in graphic art, are again strictly segregated.

Bayer's book is lovely. Many of his drawings are evidence of his admiration for Kandinsky, with whom he studied, and for Klee, who was, of course, also a colleague on the Bauhaus faculty. But Klee and Kandinsky were, what Alfred H. Barr, Jr. has called "spiritual counterpoints" in Weimar and Dessau. On the other end of the Bauhaus scale were the technicians and craftsmen. From this symphony emerged the Moholys and Bayers and probably also the Albers, who are at once capable of more and of less than expressing emotion—the creative designers. It is design, the mastery of the great and rare art of arranging all details into a clear and orderly and harmonious expression of intent, which made them so capable of creating both for the museum and the kitchen. Bayer's drawings are mostly superb and in a few instances somewhat lackluster exercises in texture and balance and motion, but not emotion. They won't move you as

Klee does. Bayer is a designer and the "applied" art of his design for the original cardboard case of his book is as striking as the "fine" art of the designs it houses. "One Bauhaus approach to drawing," says Otto Karl Bach's foreword to the collection, "began with sketches of a familiar object, and progressed through a series of conversions which transformed these sketches into designs of energy and tensions." That is precisely what Bayer has achieved in these drawings, selected from among the graphic work he has done over the past thirty years in an amazing variety of techniques. W.V.E.

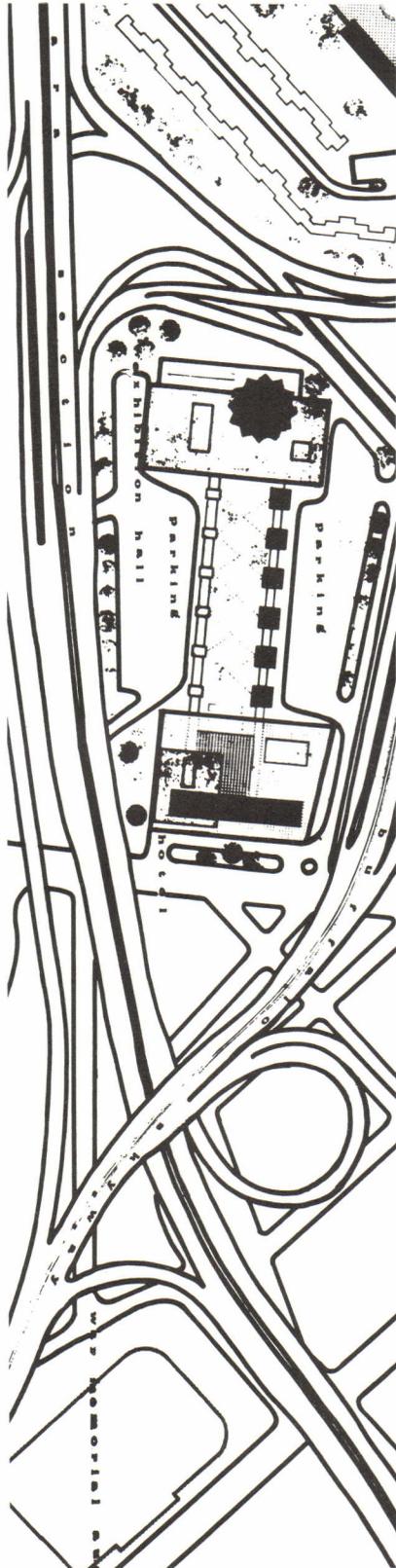
**Design for You.** Ethel Jane Beitler and Bill C. Lockhart. New York City, John Wiley & Sons, Inc., 1961. 206 pp illus. \$7.95

This is a course in design the architect had in his freshman year, however for the interested layman the book is probably ideal. It does cram within its pages fact after fact and illustration after illustration; ie: "The horizontal line creates the optical illusion of widening the space in the enclosure. The vertical line creates the optical illusion of making the space in the enclosure seem taller." And so on.

The book will probably enjoy wide sales among housewives determined to create an "interest" or anxious to learn a bit more about color and harmony. It is, as the preface states, intended to help develop an appreciation of art by detailing the hows and whys of design itself.

Chapters deal with shape, space, color, organization, optical illusions, emphasis, emotions, etc. The text is done very well and the illustrations are appropriately placed and well chosen. The one thing that bothered this reviewer were the creative experiments placed at the end of each chapter—homework, if you will—that go something like, "Find examples of various types of lines in magazine illustrations . . ." or "Make an assortment of kinds of lines—straight, curved, zigzag . . ." or "Cut several geometric shapes of varying sizes . . ." It is obvious that the authors and the publisher hope the book will be used as a textbook in schools—and well it may be. With the right teacher it could be an interesting course. N.C.B.

# Editor's Page



► I attended a session of the 28th National Conference of NAHRO this morning, and my head is buzzing with pictures of the future—gloomy pictures. Dr C. A. Doxiadis, distinguished planner and urban consultant with offices in Athens, New York, Washington and goodness knows where else, didn't intend to paint gloomy pictures, I'm sure, but that is the way his pictures affected me. The thought of the population of the world reaching the fifty billion mark in a hundred years *is* a bit disquieting, even though I don't expect to be here to be a part of it. Furthermore, Dr Doxiadis says the population will become stabilized at about that figure. Naturally, I wondered what could stabilize the population, but I didn't dare ask him. Will the great law of nature cease to function? Or will the earth be so crowded that there will be standing room only?

I do remember, very clearly, that thirty years ago the sociologists and others who are supposed to know about such things were telling us that by 1960 the population of the country (I don't remember what they said about the world as a whole) would be stabilized, and that owing to the declining birth rate and the increasing life-expectancy there would be a preponderance of middle-aged and old people. Consequently there would be no need for building more schools and we would be concentrating on homes for the aged. Well, nature proved the careful calculations of the biometrists to be wrong—and they could be wrong again. Before any specie has grown in numbers to the point where it began devouring itself, nature's law of checks and balances has set in and a natural enemy appeared. Whether the natural enemy of man is his own atomic Frankenstein, or some new peril not yet known, doesn't matter. Before the SRO sign has to be hung on this planet, nature will have taken the situation in hand.

The above remarks are not meant to be flip, nor are they meant to deflate Dr Doxiadis' prophecies. With the growth of the population and the decay of the cities, we face an appalling future. As the cities of the east coast, the mid-west and the west coast—and of north central Europe and other areas of the world—spread and tend to coalesce to create the threatened megalopolises, the centers of the cities which formed their nuclei will have sunk lower and lower into neglect and decay—unless something is done about it, beginning *now*. Whether the population of the world has increased by fifteen times in 2060, or only half that, the difference is only a matter of degree.

As to the highway situation, Dr Doxiadis says that people are the life-blood of cities, and that we are now bleeding our cities to death by surgery. Highways must now pass *outside* the cells of life, not *through* them. By passing highways through the city we are contributing to its death. We are facing the urbanization of the world, and there is no escape from it. So it is our bounden duty to "turn the City of Death into the City of Life."

Thus spoke Dr Doxiadis. Think about it.

# Introduction to Research

by **Herbert H. Swinburne, FAIA**

► Two years ago the following charts, illustrating a concept of the areas requiring research in architecture, were placed before the AIA Committee on Research for Architecture for consideration. This was an attempt to outline specific research projects as examples.

To find general agreement on those areas requiring research is most difficult. The purpose of the charts was to establish broad areas of needed research without trying to anticipate results or show direction. Of course, the suggested projects identify the author's bias and personal interests.

The projects were not suggested with the thought they be adopted for research in whole or in part, they were offered with the idea of generating a broad concept of the whole Pattern of Research. It was the Committee's thinking that final projects selected for investigation would be carefully screened by an Advisory Board having a full representation of all disciplines involved.

The direction of Research for Architecture is that which relates man to his environment. Architects alone cannot perform this research; they will depend heavily on the wisdom and help of other professionals, scientists and academicians. There is no consideration here for research in building technology, in materials and equipment. These are advancing successfully on several other fronts.

To be meaningful, all research must be relevant, so let's say that in trying to conceive projects for investigation, there are four key words to:

## **Relevance in Research**

- Environment
- Profession
- Society
- Communications

The profession lies midway between society and its environment. Communication is the common link of understanding between society and the profession. Patterns of Research, then, are suggested by the exploration of this relevance (on a vertical scale) as it ranges through a spectrum from abstract to a specific (on a horizontal scale).

In analyzing the charts and suggested projects, this relevance is preserved. For instance, the group of projects listed on the second horizontal line relate to the profession of architecture itself. The project at the far left is the most abstract of those suggested, and the project to the right the most specific. We avoid the terms "basic" and "applied" research. The research we are suggesting here is all basic to architecture, but at the same time, may be applied research in other fields.

After two years of thinking, the writer has nothing to add to this concept of Patterns of Research. He is so convinced of their worth that his own office has been re-organized as a result of personal research in some of the areas suggested. Two current projects include one in communications and one on the psycho-sociological aspects of environmental programming. Very exciting but—more important—useful.

It has been asked that these charts be published with the idea of stimulating thinking in research, and it is with that spirit this summary is offered. Now, why don't you take the time to sit down and write out your own list of significant projects that require research and then do something about getting them activated? Remember that nuts and bolts, leak-proof curtain walls and new structural systems are taboo. We're concerned here with man and the total environment we create for him.

**Technical**

In a paper given in 1959 at the Ann Arbor Conference on Research for Architecture, the author re-defined architecture as "the creation of a total environment within which could be accomplished the aspirations of man." He says today we must not only speak about the "total environment," we must understand it. Understanding can come about only through research, and this is the profession's responsibility. We can pass it on to no one.

## ◀ MORE ABSTRACT

ENVIRONMENT

### **Social Factors and Physical Environment**

Organized society, its functions, values and goals, is a complex of interlocking systems whose basic element is people. It can be considered as an entity of ideas and it can be thought of as a spatial grouping in a physical environment. People from various backgrounds, influenced by their equals or leaders, see and respond in different ways as they are encompassed by this environment. The interplay of perception and esthetic reaction to spatial organization are subtle. Interpretation of this composite interaction by the architect requires research.

PROFESSION

### **Professional Role of the Architect**

This study would be two-fold: to ascertain the architect's own image of himself and his profession and to find society's image of the architect; both on a time perspective going back to the beginning of this century and projected through to its end. The insights gained and the conflicts discovered would give a better understanding to each, of the true role of the architect, his services and his relation to society.

SOCIETY

### **Society as a Composite Client**

The client as such has never been studied. In all his many forms—individual, group, corporative and governmental, what are the factors that determine his preferences? How are his changing needs analyzed and interpreted, and by whom? What are his patterns of decision and how do they influence the design process? Should architectural leadership establish future trends or wait for society to program our environment in the years ahead?

COMMUNICATION

### **The Art of Persuasion**

Getting through to all those we serve and persuading them to accept our solutions to their problems opens up an entirely new field in communications. Society will not espouse that which it does not understand. To create understanding we need studies in attitudes and opinions; motive and purpose; thoughts and ideas; prejudices and irritations—or, more simply—how do people respond, individually and collectively, to architectural messages, and why?

### **Perceptual Form of Intimate Environment**

Research is needed that looks into the intricate makeup of our immediate, personal, physical environment. The Rockefeller Foundation has sponsored an MIT project in studies of the perceptual form of the city, but no work has been done at the smaller, more intimate level. We should systematize predictable environmental concepts which, if built into structures, would produce desirable or avoid undesirable results.

### **Nature of the Creative Process**

The creative aspects of architecture cannot be reduced to rule and rote. The genius and his intuitive faculty for great accomplishment stand out in each generation. The work of the average architect, however, can be greatly improved by a better understanding of the creative process. Fields in graphic arts, business and science have been researching the elements of creativity—architecture could profit even more than they.

### **Growth by 1999 . . . Planned or Drifting?**

The population of our country in 1999 will be 370 million—the physical plant will then be twice that of today. With the cities merged into solid state and space for expansion running out, what will happen? Should geo-political boundaries be revised about functional areas of people, transportation and industry within regional drainage basins? What of laws on real estate and eminent domain? How can we intelligently keep people, space and resources in equilibrium? Do we as architects have a stake in these problems?

### **The Science of Expression**

The whole system of professional expression needs examination. Systemization of verbal and written communications needs up-dating by experts in the field—interview techniques need study—small group communication theory should be adopted for the architectural office—esoteric professional jargon needs to be eliminated and replaced with a simple direct line of communication to the client.

## MORE SPECIFIC ►

### **Biological Response to Physical Environment**

What is comfort? What are the inter-acting elements that produce strain in individuals? What are the limits of man to a hostile environment? Why? Should the twentieth century problems of atmospheric contamination, radiation, nuclear blast and thermal effects shape our architecture? We can't bury our collective heads in the sands—we must face up to the possible holocausts of this century, as we simultaneously seek to prevent them from ever happening.

### **Architect's Role on Teaching Design**

An extension of the nature of the creative process involves the teaching of design. A joint study with engineers is recommended on the role of teaching design (similar to engineering studies in teaching design at UCLA). Similar research by the medical profession on professional image had far-reaching effects.

### **Effects of Human Longevity on Building Design**

An increasing number of older people must be cared for today, and too little is known about the problems of housing them. This involves more than the mechanics of making it easy for feeble people to move about and care for themselves. Studies are needed on the social relationships generated by group living, particularly for the older people whom society has left outworn and unwanted.

### **Graphic Ideation**

The techniques of visual communication with public, client, industry and contractor have changed but little over the years. The whole concept of persuading others to see and understand the architect's graphic interpretation of a problem needs review and overhaul. The advanced theories in graphics, photography, animation and the psychology of visual perception can assist us tremendously.

### **Psychophysical Aspects of Color Preferences**

With few exceptions, architects have been asking for research of this kind for years. The effect of color on man is positive and definite—his responses to it are varied and unpredictable. New knowledge in this field could be of immediate help to the professional in his daily work. Let's get on with it.

### **Systems Engineering**

The science of total design. This concept, totally unknown to industry before World War II, so sweeping in scope, has tremendous potential. New methods can be developed that fully exploit available technology, that are compatible with existing systems, that recognize the needs of human physiology and psychology and are reliable to an extraordinary degree. Systems engineering has become indispensable in design of enormously complex military and electronic systems. This knowledge must be exploited as it applies to architecture.

### **Homes for the Aged and Their Communities**

Building type studies are a necessary extension of data developed in the preceding project. We have not only more older people, but better retirement plans and fast methods of travel to areas attractive to them, where they can live with their contemporaries. Whole communities of retired people are being formed and these will soon become communities of the aged. These phenomena need investigation.

### **Information Technology**

The fund of scientific information will double in the next ten years. Information reliability, its storage and quick retrieval for specific use is becoming a monumental problem. Projects such as Building Products Register and the Index of Architectural Information are good starts. The information of available complexities on the art and science of building must be analyzed, abstracted and made instantly available on call to the entire profession. It must be re-evaluated constantly.

# Present Status

ENVIRONMENT

## Social Factors and Physical Environment

*Potential value* greatest project of all—  
can give meaning on how  
to mix people and their  
environment with an  
understanding generated  
by a full panorama of  
knowledge—not just  
professional bias

*Time/Cost* ...../.....  
*Sponsor/Research by* Foundation/Univ of  
California\*

## Perceptual Form of Intimate Environment

*Potential value* can give knowledge where  
it is most needed—  
methods in solutions to  
immediate pressing prob-  
lems—other than the  
economic-physical  
approaches

*Time/Cost* ...../.....  
*Sponsor/Research by* Foundation/Harvard  
University

PROFESSION

## Professional Role of the Architect

*Potential value* if we knew how others see  
us, we could better judge  
ourselves; similar objective  
study by medical  
profession completely  
changed their education &  
practice within 10 years

*Time/Cost* ...../.....  
*Sponsor/Research by* industrialist/specialists

## Nature of the Creative Process

*Potential value* great benefit to the  
practitioner—kinds and  
sequence of information  
required for design alter-  
natives; systems of think-  
ing, reasoning and  
intuition

*Time/Cost* ...../.....  
*Sponsor/Research by* Foundation/Pratt Institute

SOCIETY

## Society as a Composite Client

*Present status* no known research  
*Potential value* enable architects, not  
package dealers, to  
maintain leadership in  
construction industry—  
if we don't try to under-  
stand the client himself,  
others will

*Time/Cost* ...../.....  
*Sponsor/Research by* industrialist/Dartmouth  
College

## Growth by 1999 . . . Planned or Drifting?

*Potential value* have architects share in  
sponsoring solutions to  
problems 40 years away;  
arouse nation to necessity  
for long-range planning

*Time/Cost* ...../.....  
*Sponsor/Research by* Foundation/Phila. City  
Planning Commission

COMMUNICATION

## The Art of Persuasion

*Potential value* establish basic com-  
munication theory that  
will generate accurate  
transmittal and interpre-  
tation of needs & images  
of solution

*Time/Cost* ...../.....  
*Sponsor/Research by* ...../university

## The Science of Expression

*Potential value* elevate the business  
aspects of architectural  
communication on a level  
as high as that enjoyed  
today by the best in  
industry

*Time/Cost* ...../.....  
*Sponsor/Research by* ...../.....

**Biological Response to Physical Environment**

*Potential value* survival!!!  
criteria of things to be  
avoided rather than things  
to be desired

*Time/Cost* ...../  
*Sponsor/Research by* AEC-OCD/to be  
determined

**Psychophysical Aspects of Color Preference**

*Potential value* needs no explanation  
*Time/Cost* ...../  
*Sponsor/Research by* ...../.....

**Architect's Role in Teaching Design**

*Potential value* enrich and sharpen the  
teaching process, impart  
strong design factors in  
designing environment,  
improve competence of  
the professional

*Time/Cost* ...../  
*Sponsor/Research by* ...../UCLA

**Systems Engineering**

*Potential value* greatest design break-  
through in architecture  
for this century  
*Time/Cost* ...../  
*Sponsor/Research by* ...../.....

**Effects of Human Longevity on Building Design**

*Potential value* give us knowledge that  
will make the aged a useful  
part of society—not a  
problem in custodial care

*Time/Cost* ...../  
*Sponsor/Research by* ethical drug co/university

**Homes for the Aged and Their Communities**

*Potential value* development of criteria  
with enormous value to  
practicing architect on a  
new building type which  
will soon absorb an  
enormous part of con-  
struction dollar

*Time/Cost* ...../  
*Sponsor/Research by* ethical drug co/univ &  
professional architect

**Graphic Ideation**

*Potential value* reach a new plateau of  
visual expression that will  
give our clients faster,  
clearer understanding of  
our work

*Time/Cost* ...../  
*Sponsor/Research by* industrialist/university

**Information Technology**

*Potential value* obvious  
*Time/Cost* ...../  
*Sponsor/Research by* industrialist/.....

\*following names of sponsors and researchers are suggestions  
only—this draft shows what could be done and is intended to  
provoke comment

# Termites

by Joseph W. Wells, AIA and

the AIA Committee on Disaster Control

Fourth of a planned series of Technical Reference Guides on the following disasters:

HURRICANES \* • TORNADOES † • EARTHQUAKES †† • FLOODS • SNOW AND SLEET • LIGHTNING

► Termites, sometimes called "white ants," are any of various pale-colored social insects that are very destructive to wooden structures. They are not true ants, although they look like them.

## Classification

While there are nearly sixty species of termites in the United States there are only two main types—subterranean and nonsubterranean. The latter are less widespread than the subterranean type, and usually less injurious. Unless specifically mentioned otherwise, this report pertains to the subterranean type.

## Where Found in the United States

Termites are found throughout the tropical and temperate parts of the world. The subterranean kinds are active in nearly every state in the Union. They are common throughout most of the Eastern half of the United States, along the Pacific Coast, the Gulf of Mexico, in the Ohio River Valley, and in the Southern part of the Missouri and Mississippi River Valleys. Both kinds of termites are found in great numbers in Southern California, Florida and Key West. Termites are more numerous in the Southern, the Southwestern, and the Southern Pacific regions than elsewhere in the United States.

## Termite Regions

The Special Advisory Committee on "Protection against Decay and Termites in Residential Construction" of the Building Research Advisory Board for Federal Housing Administration has divided the United States into three regions, based on prevalence of subterranean termites and their damage. (See fig 1.)

## Termite Damage

Subterranean, or ground-nesting, termites cost the people of the United States many millions of dollars each year in repairs to structures and in control measures. Termites are destructive to the woodwork and contents of buildings, telephone poles, fence posts, or any other wood in contact with the ground. Paper fiber board, and various types of fabrics derived from cotton and other plants are often damaged, as well as living vegetation including not only fruit and shade trees, shrubs and flowers, but also truck and field crops, and in California, grapevines. Termites occasionally will damage living plants, but by far the greatest economic loss is caused by their activity in the woodwork of buildings. Many non-cellulose materials, including plastics, may be penetrated and damaged by termites, even though they do not serve as food.

## The Termite Colony

Subterranean termites are social insects that live in nests, or colonies, in the ground. Each colony is made up of three forms, or castes,—reproductives, workers, and soldiers. (See figure 2.) The adults are of two kinds—sterile and fertile. The sterile adults of our common subterranean termites and of many other species include two forms (or castes)—soldiers and the workers; and the fertile or sexual adults include three normal forms. The individuals of each caste pass through three stages—egg, nymph and adult. The adult workers and soldiers are wingless grayish white, and similar in appearance. The soldiers have much longer heads and longer mandibles than the workers. Both workers and soldiers live in their tunnels in wood and soil. The reproductives, or

sexual adults, have brown or black bodies and two pairs of long, whitish, opaque wings of equal size. They differ from the reproductive forms of true ants, which have two pairs of transparent wings of unequal size. Termites may also be easily distinguished from true ants by their thick waistlines, in contrast to the very small waistline that is characteristic of the ants.

## Evidence of Termites

Large numbers of winged reproductive termites emerging, or "swarming," from the soil or wood may be the first indication of the presence of a termite colony. Even though the actual flight of the adults is not observed, the presence of their discarded wings is a positive indication of a well-established colony nearby. These discarded wings often are found on the floor beneath doors and windows where termites have emerged within a building and have been unable to escape. The presence of branching shelter tubes of small diameter, made of earth mixed with finely powdered wood, on the foundation timbers or other woodwork, or over the surface of stone, brick, or other impenetrable foundation material, around which the insects travel from the ground to the woodwork, is another aid in locating infestations. These flattened shelter tubes range from ¼" to ½" or more in width. They serve as covered passageways between wood and moisture in the soil and protect termites from direct exposure to the air.

In the case of nonsubterranean termites, which infest wood directly, evidence that they are damaging the wood are impressed pellets of excrement which are expelled from the wood and the holes, similar in size to BB shot, where insects entered the wood.

\*AIA Journal, Oct 1959  
†AIA Journal, May 1960  
††AIA Journal, Oct 1961

Except at swarming time, termites are not visible unless their galleries or passageways are broken open. The earth-colored shelter tubes, however, offer a ready means of recognizing their activities. Their work usually can be detected in wood by striking it with a hammer. Solid wood rings clear, while timber or wood eaten out by termites will give a dull thud when struck. Striking with an ice pick also detects weakened wood. Clean-cut holes in books, papers and clothing are good indications of the presence of termites. Springy basement floors or the softening or weakening of woodwork suggest repairs. The wood usually must be stripped of its exterior in order to see the extent of damage. The workers avoid exposure to the air by constructing galleries within the material which they attack.

#### FAVORABLE CONDITIONS FOR BREEDING

#### Environment

Subterranean termites build their nests in the wood of standing timber, logs, or stumps; in cleared land, in any wood in contact with the ground; or, in the plains, in a labyrinth of passages in the earth, usually underneath wood or vegetation. With the clearing of land and the consequent destruction of their natural breeding places, termites become increasingly destructive to a wide variety of substances.

Infestations in buildings have become more common with the general adoption of central heating plants. Heated basements are favorable for a longer period of termite activity. Changes in building practices and use of construction materials have resulted in termite problems in areas where formerly they were unimportant. Much of the lumber on the market today is from young, second growth trees containing a large amount of sapwood, very attractive to termites.

Subterranean termites become most numerous in moist, warm soil containing an abundant supply of food of the type mentioned elsewhere in this article. Such conditions often are found beneath buildings where the space below the first floor is poorly ventilated and where scraps of lumber, form boards, grade stakes, or tree stumps are left in the soil.

These conditions are conducive to attracting and supporting termites. Subterranean termites, however, are adaptable to their environment. They can survive in an en-

vironment of abundant or scarce moisture, high or low temperatures, absence or presence of ventilation, abundance or dearth of food. Thus precise geographical limits cannot be stated.

#### Food

The principal food for termites is cellulose, which they obtain from either dead or living vegetation, obtained from wood and other plant tissues.

#### Habits

Subterranean termites nest well below the surface of the earth. They must return to their nests in the ground for moisture. Dampness, warmth and darkness are favorable to these insects. The kinds that cause most of the damage in this country must have constant access to moist soil, with which they connect by tubes. Consequently, subterranean termites infesting beams or other wood will die if the wood is disconnected from the ground. *Destroy and maintain destruction of the ground contact and you destroy the termite.*

Termites are soft-bodied and always remain within wood, in the earth, or within their earthlike carton shelter tubes. The greyish-white, soft-bodied, wingless, sterile "workers" are the destructive form. These workers make the excavations occupied by the colony and enlarge and extend them as the colony increases. They live underground or within the wood, are blind, and shun the light; as a result they are rarely seen. Workers often completely honeycomb wood, usually following the grain and eating out the softer, thin-walled, larger-celled spring or new wood. They are able to penetrate the hardest woods, provided they have access to moisture in the ground. In extending their galleries in wood and vegetation, subterranean species carry with them moist excrement mixed with earth.

Flights of termites occur most frequently after the first warm days of spring, often following a warm rain. They may occur at any time during the spring or summer, and sometimes even in the fall, especially in warm parts of the country. In buildings with heated basements, termites occasionally fly during the winter. The individuals in the flights are adult, winged reproductives, sometimes called kings and queens, that have developed in well-established colonies. They are attracted by strong light, and when they

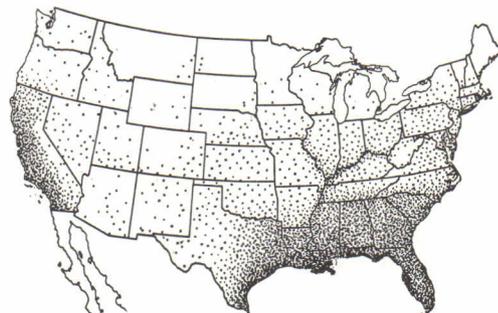


FIG. 1. Relative hazard of termite damage in U. S. indicated by density of stippling. Note: local conditions may be more or less severe than indicated by the region classification<sup>(13)</sup>

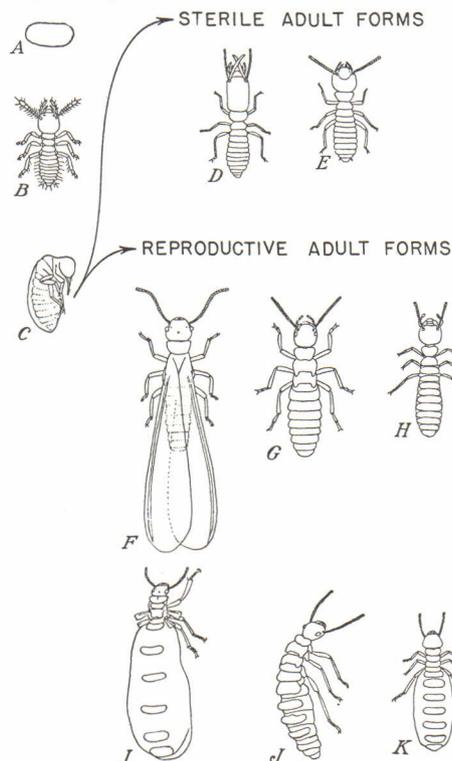
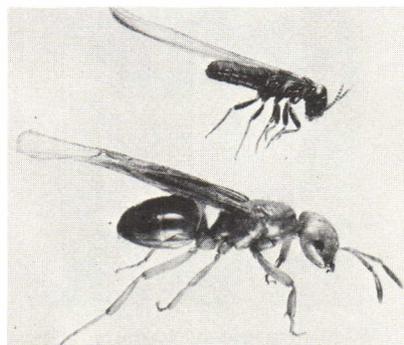
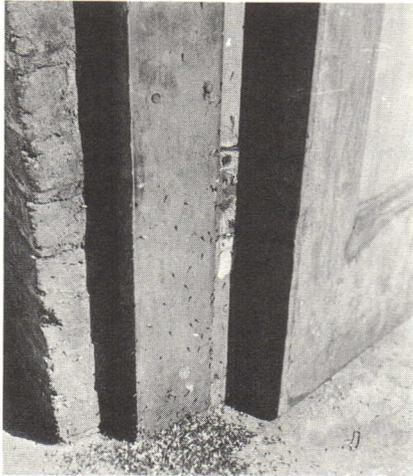


FIG. 2. *Reticulitermes flavipes*, common subterranean termite. a—egg, b—recently hatched nymph, c—mature nymph in quiescent stage, d—soldier (sterile adult), e—worker (sterile adult), f—sexual winged adult, g—sexual adult with wing pads, h—workerlike wingless sexual adult, i, j, k—enlarged egg-laying females (queens) corresponding to f, g, h respectively<sup>(10)</sup>



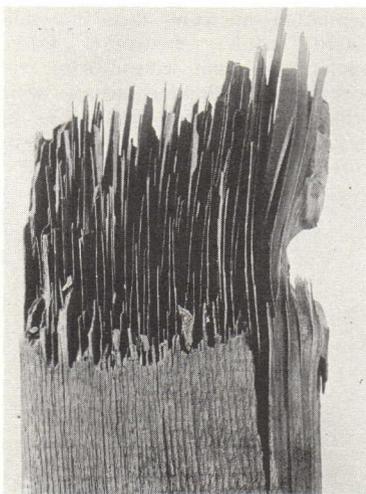
Winged termite and winged ant



Swarm of reproductive termite adults



Shelter tubes of termites entering through space and pipe and constructed over surface of foundation



Wood damaged by termites. A portion of surface has been removed to show tunneling following the grain

emerge within buildings they gather about windows and doors. Here they soon shed their wings. Then, pairs of termites try to return to the soil to find a suitable location for starting a new colony.

Most of these perish, but some pairs survive and succeed in hollowing out small cells in or near wood in the ground. After this done, the female begins laying eggs. During the first year she lays only a few. The young termites hatching from these eggs are cared for by the parents and develop into workers, soldiers, and the reproductive forms. These pairs of colonists gradually take over most of the duties formerly performed by the original royal pair. Egg laying increases rapidly in a termite colony after the first, second or third years. Secondary reproductive forms, without wings, also develop and lay eggs, which serve to supplement those of the original queen. A colony more than five or six years old may contain a royal pair, secondary productives, soldiers, and thousands of workers, but very little damage to a building is likely to be caused by a colony that is less than eight or ten years old. Where serious damage occurs in a shorter period of time, it usually is because a large population of termites was present in the soil before the building was constructed.

#### Parts of the Structure Susceptible to Attack

Termites will infest not only old buildings but also improperly constructed new buildings. It is not the age of a building but the manner in which it has been constructed that renders it liable to attack. Most termite infestations in buildings occur because of wood being in direct or indirect contact with the ground, particularly at porches, steps or terraces. Cracks or voids in foundations and concrete floors also make it easy for termites to reach wood that is not in actual contact with the soil. Soil within or adjacent to heated basements is kept warm throughout most of the year, even in northern areas, prolonging the normal period of termite activity. In general, termites enter buildings through cracks in the concrete or masonry walls, through timbers or by building earthlike shelter tubes over these materials. Also, they may build shelter tubes along the surfaces of pipes, fence posts, trellises, etc., and thereby gain entrance to buildings.

#### PREVENTIVE MEASURES

##### General

The key to termite control lies in construction that prevents or discourages attack. The fundamental principle is to prevent the termites from establishing or maintaining contact between the soil, from which they obtain moisture, and the woodwork of buildings, on which they feed.

Termites can be discouraged by removing stumps, roots and debris from the building site and by grading to keep the site dry. Because the nests are sometimes located deep in the ground or far outside the foundation of the structure it is not easy to eradicate them. However, it is possible to protect property by putting a mechanical or chemical barrier between the source of food and the source of moisture. Adequate clearance between soil and woodwork, as well as proper ventilation, should be provided for buildings having crawl space. Foundations should be impervious to termites—solid concrete is preferable. Hollow block or tile foundations should be capped with 4" of reinforced concrete or provided with good termite shields. Expansion joint fillers resistant to termite penetration should be used in slab-on-grade construction where it is not feasible to pour the slab monolithically with the footing. Pressure-treated wood for sills, plates, and headers may be desirable where the hazard is extreme. Preventive measures—taken during home construction—are usually much less costly than later remedial measures.

##### Summary

The best time to provide protection against termites is during planning and construction. Following suggestions are made to encourage use of design and construction practices that are practical and will give effective protection against infestation.

- remove all roots, stumps, wood debris, and other cellulose material from building site before construction is begun. If termites are found in the soil, apply chemicals to kill them.
- protect your landscaping and minimize threats of insect invasion by pruning broken, dead and dying limbs and branches within reach of ground; then burn up this debris and your unused firewood, particularly if latter has logs still fresh and

moist. Only alternative to destruction of even seasoned logs is spraying with a two per cent solution of DDT in oil. Under no circumstances store wood in basement. In addition to harboring borer pests, this wood may contain termites.

- remove all formboards and grade stakes.
- do not allow scraps of lumber and other wood debris to become buried in backfill adjacent to foundation or in fill material used under porches, steps and terraces.
- place the building on a foundation termites cannot penetrate.
- avoid all contacts between woodwork of building and soil or fill.
- except in case of slabs on grade, provide sufficient clearance beneath all parts of a building to give crawl space for making future inspections.
- provide ventilation openings in the foundation, arranged to prevent dead air pockets and of sufficient size to insure frequent air changes.
- provide for thorough drainage of soil beneath building.

**Method of Construction**

The use of chemically treated wood, concrete, brick, steel or tile does not in itself insure against these insects. It is the *method* of construction that effectively safeguards against termites.

**Types of Foundations**

All foundations should be made impervious to termites to prevent hidden attack on the woodwork above. This is one of the most important protective measures and should be considered very carefully in all new construction. Foundations may be rated as to their relative resistance to penetration by termites as follows:

- poured concrete (fig 3) properly reinforced to prevent large shrinkage or settlement cracks will give the greatest protection. Cracks that are 1/32" or more in width will permit the passage of termites and should be prevented insofar as possible.
- masonry walls or piers capped with a minimum of 4" of reinforced poured concrete or its equivalent will also be effective (see fig 4).

• masonry walls or piers capped with precast solid concrete blocks or brick, with all joints filled completely with cement mortar or poured lean grout, are often satisfactory but must be very carefully constructed.

• hollow-block foundations with the cells of the top course of blocks and all joints between the blocks completely filled with concrete may be satisfactory for low-cost construction.

• hollow-block or tile foundations with all cells of the top course of blocks left open give little or no protection.

The capping described above should be used only where constant, rigid supervision can be given to the work. Shrinkage or settlement cracks are almost certain to form in cells of vertical joints between blocks or bricks and thus allow infestation which cannot be seen on inspection. Moreover, poor workmanship cannot be detected after floor framing is in place.

Where the use of wooden piers or posts for foundations is unavoidable, wood that has been impregnated with an approved chemical preservative by a standard pressure process, or heart-wood of naturally resistant species, should be required (see page 81). As an additional safeguard, metal termite shields may be installed on top of such piers or posts to prevent termites from tubing up through checks or cracks and thus gaining hidden access to the building.

**Clearance Beneath Buildings**

A minimum clearance of 18" should be required beneath all wood substructures, to provide crawl space for making periodic inspections. In the southern and more humid sections of the country a minimum of 24" and preferably 30" is desirable. Clearance of less than 18" will not give room for making inspections for termite activity or for applying control measures in case infestations are found.

The outside grade line should be kept at least 6" below all exterior woodwork, so that the outer surface of the foundation may be inspected. If the superstructure is of brick or other masonry, the grade line should be at least 6" below the top of the foundation. If a masonry foundation is capped with solid concrete blocks, the grade line should be kept at least 4" below the uppermost horizontal joint so as to prevent direct entry by termites from the

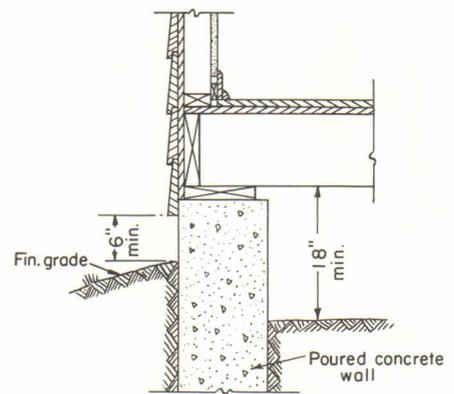


FIG. 3. Easily inspected poured concrete foundation walls or piers<sup>(13)</sup>

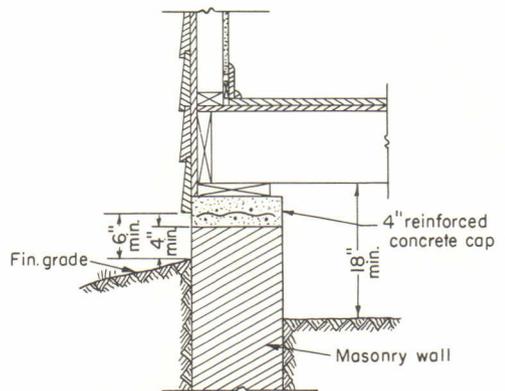


FIG. 4<sup>(13)</sup>

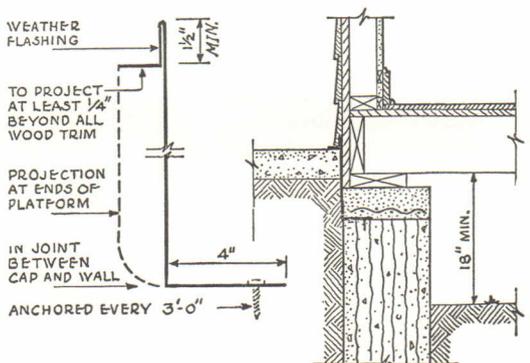


FIG. 5. Metal apron inserted between concrete slab and woodwork, anchored to unit-type foundation, and capped with reinforced concrete. Apron serves as weather flashing as well as termite barrier<sup>(11)</sup>

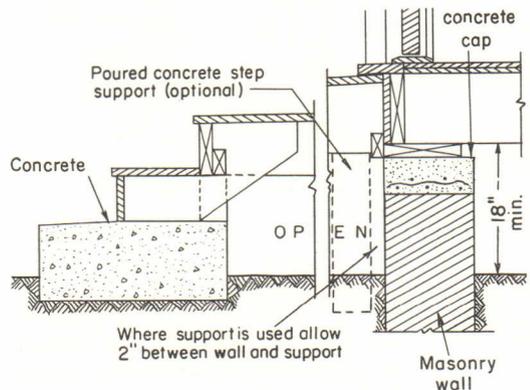


FIG. 6<sup>(13)</sup>

soil to cracks in the vertical joints between blocks.

### Ventilation Beneath Buildings

Ventilation openings in foundation walls beneath buildings with-out full basements should be of sufficient size and so distributed as to assure frequent changes of air and prevent dead-air spaces. Openings placed near corners of buildings will usually give best cross ventilation. Openings need not be placed on front of building, provided they can be arranged otherwise to prevent any unventilated areas. Size and number of openings needed will vary greatly with soil moisture, atmospheric humidity and air movement. Shrubby should be kept away from the openings a sufficient distance to allow free circulation of air and to allow inspection of wall surfaces for the presence of termite tubes.

For average conditions, ventilation openings having a net area of 1 sf/25 linear feet of exterior foundation wall are sufficient. It is a good plan to cover the soil beneath the buildings with roofing paper (55 pounds per roll of 108 sf), lapped 2 or 3 inches but without edge fastenings. This practice reduces evaporation from the soil and prevents excessive condensation of moisture on floor timbers.

### Drainage Beneath Buildings

Every possible effort should be made to prevent moisture from accumulating in the soil beneath a building. The soil surface should be sloped so that surface water will drain away from the building. Eaves and downspouts connected to a storm sewer system are very helpful. Buildings with basements should have drainage tile around the outside of the foundation footings if the site is low or wet.

### Porches or Terraces of Concrete or Masonry

It is highly important that concrete or masonry porches, terraces, and steps be isolated from the building proper. The floor or slab of such an entrance platform nearly always joins the exterior wall of the foundation. This condition provides termites with hidden access from the soil to the woodwork of the building and is responsible for a large proportion of all termite infestation in buildings.

Protection against such infestation can be provided by the use of a properly designed and installed

metal barrier or apron (see fig 5). This apron must isolate effectively the soil and the slab from the woodwork of the building and make an impervious barrier to termites. An important feature that should be embodied in all such aprons is a vertical extension to serve as a flashing to prevent moisture from reaching the sill and causing decay.

The filling of porches, terraces, and steps should be discouraged and avoided wherever possible. Cinder fill is especially objectionable because, even if a copper apron is installed, there is almost certain to be rapid corrosion of the metal by the action of chemicals, particularly sulfur, contained in the cinders. Painting the apron with asphalt after the apron is in place will help to prolong the life of the metal. Where such structures are not filled, the slab or floor should be adequately reinforced, and an access door should be left in the foundation so that the form boards can be removed and periodic inspections can be made. Ventilation openings also must be provided. The use of a metal apron as described above is advisable even with these precautions, because of the danger of termites finding hidden access through the joints between the side walls of the porch and the main foundation.

### Exterior Woodwork

The lower or outer step and the platform supports should rest upon poured—or solid—concrete bases or aprons extending at least 6" above grade (see fig 6). If the sides of the porches are to be enclosed, the siding or latticework should have at least 2" clearance above the ground. Provision should be made for adequate ventilation and access through the side walls for inspection. It is a good idea to separate the entire structure from the building by a space of 2 to 4 inches.

Door frames or jambs should not extend into or through concrete floors that rest on soil. This is particularly true of garage doors or doors leading into basements from outside stairways.

### Metal Barriers

Figures 7 to 15 illustrate metal termite shield designs and their application to various construction details. Shields provide a lasting and impenetrable barrier if installed properly. Copper shields are easy to shape and solder, strong, rust-proof and resistant to corrosion, mortar and lime burns.

To assure adequate stiffness for

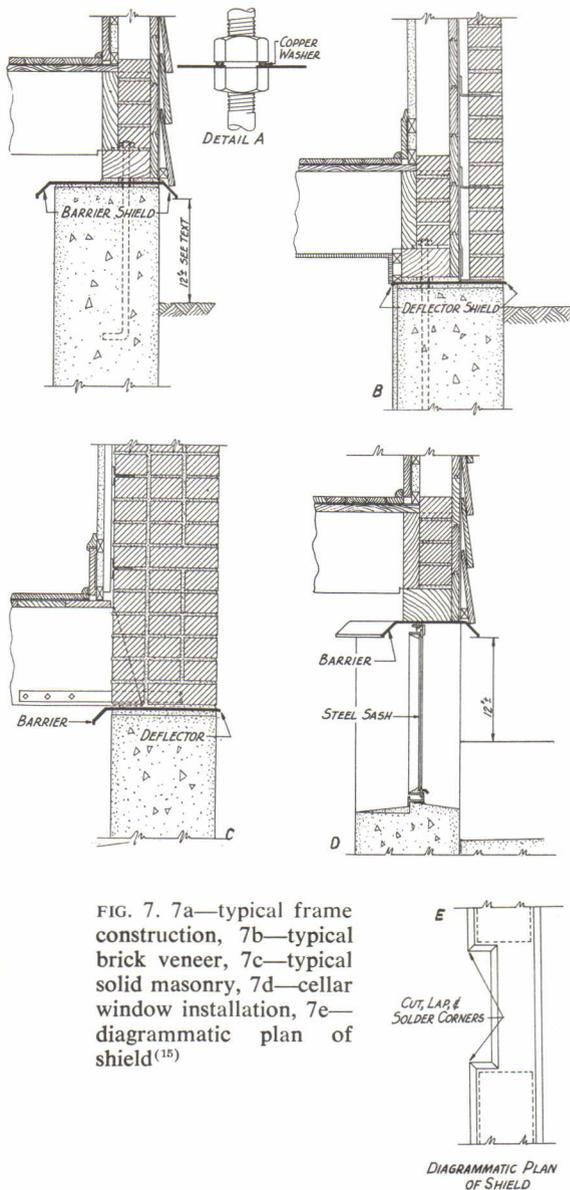


FIG. 7. 7a—typical frame construction, 7b—typical brick veneer, 7c—typical solid masonry, 7d—cellar window installation, 7e—diagrammatic plan of shield<sup>(15)</sup>

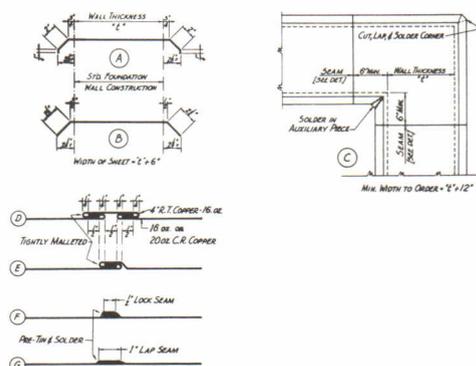


FIG. 8. 8a, b—standard barrier shields, 8c—plan of corner sheet, 8d, e, f, g—4 types of cross seams<sup>(15)</sup>

the projection of the shield, when copper is used, 16 ounce cold rolled sheet should be specified. These shields should not be prepared in the field, but should be formed in the shop to accurate dimensions based on exact width of foundation wall.

Termite shields may be either of two forms: the *barrier*, or the *deflector* (figs 7a, 7b), or a combination of the two (fig 7c).

In installations where inspection of the shield is impossible, a barrier type is required. It is designed so that termites building up over the masonry or concrete foundations are blocked from entry into the woodwork of the house above by the projection of the shield. Two basic barrier type shields are shown in a and b of Fig 8.

The type A with a vertical turn-down edge is preferable, but the B type is also satisfactory and under some conditions easier to apply. The sharp edge of the metal, either vertical or at 45 degrees, provides a 180 degree angle around which the termites are unable to construct a shelter tube. Some shield designs have a rolled edge, but they are not recommended because shelter tubes might be built around the roll. There is no record of one being built around the sharp edges of the a and b types. At corners, as in standard types of through-wall flashing, it is better to use a specially formed piece as in c than to have a diagonal seam across the corner. Four types of cross seams are shown at d, e, f and g. Types d and e should be tightly malleted. When the soldered types (f or g) are used, the edge of the sheets should be pre-tinned to ensure a solid joint. Any loose joint provides a possible means of access for termites to enter the structure.

The deflector shield, illustrated in Fig. 9b, does not in itself provide an impassable barrier to termites. It is employed only in areas accessible for periodic inspections, such as the interior wall of a basement recreation room, or on the outside of a brick porch.

Termites building a shelter tube from the ground moisture to the house woodwork are forced to move out around the shield as indicated at the "point of detection" (Fig. 9). The shelter tube, exposed at this point, can be broken off easily and the termites that have gained access to the building are cut off from their essential moisture. This simple procedure, repeated several times, apparently discourages the tube-

building termites and they soon seek a source of food elsewhere.

With regular careful inspection, the deflector shield assures the same protection offered by the barrier type. Variations of deflector shields, or combinations of deflector and barrier types are shown in subsequent illustrations.

Termites in a building isolated by metal shields generally make a strong effort to restore contact with ground moisture. If a shallow, unexcavated area is available they have been known to connect a joist to the ground by means of a shelter tube. Proper ventilation, however, should defeat such attempts. Under moist conditions, lengthy shelter tubes can be formed, but under dry conditions the tubes have the consistency of sand and tend to crumble and collapse.

Fig. 7a depicts the foundation wall installation of a metal shield on a frame house. In this instance a barrier type is necessary. With veneer construction, as shown in Fig. 7b, a deflector shield is generally satisfactory. A deflector shield generally is used in solid masonry construction, Fig. 7c, although in this case a barrier shield is installed on the inside due to inaccessibility for periodic inspection. It should be noted that, while this detail has been used in certain geographical locations, it would not be satisfactory in earthquake areas, since a lateral force would tend to slide the brick across the metal.

In the southern part of the United States the shield should be from 12"-18" above ground level; in the northern part from 9"-15" usually is sufficient. The degree of local infestation also must be considered in determining proper clearance.

When there is objection to shielding showing on the outside of the house it often can be camouflaged with shrubbery, or a modification of a true barrier type can be employed. This design will demand periodic inspections to discover if any termite shelter tubes have been built and care should be taken that shrubbery does not provide a bypass of the shield.

Attention is directed to detail a (Fig 7a) which shows how an anchor-bolt hole penetrating the shield is made termite proof. Instead of the metal washer as shown, special nuts with grooves may be used. In either case, the two should be drawn so tightly that there is no chance of a termite squeezing through.

Fig. 7d shows detail of shielding

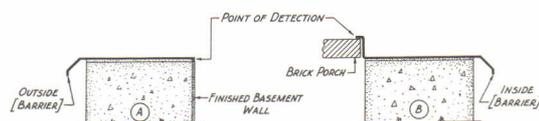


FIG. 9. Termite deflector shields<sup>(5)</sup>

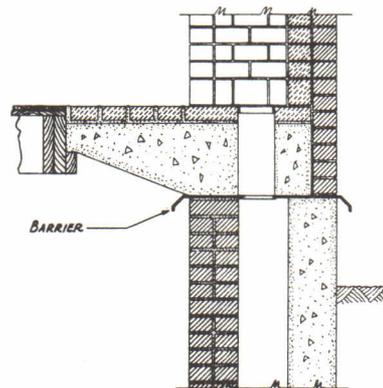


FIG. 10. Barrier in fireplace installation<sup>(5)</sup>

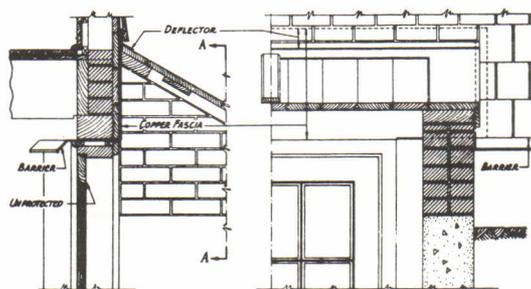


FIG. 11. Combination shields applied to cellar hatchway<sup>(5)</sup>

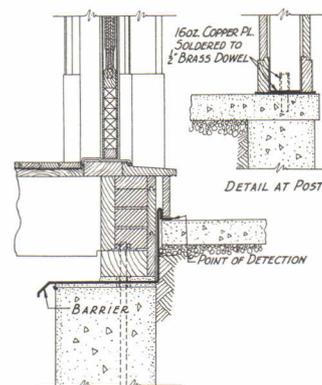


FIG. 12. Shield application to door sills<sup>(5)</sup>

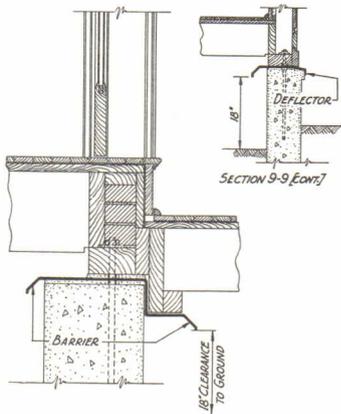


FIG. 13. Barrier shields in porch installation<sup>(5)</sup>

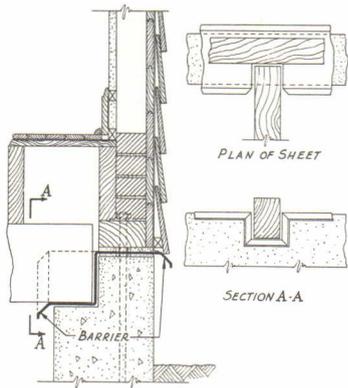


FIG. 14. Shield for cellar beam pockets<sup>(5)</sup>

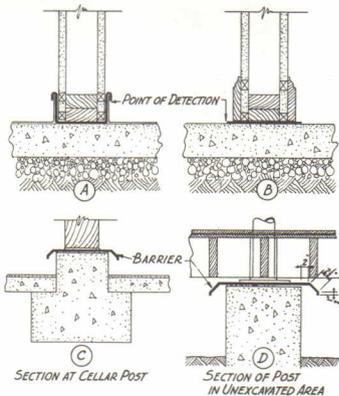


FIG. 15. Miscellaneous shield applications<sup>(5)</sup>

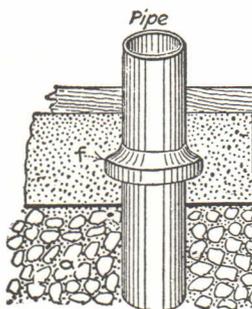


FIG. 16. Metal collar around pipe which runs down through concrete (this collar should be soldered to the pipe and imbedded in the concrete)<sup>(5)</sup>

construction at a typical cellar window. As the window itself is below level of shield, to secure complete protection the window should be a metal one. When the window is above the ground level, a combination of barrier and deflector shields beneath the window will give ample protection.

Fig. 10 shows a fireplace protected by a barrier shield over the foundation wall. The detail shows the hearth, with the ashdump above the shield and the ash-flue below. Utmost caution should be exercised in the selection of the termite shield and in its installation under the fireplace. The seal should be tight and permanent.

Fig. 11 shows a typical cellar hatchway installation. The application combines barrier and partial deflector type shields, for where the shield extends vertically it is conceivable that shelter tubes might be built around it. The combination of shields, plus inspection, will assure protection of the building. In this example the door shown is wood and it is located beneath the protection of the shield. Metal construction for door and frame would be necessary if all opportunity for termite damage is to be eliminated.

Fig. 12 shows another sill combination, this time applied under a door sill adjoining a concrete (or brick) porch. A deflector type is used outside, while inner shield is a true barrier type. It is bent up behind the kickboard to form a water stop. Detail at the upper right illustrates a deflector shield inserted under a wood post resting on a concrete (or brick) porch.

Fig. 13 shows shielding applied at a house wall adjoining a porch of wood construction. A barrier shield is necessary throughout, particularly as area under porch is rarely excavated or easy to inspect. This area also should be well ventilated. Detail at upper right shows a shield at outside of porch. When exposed, a deflector shield can be employed as illustrated, otherwise a barrier shield type should be used.

Fig. 14 shows a barrier shield installed at a cellar pocket. In this application the shield must be cut, fitted and soldered to meet the dimensional specifications of the beam, thickness of wall, and so on. Only a soft metal washer should be used. In wet places, electrolytic corrosion may occur if dissimilar metals are in contact with each other.

Fig. 15 shows shielding details for cellar partitions and other miscellaneous areas. A and B illustrate

methods of deflector shield installations between a cellar floor and a cellar partition. Similar applications can be made between a partition and a cellar side wall. Inspection for shelter tubes should be made regularly.

#### Water Pipes and Conduits

In buildings of crawl space construction, all plumbing, electric conduits, etc. should be clear of ground and suspended from girders and joists. They should not be supported by wooden blocks, stakes, or partitions connecting with ground because of danger of termites tunneling through or constructing tubes over such supports up to joists, sills, and floors.

If metal termite shields are used on the foundation, a funnel type of shield calked with coal-tar should be fastened tightly around all vertical piping at least 12" and preferably 18" above the ground.

Where pipes or steel columns penetrate concrete ground slabs or foundation walls, the spaces around them should be filled with coal-tar plastic cement. Another precaution is to circle these penetrations at time of construction with a perforated pipe through which a chemical poison could be poured. In this case care should be taken that the chemical selected will have no adverse effect on the pipe material chosen (either that of the perforated conductor or those used for plumbing).

#### Shields are useless in Slabs

For many years termite shields have been used extensively for control of termites in conventional housing. When properly installed and properly maintained they can be effective in conventional construction; however, there is no practical way to apply shields in ordinary slab-type houses.

#### Slab on Grade Construction

A practice that is becoming common in low cost housing is to pour a concrete floor slab continuous with the foundation. There is little possibility of termite infestation in such a structure if the following preventive measures are taken and the slab is properly reinforced.

Structures of this type should have no untreated wood below the level of the top of the concrete slab. Wooden partitions should be placed after the floor slab has been poured, and no door frame, studs, or partition members should extend into or through the concrete floor. No wooden plugs should be placed in

these concrete floors for nailing. Other vulnerable points in this type of construction are locations where pipes intersect slab. See Fig. 16 for a method of handling these matters.

The plate, the first 12" of studs and any other wood readily accessible to termites should be treated by pressure impregnation, using adequate quantities of the preservative.

In all cases the outside grade line adjacent to the building should be kept at least 6" below the top of the foundation or 6" below the bottom of any wood siding or trim—whichever is the lesser.

If the foundation is of unit masonry, it should be capped with at least 4" of reinforced concrete. In slab-on-grade construction with foundation walls of this type the outer edge of the slab should be flush with the outer face of the foundation.

Another common practice, especially in the construction of brick veneer buildings, is to extend the poured-concrete slab only part way across the top of the foundation, butting it against the brick veneer. This does not give as good protection because termites may succeed in penetrating through the horizontal joint between the foundation and slab and then upward through the crevice between the edge of the slab and the brick veneer. One means of reducing this hazard is to apply a layer of coal-tar pitch or coal-tar plastic cement to the top of the foundation before the slab is poured, so as to seal this joint.

Since slab-on-grade construction is very susceptible to termite attack, and remedial measures are difficult and expensive, prevention is highly desirable. Protection can be secured for many years by poisoning the soil before the slab is poured with any of the emulsions hereinafter listed, or with a water solution of sodium arsenite.

The merits of soil treatment under the slab as against metal shields are as follows:

- In both cases the soil should be treated before the floor is installed in order to destroy any existing termite beds
- Metal barriers are virtually useless in slab-on-grade construction
- For buildings with crawl space, metal barriers can be relied upon only when the following precautions are observed:
  - the metal is stiff enough to hold its shape after installation,
  - all corners and intersections are

tightly formed with no open spaces remaining,

—all joints are lapped and hammered flat,

—all bolt holes are protected by soft metal washers tightly screwed together between nuts,

—all fitting of metal should be performed in shop—not field,

—all pipes, posts and piers should be fitted with metal collars

• For buildings having crawl space: metal barriers, if properly designed and constructed should afford protection indefinitely, whereas soil poisons will lose their effect after a number of years. In buildings of this type, however, the crawl space is accessible for re-poisoning. Slab-on-grade structures, on the other hand, would become vulnerable after the poison became ineffective unless interior perforated piping were installed previously so that poison always could be introduced to the interior.

#### PAINT AND PRESERVATIVES

##### Limitations

Paint is not a preservative. In many cases it may prevent decay by protecting wood from intermittent wettings, especially if applied to ends and edges as well as to the exposed faces, and so maintained as to allow fewest possible cracks at joints.

##### Chemically Treated and Naturally Resistant Woods

Chemically treated wood is an additional safeguard against damage by termites and decay. For maximum protection the wood should be pressure-impregnated with an approved chemical by a standard process. Vacuum treatment gives adequate protection where conditions are less severe. Brush, spray, or short-period soak treatments give limited protection to wood above ground.

Pressure-treated lumber is produced in a process during which chemicals are forced into lumber under high pressure, making the treated lumber toxic to termites and decay-producing fungi. After treatment, this lumber is completely safe—harmless to humans or animals—and can be painted, glued, sawed and handled like untreated lumber.

Painting prior to erection has not proved satisfactory because the workmen will not paint the sawn ends or holes drilled for bolts. As penetration of the preservative is rarely 100%, exposed ends will allow termites easy access into the

center of the wood. Thus, by eating away the untreated portion they can cause the plate to collapse.

Spraying or dipping is ineffective because seasoning checks open up beyond the area penetrated and again allow the termites to materially damage the structure.

The slow-growing heart wood of some of the native species of wood is quite resistant to termites, but it is not immune, nor is it as resistant as pressure-treated wood. Following kinds and grades of lumber are the most resistant to termites:

- foundation-grade California redwood
- all-heart southern tidewater red cypress
- very pitchy southern pine—"lightwood"
- heartwood of eastern red cedar (less resistant than the above)

#### Soil Treatment

No matter how carefully constructed, however, any untreated wooden building is vulnerable to attack. In regions where termites are abundant, poisoning the soil with chemicals is advisable to provide additional protection. The poisons are used as a supplement to good construction—not as a substitute for it. As such an additional precaution, soil poisons are practical and effective in preventing attacks. They are valuable also in stopping existing infestations. Since there are many variations in construction, a number of different remedial treatments are possible. Essential consideration is to apply the insecticide in such a way that it forms a barrier to termite entry.

If buildings are to be constructed on recently cleared woodland, decaying stumps should be removed from the soil in the vicinity and burned. If, because of the presence of decaying stumps and humus, the subterranean termites are numerous in the earth, the soil should be deeply ploughed or otherwise broken up and treated with chemicals to kill the insects.

In slab-on-grade construction where soil treatment is resorted to prior to pouring the concrete or applying the membrane, an overall surface treatment of any of the emulsions hereinafter listed or of the water solution of sodium arsenite is recommended. A dosage of not less than 1 gallon/10 sf should be used if the fill is soil or unwashed gravel. If cinders, washed gravel, or similar coarse material is used



Termite damage to the sill and studding of a building. All photos from US Department of Agriculture, Forest Service, courtesy J. P. Secrest

in the fill, dosage should be increased by at least one-half. Treatment should be made after all filling and grading is complete. Critical areas, such as along foundation walls and around plumbing, should be treated by the trenching method described later under remedial measures. Soil treatment is a satisfactory remedy for five years or more, but is not a permanent preventive measure. Such treatment is most effective when necessary changes in structure are made.

#### REMEDIAL MEASURES

##### Situation to Be Coped With

Once in a building, termites will continue their work and extend their damage slowly or rapidly unless and until their means of entrance from outside have been broken by corrective measures.

##### Investigation

Although it may be difficult to eliminate termites and stop further damage by them once these insects have become established in the woodwork of a building, approximate point of entry should be sought at once by careful examination of woodwork in contact with ground. To do this, it may be necessary to tear up foundations, flooring and some other woodwork.

##### Killing Winged Adults Will Not Stop the Damage

When efforts are made to prevent further damage by termites in buildings, it should be realized that the numbers of these insects may be constantly recruited from some undiscovered, outside, central colony. Destruction of winged colonizing adults at time of emergence will not

eradicate colonies infesting woodwork. Winged adults are harmless indoors and soon will die. The destructive forms are the grayish white, wingless workers, which remain in the wood.

##### Structural Repairs

Methods of stopping termite injury are substantially the same as those to be employed in new construction to prevent entry. General objective is to insulate all woodwork from the ground and allow proper ventilation of unexcavated areas enclosed by the foundation. All wood that has been weakened structurally should be replaced. Wood members that have been in contact with soil should be placed on poured concrete bases. Voids, cracks, or expansion joints in concrete or masonry under wood should be filled with cement grout, coal-tar pitch, or coal-tar plastic cement. Additional openings for ventilation may be needed in foundation wall. Most structural details recommended previously will apply equally well in reconstruction of infested existing buildings.

##### Breaking Contact With Ground or Moisture

Contact with soil moisture is absolutely essential to the life of termites. When corrections are made which break permanently and make impassable the ground connections maintained between the parent colony and a building, all termites in the building die promptly and injury ceases. However, if through water leakage, or other sources, moisture is provided above the ground contact, termites cut off in the building may continue to work as long as this condition exists.

#### Soil Poisoning

Upon removal of foundation timbers damaged by termites, the ground where they were set should be broken up and drenched with soil poisons of type and in amount described elsewhere in this report, which will kill or at least temporarily prevent further activity of termites at that point. If inspection shows termite tubes, these should be destroyed and the nearby soil poisoned. A toxic chemical should be applied in a trench along infested foundation walls and piers.

#### Commercial Exterminators

Widely distributed throughout the country are companies specializing in the eradication of termites and other pests. Their work is confined in general to soil poisoning applied to the ground. As a preventive measure in new construction, the poison is used within the area bordered by the foundation before the slab-on-grade is poured. Also, it could be applied to this area when buildings are constructed with crawl space in lieu of, or in addition to, metal barriers. When applied in lieu of metal barriers, the owner has the increased burden of constant inspections and re-poisoning. For remedial measures in slab-on-grade construction the poison is poured around the perimeter of the building, outside the foundations. Application, in each case, is the same as described under *Poisons* referred to subsequently in this report.

#### Licensed or Bonded

Although most states require by law that companies operating as termite exterminators be both licensed and bonded, apparently a great many unlicensed and unbonded companies throughout the country are doing business in violation of the law. To become a licensed company, a principal of the organization must secure a license from the State Board of Examiners certifying as to his qualifications to pursue this business. Bond may be furnished in either or both of the following types: a guarantee insured by a bonding company giving protection up to a stipulated limit of liability in the event of new subterranean termite injury; or the conventional liability and property damage insurance. A large number of owners or partners in this type of work are entomologists, or have undergone some study in that field.

CHEMICALS TO USE AND  
HOW TO PREPARE THEM

**Poisons**

The following three chemicals recommended are water emulsions. Unlike oil solutions, they will not injure plants when used along exterior foundation walls. Neither will they creep up walls and damage floors, as oil may, when applied along the interior of foundations. The concentrations recommended allow a margin of safety and provide protection for several years.

*Chlordane, 1% emulsion.* Chlordane is available as 46-48, or 72-74% water emulsion concentrates. The 1% emulsion is prepared by adding 48 gallons of water to 1 gallon of the 46% concentrate, or 99 gallons of water to 1 gallon of the 72% concentrate. The ratio is 1 to 48, and 1 to 99, respectively, whether the measure is in gallons or in cupfuls.

*Dieldrin, 0.5% emulsion.* This chemical is available as an 18% emulsion concentrate, containing 1.5 pounds of technical dieldrin per gallon. To prepare a 0.5% strength, add 36 gallons of water to each gallon of concentrate.

*Benzene Hexachloride (BHC), 0.8% emulsion.* BHC is sold frequently as a liquid concentrate containing 12% gamma isomer (the part toxic to insects). The 0.8% emulsion is prepared by diluting 1 gallon of the concentrate with 15 gallons of water.

**Rate of Application**

*Slab-on-grade houses:* apply at least 2 gallons of diluted emulsion per each 5 linear feet of wall, through holes made in the floor or foundation, to reach the infested soil. Treatment around the entire slab and around other openings left for plumbing, etc. is advised. Apply the emulsion at the same rate in the trench made along the exterior foundation walls, if the footing is not more than 15" deep. If deeper in some places, apply as directed below for crawl space houses.

*Crawl-space houses:* apply 2 gallons of the diluted emulsion per each 5 linear feet of trench made along interior of foundation walls, or around piers or other materials connecting ground with wood above. Along exterior foundation walls, including the part adjacent to entrance platforms, porches, sunparlors, etc. apply chemical at same rate for each foot of depth from surface to footing. Thus, if the footing is 2'

deep in some places, increase dosage to 4 gallons of chemical per each 5 linear feet of trench, or if it is 5' deep, use 10 gallons of chemical per linear unit. Enclosed areas adjacent to foundation wall (entrance platform, sunparlors, etc.) should be either trenched along foundation and treated or have holes bored through slabs and chemical applied from them.

*Basement houses:* where it is necessary to treat through the basement floor, apply chemical in same manner and at same rate as recommended for treating slab-on-grade house. When treating along exterior of foundation wall, use rate mentioned for crawl space house.

*Voids in unit masonry foundations:* where termites have infested voids in walls or piers, make holes in mortar joints in lower part of wall or pier near the floor and apply chemical at rate of 1 gallon per 5 linear feet of wall, or around pier. Voids in hollow-block foundations should be treated with at least 2 gallons per 10 linear feet of wall. For buildings having crawl space or basements, the trench and void treatments can be used as preventive measures without an over-all surface application.

**Applying Chemicals in Trenches**

Pour or sprinkle some of the chemical at bottom of trench. Cover with a layer of soil about 6" thick. Pour or sprinkle more chemical on top of this soil layer. Mix chemical thoroughly with this layer. Tamp well. Continue to add more layers of soil, mix with chemicals as before, and tamp until trench is filled. Do not apply chemicals to water-soaked or frozen soils, because the chemicals will not be well distributed and desired control may not be obtained. Soil poisons should be applied when the ground is dry and warm. When earth is soaked with water, the chemicals are less able to penetrate.

To treat buildings having crawl spaces or basements, dig a trench adjacent to and around all piers and pipes along sides of foundation walls. A trench 6"-8" deep and about same width is ample for solid concrete foundations that have not developed cracks. While the trench is open, one of the previously mentioned formulations should be poured in at rate of 2 gallons per 10 linear feet of trench. As excavated soil is put back into trench, it also should be treated at rate of 2 gallons per 10 linear feet. This rate of application is equal

to about 4 gallons per 10 cubic feet of soil, assuming that chemical spreads downward and outward from trench. For brick, hollow block, and concrete foundations that have cracked, care should be taken to dig the trench to the footing. This is a precaution to prevent the termites from gaining hidden entry through voids in these types of foundations. Amount of chemicals applied in deep trenches should be increased correspondingly. Voids in hollow-block foundations should be treated as described under Preventive Measures.

**Effectiveness**

These concentrations and dosages provide a good margin of safety, so that a long period of protection can be expected. Since cost of the chemical usually is only a small portion of total cost of treating a building, it appears logical to use enough chemical to prevent attack for as long as possible. Shifting of the fill, leaching of the insecticide by water, agglomeration of fill by certain insecticides, voids in structure or outside of the slab, and disturbances of treatment during and after erection of structure account for failure in many instances. Such treatment can be regarded only as a first step in the process of termite control and cannot be considered as a complete control measure.

**Summary of Tests**

*Results of tests made by the Southern Forest Experiment Station's Forest Insect Laboratory, Gulfport, Mississippi:* Tests reported herein were conducted during 1944 on the Harrison Experimental Forest, about 20 miles north of Gulfport. These tests were expanded in 1946, and at same time a series was established in the Panama Canal Zone. Many new insecticides have been added since 1946. The Mississippi tests are located in a pine-hardwood forest in a light, sandy loam soil with a clay subsoil. The Canal Zone tests are in a jungle area with a heavy soil. Main results are summarized in Table 1, reference 19.

In evaluating these data, it was considered that only formulations giving good results for at least 5 years in one or both types of field tests in Mississippi could be recommended safely for use in the United States. Following formulations include the results of these tests as modified by subsequent research, and are suggested for practical use to protect buildings:

- Benzene hexachloride, 0.8% gamma in #2 fuel oil or water emulsion
- Chlordane, 1.0% in #2 fuel oil or water emulsion
- Dieldrin, 0.5% in #2 fuel oil
- DDT, 8.0% in #2 fuel oil
- Heptachlor, 0.5% in water or oil

#### PRECAUTIONS

##### Warning

All of these chemicals are poisonous to man and other warm-blooded animals if taken internally, and must be handled with care. Some of them can be absorbed through the skin. Consequently they should not be allowed to come in contact with the skin or eyes, since most of them have a caustic action and may cause severe burning and irritation. Rubberized gloves should be worn for protection. Where poison is being applied with pressure through holes in walls and piers, use a cellulose acetate face guard so that chemical cannot splash back into your face. In the event that any of these chemicals are spilled on the body, they should be washed off immediately with warm soapy water. When the chemical is being applied in an enclosed area, provide air circulation.

##### Water and Food

Chemicals having strong odors should not be used where food is stored nor in basement apartments, cellars or other places where there is poor ventilation. They should not be used near a well or other exposed source of drinking water because, once the chemicals reach it, the water will absorb the odor and may be rendered unfit for use for a long time. Under no circumstances should they be applied in a space where they might be leached from the soil and enter wells that supply drinking water.

##### Plants

Where valuable shrubs and flowers are near the area to be treated (1'-3'), and it is not desirable to remove them temporarily, the plants should be protected by lining the sides of the trench next to the shrubbery with tar paper, paraffined canvas, or copper-coated kraft paper. The last material is preferable where orthodichlorobenzene, trichlorobenzene, creosote, or light petroleum oils are used, since these chemicals have a solvent action on tar products. Special care must be exercised when poisoning the soil with sodium arsenite, which is water-soluble and very toxic to plants, and should

not be used where it may come in contact with their roots. Although oils are not absorbed by plant roots, they burn any parts they touch, and will damage plants if applied to their roots.

##### Children

Keep children away from areas where these poisons are being prepared and used, and open packages or containers should be stored in locations inaccessible to children and pets.

##### Fire

Because of fire hazard, great care should be taken to avoid open flames or electric sparks when applying inflammable soil poisons, such as mixtures containing fuel oil, in a confined, poorly ventilated space.

##### Sources

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- 2 Professor Faye E. Guyton, Auburn University, Auburn, Alabama
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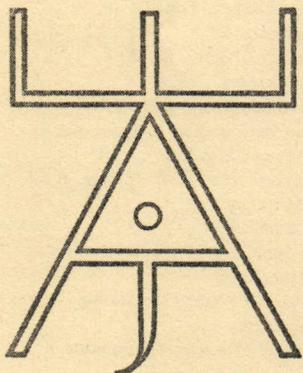
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**EDUCATION  
FOR  
URBAN  
DESIGN**

*The 1961 AIA-ASCA Seminar Discussions at the Cranbrook Academy of Art*

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*Part I*



*Volume XVI, Number 3, Autumn 1961*

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PART I

*The Changing Role of the Architect*

1 Need and Responsibility 2 Performance and Response

PART II

*The Changing Role of the School*

1 Aims 2 Methods 3 Summary

## INTRODUCTION

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The challenge could make your head whirl: How, indeed, do you educate young men and women to bring order, let alone beauty, into the mess we call our man-made environment? What, to start with, is really wrong? And, if ever, we can agree on a diagnosis, where and how do we seek the cures, so we can teach their application?

Dean Burchard threw it right at us, the very first day: "If architectural education fails the city, the city might well decide, as others have decided about war and the generals, that architecture is too important to be left to the architects."

But our heads did not whirl.

At Cranbrook we all breathed a little more deeply and walked a little more slowly, as Denise Scott Brown put it as she plucked a flower from the curb to adorn her Titian hair. Cranbrook is that kind of an environment. We all seemed to belong as much as Denise and her flower. We not only breathed, we *thought* more deeply, as we sat in the grass, against the backdrop of Cranbrook's vistas and noble buildings, or as we walked to discover and re-discover Eliel Saarinen's aforethought and surprises, to say nothing of Milles' whimsical statues.

What better proof could there be that the architect-planner can, even in our day, create an environment which lifts the human spirit.

Thus, if the setting alone offered rebuttal to the pessimists, it was nothing short of ideal for a convocation of teachers from forty-eight schools of architecture in this country and Canada, to listen

and to talk and to stimulate each other, even though there was insufficient room to accommodate all who might have wanted to come.

The ten days at Cranbrook thus admirably answered Recommendation Number 17, made seven years ago by the "Commission for the Survey of Education and Registration of the American Institute of Architects" which called for "regular study institutes in which architectural teachers . . . can meet for cooperative discussion of course content, treatment, methods of presentation, evaluation of student performance, and other aspects of discussion." Hence the forbidding designation R-17.

No, this cooperative discussion did not materially enhance the store of knowledge we shall need to "distill," as the Olympian dean has phrased it, another Parthenon, Chartres, or Piazza San Marco. But, humble or audacious, petty or large scale, way out or constructive, it deepened the kind of thought which alone produces the right kind of action. And it asked some of the questions which alone can produce the right answers.

The format of the discussions was as simple as it was productive: Prominent architects, planners, landscape architects, and teachers of all these professions had their say usually in the morning and evening. While the sun was high the fifty-three participants split up into six groups to mull over what they had heard. These groups then formulated the questions which both stars and ensemble debated with untiring alacrity.

Out of all this came a veritable ocean of words,

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captured in part by court stenographers and in part by Bill Perreault's electronic gadget, which eventually produced reams of type script. It was a formidable job to sift this ocean for its many pearls of wisdom, to arrange these in some kind of order and put them into presentable form.

This job was attacked jointly by Mrs. Edith Franchini of the R-17 Committee staff, Maurice William Perreault, head of the AIA Department of Education, and the undersigned, who, unfortunately, could attend the seminar for only two days.

The form we have chosen is apparent from the table of contents on the previous page. It seemed logical to first present the highlights of what was said about the responsibilities and needs of the profession, followed by excerpts of statements about its performance. This constitutes Part I of this report.

The second part, which deals with the performance of the schools of architecture and the ways in which architectural education might change to meet the needs of urban design, will be published in this space next month.

Much had to be left out, and our process of sifting and arranging was admittedly arbitrary. There was, for instance, great value in what Willo von Moltke told us about the work in Philadelphia and much stimulation in Robert Snyder's notion to polka dot the landscape with small communities and let existing cities rot. But Philadelphia is well covered elsewhere and Snyder's polka dots led us too far astray. So, along with John Simonds' delightful interpretation of Zen and other lively tidbits, we reluctantly cast these particular pearls back to the memories of the participants.

We did even worse: To fit a pattern which, we hope, will orient the reader in the direction the seminar had chartered, we cut up prepared talks and re-arranged them, so that questions and subsequent debate might follow logically and without redundancy. We sacrificed the speakers' own context to that of the conference of the whole. And insofar as we have thereby altered their emphasis or (heaven forbid!) meaning, blame the editors and not them.

What we've come up with, then, or tried to, is a reader's digest of what went on in Cranbrook last summer. We hope the reader finds it, indeed, at least digestible, if not also as nourishing, and stimulating, as did the participants. WOLF VON ECKARDT

## Need and Responsibility

### Development of character

JOHN E. BURCHARD (*Dean of Humanities, Massachusetts Institute of Technology*): I believe in the modern world, and the world of science, and in the inevitability but also the potential desirability of the metropolis. I have no doubt that the main element is the re-magnetizing of the central core. This involves more, of course, than the physical beauty of the core. But a lot of the magnetism will unquestionably be provided by the architecture and the other visual stimuli closely related to architecture—sidewalk and street pavements, planting, fountains, sculpture, interior green space, and very largely in terms of design. The difficulties of achieving harmony rest mostly in the aesthetic uncertainties and in the uncertainties of conscience.

Robin Boyd has been quite right to insist that a city needs a number of modest buildings to set off the occasional brilliant, even flamboyant ones which provide the high points. But who is to do the modest buildings?

At the moment the only possible solution is to give each star a larger arena in which to perform and then we may expect him to compose some modest units of his own to set off the brilliant units, also of his own.

On the scale of nature, man's scale is always inadequate and whether he tries to hide his architecture in nature or to flaunt nature with his works, he never quite makes it, whether at Taliesin or at Colorado Springs. His problem is to be natural enough if he is going the first way, or to have effrontery enough if he takes the second. But as between the two ways the only common, but necessary, demand is not to be tepid.

The urban environment includes a variety of political and economic and sociological and psychological problems with which the architect must be able to deal, if he is, as I hope, to be the leader in the resolution of the urban difficulties. It will just not do for him arrogantly to impose his personal, untested, unexamined political, economic, sociological and psychological prejudices as urban doctrine. But what the architect may choose to try to do about

this, how much of his time he may be prepared to give to providing leadership, is a political and social rather than an aesthetic question. We need much more study of housing groups, more architects as dedicated and as competent as Clarence Stein, aggressive to seek opportunities in private as well as public projects and to do well with these opportunities when they are found. This kind of competence, needless to say, is of a special kind, transcending the mere art of design. It is the same kind of competence that will be needed when, if ever, we find a way to get at the gray areas which offer the most obdurate of all the urban problems and which almost certainly will have to be solved by rehabilitation and remodeling, not by bulldozing.

Only development of character will be enough even in dealing with the subject of this conference. In the end, what an architect does to woo or to assail nature, to fit his work to the existing urban environment, or to destroy it, to work on the large and non-architectural problems of his city or to ignore them, to try to help to lead his society or to follow the army in the role of a slightly aesthetic vivandiere—all these are a matter of character more than one of skill. And it is certainly more than a matter of technique, though both skill and technique are necessary. It is a complex matter. It must never be forgotten that for a successful application to the problems of the modern city, art is essential but not enough, that the intellect cannot be discarded in favor of intuition, that the articulate and the precise are in favor of the inarticulate and vague, and that no man is able simply to guess at the needs of his time.

DAVID WESSEL (*Montana State College*): How do you propose that the architect should and could be the leader in the resolution of urban difficulties?

JOHN E. BURCHARD: I suppose my answer is: By becoming somewhat less of an architect. He has got to be a political man at times. He can't turn that over to somebody else. He has to be in the middle of the brawl.

### Cultural and social problems

NORBERT GORWIC (*Director of Urban Planning, Wayne State University*): In order to save itself and stop the further mutilation of our townscape, contemporary architecture has to restate its role and its scope. We have to get back to fundamentals. And we have to start by coming to terms with the past.

The only mature way of dealing with the past is to know and understand, to absorb, assimilate, and express the same basic problems in our own, contemporary terms. We are only too often the victims of technological progress. Because we are able to produce more, move faster and ascend higher than ever before, we tend to forget that the essence of human existence and the measure of all things—man himself—have changed very little during the last few thousand years. There is still quite a lot that can be learned from the past. In the field of urban design it is a very salutary lesson.

This lesson will point to the basic truth that an individual building is only one of many elements in the urban scene, that it is like a musical instrument which can produce a sound of its own, but that this is still only a part of a larger, richer, and more exciting experience—the performance of the whole orchestra.

For example, it is the proportions of the Champs Élysées itself, the relation between height and width, the landscaping, the Arc de Triomphe and the Obélisque, which fuse so perfectly into one, integrated, urban composition.

The modern architect must realize that the relationship between buildings is as important as the building itself. He must realize that, for the good of the townscape, his building will often have to act as a background, or a foil, and not always as a star who steals the show. Great architecture has always been in tune with the social, economic and cultural problems of its day.

The problem that matters today is not the shape of the roof of a five bedroom, five bathroom residence located on a three acre site overlooking a valley. It is how to house fifty million families, half of which have an income of less than \$80.00 a week. The elevational treatment of a corporate headquarters is of little importance, if it is the wrong kind of building for the proposed site. Styling comes and goes. But the desperate need for more and better community facilities is going to be with us for many

years to come. In short; Our problem today is the total environment, the creation of a new urban pattern which makes sense in the second half of the twentieth century. The answer will not be provided by the politician, the planner or the highway engineer. The solution will not come overnight, but when it comes, it will come from the architect—a different kind of architect than we know today, but still an architect. This, of course, will call for an agonizing re-appraisal not only of architectural practice, but first and foremost of architectural education. Time is running out. The re-appraisal should start today.

Let us remember that any human endeavor which turns its back to the social problems of its day is doomed to sterility. As the custodian of our cities, the planner-architect has a moral obligation not only to protect and preserve existing urban values, but to prepare the ground for the creation of new ones. To fulfill this vital task he must re-discover, preach and practice the art of urban design.

ROBERT NAPIER (*Pennsylvania State University*): How does the architect begin to regain the position you want him to hold as "the custodian of our cities"?

NORBERT GORWIC: One of the problems is housing. As an architect, your contribution would be to show how to provide housing for people who make less than \$50 a week. We have to show how we can house 10 families on an acre in a 10 or 12 thousand dollar house, so it will still make sense. Who will do this if not the architect? The planner is not equipped to do this.

The planner deals with problems of economics, of land values, of what kind of industry to bring into the city, and how to finance it. The architect should step in at precisely that moment to provide the physical aspect of city planning. The problem is not whether architects should or should not design a city. They should not design the wrong kind of city.

PATRICK QUINN (*University of California*): How can the architect provide housing for 10,000 people if he is not aware of the life forces within the city, of the generative forces of which the city planner has become aware by analyzing them?

NORBERT GORWIC: First have an idea and then sell it. Not the other way around. Come up with the

JOHN E. BURCHARD: Once we talk about Mies, or movers of society, we have to recognize that, perhaps their work doesn't affront the city as much as we think. Perhaps the lesser people affront it.

Our trouble with architecture is that we are always trying to look at the individual work, all by itself. We can't bring ourselves to say that this work is an absolutely admirable work, an impeccable work in the wrong place. Some such buildings are justified. We don't want a city that is all alike. Some bad buildings help make the city's character.

PETER COLLINS (*McGill University*): Is there an example of a contemporary building, or a good building put up within the last ten years, among some older masonry buildings of value which harmonizes with the environment?

NORBERT GORWIC: I find it difficult to give a good contemporary example. It should be emphasized, however, that it is relationship, scale, texture, height, not style which makes the difference. Just because it takes people time to get used to a new structure doesn't mean that it is not a work of art.

### **Awareness of land**

WILLIAM JOHNSON: The one area lacking in the present training of the architect—in his present practice—is an awareness of and a sensitivity to land in its natural elements, its potentials, its strengths, and its weaknesses as they apply to architectural creativity. This may be a mental block brought about by poor performance by the profession of landscape architects over the past twenty or thirty or forty years. And because of this mental block, architects don't even consider it, or consider it too shallowly. Land, as a commodity, is decreasing at a rapid rate. We must become aware of this decreasing availability. This awareness, in a sense, must be a part of the concern for a new dimension of design as well as of urban design. For it is with this thinking that one of the greatest gaps between planning and architecture can be bridged. I believe this gap has been the inability to interpret the generalities of broad planning policies, planning principles and ideals into

clear, positive and realistic physical form on a broad scale. We jump into projects without a real known context, that is a design oriented context. The creation of this form, on a broad scale, can be greatly inspired by a sensitivity to land form, water elements, trees, buildings and all other existing positive forms in the environment. It is a creative design problem, and unique in each case. Appropriate design form must be discovered and not contrived. This is the essence of the thought discipline which challenges the architect today and in the years to come. For it is in this way that projects, involving one or even twenty buildings, can be put into convincing and positive context.

### **Practice in the small community**

DAVID WESSEL (*Montana State College*): Is there a difference in desirable scope of interest and range of active service to society between the metropolitan architect and the architect in a small community? I come from the latter type, and I have heard very much talk and very much focusing here on the people who live in the very large communities. I'd like to maintain that the small ones will be with us for a long time.

G. HOLMES PERKINS: The principle is basically the same, whether the town is big or small. The opportunity to be of real service, in the sense of leadership, is greater in the small community than in a larger one. The reason we tend to emphasize the big things is that we will probably have to face them tomorrow.

DAVID WESSEL: A small community can't avail itself of all the experts that we keep talking about.

G. HOLMES PERKINS: There is absolutely no need for them. The problems of the small communities are much simpler and can be solved by the leadership of an architect who knows about planning.

JAMES M. HUNTER: Educators shouldn't lose sight of the fact that over seventy-seven per cent of the architects practicing in the U. S. have staffs of less than five, and are in communities of 100,000 or less people.

G. HOLMES PERKINS: The way to get this personal participation by both the professional and the local citizens is to break planning units down to groups of neighborhoods. This bridges the gap between a rather impersonal objective analysis (the master plan), and that which the people have to live with and which the planner ought to know firsthand.

### **Planning for the unknown**

PHILIP ZIELINSKI (*Illinois Institute of Technology*): The central business district of Detroit solved an immediate problem that might exist for 20 years. But planning for 20 years is not really a long span. I think we have to think in much broader terms and search for principles upon which you can design your cities. Solving certain problems right may make the citizens happy. But 20 years from now they will still have the congestion and the confusion and the chaos. What do they do then?

DENISE SCOTT BROWN: Society is changing all the time. Planners have to plan for changes they can't predict and for inventions which haven't been invented. What can the social scientist tell us about how to plan for change, for the diversity in people, and in such a way as to make the city symbolically meaningful to them?

AMOS HAWLEY: I don't think the social scientist, at least not one social scientist, can tell you. His knowledge is of a general character and the architect and planner deals with specific problems.

It is very difficult to anticipate the magnitude and the trends of facts, so we have a differential rate of change which complicates the forecasting problem to no small degree. The physical and technical aspects are capable of more rapid change than the philosophical, doctrinaire, sentimental, evaluational aspects of society. They get out of relationship with one another.

To bridge the gap between the general and the specific is not an easy thing to do or train people for. It calls for an imagination and gift for synthesis.

I don't think, however, that people today are less concerned with values than they were in the past. We have difficulty in applying a familiar set of values to a rather unfamiliar universe of happenings and relationships, so, perhaps, it is a matter of articula-

tion. In general, the planner and the architect will have to find much of the solution they need from their own expanding skills and abilities to interpret knowledge accumulated in the academic system in many fields of social sciences.

GROUP QUESTION: The continuity of a city's development will inevitably be affected by technological changes. But it may also be affected by a desire for change for its own sake. To what extent can sociologists isolate those factors which should encourage stability, and hence minimize arbitrary alterations to urban development plans?

AMOS HAWLEY: I think perhaps the answer lies in the development of criteria in the public of what is presumably useful not only in a simple operating sense but also, perhaps, in a symbolic sense.

GROUP QUESTION: How can we find a stimulus in our present civilization to influence change?

AMOS HAWLEY: There is an assumption in this question that much change is sought just for the sake of change. That, of course, is an empirical question which would have to be treated as such. I am not sure this is an important element in change. It may be there, but it seems to me that the momentum of technological development is a far more important factor. It is interesting to note in this connection that sixty or seventy per cent of the cities more or less completely destroyed in the last war, were rebuilt in virtually the same pattern. In other words, given an opportunity, an unusual opportunity, to redesign and correct old mistakes people have rebuilt their cities in the same pattern. Here is a form of stability which probably reflects the fact that the bombs didn't really damage the social structure.

I think the public will have to learn how to live with change in a way that has not been necessary in the past. It will certainly entail its costs, just as stability entails its costs. But changes will continue and solutions for them must be worked out.

### **Integration of old and new**

PETER FORSTER (*University of Manitoba*): To what extent is a consistent architectural idiom, as exemplified in the work of Mies, detrimental to the proper integration of new buildings into their older environment?

### **Ways of participation in urban design**

WILHELM VON MOLTKE: There is a variety of ways in which the architect may participate in urban design and long range planning:

- 1 As an image builder
- 2 In political ways, on the planning commission
- 3 As the architect for a developer
- 4 As a consultant, contributing to understanding of the role of design in planning and urban renewal
- 5 As the executor of planning ideas
- 6 As an educator

GROUP QUESTION: What are the reasons for Philadelphia's success with its urban renewal programs?

WILHELM VON MOLTKE: First, we started with a hopeless situation. That always helps. Philadelphia was so badly run for the last 68 years that even the blind could see that something had to be done. That aroused a good many citizens and a good many personalities, some of them architects. Therefore, there is a very good balance of planners and architects on the Philadelphia City Planning Commission which has been guiding the design throughout. There is very cordial relationship. A model of downtown Philadelphia with "before and after" displays is visited every day by two or three school classes. All the children in Philadelphia are exposed to it. It is followed up by class instructions about their neighborhoods. The children make models, develop ideas on playgrounds. They are, of course, the future taxpayers and voters. We have a lot of citizen participation.

GEORGE BIRELINE (*North Carolina State College*): What value is placed on the individual in determining the sequence of planning events in urban design?

WILHELM VON MOLTKE: Whatever you do in your urban design is ultimately for people. Obviously, you set the stage for human activities. Therefore, this should be almost the foremost consideration. But it is always difficult to deal with the problem of re-location satisfactorily. We should never forget about people, but we sometimes tend to, because we are confronted with tremendous problems.

DENISE SCOTT BROWN: Where can you go and spend a Saturday playing bowls, or whatever you want to do, in Philadelphia after the Planning Commission

is finished? Perhaps, these are not planners' values—but they are values.

WILHELM VON MOLTKE: We, in Philadelphia, are promoting a honky tonk center. There should be a place where you can go slumming.

Unless we develop mass transit and make it again attractive, which we are trying to do, we cannot have a concentration of people. One thing which we must constantly bear in mind is that a city plan is not necessarily a master plan; it is a continuing, changing thing. It should not freeze for all time.

### **The power to plan**

BRIAN SHAWCROFT (*North Carolina State College*): We are talking theory and cold war between planner and architect. That is not the real problem today. We assume that cities have power to do what we think is right and we only need to battle it out between ourselves. We have no power whatsoever in the economic situation of this country. We don't have the controls Mr. Gorwic implies we have.

JAMES M. HUNTER (*Architect, AIA Vice-President*): A great many cities are being desecrated by sociologists, political economists, and all sorts of planners who know nothing about the physical arrangements of things, but who write building laws and restrictive ordinances. They think out of this sort of thing will come a physical city that will have order. What should be the architect's position in this?

G. HOLMES PERKINS: If we try to convey the impression to the public that the architect is capable of engaging in this very difficult, high level business, I think we would be wrong. But, I don't see why he should not interest himself in the elements which limit or influence his creative problems. In other words, if an FHA regulation reduces his ability to produce a good result, he should get the regulation changed. This applies generally.

The trouble is that the architect is not there when these rules are made. If he is there from the beginning, perhaps he could devise rules that would serve their intended purpose of protecting the public interest which at the same time, allow him sufficient freedom to design a good building.

BERNARD LEMANN (*Tulane University*): There is a modest but very important role an architect can play as citizen; acting in the planning unit, the neighborhood, where in a sense planning begins.

reformer's City Social. And we are now in the phase which Crane calls the City Procedural, where the administrative man is the key person in the area. But this administrative person is only the coordinator of a series of professionals who each has some unique contribution to make which is his and his alone.

The concepts of Hausmann, of Burnham, of Howard, of Le Corbusier, of Frank Lloyd Wright and his anti-city, or the development of the garden city of Stein and Henry Wright are great contributions upon which we can build tomorrow. They are, however, not the main guidelines for the future city. We also sense other forces reflected in the designs of some of our newest cities. The new space concepts, spoken of by Spengler and Einstein are, for example, reflected in the two great cities of Brasília and Chandigarh, a city of which Louis XIV would have been proud. It is the hope of tomorrow.

### The team

ROBERT SNYDER (*Director, Department of Architecture, Cranbrook Academy of Art*): I think we are becoming inbred for lack of communication between related and unrelated disciplines. We are losing the ability, and hence losing the right, to participate in the creation of the environment. The team effort must be examined critically and we must stop thinking of ourselves as something removed from society, as a specialist or a special specialist. The problem of specialization is causing us to dwell on some very trivial matters as far as society is concerned.

G. HOLMES PERKINS: The comprehensive plan is not, I would say, the basic business of the architect. We cannot draw a sharp line as to where the architect stops and where the planner begins, or vice versa. To produce a comprehensive plan, we require a very sizeable team of experts. We do have to have people with vision, just as you do in architecture. The basic analytical studies and statements are made with the help of an architect, but they are not normally his primary concern, nor is he the leader of the group in all cases.

The architect comes in on this master plan. He can and has exerted an enormous influence on the form. And a three-dimensional form lies behind much of it. In fact, the location of walkways, of parks, or expressways, the location of major garages,

and their access to expressways to the city are entirely the result of three-dimensional cities which have gone a long ways in influencing the master plan.

A. A. LEIFESTE, JR. (*Rice University*): It has been suggested that for the individual, there is no difference between individual work and teamwork.

WILHELM VON MOLTKE: What may look like one man's creation is really the result of a great deal of work by other people.

A. A. LEIFESTE, JR.: I wonder if Detroit, for instance, isn't suffering from a lack of individual expression.

WILHELM VON MOLTKE: No. I think it is a lack of principle. That is quite different.

A. A. LEIFESTE, JR.: Well, can principle derive from anything but an individual, really?

WILHELM VON MOLTKE: Principle is something outside the individual. The individual is trying to discover the principle. We strive all our lives to find the principle, to find the forces which finally give shape to whatever is done by architects. They are the ones who are trained to put the many factors together and bring planning to a real conclusion.

NORBERT GORWIC: We are repeating a Garden City pattern that was outmoded the moment it was established. Our urban pattern doesn't make sense and we need a new one. We haven't got it. We are making a mess of Detroit with all the expressways. But we don't stop the people from moving to the suburbs. We save one acre by urban renewal while a hundred acres become slums. If the architects don't provide the answer, no other profession will.

JOHN E. BURCHARD: But the conclusions may be that the superhighway is, whether you like it or not, what most people in this society want.

EARL STEWART (*North Dakota State College*): Should a practicing architect be encouraged to collaborate with professional planning consultants in professional practice to provide integrated professional services?

G. HOLMES PERKINS: The answer is yes, a hundred per cent. The more the better. This is the hope for the future. Architects can't do it alone, because they can't provide the wide range of services necessary to do an honest consulting job for the community. The trouble is that there aren't enough people who are really good enough in the various fields to make these teams. We must educate more.

this predicament it has chosen to be not skeptical (which may be hard for architecture to be) or syncretic, but rampantly eclectic—that is, if we use eclectic in its real meaning and not associated only with revivalism, as architects have tended to do. And, from this, certain large questions arise for teachers. For even if individual buildings today are to spring full-panoplied from the head of a single architectural Jove, whole cities will not, at least not very often. Fortunately, and I say this deliberately, the chances for a Chandigarh or a Brasília are few and far between—and if these cities turn out to be successes they will be added to long after Le Corbusier and Niemeyer and all their acolytes no longer have anything to say beyond the messages of their buildings and their streets.

NORBERT GORWIC: The modern architect is neither willing nor technically equipped to deal with the large scale problem of urban design.

The modern architect has abdicated his responsibilities. He has no common language with the painter or sculptor. He has lost interest in the urban scene. The problems of the city are no more his concern. He has put on a pair of blinkers and limited his vision to the solitary building. Even the construction of his single building has been taken over by the structural engineer. No wonder that architecture is ceasing to be an art and is becoming just another branch of industrial design.

What has been our contribution to the philosophy of modern architecture in its relation to the complicated problems of contemporary life? Modern architecture is no longer new, revolutionary or even very modern. It is simply commonplace. Some individual buildings are impressive in their intellectual integrity, others can be quite pleasing, but when viewed en masse, there is only too often an uneasy feeling of disappointment, a lack of fulfillment, a sense of great expectations that have not come true. Consider the bizarre collection of giant glass boxes on Park Avenue, which have so successfully obliterated the character of the old street without putting any new urban value in its place. You can see how each building has been conceived and designed in total isolation, just like a vacuum cleaner or a washing machine. How obvious it is that no consideration has been given to the relationship with the other buildings or to the urban personality of the street itself.

We have embraced the gospel of functionalism in its most narrow, material sense. We have forgotten that spiritual values are part and parcel of any architectural function, and we are beginning to pay the price. Frustration is growing; the reaction is setting in. One can already detect the signs of a modern baroque. But no ingenious screen or other clever gimmick will prove to be the salvation.

### The Rebuttal

G. HOLMES PERKINS: It has been said that the architect has divested himself of any responsibility for urban design. It is hard for me to understand this statement. There is a certain urgency today which, perhaps, we did not feel yesterday. But just look back at the architects: who was it who produced the Rome of Sixtus V? Let me just mention Fontana, L'Enfant, Berne, Clarence Stein (the AIA Gold Medalist of 1956), and Le Corbusier, (the AIA Medalist of 1961). Have these men turned their backs on the city?

Architects contribute more than any other group to the city. And yet they are condemned for one reason or another. The City Beautiful movement, with its emphasis upon the physical form, is now decried. Burnham's name is tarred with the brush of "The City Beautiful" as something to be condemned by planners and architects as well. I suggest that Burnham's great contribution was not the City Beautiful at all, it was not the continuation of that sense of form. It was the first great plan in the world which concerned itself with the total social and physical organization of the city. This plan included transportation, social needs, parks, waterfront developments, the economy of the city, the central railroad station and others. There were eight points and the first seven were carried through, not exactly on the image he designed, but based upon his plans. Chicago has spent 300 million dollars carrying out the first seven portions. The only one it failed to carry out was that of the City Beautiful with the great city hall and public square in the center. Burnham's approach is the basis for a modern planning content.

Today, as Crane points out, we have passed through that phase of Burnham's City Beautiful. We have passed through the phase of the social

*The indictment*

JOHN E. BURCHARD: Architects are winning few laurels when they joust with the man-made environment, and particularly the urban environment. Would anyone here like to try to list three examples he would want seriously to defend as fine and sensitive presentation of the modern idiom in an established and decent older historical environment?

Using the bulldozer is the easiest possible solution; accommodation to the existing which should not be bulldozed for aesthetic reasons or cannot for economic reasons—this is the hardest problem and it is one which modern architects have very consistently flunked when they have not ducked submitting to the test altogether.

Today we have to mention the UNESCO building as only a fair effort to respect an urban landscape while the disasters in Oslo and Stockholm and on Park Avenue and especially in Grosvenor Square should cause us to wonder if there is any much-admired contemporary whom we would be happy to see commissioned to reclose the Piazza San Marco if the nineteenth-century building should come tumbling down.

The plain fact is that the modern movement which began with dignity and modesty and firmness of purpose has been fragmented into what sometimes seems like a restless personal quest for notoriety. For if architecture is as bedeviled by fashion as I believe and have asserted it to be, it is probable that fashion will determine also architects' attitudes (and schools' attitudes) toward how architecture should approach the natural environment or the urban environment; even how architects should structure their moral and ethical hierarchies. The profession cannot provide examples of moral conduct for oncoming generations so long as the examples are hidden.

We can fairly draw an even more bitter indictment against the state of contemporary architecture and the attitudes of contemporary architects; they cannot even consort with each other.

It is ironic that places like MIT and Yale which have been most enterprising in their efforts to employ a variety of first-class men, and have often gained a number of distinguished individual buildings, have nonetheless been individualized into chaos.

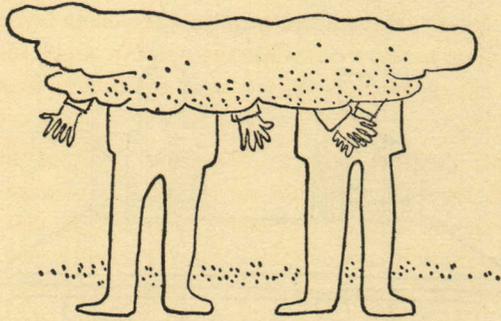
The fashions that we remember as associated with the "great" architectures seem to have taken a fairly long time to work out while the times in which there was too abundant a choice tend not to be remembered.

This raises a host of reflections. Perhaps time scales have changed and we should expect even in architecture a rate of change comparable to that of transportation or communication? I happen not to regard the analogy as valid or the conclusion as sound, but it is a possibility. The more sobering reflection is to be experienced by examining the results of the present architectural chaos.

Can you really call the work of the following contemporary men all modern architecture: Corbu, Mies, Gropius, Nervi, Rogers, Vigano, Rudolph, Yamasaki, Saarinen, Johnson, Stone, Belluschi, Niemeyer, Bucky Fuller, Lou Kahn, Kenzo Tange, Kunio Mayekawa, and say Steener Rasmussen and Alvar Aalto and Arne Jacobsen? Of course you can, but if you do what is the fundamental principle that puts it all under one title? I suggest there is no common principle of structure, of plan, of space, of purpose, of theory, that is to be found in all this work; if there is any at all, it is the principle to which all the great men do not subscribe that buildings are admirable only to the extent that each one is as different as possible from every predecessor; and that innovation, even half-baked innovation, is infinitely preferable to slow and painstaking refinement of an innovation that had merit even when it first appeared in its crude form. It is not by such processes, the processes of the Bandarlog, chattering away over each newly discovered stone or art, that any notable human achievements have occurred. It is not the way by which Major Gagarin and Commander Shepard were punched into space and recovered alive; and it is not the way the Parthenon or the Cathedral of Chartres were distilled.

It is possible that the chaos of the architecture of today is but descriptive of our society so that it is, in fact, what a decade ago we would have described in the fashionable term "the architecture of our time."

But if we had to categorize the architecture of our day, we could not call it unified; it is representative rather of a time and a situation when several powerful doctrines are in conflict; and in



we could design a playground and make it a wonderful environment, then we can take other playgrounds, parking lots, city squares and cities and create the total environment.

I believe that in the design of any project, the most important thing is to develop empathy. Empathy for the land, empathy for the people who will use the project, empathy for the people who will operate it, empathy. If you preserve the spirit of the land, you can preserve the land, its quality, for the people who will live and be there.

To develop empathy with the owner is so simple, it's so right.

How can you do a playlot without developing empathy for the kids who will use it? I know this; if you design a playlot and you have a pencil in your hand, you have to feel like a kid. You have to feel like leaping, like pulling a pigtail, like kicking and running and playing and jumping and climbing and swinging. Think, feel, remember. What do kids like? What do kids really want in a playground? They like to create; a little playlot should give them color and a chance to create. If you want to have a playground for a little kid, give him primitive color; he is a primitive, he's a savage. Give him texture, not asphalt, not all the same texture.

You have to develop an empathy for materials—you have to love them. Look at a piece of wood: "What a nice piece of wood!" Or look at leather, or steel, or aluminum. It has to make you proud and happy just to see and feel materials and know their nature and their possibilities and limitations. Then it is really fun to work with materials and they won't frustrate you—they'll sing.

Don't clear the land by taking the tree down. Preserve the tree, use this tree.

You should *feel* what goes into the playground, the relationship of the used areas. Here's where a little sandbox will be, a little shelter here, a screen of planting here, here's a little slide area, here's one of those new climbers, here is where the volley ball court will go, the basket ball area here, the baseball field—these are the areas to plan. Change them around until you get the best diagram of relationship. Once you have this you can change these areas into volumes. One learns a great, great deal about designing, once he catches the idea that you don't plan areas, you plan spaces; that areas have to be translated into spaces and volumes. Each volume is suited in size, shape, proportion, color, texture and form to best accommodate and best express the use for which it was planned. Then you take these areas, translated into volumes, and you move from tiny, confined, dark spaces, a shady space, a cool space, a down-under space, into a big wide, pretty, sunny, open space. And you know that this movement from one space to another is transition. It is an experience, too.

Creation of pleasant spaces can be done, and it has to be done before you call yourselves architects and we call ourselves landscape architects. You don't plan playlots, you plan experiences of play. You don't plan a doorway, you plan an experience of entry. You don't plan a swing, you plan an experience of swinging.

If spaces grow empathetically, they are organic, they are workable and easy to maintain. And they are also beautiful.

[The Japanese Zen know this.] They make every little act, cutting a lemon, peeling an onion, making a bed, building a fire, a little bit of art. They try to get experience out of each element they touch, each day they live. They extract its full essence. This is such a simple thing, but how little we do it. If we did it, what a wonderful world this world be.

I don't say we should be Zen. Zen is a philosophy the Oriental people evolved in their time, in their country, over hundreds and hundreds of years. We have to have our own philosophy. The sad thing is that we have none. We are 200 or 300 years old and we don't have a cohesive, creative, dynamic philosophy.

which is always true to the nature in man and to the laws of nature, and which is conscious of water, of air, of light, of the animal world and the green world.

PATRICK QUINN: To what degree can we give such values as loyalty to a city which elicit from the people part of their innate fibre?

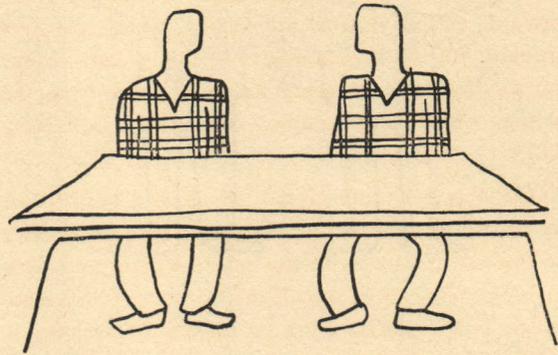
LOUIS KAHN: It depends on the level of the important planner. If he is a doodler, a designer, a red, green, blue pencil man, I am afraid, nothing will happen. If he realizes the really wonderful natures of people and thinks of all men and what their motivations are, it can be done. I don't think the city will disappear some day. It won't, because it is a place which expresses the various aspects of man, the many points of view of man, how man is really varied. It starts with things that are indestructable, not patterns. Our present way of living puts us in close touch with distant points, it makes a fundamental beginning somehow different from what it was before. We must ask ourselves, "What is the first beginning, what is the first loyalty, around which you can expect the others to come? Today it is Levittown. It is the planned community, and it is nonsense, because back of it is nothing but profit.

JOHN H. JACOB (*Arizona State University*): One of the great problems in our cities today is the values people have and our children will have, and we are often told these are materialistic ones. I wonder if we can identify what, in terms of our environment, has contributed to this and what we might do to change these for our children?

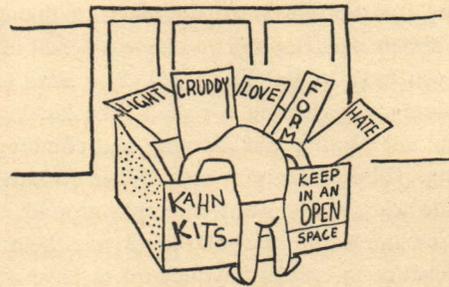
LOUIS KAHN: Your question should be the subject of a new conference. It is the only question that makes, to me, any sense. All the others are devices answerable to this question.

### Empathy

JOHN O. SIMONDS (*Landscape Architect, Pittsburgh*): I propose that in the process of shaping man's total physical environment, we must be concerned with first shaping all smaller environments. The great environment is a complex of small, pleasant, delightful, workable, usable spaces. Before we can build beautifully and create a beautiful environment, we must stir up a consciousness of the meaning of beauty. I'd like to take an example of a micro-environment, a simple urban playlot, a playground. If



*You know, there is a difference between the teacher and practitioner*



*It's not the project, the empathy, the teacher, or even the degree . . . it's the kahntent that counts!*

reverence for the animal world and the green world. But, like everything which is deeply rooted in feeling and a part of our psychic existence, it does not come forward easily. There are times when we feel strongly, but the simple matter of doing daily chores and solving daily problems keeps us away from the feelings about such simple, wonderful, motivating things.

Design is a circumstantial act. It is a battle with the nature of man, with the nature of nature, with the laws of nature, with the rules of man, and with principles. One must see all this to put it into being. Design is a material thing. It makes dimensions. It makes sizes. Form is a realization of the difference between one thing and another, a realization of what characterizes it. Form is not design, not a shape, not a dimension. It is not a material thing.

In other words, form is really *what* and design is *how*.

Find the form and from it many designs can come—many notions and many personal acts. Design is a personal act, it is how you see it. But the principles, the unique characteristics, are something which do not belong to you at all. They belong to the activity of man of which you happen to be a part and which you must discover. In planning, the central business district or housing areas are nothing but question marks. What are they, really? Where is the beginning? What is the nature of the place for living, or of the place where business is conducted?

We must look back into the nature of man and the laws of nature. We will find very good answers there. We will find selfishness, hate, love, sincerity—all these things. We will find what is called “good and bad” and we must account for it. Don’t say you don’t want any “bad.” You will have it, whether you want it or not. It is in the nature of man.

There are wonderful things in the nature of man which can be brought out, if you think of design in a fundamental way. Empathy, for instance, is a realization of in-common-ness—that which is true of all men. In-common-ness is not just common place. It is a kind of transcendence, commonness in transcendence. It is where you and I become “thou,” instead of just I.

This is not accomplished by a committee or by many people. It is the work of a single person right

from the start and supported with unquestioning enthusiasm because it is so true to existence itself.

In city planning, connection is very important to me. Not passage, not going from place to place, but simply places, areas which are treated as events in the plan and which give a feeling of connecting one thing to another, a feeling of belonging to everything in the city. A square can do this. Well-placed squares provide a sense of connection between one part of town and another.

This does not mean that a passage does not provide connection. But it is often confused by planners. Going from place to place you need established reference points from which you can sense the city in a certain way, in a certain aspect, a certain point of view. It makes you more loyal to the city. You can be a participant in the city only if there are logical and very strong statements in regard to movement and institutions of which you are conscious.

The architect should give spaces to an institution which evoke new meaning for it. Our institutions need spaces which will evoke a greater sense of dignity, a greater sense of loyalty to the institution and its relationships. For institutions are establishments of responsible civic living. The architect should think of new institutions as reflecting the things which are deeply ingrained in the nature of man and which, when expressed more fully, can make a city a city. And one can put new life into existing institutions by giving them other spaces, by creating new connections and by re-defining everything: buildings, streets, lighting, traffic lights, gateways, entrances—everything the city needs to make the passer-by understand the way of living in a city.

To put garages under buildings and to sort of hide them, or to wrap a nice little candy bar around them, or a nice grille, may appear as though something has been done. But, actually nothing has been done. It only confuses everybody as to the way of living in a city.

To prevent things from being done in an ugly manner, or in a manner which tends to deteriorate the original motives, our principles must be so true and real that they cannot be easily destroyed.

This applies to planning. It is finding the devices which obey the laws of nature and bringing them into consciousness. The architect must think of his responsibility—his responsibility to create something

as far as we can with our limited knowledge, to set up hypotheses and then to analyze them. It is an expensive experiment. But it is probably the only way we can do it.

### **Does environment change behavior?**

AMOS HAWLEY (*Chairman, Department of Sociology, University of Michigan*): Urban growth has been, and still is, a process of schooling unsophisticated populations in how to live in an urban culture. The contributions of the physical environment, whether in the city or elsewhere, to social and cultural development can be no greater than, or different from the unused potential in the society itself. In the absence of a religious doctrine a church spire does not lead the eyes upward to a contemplation of spiritual matters. Nor does a magnificent panorama excite the imagination where aesthetic values are not nourished. The physical environment can do no more than present a range of opportunities; it cannot dictate the choice that is to be made within that range. Regardless of the extent to which systematic planning may have guided the accumulation and patterning of the urban environment, the result can be no more than a passive factor in shaping behavior. Still it remains true that some arrangements of form and space are more conducive to a given set of activities than are other arrangements. Neighborly intercourse may be more readily fostered by arranging residences about a small square or piazza than by lining them up along a straight street. But that arrangement also lends itself to neighborly frictions and enmities.

If the physical environment cannot create, it should be designed so as not to impede the realization of the substance for creativity inherent in the social order. It should permit expression of the fundamental values of the society through providing the opportunities for their cultivation and through a symbolization of those values. Since those values are refracted through shifting interests and activities with the passage of time, the developing physical pattern will take on a variegation which nevertheless should retain a consistent theme.

But the coherent development of a physical pattern to incorporate expressions of a society's fundamental values in all of their many nuances and perspectives calls for a capacity for insight, syn-

thesis, and normative omniscience that only the rare paragon might possess.

The basic values of the contemporary period are of necessity highly abstract. The brotherhood of man, religious tolerance, freedom of expression international amity—assuming we seriously cherish such goals—are rather too ephemeral for effective nurturing through physical design, apart from the occasional use of monuments and commemorative structures. And when we try to bring those lofty goals down to specific applications we encounter a baffling diversity of interpretation.

On the question of what is required to achieve an abundant and satisfying life, people are not very articulate. It would appear that seldom have they connected specific and immediate objectives to that generalized goal. The opportunity for personal growth and development, the chance to make a lasting contribution to one's fellow man, the gaining of a sense of significance about one's daily activities—such ingredients of the abundant life are mentioned only by the few philosophical ones. Considerable research literature on all this seems to say that people want abundant and satisfying lives for themselves and their children.

People are much more explicit about their desires for certain instrumentalities, or environmental requirements, for the pursuit of their basic goals. Foremost among the specific requirements to which voice is given in sample surveys are convenience (or accessibility), space, privacy, safety and cleanliness of surroundings. It is interesting that beauty or aesthetic gratification is never mentioned. Could it be that beauty is of secondary importance, that it might become an objective only after the functional instrumentalities are secured?

Modifications and alterations of environmental requirements, whatever they may be, are simply adjustments to changing circumstances and opportunities for the pursuit of the primary objectives of life. The objectives, however elusive and difficult to define, remain the same.

### **The nature of nature**

LOUIS KAHN (*Architect and Professor at the University of Pennsylvania*): Built into us is a reverence for the elements, for water, for light, for air—a deep

GROUP QUESTION: Are expressways, traffic interchanges or parking facilities necessarily detrimental to the urban scene or to urban order?

G. HOLMES PERKINS: These things are not necessarily detrimental. I am sure that they are absolute necessities within the urban scene. If they are handled properly they will produce, or help to produce, urban order and urban form. They are not the sole and only determining basis for it, but they are certainly one of the ingredients which will help to produce a certain urban form and an order.

### **The image of the city**

GEORGE BIRELINE (*North Carolina State College*): We keep speaking of the image. I really can't fix it.

G. HOLMES PERKINS: When Le Corbusier, in 1925, showed his plan for rebuilding Paris, which would have wiped out all the area next to the Louvre, this was an image. It was an obvious attempt to shock people into a re-examination of their way of thinking. It was deliberate. He could have put the same design out in the middle of the country where nobody would have objected. But by putting it in one of the most sacred parts of Paris, and wiping it out, he caused a storm of protest which got his message across to a great many people. I believe we are today living on that image for our redevelopment proposals. We are modifying it, but basically most of our redevelopment proposals of a residential character in the central portions of our cities are based upon the image Le Corbusier created in 1925 in such dramatic form.

GEORGE BIRELINE: Then in effect, the architect determines the image, and there isn't, in many cases, an image of the city at all?

G. HOLMES PERKINS: Actually, when we speak about the image of the city we usually mean the new city such as New Delhi, or Chandigarh, or Brasília. The problem becomes very acute when there is an old image and one must impose around it, or in the middle of it, a new image. This becomes a problem of values.

WILLIAM S. GOULDING (*University of Toronto*): Philadelphia is one of the few communities in this country which has taken the old tired out images and principles and made something more than a project out of it. What concerns me is, once you get outside the core of the city, what do the planners and

architects do about creating images and principles that will put some sort of order into the great, endless sprawl beyond?

G. HOLMES PERKINS: I'm inclined to think that over a long period of years we must rebuild the central core. We must recognize that part of the quality of a city is the fact that it represents history. We can do this by destructive means or we can do it by adding. The problem is to provide the twentieth century solution without too serious a destruction of the values we inherited from the past. Thus, over a period of time, by each act, we evolve into a new kind of vision for the city. Cities take more and more land for industry which employs less and less people. This will have a tremendous impact on the central portions of the metropolitan area. It is frightening. While, at the present moment, we haven't come to the crisis point, we will come to it very soon. Suburban communities currently consider themselves better off than the mother city in the center. Tomorrow they will be worse off unless they themselves start taking some of the industry and also create satellite business areas. Suburbia will inherit the next generation of babies and this will greatly increase the cost of public services. The only new force I see appearing on the horizon, likely to be successful in America, is the creation of a Department of Urban Affairs.

GROUP QUESTION: Wouldn't it be fruitful for us to make an examination of the underlying principles that may determine the image, rather than placing emphasis on methods and procedure of designating responsibilities?

G. HOLMES PERKINS: I am sure we know that any design we may create will have an influence on behavior and the way people act. What that will be, we are not quite so sure, and here we need the help and advice and analytical ability of social scientists. They may tell us from paper what the effect on people might be.

For instance, soon a study will be published on the design of Levittown upon the habits, the social contacts, and the behavior of the families living there. This is the kind of thing that needs to be done over and over again. You cannot make this kind of a study without first building the design. Therefore, I'd say, we should sponsor experiments, such as Levittown, if we can. There is no other way in which we can come to grips with these problems but to go

artist should be to seek the essential and when the essential has been found, then, if ever, will be the time for embellishment. "At present, our approach is concerned almost entirely with economics, social security and physical health," criticizes Huxley. However adequately this deals with the foundations of life, it is not, frankly, enough. It leaves out all its upper stories. Our new view of human destiny insists that emotional and intellectual and spiritual satisfactions must also be taken into account.

Our problem today is that we do not have enough principles to carry down into sufficient detail and accuracy so that we have a reasonable guide as to the design. The role of design, it seems to me, is the force of an idea. The two greatest ideas which, to my mind, still have force today—perhaps, some might say too much force, because they are to some extent stultifying our imaginations and preventing us from developing still further and more vital ideas—are Ebenezer Howard's 60-year old idea of the Garden City and Le Corbusier's idea which is followed in all redevelopment planning.

In planning, there are forces which lie behind the decisions which have to be made, and the actions that inevitably will be taken. These forces are form makers. Among them are, obviously, our concepts here in America, of the free market, of a free society, and of private enterprise, but regulated private enterprise. Therefore, the pressures, we could call them the actions of the city, come from the competitive demands of the private segment of the economy.

On the other hand, there are the public interests which produce form in the city. We have the problem of movement—automobiles, the railroad, airports and our legs. We also have demand for certain public services which can be provided only through public cooperation. As our economy becomes more affluent, we are going to have to have other things that are not markedly private such as public golf courses, bathing beaches, and so forth. Representing the public are the mayor, the council, the planning commission, the city department and the commission.

But designs which are in any way subjective and are designs for a particular project have, frankly, very little weight in the long run. They are not really among the things that will generate form within the city. The most important aspect of design, and I think the most important part, is principle. If you

can establish a principle which is simple and understood by the people and by the professionals, you can hold to it.

I suggest that there are certain principles which are the forerunners of a universal image in terms of the city of tomorrow. First of all, the city will be constantly renewed. In other words, it must be designed so that it is adaptable to change. Secondly, the city must provide a freedom of choice for every family and individual, of the place to live and to work, and of what he may do—see a ball game or to go to the art museum or elsewhere. Thirdly, the city must be based primarily and overridingly upon the objective of promoting social values. Included among these social values are the possibilities for a balanced life.

The primary domain of the architect is space. Here, he is the acknowledged expert. Here he stands head and shoulders above all others. His only rival in the control of space is the landscape architect. But in this space he must understand what he is searching for, how the space is to be used, and it is not going to be used as Piazza San Marco was used, or the Piazza Navona, or the Signoria in Florence. Beautiful as these places may be, much as they may be magnets for the tourists, this is not the form of the city of tomorrow. To look backwards romantically to these creations of the past is the cosmetic approach to the city of today. We must understand that this is not the way we live today. We must find our own solution. We must recognize that in the path of the car there is a controlled element, a directed movement, between walls and between curves. We must remember that the movement of the pedestrian is not a directed movement, he can go everywhere. Therefore, these two directions, one overlaying the other, are in complete conflict. The free movement of the pedestrian must again receive this recognition in the city, as is beginning to be recognized in the New York Zoning Code, issued this June, and in the proposed Philadelphia one. If these codes are enforced and become the guide to building, it will mean the destruction of the street as we know it today, of the traditional city of the past.

The question the form makers must answer, is how we want to use our open spaces.

### **A call for greatness**

CHARLES BLESSING (*Director, Detroit City Planning Commission*): It is my thesis that urban design training, while providing basic technical proficiencies and basic design insight, must first and most importantly instill in the architectural student the urge to create an image of greatness for the city of the future. The American city sorely needs this vision. And it is here that the architect can find his greatest challenge and his challenge to greatness.

Only by creative inquisitiveness into the true nature of the future city and its potential for beauty, efficiency and economy, can we meet the challenge inherent in the virtual rebuilding of our cities.

The damage resulting from the transformation of a new continent, into the greatest industrial nation has been fast and perhaps irreparable. The complacency of every American to this fact must end.

A large part of the total man-made urban environment of America is a graveyard of lost opportunities. How can the mistakes of the past be corrected, and the inevitable future growth of cities be channelled into the creation of a beautiful, human and efficient environment? This is a problem that can be solved only if every city, every state, and the nation as a whole can share an image of greatness for the city of the future. This unequalled challenge calls for the broadest possible cooperation between architects, city planners, landscape architects, engineers, urban designers, as well as painters and sculptors and the others in the fine arts.

During the past 30 years we have witnessed a surprising paradox: the emergence of a brilliant, if erratic, modern architectural expression, and the concurrent decay of the very urban fabric onto which these same architectural masterpieces have been grafted.

We must concede that we are today not clear about the form of the new regional city we wish to achieve.

The national government in Washington has had more to say about the encouragement of urban design in the past few months, than in the past 50 years. "We ought to try some new ideas," says William Slayton, Commissioner of Urban Renewal, "some new designs, some new site plans, some new relationships between buildings, some other types of units, all sorts of different ideas for urban living."

We must today concern ourselves with the total environment, natural as well as man-made.

### **Sit quietly and listen**

WILLIAM JOHNSON (*Associate Professor, Department of Landscape Architecture, University of Michigan*): The individual has always been the key to inspiration and to creativity. What has changed the face of architecture is the ability to manipulate architectural form, and this ability will increase. But the basic task the architect must perform has remained the same for centuries. Perhaps, this fact has been lost in the sudden realization that urban problems have to be solved. Architecture, as a profession, should stay as it is and simply encompass urban design. It should not go running off into other areas.

DENISE SCOTT BROWN (*University of Pennsylvania*): It seems a new kind of city form is trying to emerge. We all put our hands before our eyes and say this is terrible. If we just sit quietly and listen, and see what is trying to happen, we may find that it is not all that terrible. There is, perhaps, an emerging structure and not the chaos Mr. Blessing sees.

### **The need for principles**

G. HOLMES PERKINS (*Dean, School of Fine Arts, University of Pennsylvania*): Over and over again, we hear the cries of doom, of the horrendous desecration of nature. We have even heard of the failure of the architect to take the proper leadership. I am, therefore, inclined to take a somewhat different view and say that our cities today are probably the best cities we have ever had in the history of man. They are now reasonably healthy and more people are born there than die there. In them we have a higher standard of living than ever before. Our cities are, however, very far from being as good as we could have, and this really is our problem. Today's cities are not what our children and our grandchildren, whose standards are going to be higher than ours, will want tomorrow.

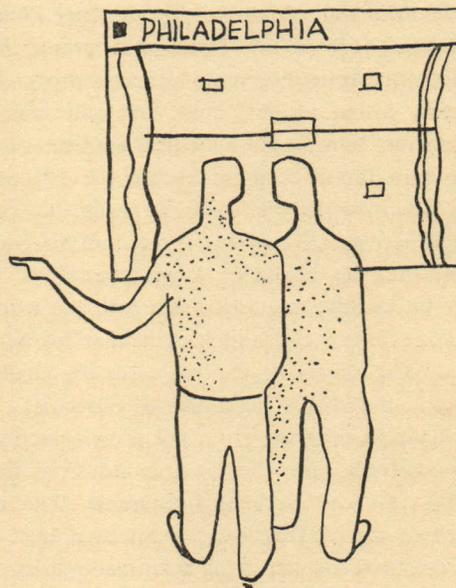
The architect is par excellence the image maker of the city. He is going to create the third dimensional city which will be saleable, which will be loved and accepted by the public. He will be the creator of the new alternatives which the public will look at and will, probably, at first reject. But, in time, these will be the ideas which will have force and will carry into action. The architect must, therefore, search, as Greenough has said. The aim of the

theoretical solutions to lay the foundations for the architect of tomorrow and the community will accept them. Don't start if you feel you have to know all the answers before you do anything. You'll never know them and it's a waste of time. An architect has to learn the art of getting the needed amount of information, whether it is for a city, a neighborhood, a hospital, or any other physical problem and do a good job of it. If he has the proper training, he can do it. He can be a first rate architect and leave the other things to other people. Good design is done by one man. A committee cannot create anything.

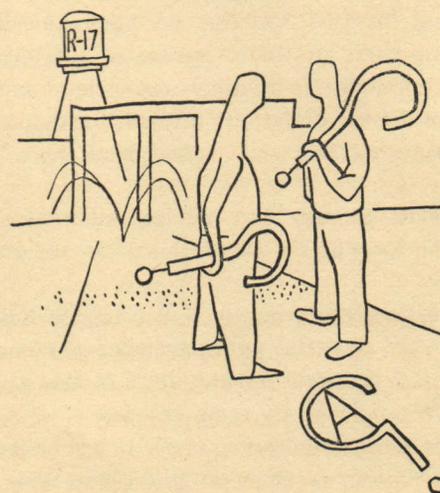
**Program and design**

WILHELM VON MOLTKE (*Chief Designer, Philadelphia City Planning Commission*): I question whether you can separate programming from design. All the decisions, the big decisions, are really made in the programming. Therefore, I believe it very important that the architect be there when the program is developed, which is part of the total process. I also feel very strongly that the architect has to understand the forces that shape the city. He must know the economic forces, otherwise his design becomes superficial. The design should grow out of the forces. There is a cross-fertilization between the body politic and the body designer. Therefore, I think, one of the roles of the architect is to create images which are also based on some understanding of economics. Through the creation of new space, the economic value of the land around it will, of course, increase tremendously. It will also improve the economics of the city. Thus, the architect who understands these relationships and who creates this image contributes very much in the political life and to the total life of the city. I see the architect as an image builder in political life. This, I think, is very important.

JOHN E. BURCHARD: But, I'm sure, you would also agree that, having created this image, the architect can't just leave it with the publication and the bulletin. He works with this image to the point where he thinks the image can take. Then he finally has other people, who are not architects, carrying it forward.



... yes I know but did you see Earl Stewart's project in Fargo, N.D.?



At least we've got a few good questions to take home

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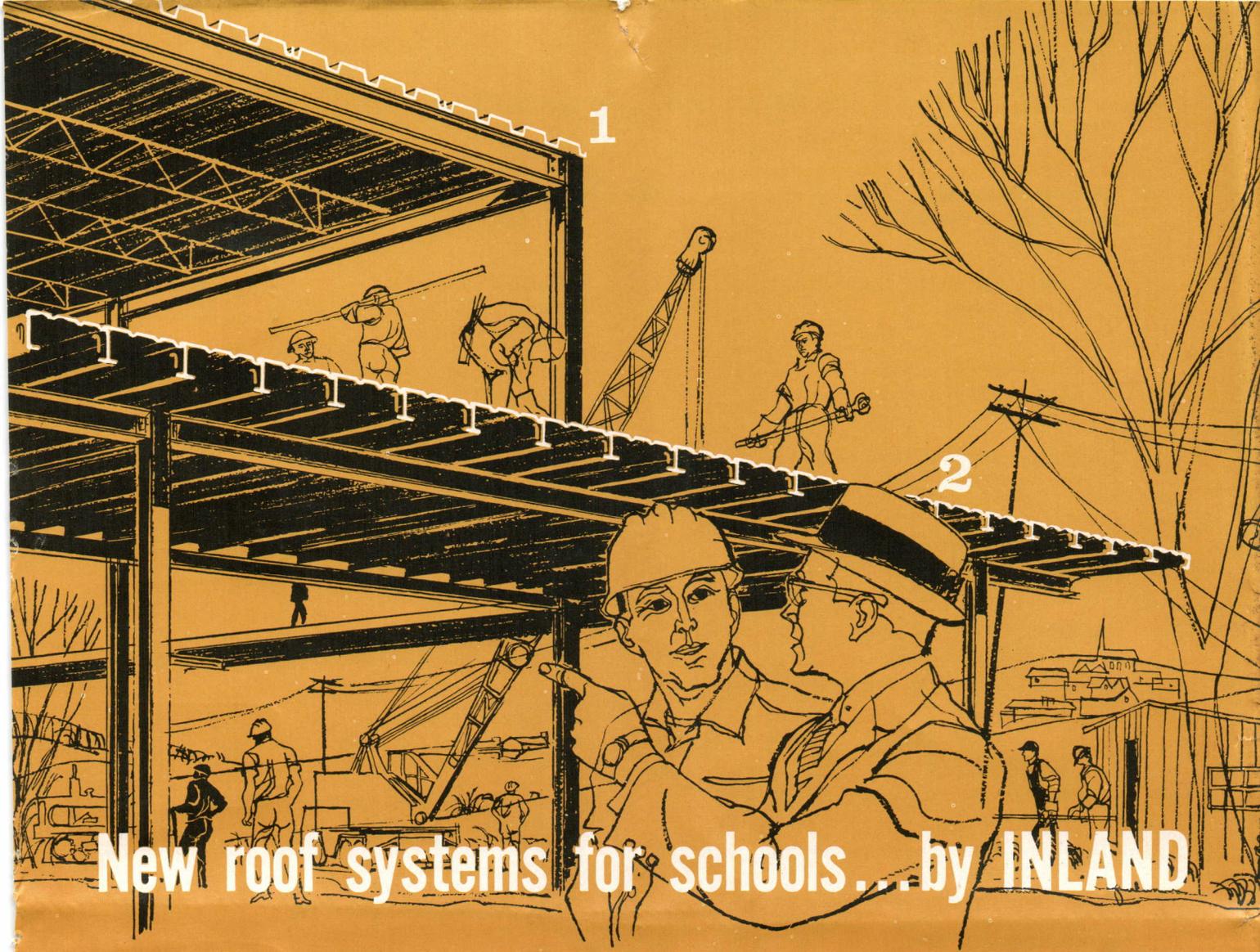
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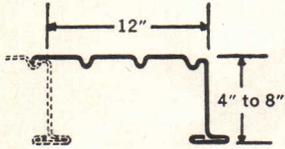
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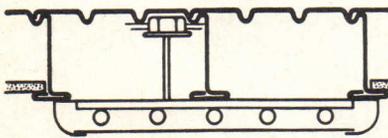
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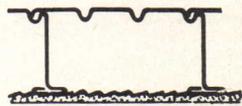


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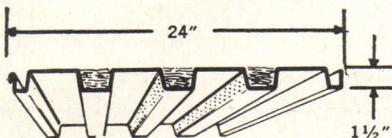
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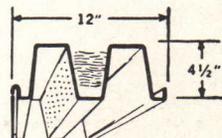


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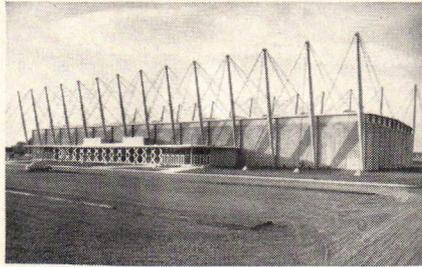
## Suspended Roof for New College Gymnasium



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but  
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“Column-free on the inside” is the way the architect describes this exciting and wholly utilitarian structure. It is the Physical Education Building of the Central Washington College of Education, Ellensburg, Washington. It is 150 ft wide by 390 ft long and contains, among other things, a main gymnasium, upper gymnasium, field house, swimming pool, apparatus room, two four-wall handball courts, two classrooms, 14 offices and, locker rooms, dressing rooms, etc.

The suspended roof is actually floating, being slip-fastened to the exterior walls. There are twenty-eight 80-ft high prestressed concrete pylons. Each supports two pairs of 1-5/16 in. prestretched, galvanized bridge strands, which suspend the entire roof structure. The 56 cables, averaging 404 ft in length, were prestretched and accurately marked for



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*Architect:* Ralph Burkhard, A.I.A., Seattle  
*Structural Engineers:* Anderson, Birkeland, Anderson, Tacoma

*General Contractor:* Earley Construction Company, Tacoma

*Prestressed Concrete Fabricator:* Concrete Technology Corp., Tacoma

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## Baroque Boldness

by *Wolf Von Eckardt*

► Sketches by great masters have always fascinated me. They often reveal the intuitive, the subconscious essence of their art—a first flash of vision, unrefined, but also uninhibited by the discipline of reasoning and craftsmanship. Ultimately, this discipline is, of course, essential, as so many contemporary artists tend to forget. But in great art that discipline serves to enhance the spirit of the first, uncontrived flash, rather than to belabor it to the point of mere technique. Vasari said 411 years ago that “many painters . . . achieve in the first sketch of their work, as though guided by a sort of fire of inspiration . . . a certain measure of boldness; but afterwards, in finishing it, the boldness vanishes.”

I found this, perhaps all too obvious bit of wisdom again confirmed by an exciting show of Tiepolo drawings at the National Gallery last fall. Most of the 135 drawings in this traveling exhibition, selected from the collection of the Victoria and Albert Museum, are quick pen and ink or chalk sketches on white or toned paper, given incredible depth and plasticity by dashing wash shadows. Giovanni Battista (or Giambattista) Tiepolo, who was born in Venice in 1689 and died in Madrid in 1770, undoubtedly represents the epitome of Italian Baroque. All the fashionable talk nowadays about a new baroque in our architecture made this delightful show particularly interesting to me. Here, I felt, is the genuine article in its unabashed, spontaneous essence.

Tiepolo obviously couldn't get his vision on paper fast enough. His ink pen could never quite wait for the wash brush. It rushed feverishly across the paper, creating utterly effortless, calligraphic strokes which give a mere, often scribbled suggestion of form. But only the brush with its sure and intense dabs could really capture his vision, a vision of often almost turbulent motion and incredible vibrancy. Even the most casual sketch, and a few in this exhibition are casual to the point of hardly intelligible abstraction, provokes the illusion of being three-dimensional. These allegorical figures and scenes breathe. They convey movement in space and tension and thus real emotion.

The power of the Tiepolo sketches struck me particularly in the two or three instances where such a first study is shown together with the engraving for which it was made. (All the others are studies for murals and paintings.) By comparison, the engravings seem meek and almost lifeless. They show skill but no fire. They lack baroque boldness, a spirit Tiepolo always conveyed, and often superbly, in his paintings and decorations for so many of the great palaces of his time, particularly the Palazzo Labia in Venice and the Residenz in Würzburg. There, even on an enormous scale, his virtuosity is all aglow with the fire of inspiration. As that of Bernini and the other great architects of the High Baroque in Italy, it was a virtuosity in the service of illusionary drama and enchanting splendor, but also of great strength.

This breathtaking, almost violent strength was not always admired. In the days of its founders, the catalog tells us, the Victoria and Albert Museum was able to buy the Tiepolo drawings for an average of ten cents a piece, unaware of striking a bargain. I have no idea how many hundreds of dollars one of these gems might fetch today. But I am satisfied that each and all of them will undoubtedly receive and deserve your full admiration, be it for their exuberance and freshness, their exceptional skill and genius, or, as in my case, as a strong reminder of what baroque was all about.

In painting and sculpture, as well as in architecture, baroque was not just, I believe, unrestrained exuberance or the employment of the much-touted illusionism which blurred the borderline between image and reality, as when Tiepolo's ecstatic ladies step right into the framing architecture. This unification of real and artistic space is but one manifestation of its essence: Its high drama which invariably lifts us beyond ourselves into the realm of emotional experience. Such drama takes a worldly director who, with sovereign abandon, creatively employs all the props—light, space, movement, color, painting, sculpture and whatnot—to overwhelm our senses. And this is a far cry from lyrical decorativeness, however ingenious, which might just as soon be called neo-Victorian as neo-Baroque.

The Tiepolo Drawings are circulated by the Smithsonian Institution Traveling Exhibition Service. They will be shown at the Houston Museum of Fine Arts (December 15, 1961 to January 15, 1962); the Los Angeles County Museum (February 1 to 18); and the Chicago Art Institute (March 15 to April 15.) ◀