IA JOURNAL

MAY 1970

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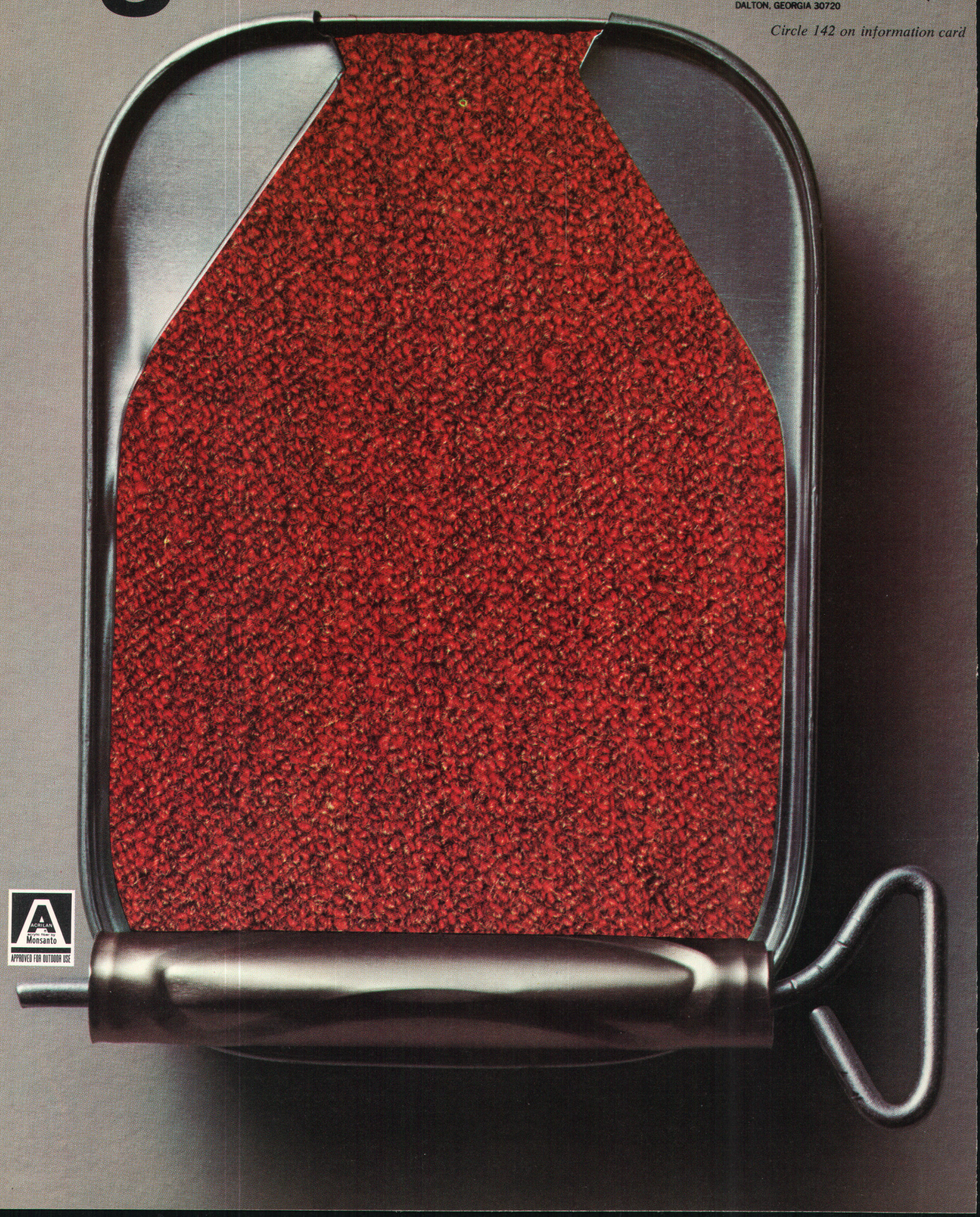

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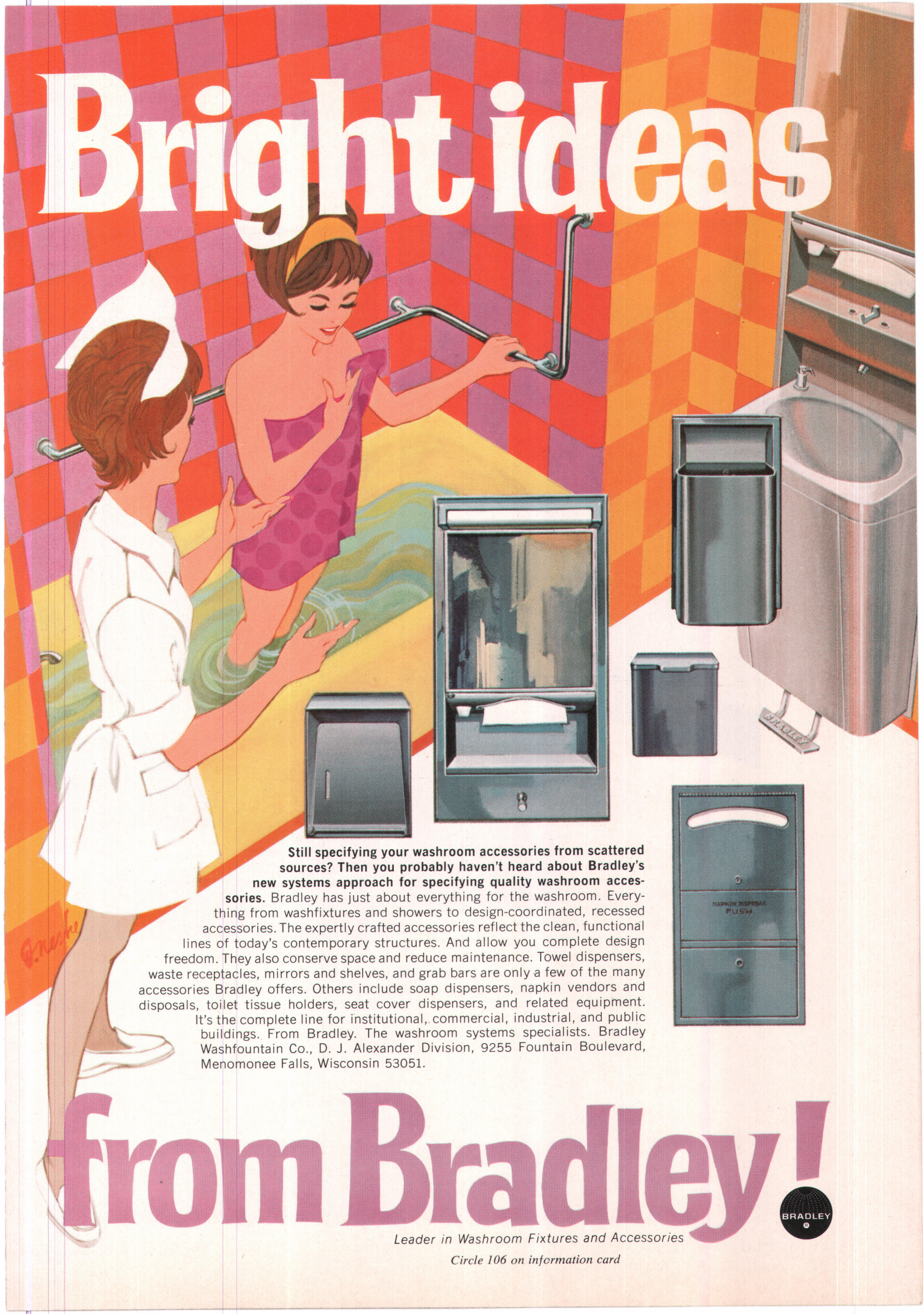

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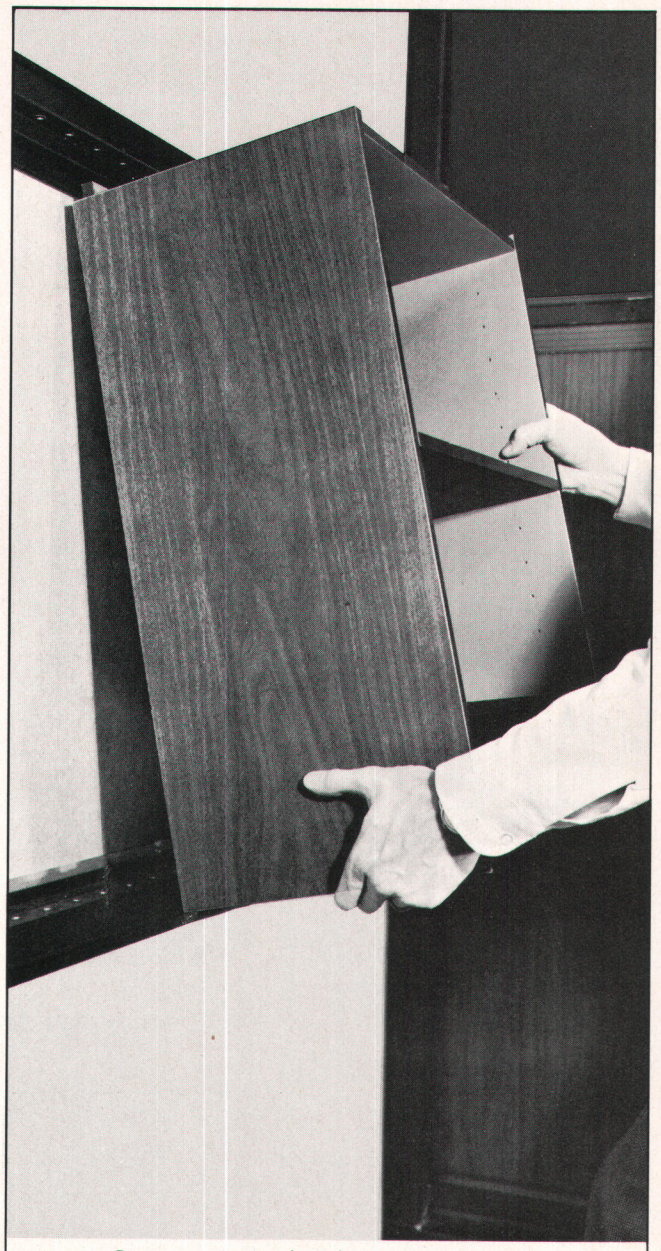

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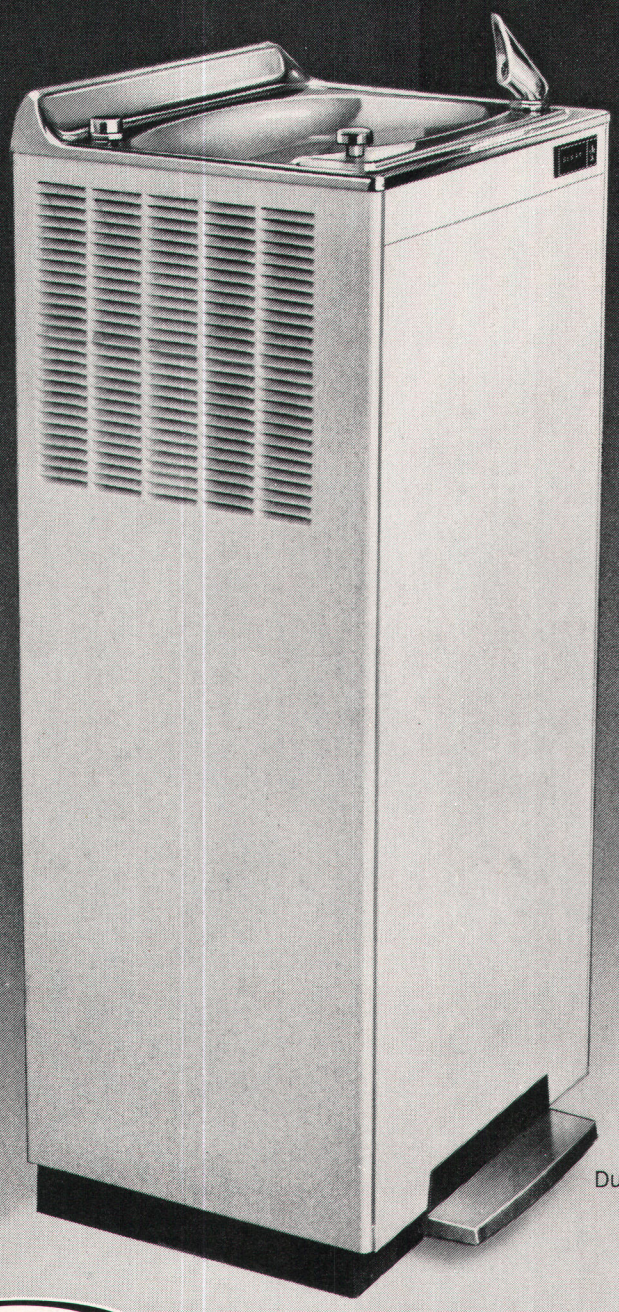

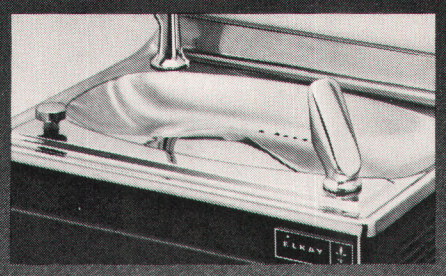

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Reception area designed by J. Gordon Carr & Associates for General Motors Acceptance Corporation in New York City. Photo by Norman McGrath.

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VOL. 53, NO. 5

comment and opinion

PRAISE FOR A PROPHET OF OUR TIME: From February 21 through April 5, the Corcoran Gallery of Art, our neighbor at the other end of the block, buzzed with an excitement it had seldom before known. And little wonder, for the whole gallery was given over to "The Architectural Vision of Paolo Soleri," the first major exhibition of the work of the small, sinewy man with the big, bold ideas, during which his book *Arcology* (to be reviewed in a later issue) also was introduced. There were models of all shapes and sizes—some exquisite pieces of sculpture like the bridges, some large enough to walk through like the city systems—and scrolls that unraveled along entire walls, all appealing to the esthetic sense while stimulating the imagination in terms of possible urban forms.

In addition, it was the first one-man architectural show in the Corcoran's 100-year history, averaging 8,000 viewers a week and producing more press coverage than any other. There were two other significant aspects, as the catalog so aptly described:

"Because the Soleri exhibition accedes to a social relevance seldom attained by most museum exhibitions, the Corcoran Gallery of Art is especially indebted to the Prudential Insurance Company of America for acting as co-sponsor and the US Department of Housing and Urban Development for aid in the publication of the catalog. Prudential's contribution goes beyond the financial: It shows that American business interest can exert collaborative pioneering efforts on the social realm. And HUD's participation, through the urban renewal demonstration program, represents a new dimension of that department's concern for the achievement of quality in our developing environment. While neither Prudential nor HUD necessarily endorse any of Soleri's particular solutions, both feel that the issue he raises must be heard and discussed at an early date if ever new cities are to be created."

As a postscript, it should be noted that Secretary George Romney, whose department is now immersed with the realities of Operation Breakthrough, was on hand during a reception for Soleri to be given a personal tour, even though none of the projects on display has been built. But the truth remains that his images open vistas into a cityscape of the future. In awarding him the Craftsmanship's Medal in 1963, The American Institute of Architects called him "an architect of vision" and noted "that within the awesome setting of nature, man should be gaining an environment worthy of his manhood, his potentiality."

Almost all of the technologies presently being used in architecture proceeded out of the inventions of the last half of the 19th century. We are confronted now with the potentialities provided by new materials and new methods in approaches to design and construction. Our capacities are enhanced tremendously by these developments. On the other hand, we have been unable to maximize the use of new technologies.

The persistence of the past in our architectural activities is being discarded by the intellectual inversion taking place. New perspectives of the future have been made possible by the increase in information flows and the adoption of computers so that simulations can be studied; by anticipations of alternative futures stemming from these simulations of several solutions; and by availability of new materials and new techniques in arranging these materials. They have made it possible for an architect to abandon the past and, anticipating the future, to find new forms for creativity.

Jakob Burckhardt, the Swiss historian of art and culture (1818-97), wrote that the capacity to create new forms is an attribute of a civilization capable of renewing itself. If American architecture is to adopt and utilize the new generations of technology that are appearing, then it, too, must have this capacity to create new forms. Such capacity comes from an ability to anticipate and invent the future. Paolo Soleri seems to have discarded the past and to have discovered the tendencies of what lies ahead. ROBERT E. KOEHLER

ACKNOWLEDGEMENTS

10—Robert D. Harvey
18—right, Chase Ltd.
43, 46 right, above and below, 47—Norman McGrath
48—Alexander Georges
49—Norman McGrath
50—above and second from below—Gil Amiaga
50—below—Charles N. Pratt
61—Antonio Atiles-Hernandez
83—Bill Wilson

NEXT MONTH

The convention theme for Boston, "The Architect in a Dynamic Society," sets the stage for our opening presentation in June: a packet of seven articles, led off with a statement by Nathaniel A. Owings, FAIA, from his book *The American Aesthetic*. What follows covers a gamut of pertinent topics about the practitioner and his profession.

The small office is examined in the light of a Northern California Chapter questionnaire; a Houston architect talks about comprehensive services in a somewhat philosophical way, declaring that "Our Architecture Is Too Small"; Charles Luckman, FAIA, answers a dozen or so candid questions about his firm's merger with Ogden Development Corporation; the NCARB president looks at new licensing proposals; the programs of the Task Force on Professional Responsibility are reviewed in a kind of "State of the Union" message; and this year's Gold Medalist, R. Buckminster Fuller, is analyzed in a very personal portrait.

Also in June: Joseph L. Eldredge, AIA, will be your guide on a tour of Boston, bringing you up to date, almost house by house, on what has been going up (or down) since the 1954 convention. And last but certainly not least will be our annual publication of the Honor Awards winners, complete with the report of the jury and comments on the individual projects. The largest number of entries since the inception of the awards program in 1949 was received this year.

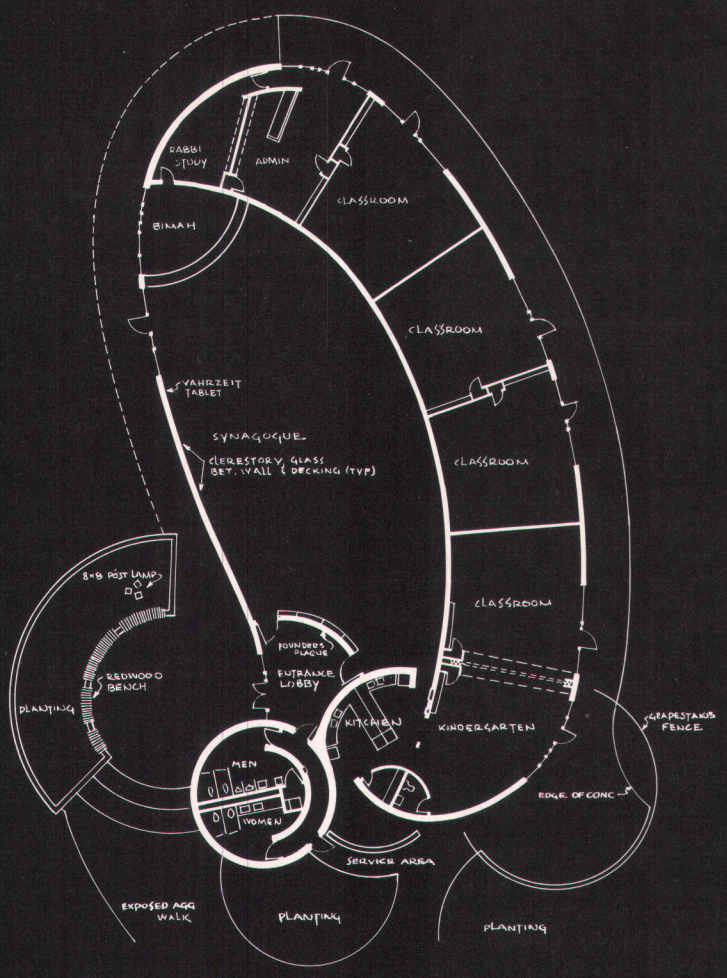
ASIDES

If present trends continue, there is a strong possibility that the architect of the not-too-distant future will work either for a large corporation as a member of a multidiscipline team or will represent the owner, be it an institution, foundation or private individual, in the setting of performance specifications. That opinion was given by Christopher Arnold, vice president of Building Systems Development, Inc., of San Francisco, when he addressed a Producers Council luncheon in the nation's capital.

Arnold made his talk just as we were putting the final touches on an article by the president of the firm, Ezra D. Ehrenkrantz, AIA, who attempts to set things straight in his discussion of "The System to Systems" in this issue.

Lauding the Department of Housing and Urban Development's Operation Breakthrough, Arnold noted that this program demonstrates a shift from what he termed "innovative building systems" to systems concerned primarily with process and delivery. He further stated that the Breakthrough finalists could well trigger the beginning of an alignment of major producing groups who will do the bulk of the entire building packaging in the future.

Arnold said he thought that there would be two types of building systems producers as already evidenced in the aircraft industry: the large ones who will deliver the entire building package, and many small ones who will subcontract out to these few, large producers and who will do essentially component work. □



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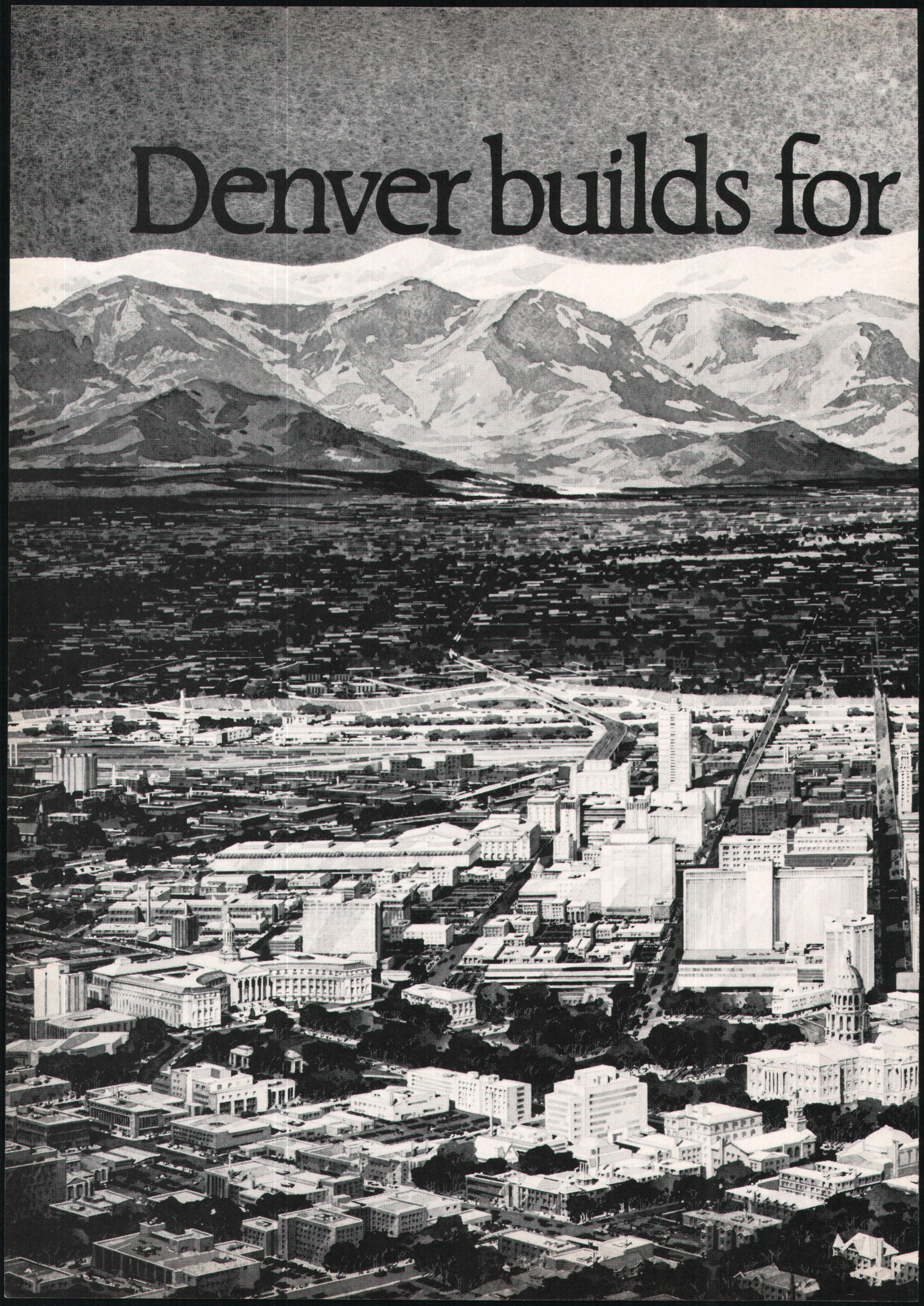

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Citizen-Controlled Urban Renewal Appears to Be Goal of CDC Participants

If the present degree of involvement continues, what is the future for the approximately 30 community development centers located throughout the nation?

Not bright at all was the consensus of the conferees at the first national conference on CDCs, sponsored by the AIA and held at Howard University in Washington, D.C. (The members of the Task Force on the Profession's Responsibility to Society have replaced the word "design" with "development," feeling that the former was misleading.)

Although there seem to be a number of factors at work that are hampering the effectiveness of the CDCs, the major problem seems to be one of finance.

Grady E. Poulard, the moderator and new director for the AIA Community Services Program,* began the conference by introducing Eugene Brooks, co-director of the Los Angeles-based Watts Urban Workshop.

Brooks reported, "Our flimsy but vital services from New York to Watts may evaporate if we can't be productive."

In the five years that have elapsed since the Watts riots, "not a damned thing has been done. There's been no essential change," Brooks stated. In that time his CDC has been able to get only 36 housing units started in the black, South Central Los Angeles slum with some 50,000 units still needed. The problem: funding.

Voicing a commonly heard complaint, Magnolia Small, a staff member of the Watts Workshop, declared, "Something is wrong. There is plenty of money for studies, on the drug problem for example, but no funds for action programs already set up."

Echoing her sentiments, Willie Vasquez, director of the Real Great Society in New York's East Harlem, commented, "You know, they study us; where we live, what we eat, even our sex lives; East Harlem is the capital of the world for studies."

Representatives of the Department of Housing and Urban Development and the Office of Economic Opportunity, addressing the conference on the subject of funding and how to get it, were repeatedly interrupted with expressions of impatience.

Noting that one of the major problems the CDCs face is that the current administration is transmitting funds through city halls and state houses and not directly to programs such as CDCs, AIA Executive Vice President William L. Slayton said the Institute is actively working to secure funds for CDCs from HUD and OEO.

Clifford Graves, 701 special projects officer for HUD, stated that funding problems were likely to arise if CDC projects were open ended. He said that the government would much rather see a program with a definite starting point and termination point. He added that it is necessary to identify both the programs and the participants, at which point Rodney Wright, AIA, director of Chicago's Uptown Design Center, came back with the rejoinder, "You don't have to identify us; we're trying to identify you."

New York's Quintana addresses conference.

Perhaps this statement best exemplified what the conference was all about: community control. The CDC leaders seemed to agree that the most effective centers, and the ones which the poor trust the most as advocates, are those controlled by citizen boards.

"I see this as the most creative effort the American architect has ever been involved in," said Wright. Uptown Coalition leader Charles Geary added, "The AIA did a beautiful job in setting up the Chicago CDC. But it wouldn't have been beautiful if the community didn't have control."

George Rockrise, FAIA, of San Francisco, AIA Vice President and chairman of the Task Force on the Profession's Responsibility to Society, added, "The work of the development centers must be based on what the community wants. The community must organize to tell the professionals, and the professionals must listen."

In the same vein, Slayton stated, "The community design centers can become the community government of the future; very clearly that's where we're going."

One of the definite pluses of the conference was the information imparted to AIA members who are hoping to set up their own CDCs. The members said they are organizing such programs, based on local needs but using lessons from operating CDCs.

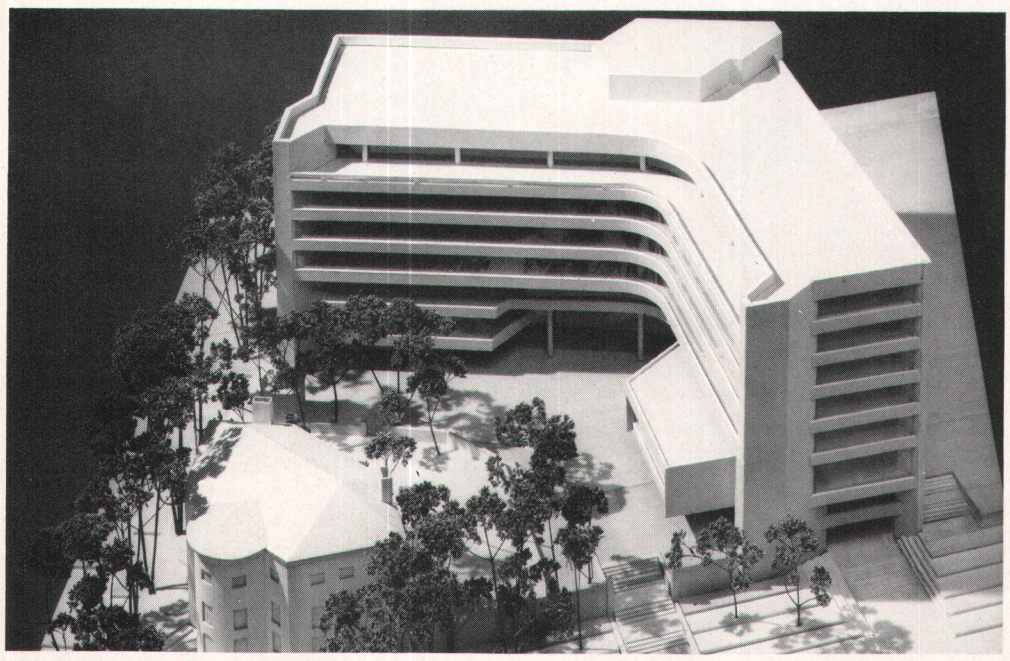
Arthur Brown, AIA, of Dayton, Ohio, explained, "This information will help get us started." Most of the factual, day-to-day data came from the workshops that went on both days of the conference.

Some of the young architects complained that the AIA has devoted only 1 percent of its income to aid CDCs, and there was fear expressed that the Institute might seek to control the CDC program.

Slayton, answering this statement said, "The AIA does not look upon CDCs as an AIA-controlled program but as a very important movement which we should encour-

Continued on page 14

* Poulard was special assistant to the Mayor of Washington, D.C., and an Urban Affairs Fellow at Yale University, 1969-70, before joining the Institute staff on April 1. Hugh M. Zimmers, AIA, Philadelphia, a consultant to the Task Force on Professional Responsibility to Society who acted as director until Poulard's arrival, will continue as consultant.



"We shall move ahead as quickly as possible and hope to begin construction in late fall," says Executive Vice President William L. Slayton following the approval of the design of the AIA's new headquarters building by the Fine Arts Commission and the Board of Directors at press-time. Details of the seven-story structure, as planned by The Architects Collaborative with Norman C. Fletcher, FAIA, principal in charge, will appear in June.

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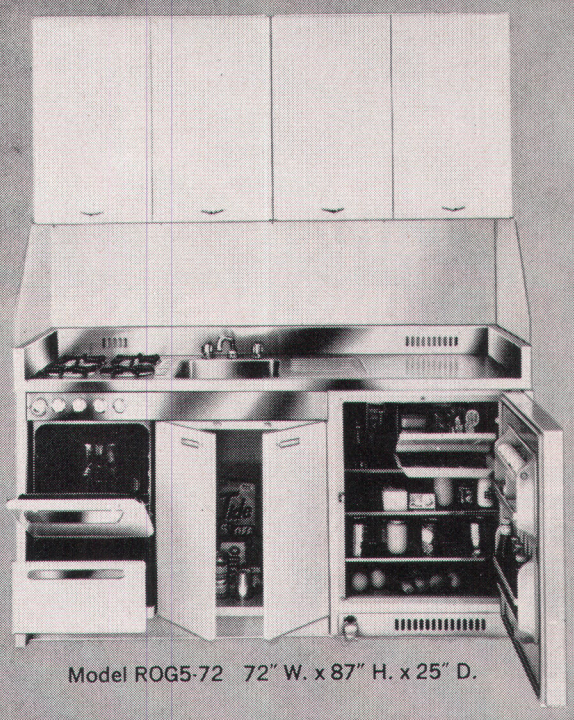

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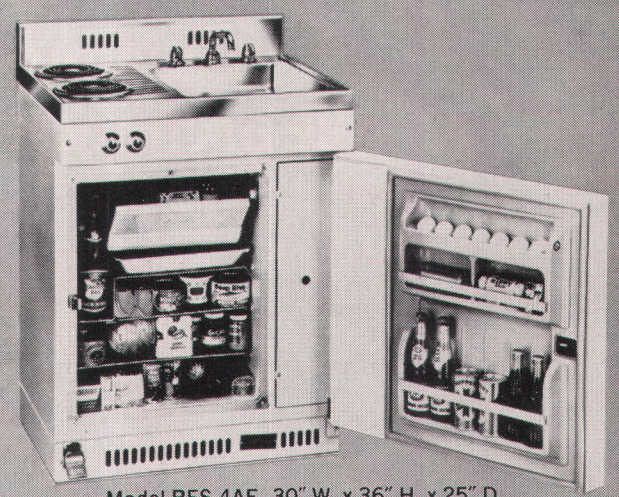

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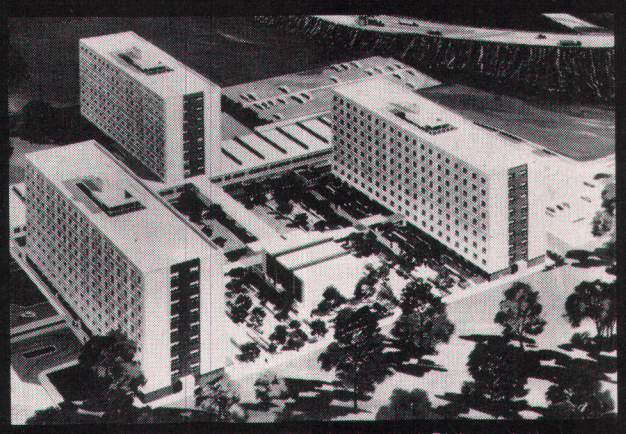

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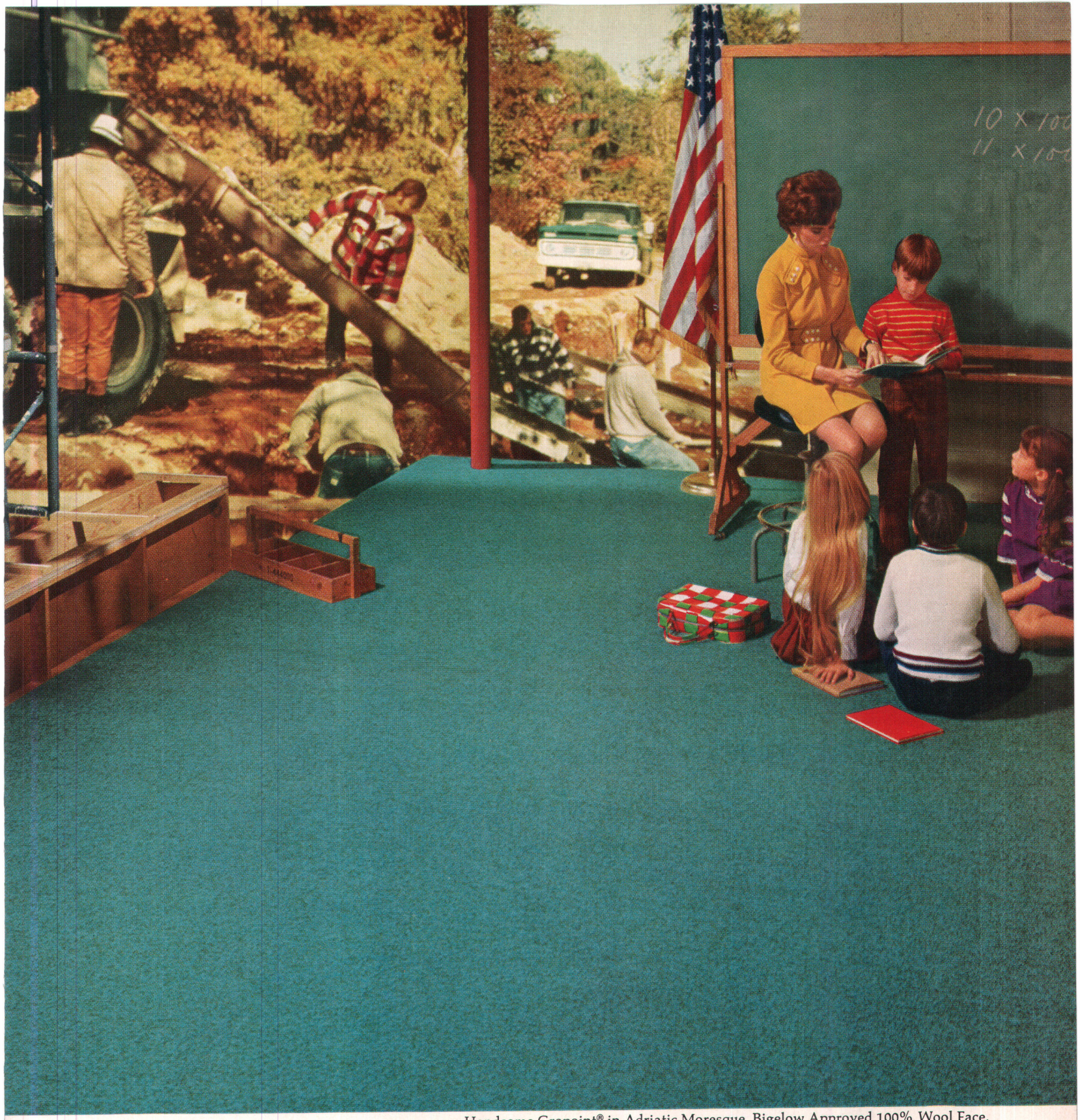

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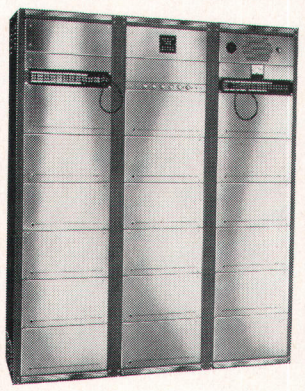

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outlook *from page 10*

age." He added that the AIA is encouraging local chapters to sponsor centers, and that local foundations are another good source of continuing money.

During the morning and afternoon sessions of the second day, a number of resolutions were offered that seemed to sum up the thinking of the attending members. Four were passed and one was defeated.

Harvey Kaiser, associate professor at Syracuse University, proposed that the conclusions of the conference be distributed to the members of the AIA as well as to the conferees; that within one month the scope, goals and objectives be established by the AIA in regard to CDCs; and that discussion of CDCs become a part of the Boston convention agenda.

Harry Quintana, director of the Real Great Society Urban Planning Studio in New York, submitted a resolution that the AIA make funds available directly to requesting community groups and if the community could not take the funds then the local CDC would act as a conduit for channeling these funds; that the AIA hire a full-time fund raiser with an annual income to be in the range of $20,000-25,000 and that he be assisted by an advisory group.

Quintana further proposed that a 13-member ethnically mixed advisory board be formed to channel the AIA funds, members of which board to represent Mexican-Americans, Indian-Americans, blacks, poor whites, Oriental-Americans and Puerto Rican-Americans and to be selected from the following CDCs: The Black Workshop in New Haven; Metro-Link of New Orleans; BAC in Chicago; the Philadelphia Workshop; CISCO in College Station, Texas A&M; ARCH of Harlem; 2001 in Pittsburgh; the San Francisco CDC; UDS of East Harlem; Environment, Inc., in Denver; and Uptown Design Center in Chicago.

The one resolution that was defeated, also submitted by Quintana, proposed that a practicing architect who works only on CDCs be made an AIA member and be exempt from all dues.

Robin Riley, director of Metro-Link in New Orleans, proposed that the executive vice president of the AIA be directed to hire 20 full-time lobbyists (from the existing staff or with new personnel) to reorient Congress to environmental concerns.

The last resolution that was passed was put forward by Harold Himes, a professor at the University of Michigan, who urged that each architectural and planning department recognize and accept the fact that individual experience at the community level of involvement be accepted as an essential ingredient of an architectural and planning education; and further that the students accept the responsibility to put together particular educational programs related to the community needs and that such programs be accepted as components of the educational process by the various faculties.

Himes' resolution was to be circulated in the name of the conference to department heads, deans, faculty members and student organizations of all architectural and planning schools; all members of the AIA and the American Institute of Planners, the Association of Collegiate Schools of Architecture, the National Council of Architectural Registration Boards and the National Architectural Accrediting Board.

Throughout the conference, in workshops and in the general meetings, there were two conclusions that were stated time and time again: that the basic goal of the conferees was to take the principle of the CDCs and develop local, state and federal government support for a productive, vital citizen-based effort; and that the present lack of funding made the attainment of this goal virtually impossible.

Special Day of Awareness to Augment Muskie's Keynote Address in Boston

When Senator Edmund S. Muskie (D-Me.) delivers the keynote address at the Boston convention, he will be speaking from a background that displays concern for the problems of air and water pollution.

The ex-Governor of Maine has sponsored and managed some 11 legislative acts concerned with air and water pollution abatement, as well as chaired the Senate Subcommittee on Air and Water Pollution.

Addressing the recent environmental teach-in at the University of Michigan, Senator Muskie stated that "The fight to improve the quality of our environment will

continued on page 18

Final Questionnaire Mailed for American Architects Directory

By the time this issue of the AIA JOURNAL goes to press, all architects practicing in the United States should have received the third and final questionnaire to secure data for the American Architects Directory. For several technical reasons, which were eliminated in the second mailing, the results of the initial one were disappointing.

John Noble Richards, FAIA, chancellor of the College of Fellows which is underwriting the third edition, urges "all corporate members to complete and return the questionnaires mailed to them in the name of the American Architects Directory. Each chapter has an associate editor to represent Editor John Gane, AIA, of Philadelphia at the local level. If you have questions about the form, ask him."

Chancellor Richards further comments: "All copies of the first and second editions have been sold, and this 1970, or third edition, will provide the only detailed information on you, the architect, and on your firm for at least the next four years.

"George McCorkle, president of the R. R. Bowker Company, agreed to publish the third edition only because his clients, chiefly libraries, indicated that such a reference book on architects is used. Let's do our part to assure the publisher that the information about ourselves and the experience of our firms is complete and accurate."

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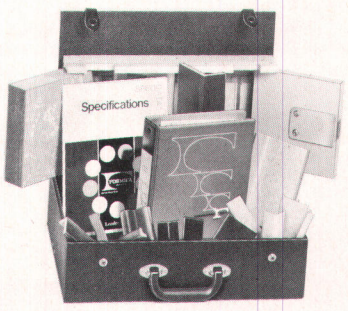

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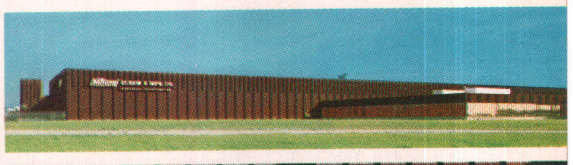

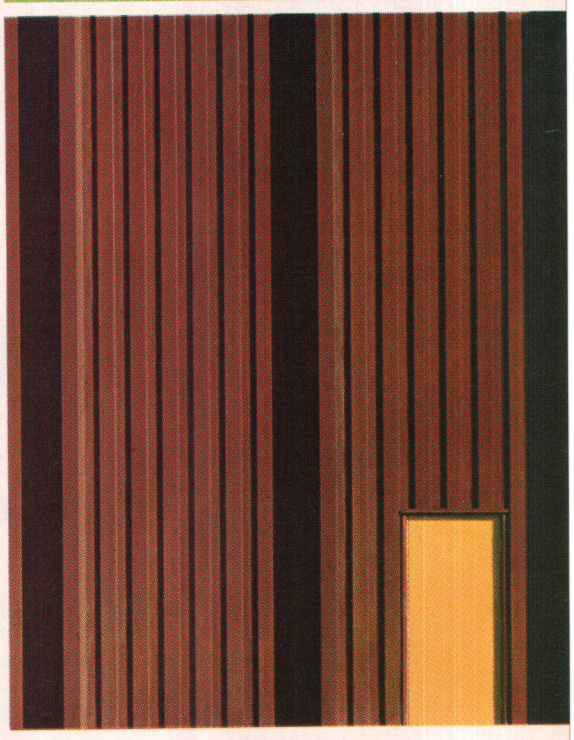

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Circle 137 on information card

outlook *from page 14*

need many new ideas. But more important than the search for ideas is the need for commitment."

He added: "The Santa Barbara Declaration of Environmental Rights contains a memorable line: 'Today is the first day of the rest of our life on this planet. We will begin anew.' To begin anew does not mean to begin with a fresh slate. We must start with what we have and what we have done to ourselves. But we can begin anew with a fresh appreciation of what life can mean in variety, harmony, useful tensions, beauty and excitement."

Further pointing up the special emphasis that the convention will place on the subject of environment, a "day of awareness" has been slated for June 24. It will feature a student program, "Environment: Awareness and Action," jointly planned by the Association of Student Chapters/AIA and the corporate members to focus attention on environmental problems and programs.

Other events will include the Purves Memorial Lecture by Walter P. Reuther, president of the United Auto Workers; a special awards ceremony celebrating the honorary members, the medalists and the recipients of Honor Awards; and a Gold Medalist's Ball that will honor R. Buckminster Fuller.

The Kemper Award recognizing "an AIA member who has contributed significantly to the Institute and to the profession" will be presented to Ulysses Floyd Rible, partner in the Los Angeles firm of Allison, Rible, Robinson & Ziegler.

Keynoter Muskie, Purves lecturer Reuther.

A recessed session of the convention will be held in London on June 29 in conjunction with the Royal Institute of British Architects.

Merchandise Mart Welcomes Architects

The National Exposition of Contract Interior Furnishings (NEOCON), whose sessions for architects were well received by AIA members attending the Chicago convention, again will feature a range of specific subjects pertinent to all the various areas of nonresidential environment.

At any time during the June 17-19 sessions, the registrants will have their choice of four programs under the sponsorship of the Merchandise Mart. Joining the city developers, industrial designers, educators and behavioral scientists on the program will be at least three architects: Charles William Brubaker, FAIA, Chicago; Arnold W. Thompson, AIA, White Plains, New York; and George A. Robb, MRAIC, Toronto.

Brooks' Legislation Would Determine Most Qualified Architect/Engineer

Noting that "federal buildings and other structures must be of the highest quality and most efficient design," Congressman Jack Brooks (D-Tex.) has introduced legislation providing for the broadest competitive selection of architect/engineers on the basis of proven capability.

Under the Brooks bill, the government agencies requiring architectural or engineering services would invite all interested A/Es to submit data as to their qualifications and performance. The agency head would then rank these A/Es according to their qualifications to undertake the particular design contract then under consideration.

Next, the agency head would negotiate with the highest qualified A/E and, assuming a fair and reasonable price can be agreed upon, award a contract to him. If such an agreement on price cannot be negotiated, the next qualified A/E would be afforded the opportunity to negotiate a contract, and so on until a contract was let.

In effect, the legislation will enact into law what the federal agencies do right now, i.e., select the most qualified A/E subject to the negotiation of a reasonable fee.

If enacted, the bill would counter the General Accounting Office recommendation that A/Es engage in price competition.

"In the years to come," Congressman Brooks emphasized, "billions of dollars in

continued on page 22

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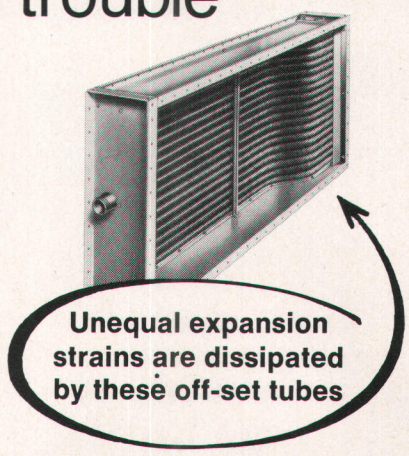

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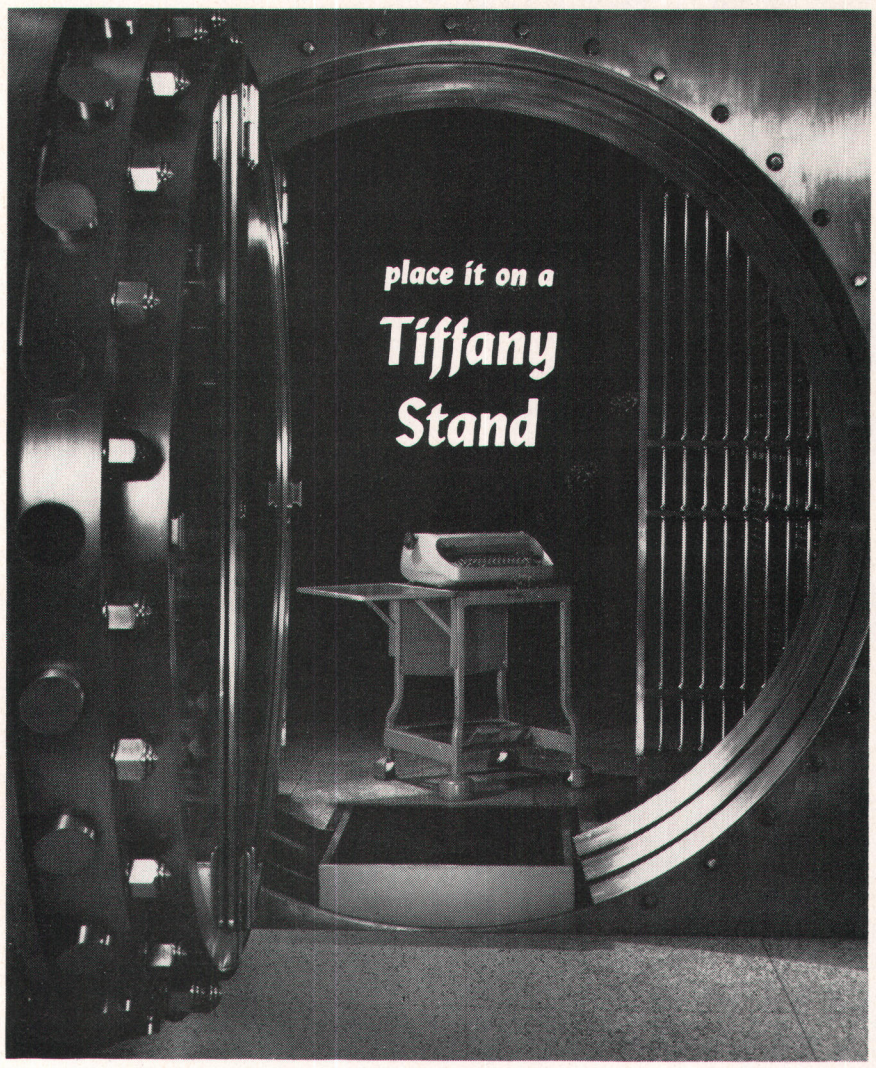

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outlook *from page 18*

construction will be undertaken by the federal government. Thousands of architect/engineers will be required to develop the plans and specifications to bring these structures into reality. We must do whatever we can to obtain the highest quality, the most efficient and effective architect/engineer services at the lowest reasonable cost."

Latin America Is Theme of Papers Sought By Planning Society with June Deadline

Through its second awards program, the Interamerican Planning Society hopes to stimulate original investigation into the area of planning and to promote the preparation of publications in all aspects of development.

During its eighth congress to be held in Salvador, Baía, Brazil, September 13-18, the society will give awards in three areas: 1) theoretical works in planning and development of a conceptual, investigative or evaluative nature; 2) practical works that have been executed or are in an advanced stage of development; 3) demographic essays. The third part of the program is intended to stimulate studies in depth on the problems of population and their relationship to planning and development.

In each category, the winner of the first prize will receive $500, a diploma and publication of the work by the society. Further, winners will have their expenses paid to Salvador to receive the prizes. Second and third prizes will receive a diploma, but publication will be at the sponsor's discretion.

The theoretical works must deal with the theme, "Evaluation and Perspectives of the Planning of Development in Latin America."

The practical works must have been completed within a period of not more than four years before July 1, 1966. Professional teams and public and private entities may compete in this category.

Final date for the receipt of entries is June 30, 1970. For additional information write Jurado Calificador "Premios de SIAP 1970," in care of Ing. Rubens de Mattos Pereira, Comisión Organizadora del VIII Congreso, Interamericano de Planificación, Altameda Itú 657, São Paulo, Brazil.

Mumford Adds Another Medal to His List

When Lewis Mumford, essayist, community-planning critic and historian of technology, receives his Gold Medal for Belles Lettres from the National Institute of Arts and Letters on May 26, he will join such distinguished company as Tennessee Williams, Walter Lippmann and Andrew Wyeth.

Mumford, who was elected to the National Institute of Arts and Letters in 1930 and to the American Academy of Arts and Letters in 1942, has been the recipient of such other awards as a Guggenheim Fellowship; the Gold Medal from the Town Planning Institute, London; the Royal Gold Medal from the Royal Institute of British Architects; and the first AIA Architectural Critic's Medal.

Among the 15 newly elected members to the Institute is Kevin Roche, AIA, of Hamden, Connecticut. *continued on page 30*

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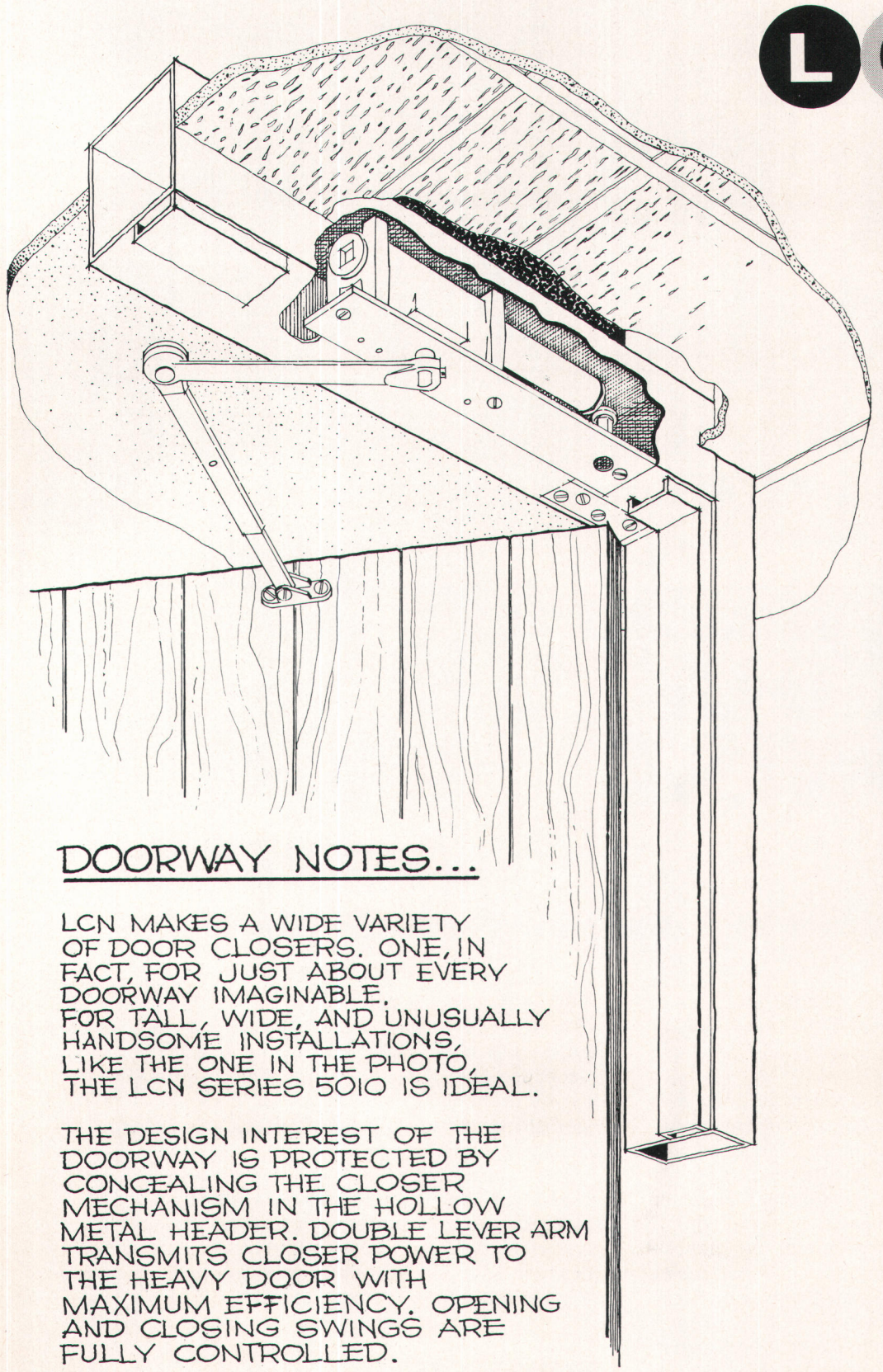

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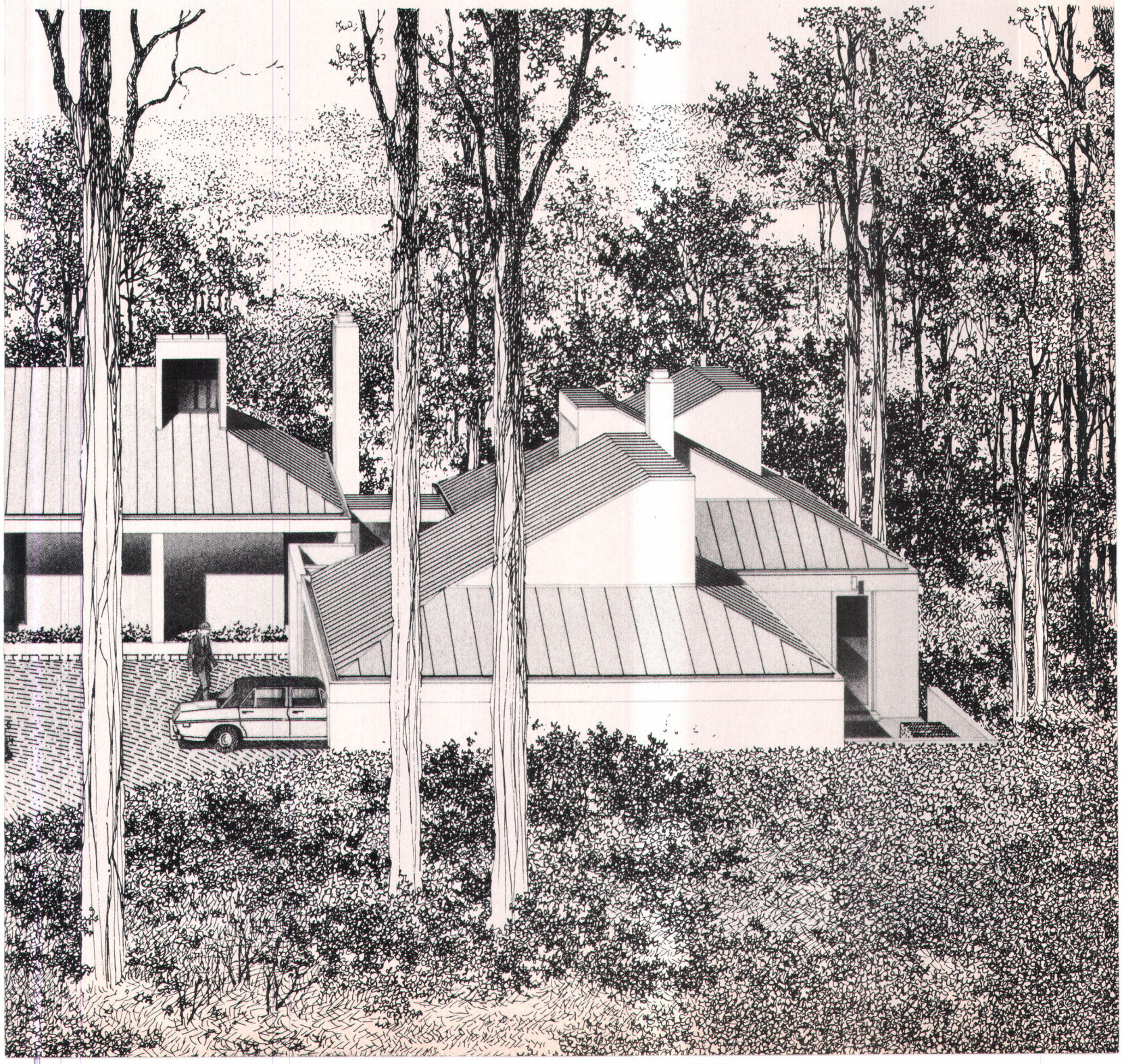

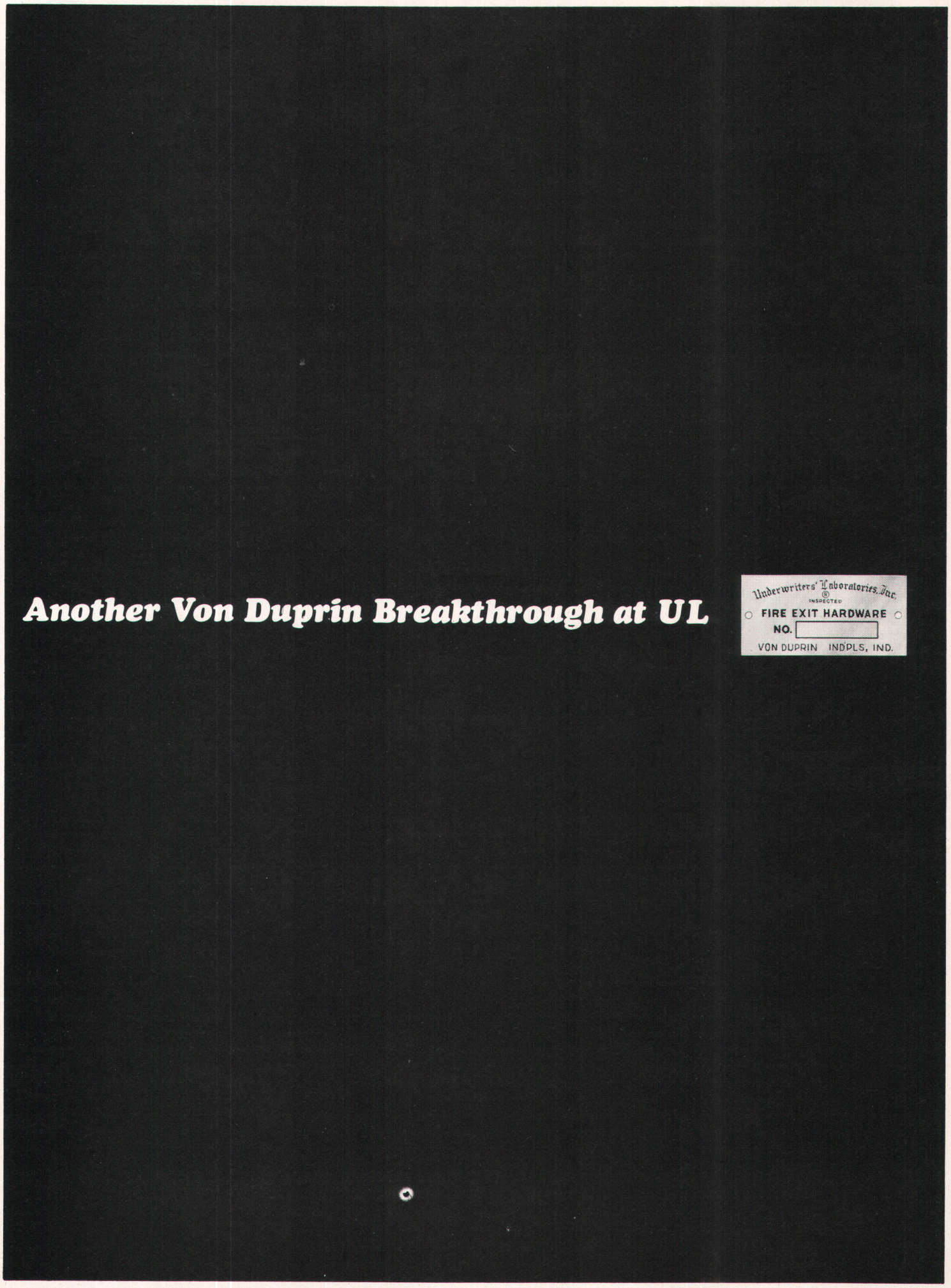
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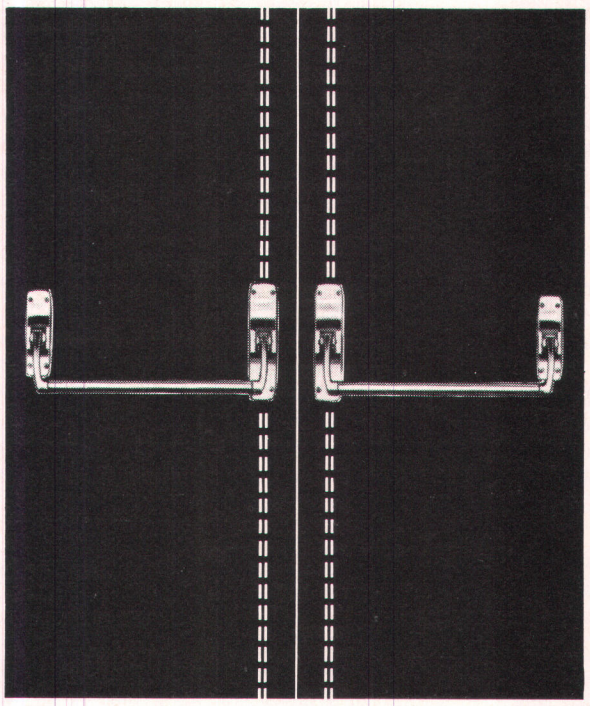

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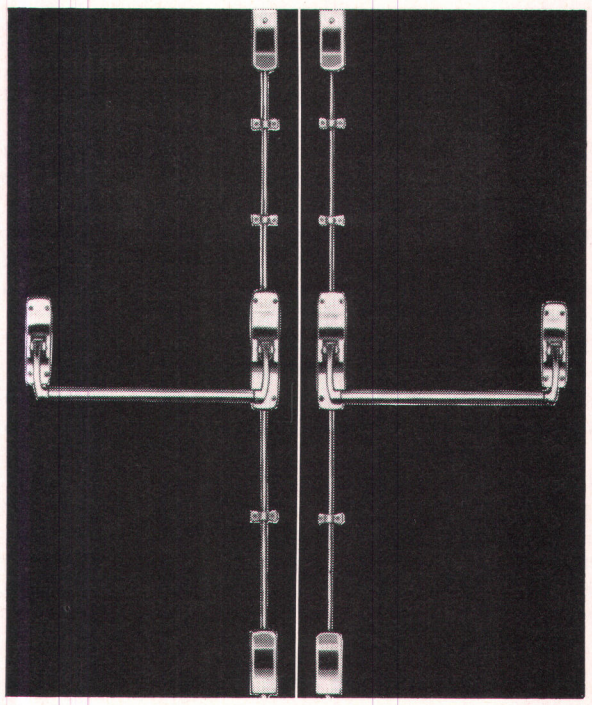

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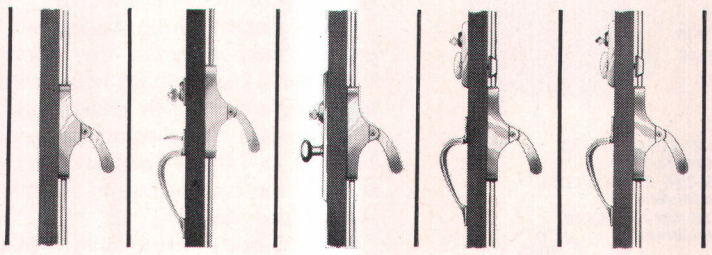

8817 Exit only

8817TP Key locks thumbpiece

8813 Key locks knob

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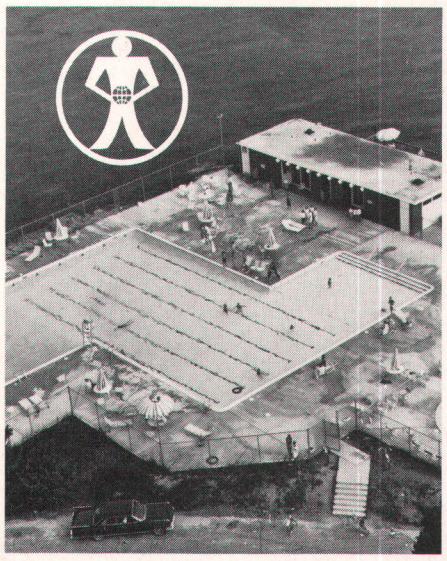

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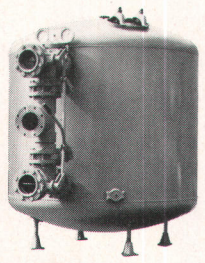

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outlook *from page 22*

Congressmen, Administration Officials View Urban Breakdown as Issue of '70s

If the opinions expressed at the third annual Public Affairs Conference of The American Institute of Architects and the Consulting Engineering Council are valid, the major problem facing the design professions in the '70s will be the "mad cycle" of city decay.

The answer to this urban breakdown, according to the top Nixon Administration officials and members of Congress who addressed some 650 architects and engineers from the 50 states and Puerto Rico, in Washington, D.C., is threefold: increased power and responsibility for regional government; mass transit to new jobs in the suburbs; and future development that doesn't damage the environment.

Setting the tone of the meeting, US Department of Housing and Urban Development Secretary George Romney urged the opening of the suburbs to the poor and called for "making the center cities more attractive to the affluent. . . . The deep divisions in our metropolitan areas are our most serious problem. Hostility, fear and alienation are the daily lot of both poor in the ghettos and the well-to-do in the suburbs," he said.

Romney further pointed out that urban renewal, the interstate highway system and other programs have aggravated the housing shortage in many central cities. He added that in the future all the side effects of such massive programs must be weighed with the utmost care.

Generally both key Democrats and Republicans agreed on policies aimed at reversing postwar urban trends, with the only disagreement being on the subject of how best to combat inflation. Republicans stated that the monetary and budget policies must be used to "cool off" the economy, while Democrats argued that high interest rate policies were devastating to housing production and would raise costs for a huge backlog of housing units and public works.

Romney joined Democratic Senators William Proxmire (Wis.), Birch Bayh (Ind.), and Harrison Williams (N.J.) in calling for new federally aided highways that aid orderly development and avoid splitting neighborhoods and for public transit that gives access to job openings in the suburbs.

Representative John Anderson (R-Ill.) reported "some progress" by unions agreeing to assemble factory-built houses. But, looking to the future, a much greater production of both houses and construction workers—130,000 to 140,000 new workers a year instead of the current rate of 30,000 to 35,000—is needed, he said.

New York's Republican Senator Jacob Javits urged the creation of a National Institute of Building Sciences which could offer "nationally acceptable building standards." He added that the nation's 5,000-plus different local building codes are a block to a national housing market which would make large-scale factory production possible.

Russell E. Train, the newly designated chairman of the President's Council on Environmental Quality, warned the conferees that "autos will overwhelm us" due to the increased levels of pollutants no matter what is done to improve the gasoline-burning engine. He further disclosed that the Nixon Administration has ordered him to devise an international environmental monitoring system, a bounty system to get junk cars off the street, research on "unconventional" vehicles that avoid the internal combustion engine, and ways of dealing with agricultural wastes that leak into rivers and lakes.

Approaching the question of environmental quality from a different angle, Rep. John Brademas (D-Ind.) told the gathering that schools and highways can be major weapons in the war on a polluted environment.

Classroom instruction in protecting man's limited natural habitat is vital "if we are to save and improve the environment," he said. Backed by some 70 other Congressmen, Brademas has introduced House Bill HR1753 to provide funds to local school districts to conduct environmental awareness instruction. "Today there are very few resources to help our elementary and secondary schools teach environmental education," he stated.

Contemporary Tapestries Give Texture And Dimension to Our Glass Boxes

The ancient art of tapestry, which had its decline in the 18th and 19th centuries and had a revival in France during World War II, continues to make a strong comeback, particularly in terms of architectural commissions.

Indicative of this movement is the work of Paris-based Mathieu Matégot, whose workrooms in Aubusson as well as in Portugal and Japan, carry on the tradition of hundreds of years of tapestry weaving.

Says the artist about his work, which recently was on exhibition in Washington, D.C. and New York through the coordination of interior designer Susanne Shaw:

"The very great change which occurred in architecture and furniture obliges one to live in a denuded and also more restricted setting. Therefore, tapestry opens new horizons, wider outlooks in which the spirit of man can find its personal ideal, its poetry and where it can satisfy its need to escape."

The French Government has commissioned many monumental works from Matégot, including the largest contemporary tapestry in the world which dominates a huge room in the Prefecture at Rouen.

The Hurschler collection of modern tapestries of Pasadena, California, includes 49 Matégots. The traveling show will be seen in San Francisco in the M. H. De Young Memorial Museum, beginning May 14 and running until the end of the month.

Honorary Fellows Increased by Eight

The investiture of eight foreign architects at the annual convention in Boston will bring the number of Honorary Fellows of the Institute to 155. The newly elected members are Te Lin Chang, Taiwan; William G. Leithead, Canada; Lord Richard Llewelyn-Davies, England; Jorge L. Medellin, Mexico; Togo Murano, Japan; Arieh Sharon, Israel; Edouard Utudjian, France; and Jørn Utzon, Denmark.

continued on page 36

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Atlas White and Precast earn extra credits at Southeast Missouri State College

Here's a building for the "groves of academe" at Southeast Missouri State College in Cape Girardeau, Missouri. It's a study in design and comfortable living, but with disciplined lines and careful attention to detail. Atlas White and Precast have risen to new academic heights, but both feet had to be planted firmly on the ground. The building was constructed so as to withstand seismic conditions in the area. Amberg quartz was the aggregate used in the panels. Some of the panels weighed up to a ton and a half and measured 7 feet by 12 feet. Precast Contractor: White Stone Company, Memphis, Tenn. Architects: Buchmueller, Whitworth & Foust, Inc., Sikeston, Mo. General Contractor: McCarthy Brothers Construction Co., St. Louis, Mo. Atlas White is only one of a wide range of cements produced by Universal Atlas. Write Universal Atlas Cement Division of U.S. Steel, Room 5393, Chatham Center, Pittsburgh, Pa. 15230. Atlas is a registered trademark.

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outlook *from page 30*

Architects Are Challenged to Design Two-Year Colleges Attuned to Times

James B. Ash of the architectural firm of Kivett & Myers, Kansas City, Missouri, has written this special report on the AAJC convention for the AIA JOURNAL.

"After serving on the awards jury, I can emphasize the fact that we are currently building colleges that belong in every past decade of this century and a few that appropriately may belong in the '70s," said Bill N. Lacy, AIA.

"If I were to conduct another design session similar to that one in 1962—"Rice Design Fete: 10 Designs/Community Colleges" —I would center it around one theme: change. I would not accept a solution that did not plan for change in some manner or other."

The dean of the School of Architecture, University of Tennessee, was addressing the American Association of Junior Colleges which met in Honolulu for its "50th Year-50th State" convention; and he was referring to the first annual architectural awards program, of which the Institute was a co-sponsor (*see* AIA JOURNAL, March, p. 35, for winners).

Dean Lacy was echoing the convention theme itself: "A Time for Change." There was much substance in the four-day program, but the best evidence of change was represented by the keynote speaker and the host city (currently among the top five builders in the United States, which threatens the charm of Waikiki's 43-year-old Royal Hawaiian Hotel with Miami Beach high-density, highrise architecture.)

James E. Allen Jr., US Commissioner of Education, begged off with a last-minute telegram citing "business in Washington." His stand-in, Dr. Preston Valien, a Negro and former professor at Fisk, Brooklyn and Columbia Universities, delivered Dr. Allen's talk, but by his presence the Deputy Associate Commissioner for Higher Education set the tone of "A Time for Change" better than the words in the program or the speakers who followed.

Representatives from the seven community colleges on the Hawaiian Islands were among the 1,500 US and Canadian delegates who shared the sessions with over 60 educators from Australia and 16 Asian nations.

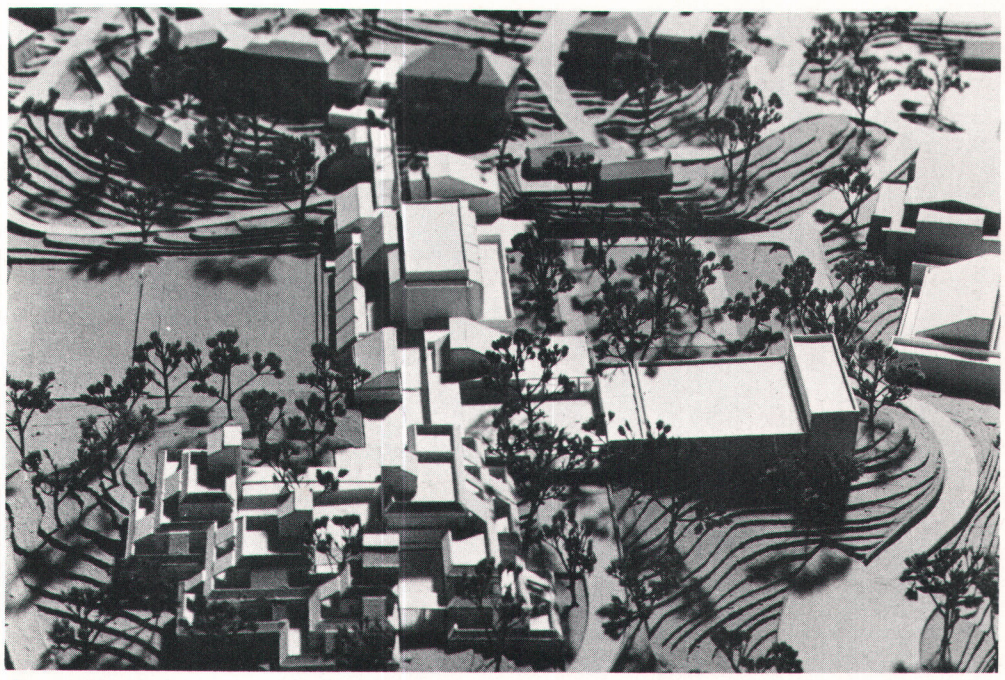
For those in the architectural profession, there were at least two other high points in addition to the awards presentation and juror Lacy's statement: the remarks by Edmund J. Gleazer Jr., who also was a contributor to the March AIA JOURNAL, and a case study comparison of the Dallas Junior College District and the new Borough of Manhattan Community College campus.

One disappointment at the Honolulu meeting: Of the more than 50 general and seminar topics, not a single one was set aside for a discussion of "Strategy for Bond Issues and Tax Levies." Maybe next year when the 51st convention will be held in the nation's capital.

Shows Are On Again at Octagon House

The newly restored Octagon is already in full swing with exhibits. Shown in the second floor area at present are photographs of works by William W. Wurster, FAIA, last year's AIA Gold Medal winner. The photos, which were taken by Roger Sturtevant and Morley Baer, feature 16 projects spanning a period of 40 years. Put together by the California Redwood Association, they are accompanied by text with comments by Wurster on the various projects. The show will be on display through May 29.

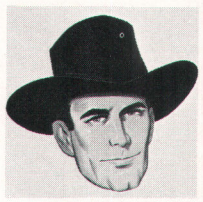
Later this year, from July 21 to September 13, the Octagon will have the 1970 Honor Awards winners on display.



Among the design award winners is the comprehensive campus master plan for Mount Vernon Junior College in Washington, D.C., for which Hartman-Cox conceived this megastructure type of building. The March AIA Journal showed only the existing campus.

Johnny Horizon Is Coming on Strong As Antipollution Hero of Our Land

The Post Office has its Mr. Zip, the Forest Service its Smoky the Bear and now the Department of Interior has its Johnny Horizon, a square-jawed cartoon character who combines the best of Mark Trail, Gary Cooper and the Lone Ranger (minus mask). Johnny will be the symbol of the most intensive anti-litter campaign ever launched by a public agency. Interior Secretary Walter Hickel and folk-singer Burl Ives, at a press conference introducing the antipollution hero, promised an effort to "get 200 million Americans aware of and caring for their environment."



Speaking on the theme of the new campaign "It's my land, it's your land—help keep it clean!" Ives stated that what was necessary was a gentlemen's agreement with the earth.

UDDC Appoints Slayton, Three Others To Enlarge Scope of 10-Member Board

The Urban Design and Development Corporation, in line with its broad objectives to improve life in America's urban centers, continues to select trustees with a wide background of experience.

The newly elected members of the board are William L. Slayton, executive vice president of the Institute and former head of Urban America, Inc.; George A. Dudley, AIA, chairman of the New York State Pure Waters Authority and the New York State Council on Architecture; Philip Hammer, president of Hammer, Greene, Siler Associates, economics consultants of Washington, D.C., and past president of the American Society of Planning Officials; and Wayne E. Thompson, vice president of environmental development for the Dayton Hudson Corporation and a former member of the National Advisory Council of Urban America.

Set up with AIA funds in February 1969, the UDDC board's current total of 10 now is a mix of architects and nonarchitects.

Miami Coalition Turns to Architect With Long Public Service Record

The new president of the Greater Miami Coalition should have no problem identifying with its overall aim: to emphasize means of improving the quality of life for all citizens in Dade County. He is Edward G. Grafton, senior partner in the architectural firm of Ferendino/Grafton/Pancoast.

This year's specific efforts are concentrating on 1) housing, 2) administration of justice, 3) manpower, 4) economic development, 5) health and welfare, 6) education. Concerning the later, "Miami School Integration" is the title of program case study No. 8 in a series being produced by the Washington-based national Urban Coalition.

A past president of the Florida South Chapter AIA, Grafton is a member of several national housing groups and has served as a consultant to the Department of Housing and Urban Development. □

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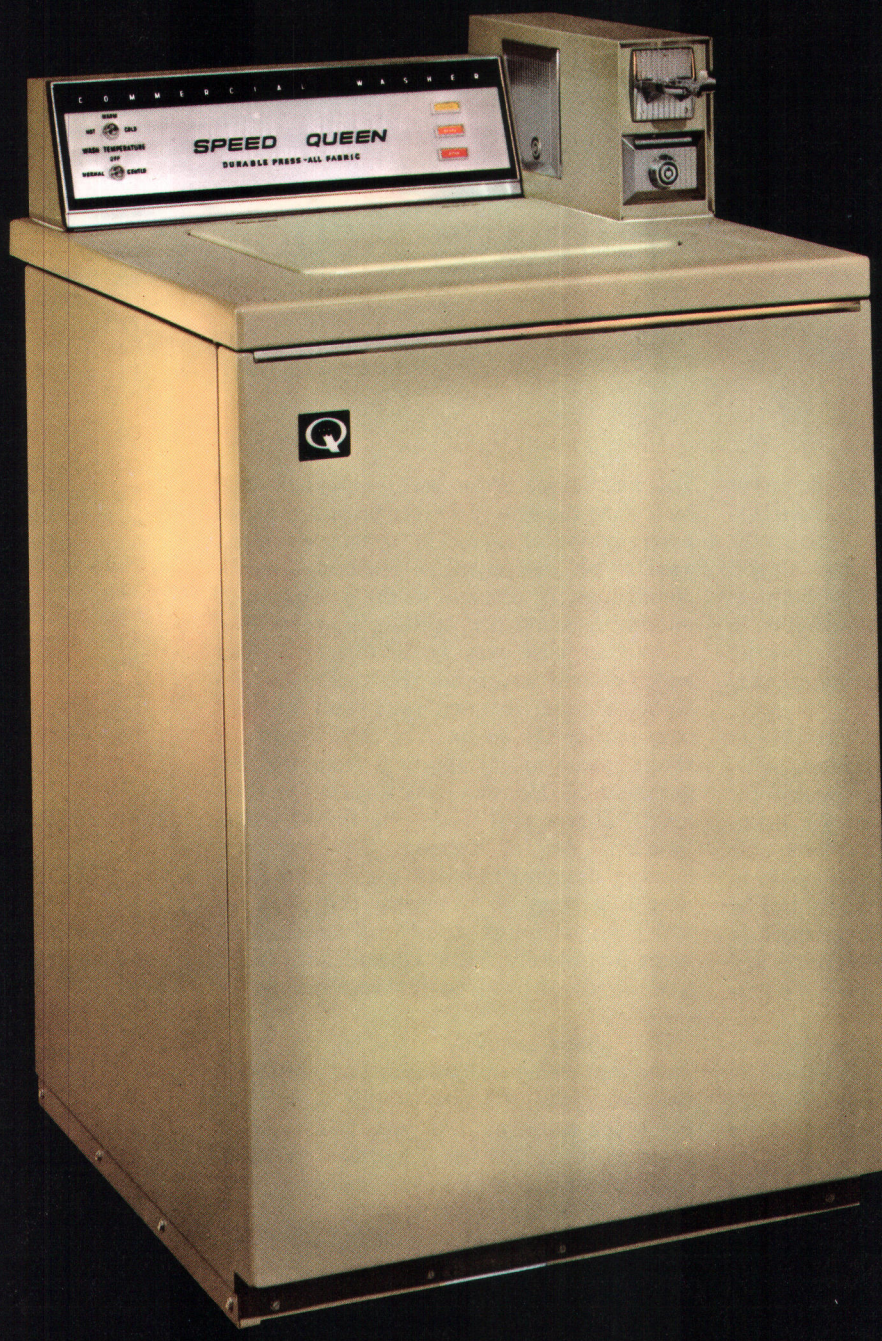

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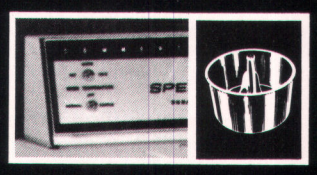

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Your Conduit on Housing Action

by JACKSON T. WRIGHT SR.
Director, Housing Programs

The department of Housing Programs serves as a direct means by which you, the membership, can get action on matters dealing with federal housing. It maintains close liaison with officials responsible for the administration of housing programs so that solutions to problems which tend to slow down construction can be brought to the attention of personnel in the various agencies.

During 1969, the department was able to clear from the backlog of the housing pipeline more than $22 million of housing for low and moderate income families for member firms. Also, the department has been able to assist the national Housing Committee in pinpointing problem areas that could not be solved administratively but are stressed in legislative testimony aimed at alleviating and removing the constraints that impede the production of housing.

To get the most effective help, a brief but detailed case history of a problem should be sent to the department, accompanied by all supporting data and with recommendations for solutions when available.

Case reporting is exemplified by the action obtained through concerted efforts by the profession and others (testimony) in connection with the 1969 Housing Act. The membership made it known through direct communication to the department that:

1. The 202 Elderly Housing Program and the 221-D-3 Program should be retained and funded. The 1969 Housing Act so provided. Both programs have become well known and most widely accepted as vehicles by which quality housing can be produced. The membership has further expressed strong desires that the programs be made permanent. This will be reflected in testimony in the near future.

2. Low rent public housing should be fully funded and the per room cost raised. This was also made possible by the act although still inadequately to some degree.

3. The 1968 Housing Act should be fully funded. Here we were only partially successful, but the committee is continuing the fight for full funding and will so testify in the near future.

In the department's direct assistance to the membership, one case involved a small architectural firm which, due to misinterpretation of procedures, was having problems obtaining interim payments to which it was entitled. This had caused undue hardship and expense by forcing the firm to finance large sums over a long period of time. The department managed to get the payments released. Recommendations for changes in the procedure of interim payments are awaiting approval.

Another case was an architectural firm which desired to upgrade the quality of public housing and ventured away from the ordinary project-like design. The firm fought for several years to get approval from the Department of Housing and Urban Development but was told repeatedly that it was a "wasteful use of design." The Institute's housing department aided the firm in planning a strategy to overcome this thinking, and I am happy to report that the development is presently under construction and a new, improved living environment will be the result.

The above are only a few of the many problems dealing with housing that have been brought to the attention of this department for which solutions have been found. These cases have enabled the department to establish a file which serves as an excellent referral source within the Institute.

The department is maintaining close contact with Operation Breakthrough and has made available to the membership lists of firms, compiled by state, which responded to Breakthrough initially and expressed interest in forming consortiums; information bulletins released by HUD; and first-hand information on meetings and developments.

Participation with other organizations deeply concerned with the housing crisis such as the National Housing Conference, US Conference of Mayors, Urban Coalition and others keeps the department aware of the contributions that the profession can make.

The department also makes appointments for the membership with the appropriate central office housing officials of HUD who, under the new organizational structure, will act somewhat as a "court of last resort."

The services of the department are many and varied, and we look forward to being of assistance to you, for the crisis in housing looms more formidable each passing day. The need for your contribution is vital. Unless the constraints are brought to the fore, the goals of decent homes and good living environments for all Americans will remain a myth. □

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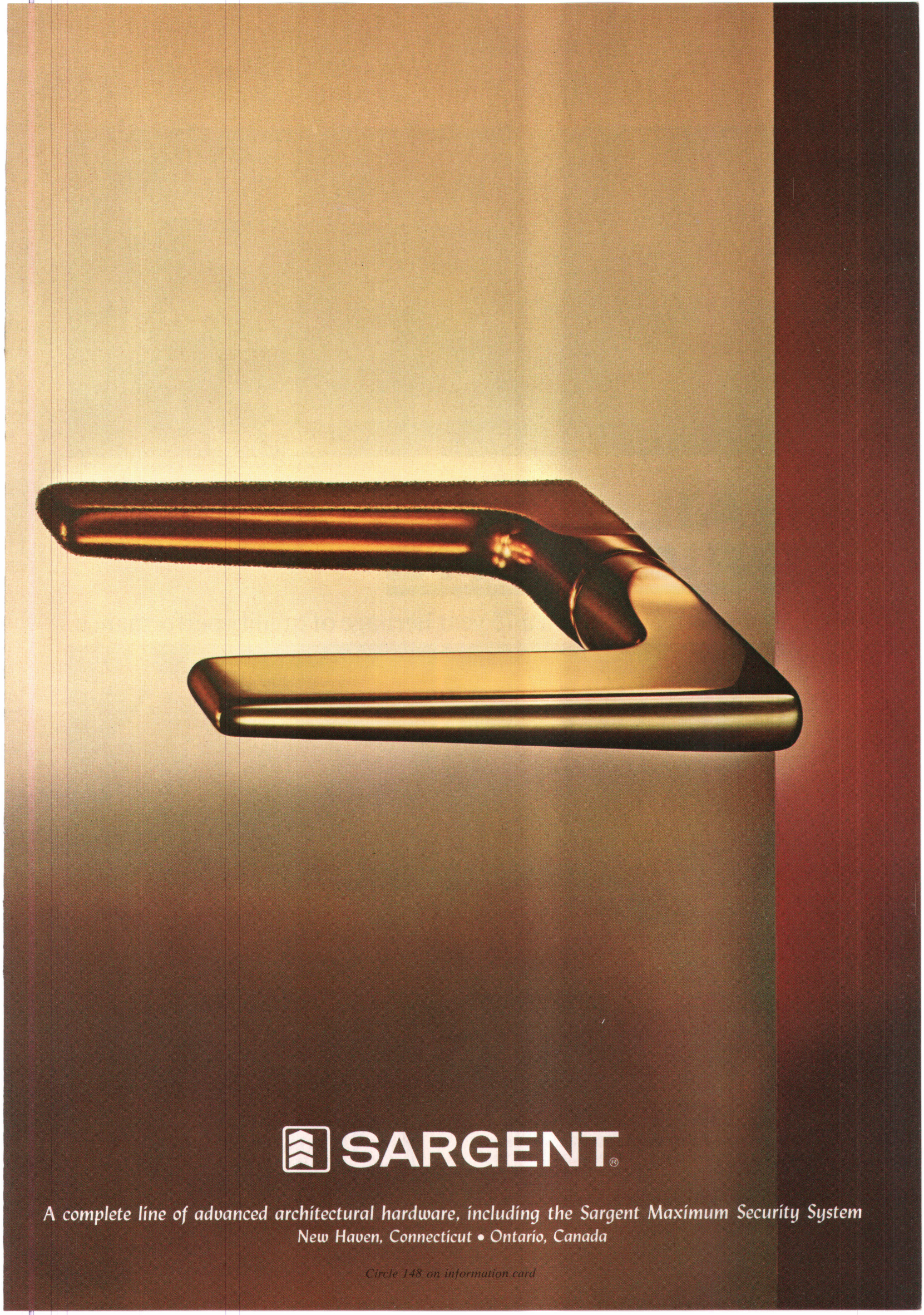

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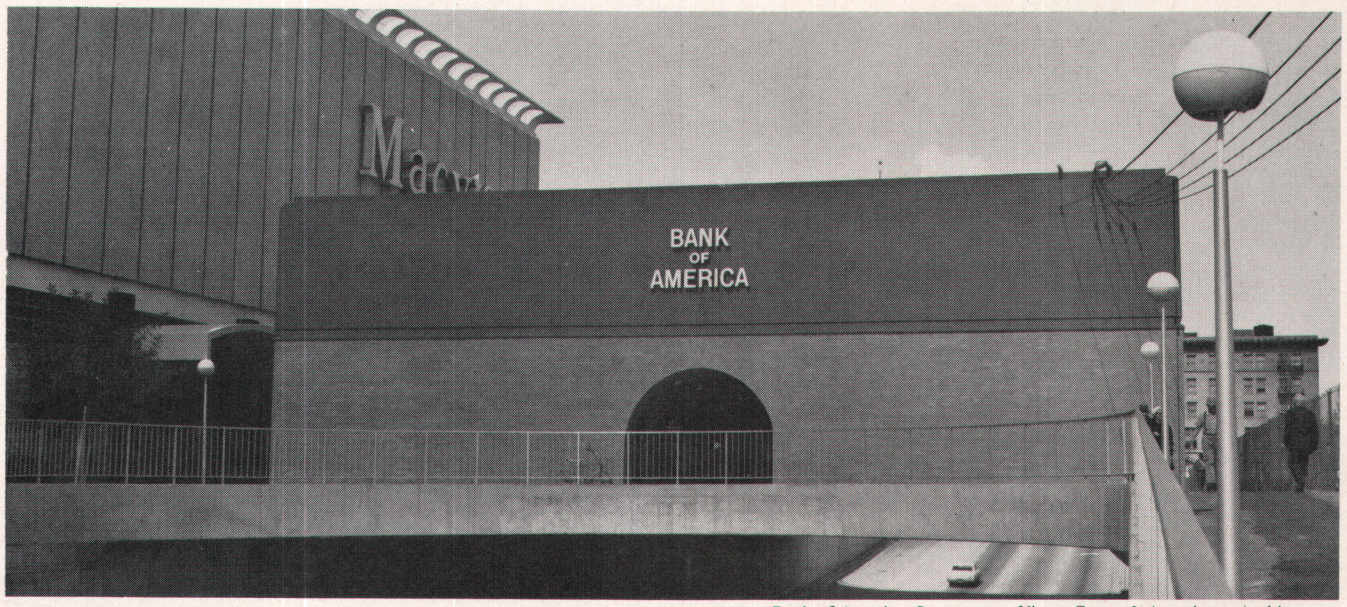

Bank of America, Sacramento. Victor Gruen & Associates, Architects.

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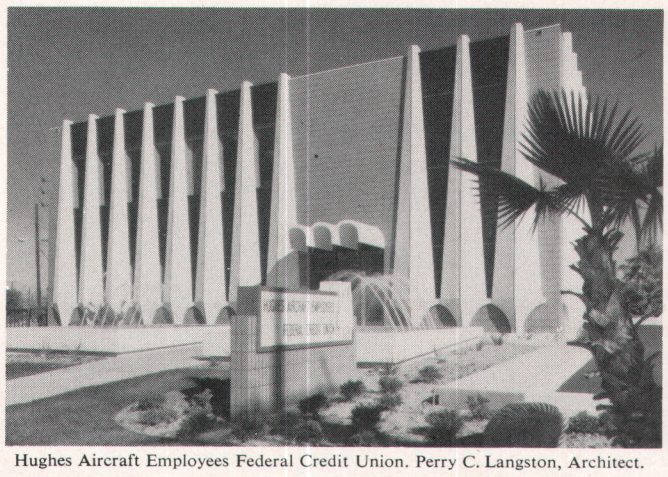
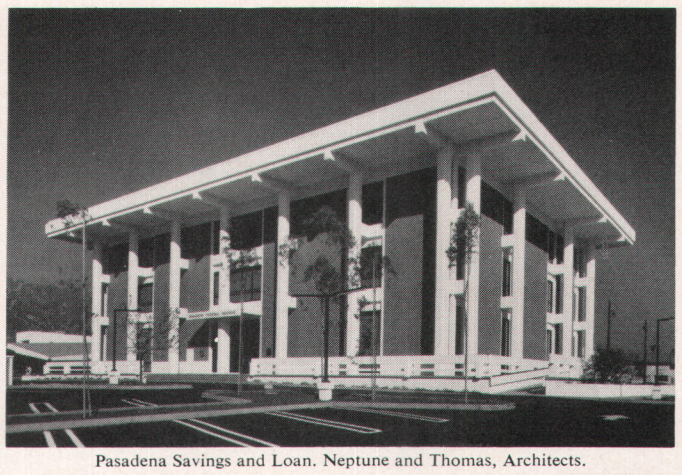


Hughes Aircraft Employees Federal Credit Union. Perry C. Langston, Architect.



Pasadena Savings and Loan. Neptune and Thomas, Architects.

Coming into favor with American architects is the use of "Brickplate," a type of ceramic tile with the density of natural granite that has been popular with European designers for years. Since 1963 it has been made available in this country and Canada by Gail International Corporation, a subsidiary of Wilhelm Gail Ceramics, Giessen, Germany.

Previously, American designers have had to improvise when using exterior tiles with materials primarily intended for flooring use. Brickplate, on the other hand, is intended for the exterior, being completely frost proof, and allows more freedom of design with a wide variety of shapes in glazed and unglazed finishes. Gail conveniently produces these tiles in modular English sizes for the American market.

Because of their low absorption, Gail tiles have dovetail ribs on the back which make a mechanical key with the setting mortar, hence, they are suitable for pre-cast and tilt-up construction as recently employed in the Serramonte Shopping Center, Daly City, California; Welton Becket & Associates, Architects.

Although mass produced in one of the most automated ceramic facilities in the world, thus modest in price, Brickplate has a warm, handcrafted quality achieved through its controlled color variation. The same dense body is used for both glazed and unglazed finishes.

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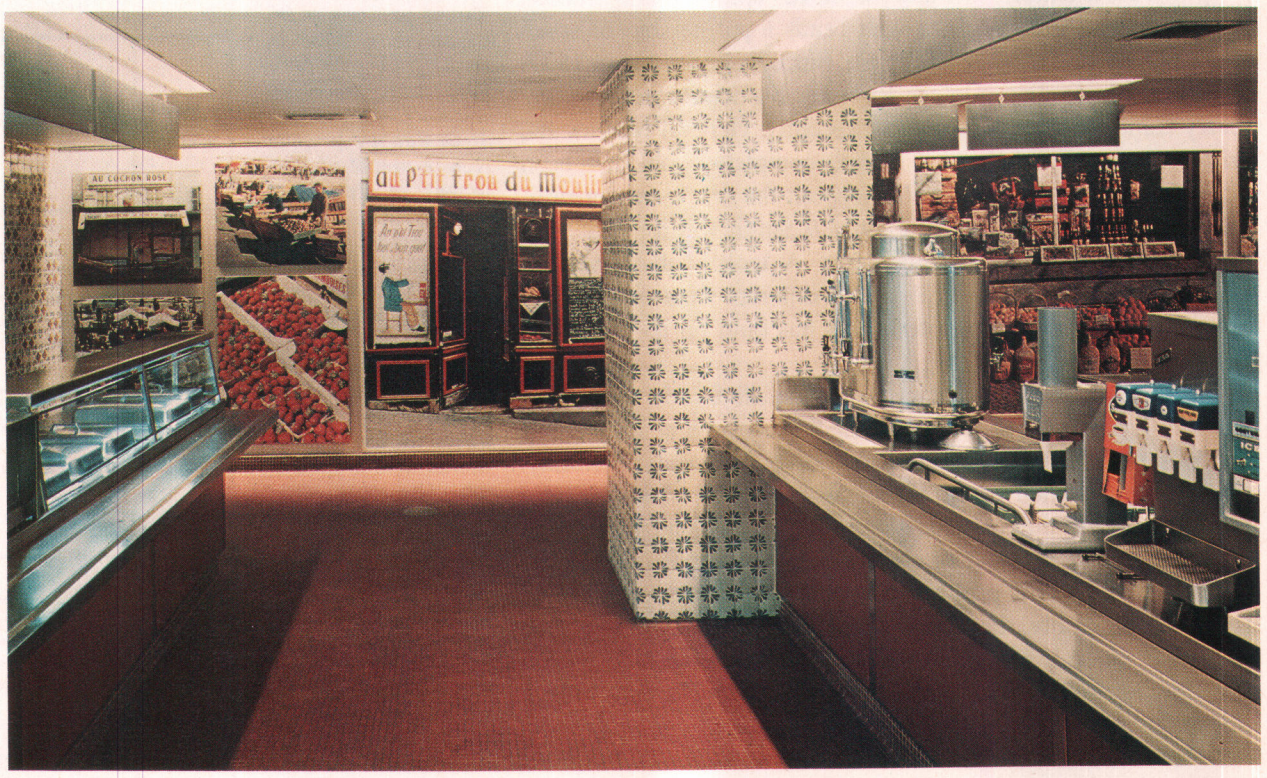
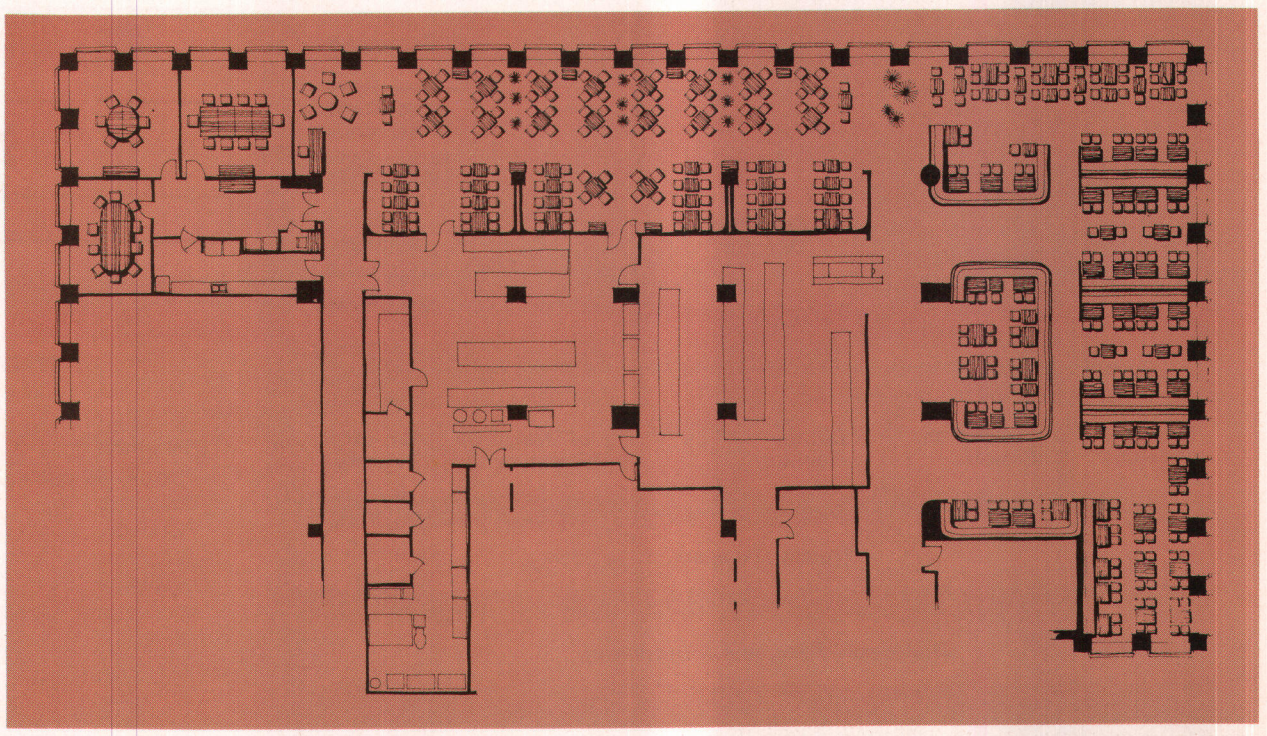
PRACTICE

J. Gordon Carr & Associates of New York City translates a businessman's approach to interior planning problems into architectural solutions, coming up with such innovations as the work letter.

PROFILE



The Intricacies of Designing Inner Space



Plan of the food service floor and photo of the kitchen for Bristol-Myers headquarters (architects: Emery Roth & Sons).

It may come as a surprise to some, but the firm which undoubtedly has done more interior planning and design for the headquarters of New York City's corporate giants is an architectural one. For J. Gordon Carr & Associates has discovered that specialization in one area can pay off for the organization that is willing to concentrate and become knowledgeable beyond the normal breadth of planning, particularly as it relates to business procedures.

"We are architects first and foremost," emphasizes J. Gordon Carr, AIA, the firm's founder who heads a partnership of seven men and a current total of 55 people. Since its beginning in 1937, the office has developed plans for such big names as Seagram, Sperry Rand, Mobil Oil and, more recently, General Motors and Bristol-Myers. To date, the largest completed job has been 975,000 square feet for J. C. Penney, but the firm's current project for Merrill Lynch, Pierce, Fenner & Smith will top that with approximately 1.2 million square feet. A look at the latter can help to explain what Carr does that is different from other architectural offices and to illustrate how it has built up its reputation for client service.

Carr's preliminary contacts with Merrill Lynch took place almost 10 years ago at a time when the investment firm had a locations department which handled all of its needs internally. When Merrill Lynch determined to combine all of its facilities (scattered in six different locations) into one home office, and to do this within a matter of about three years, management decided that this was a problem for which it needed professional assistance. In reality, the situation was more complex than at first believed because it was estimated that space needs would not hit the 1-million-square-foot mark until somewhere around 1986. However, as preliminary planning got underway and as the vol-

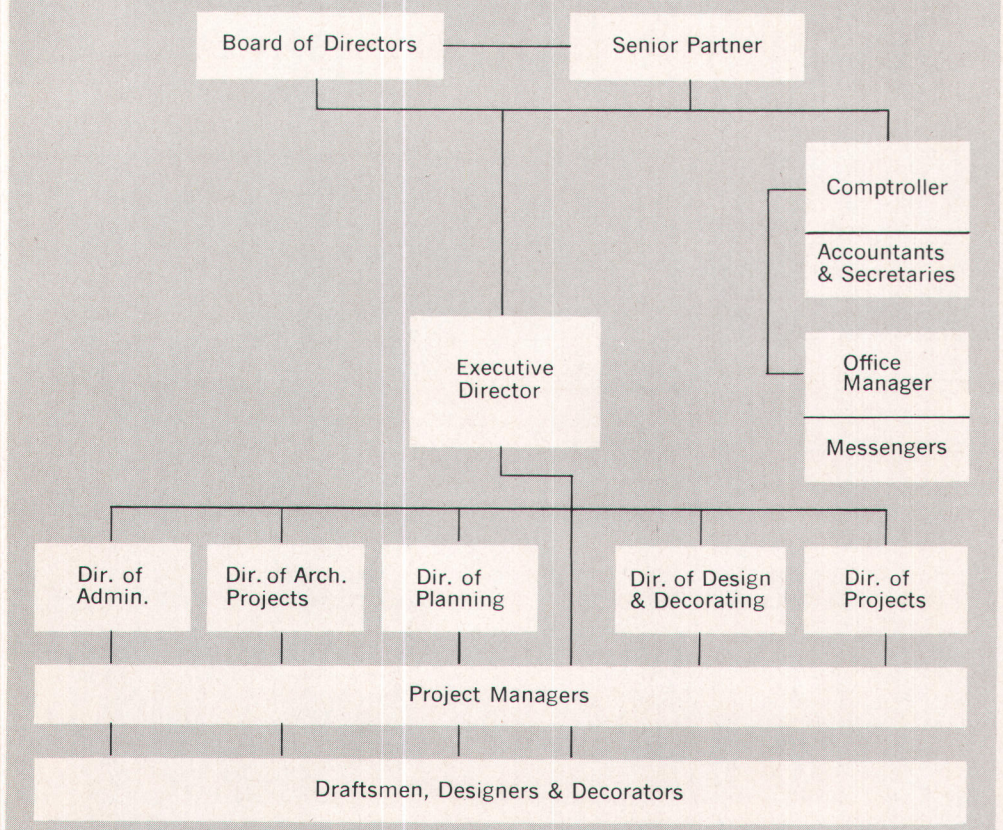
continued on page 49

This is just one of 96 pages, assembled in an 8½x11-inch portfolio, that made up the work letter for the J. C. Penney project. Now a standard document as developed by Carr, it is a letter of agreement between landlord and tenant, setting forth the commitments of the participants and defining the materials, equipment, fixtures and all of the other details based on the requirements of the specific job. The work letter is either appended to the lease or incorporated into it by legal counsel. It is interesting to note that lease negotiations on the part of the design team represent a major part of preliminary planning for most tenant-clients.

This Report Item No	Work Letter Sec. No.	'A' Item
1)	2.1.0	Loading Docks.
2)	2.2	Private Stairways.
3)	2.3	Passenger Elevators.
4)	2.3	Private Service Elevators
5)	2.4	Elevator Lobbies on Office Floors.
6)	2.5	Slop Sink Closets.
7)	2.9	Escalators.
8)	2.10	Base bldg. Toilets

41)	11.	Miscellaneous Plumbing.
42)		Pneumatic Tubes.
43)		Special Fixtures and Accessories for Sample Rooms in Buyers' Depts.

ORGANIZATION CHART



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Project Managers	6
Designers	5
Planners	3
Decorators	4
Draftsmen	25
Accountants-Secretaries	5
	55

EXHIBIT "D"

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J.GORDON CARR & ASSOCIATES

PROJECT NUMBER 648

All prices and figures shown are educated preliminary estimates prepared by J.G.C. - 12-7-62

Rev. 3-7-63
Rev. 1-30-63
Rev. 1-15-63
12-7-62

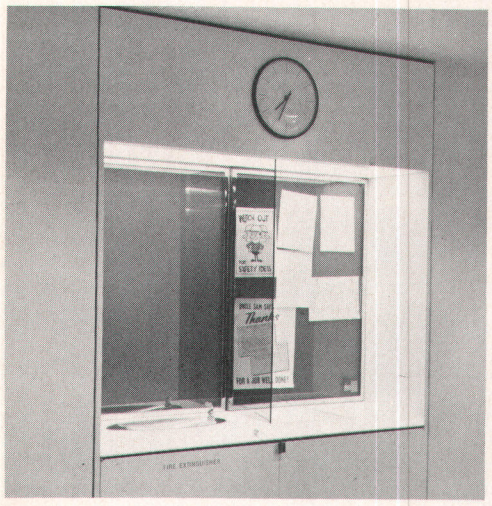
'B' Remarks	'C' Work Offered-No Expense to J.C.Penney by "Memo of Understanding" and MSGC Answers	'D' Add'l. Items and/or Allowance. Considered to be Necessary when Compared with Other first-class Office Bldg. Space in NYC. These have direct relationship to the Rental Rate. Remaining Items Listed have been Rejected by MSGC.	'E' Items Generally Considered to be at Tenant's Expense
J.C.P. indicated need for 4 docks for their exclusive use.	4 docks exclusive use.		
J.G.C. has estimated that J.C.P. could have a need for 8 inter-floor flights of stairs. 2 of these should be ornamental from cafeteria to lounge below	8 standard stairs $ 9,600.		2 of 8 should be ornamental at an additional $ 7,600
	18 cars for entire north tower as required.		
J.C.P. indicated a need for 2. Shafts, structural work and rentable area not included.	None.	1 $ 100,000.	
Walls and floors should be above office area standards because of maintenance.	Plaster walls & asphalt tile flrs.,except exec. flrs. MSGC will give vinyl walls & flrs. in these areas.Established as 2 floors. 3,000.	Vinyl walls and vinyl floors, all floors $ 25,875.	
	Will provide.		
None Required.			
Actual cost of toilet fixtures & accessories in toilet rms., shelves, soap dispensers,towel dispensers, mirrors, etc. is..... $ 70,000.. Col. 'C' should read $70,000 not $30,000 more.	Extra toilet facilities req. will be given. MSGC says: $ 70,000.	Powder Rooms, incl. $ 28,500 formica powder bars,	
Col. 'B' total of 63 sinks of various finishes and installed complete. This is 2 per floor for a total of 63, for use in work areas, etc. Quantity based on sq. ft. area pro-rated from previous projects.	None.	$ 19,000.	
Col. 'E' based upon an automatic dial system from floor-to-floor and a point-to-point system for 3 stations on each floor, 3rd - 11th and 2 stations on tower floors.			$ 475,000
Column 'F' based on assumption of 1 lin. ft. of wall units for each 12 sq. ft. of space in sample rooms, approx. 90,000 sq. ft. divided by 12 = 7,500 lin. ft. x $75. per lin. ft.			$ 560,000
	TOTAL..... $4,718,650.	TOTAL..... $1,530,975.	TOTAL..... $ 2,690,400

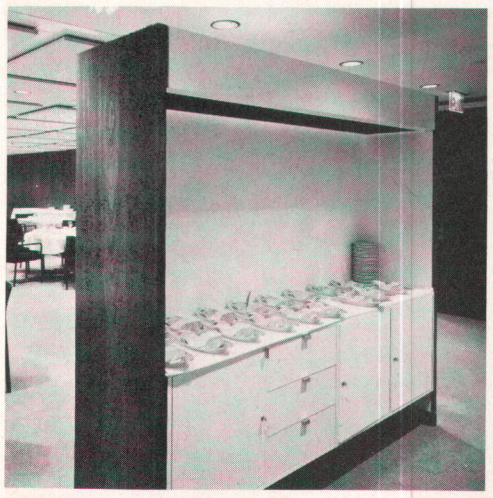
SQUARE FOOTAGE OF MAJOR PROJECTS

Merrill Lynch	1,200,000
J. C. Penney	975,000
General Motors	750,000
Mobil Oil	720,000
Bristol-Myers	560,000
Sperry Rand	450,000
Celanese	425,000
Young & Rubicam	400,000
Continental Can	350,000
Seagram	250,000

Carr directors: seated —Edward J. Meyer, AIA, executive director; J. Gordon Carr, AIA, senior partner; Paul G. Lips, AIA administration; standing—Niels Gabel-Jorgensen, design; Joseph P. Gherardi, projects; James L. Goettinger, planning; William C. Blaser, AIA, architecture.

The General Motors interiors on these two pages indicate the scope of functions found in a corporate headquarters. Shown here: reception area, executive office, especially designed water fountain unit (with fire extinguisher, watchman's time clock, etc., in cabinet below) and food serving detail.





The headquarters building (architects: Edward Durell Stone, FAIA, in association with Emery Roth & Sons) includes the not-so-typical legal conference room and library hallway and the typical secretarial-pool work area.

The interiors of the Montreal Trust Company, which was the first major tenant to move into Place Ville Marie (architects: I. M. Pei & Associates), reflect a calm and dignified image. The East Indian laurel wood of the custom-built boardroom table is repeated in some of the other furniture.

ume of Merrill Lynch's business increased, it soon became apparent that previous estimates had to be completely discarded.

Beginning with the acceptance of its initial proposal, Carr has been intimately involved in the negotiations between the client and the management of the building into which the former is to move. This particular situation is the ideal one since specific plans for Merrill Lynch are being conceived as the basic plans for building construction are being drawn, allowing a great many changes to be made on paper before anything is actually built. Because of the nature of its operations, Merrill Lynch as the major tenant (occupying about two-thirds of the building) will have special requirements in such areas as communications systems, electrical services and airconditioning. Thus Carr is able to work directly with the building architects, Skidmore, Owings & Merrill, to incorporate many of these features into the basic building plans, thereby saving money for everyone concerned.

To clarify this kind of arrangement, Carr prepares for its client a work letter (see sampling on pp. 44-45) which outlines in complete detail everything that must be done and indicates whether the costs of such items are to be borne by the building owner or by the tenant. The preliminary version of the work letter serves as a basis for negotiations with the building owner, and when agreement is reached, the final document becomes a contract.

It is also Carr's function to schedule the construction in the tenant's space to fit basic building construction schedules. If, as is usually the case, the client has employed his own engineering consultants, Carr will coordinate that work with that of the building's engineers. In short, the firm's job is a highly complex, detailed one without the advantage that an architect sometimes has of being able to change the configuration of his shell. In some instances, when the building architect makes the latter kind of change, Carr's problem is further complicated by adjusting to such basic building changes.

Along with its plans for space utilization and location of facilities, Carr usually handles the interior design. This is an area which depends upon the overall space planning but, in a sense, must proceed independently. Perhaps the biggest difficulty here lies in pleasing the many different tastes involved. Decisions on plans for space utilization are usually made, as is being done in the case of Merrill Lynch, by a high-level building committee. However, when it comes to style of furnishings, colors and decorative details, the same selected group of people may make the final choices, but the results will reflect a range of opinions.

In this matter of responsibility, what practitioner Carr told the American Management Association a few years back is worth repeating today: "One of the best ways to keep the cost of an office planning project within reasonable bounds is to place complete responsibility for the program with one high-level executive and back him on all decisions. Failure to do this can add considerably to the amount of time and energy expended in the planning process, and if the divided responsibility continues after construction has begun, costs can soar unbelievably. In addition, delays in either the planning or the construction stage may prevent the client from moving into its new quarters on schedule, and thus make it necessary to pay two rents for several months or more."

When Merrill Lynch makes the move to its new home office in May 1971, it will occupy almost 33 stories at 1 Liberty Plaza. There will be somewhere between 5,000 and 7,000 employees at that time, and they will be serviced by such specialized equipment as an extensive electronic data processing department, a unique pneumatic paper-handling system and vertical conveyors. The firm will have its own kitchen, cafeteria, dining rooms and vending machines to take care of some of the feeding needs. In addition to the customary reception areas, lounges and conference rooms, there will be special vaults, a medical department, an auditorium and other facilities to keep Merrill Lynch's huge volume of work timely and efficient—and all of this with the added flexibility and economy of a 25-year-lease at a current rental figure.

Vaulted ceiling of the Marine Midland Trust Company of New York echoes the building's exterior (architects: Emery Roth & Sons).

Says senior partner Carr about lease negotiations: "We examine the basic building design and facilities and advise our clients of the conditions found or to be expected. When given sufficient notice before a client's lease is to be signed, we aid in its development and safeguard his interest in incorporating those parts within our jurisdiction. To do this, we make an analysis of his requirements. We aim to get for him maximum benefits, both in what is given by the lease and in the minimum controlled costs for work done by the building owner."

The firm even assists its clients in moves to their new quarters by developing schedules that are coordinated with telephone installation and properly fitted into the receiving and elevator facilities at the new location. The service also includes zoning and coding plans for the move.

After the move, punch lists are prepared for items and work that will require attention. These are followed and checked until completion. Guarantees and insurance certificates are gathered, and the hundreds of other particulars for closing a job are finally carried out.

For providing all of these services, Carr charges 2½ times the hourly salary of every person for the time actually worked on the job. No other income, direct or indirect, is received. In the few instances when the office does the entire building, it bills on a commission basis, using the AIA recommended fee schedule.

The client is sent a monthly statement which includes the names of the people at work, the number of hours engaged and

The American Stock Exchange's interior has been renovated several times since its opening (architects: Starrett & Van Vleeck), but Tiffany remains unchanged since Carr's original design in 1941.

Among the firm's long list of clients are ITT (architects: Emery Roth & Sons), whose boardroom is seen above, and Mobil Oil (architects: Harrison & Abramovitz), which has a training center as a special feature.

their hourly salary; thus at any point in the progress of the job, it can be determined how much of the ultimate budget has already been spent.

Carr employs cost-per-square foot measuring formulas only as estimating devices for the client, as a basis for checking the fee and as a measurable method of cost control. The data assembled to establish these estimated costs then becomes part of the presentation process.

One might ask the question, how does the office get the job in the first place? The founding partner is proud to say that, at this point in time, many are repeat commissions. The others are the result of the firm looking for work and prospective clients looking for professional help.

In the case of Merrill Lynch, a job on which the competition was understandably intense, it was a case of the client making the first move. Carr's office brought with it to the initial interview not only its in-depth experience but also a basic presentation book which *Interiors* magazine has called "a masterpiece of clarity and undersell." It is, in essence, a detailed record on similar or related installations, including the original budget and final costs. Beyond that, it explains the methods used by the design firm in maintaining a constant line of communication with the client.

The presentation book is, in a sense, the compilation of a lifetime of work, still continuing, that began when architect Carr hung out his shingle 33 years ago. Upon receiving his master's degree in architecture from Massachusetts Institute of Technology in 1930, he worked for Raymond Hood who was developing "a new approach to architecture," as Carr recalls, designing such projects as the Daily News Building, the McGraw-Hill Building and Rockefeller Center.

But as the Depression wore on, "there was less and less chance to do much architecture," so Carr returned to college—this time to Harvard University's Graduate School of Business Administration where he got another master's degree and his "business" orientation which was to stand him in good stead in the years to come.

Carr became associated with industrial design when he joined Raymond Loewy and was to find himself involved in that area for a half dozen years or so with a list of credits that would range from the Pepsi-Cola bottle to movable belts to DC-3 interiors.

When Carr opened his own office, he got a big lift from Loft's candy chain, but it was the New York World's Fair of 1939 that gave him his real start when he won a competition for the Aviation Building. He was also asked to design the House of Jewels. "It was at this point that I actually got involved with people," he reminisces.

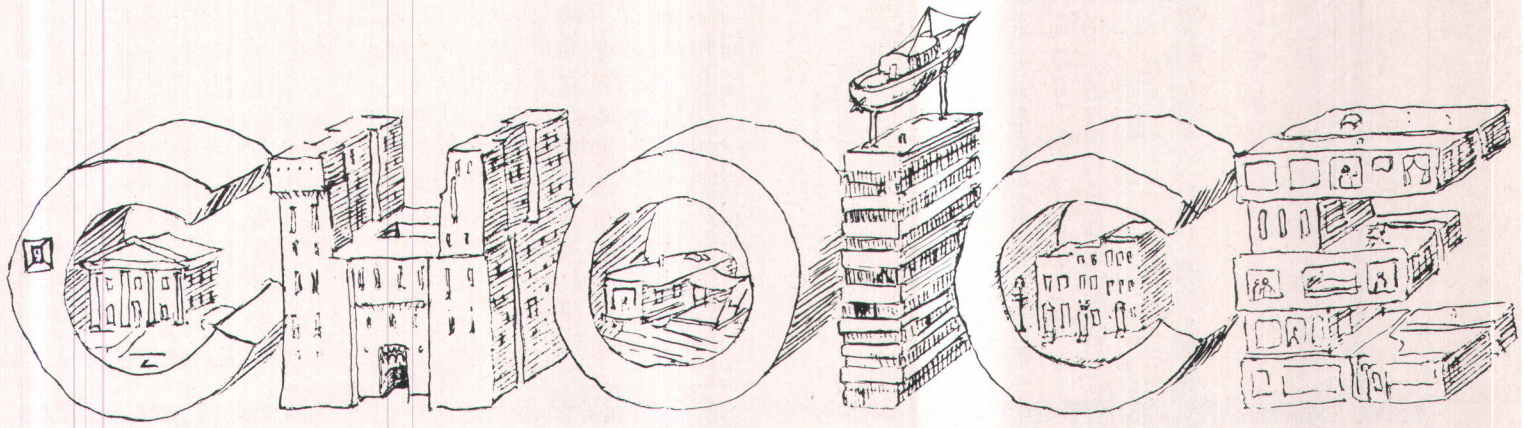
Looking back at his long career, if Carr had to pick another milestone project it would be Tiffany on Fifth Avenue, a store that has changed little since he designed it in 1941. Today, he remains active in the firm but has turned over the day-to-day operations to six directors, five of whom are registered architects (one a member of the Federation of Danish Architects).

All the directors have come to Carr via architectural channels, either as employees of firms or as practitioners on their own; and all have been with the organization for at least 10 years, two of them for 15.

"Yes, indeed, we are an architectural firm," repeats Edward J. Meyer, AIA, whom the directors have elected executive director. "Ours has become a highly specialized field in itself which combines a knowledge of business operation, finance, real estate, architectural design and elements of decor into one clearly integrated program."

ROBERT E. KOEHLER

NEIGHBORHOODS: A MATTER OF



by JAMES PRATT, AIA

Man can still only mentally encompass so much of his immediate surroundings. How about reversing the present trend toward superenvironments and breaking them up into manageable pieces?

Alexandra, age 7, described how she would improve her part of the city. "Build bridges across the big streets so I can go by myself, to daddy's office, to school or to get an ice cream. Make a place to play in the middle of our neighborhood, make a swimming pool. Have lots of flowers."

Since all of her goals were within a half mile, her barriers were not space but intruding technology. Small-town children have the independence, safety and beauty she seeks. How can the city and the suburbs become structured to create these same values for children, as well as for their adults? We have traded grace and safety for speed of movement. How do we have all three? How do we make life with technology beautiful?

As long as the town was small, the average American felt some ability to cope with his environment. Today, systems in scale with the individual have been lost while we have been developing single, monolithic supersystems, physically and politically. But we also need a mosaic of related suborders.

For example, the postwar interstate highways have created a major revolution in almost every city of any size. They have destroyed the town fabric without regard for the effect on its suborders. This highway logic has produced the concept of a major thoroughfare system with direct fluid movement through the city. Whether sensitive planners could have woven new traffic systems through the old ones without destroying them is academic; the fact remains that for much of America the values of living in the old fabric are gone. With few exceptions major traffic movement has had precedence over the neighborhood.

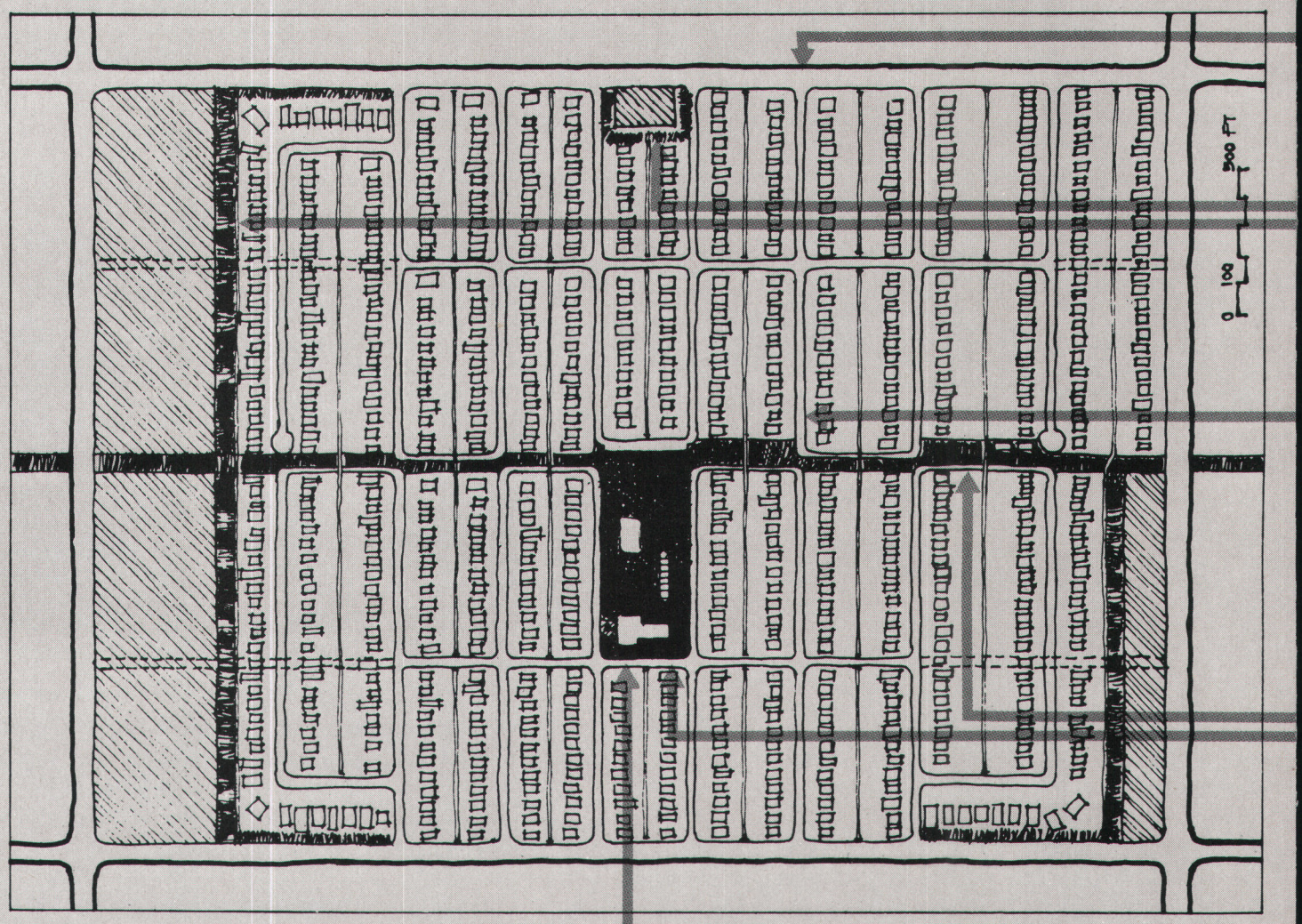
We must elimininate street continuity inside the residential neighborhood. The grid pattern, the surveyor's fast way of establishing civilization in the wilderness, has an inherent lack of safety in a dense, mobile society based on wheel technology. The accretive 19th century grid pattern led us into our present neighborhood problem as much as the freeway. New subdivisions have developed curved, winding streets, but these are not enough. No dwelling should face a street where traffic moves at even a 20-mile speed if we are to maintain grace and safety in the living environment. We cannot continue to let 18,500 children a year be injured in our streets with cars.

To structure a better neighborhood there are interlocked variables which must be synthesized: 1) automobile circulation, 2) size, 3) boundaries and interfaces, 4) dwelling variety, 5) major foci, 6) recreation, 7) links other than automobile to contiguous districts.

Automobile Circulation: If streets can be specialized upward in scale, why not downward as well? When it finally dawns on us that we have to rebuild the neighborhood in the wake of the present highway cataclysm, we will add streets for creeping speeds.

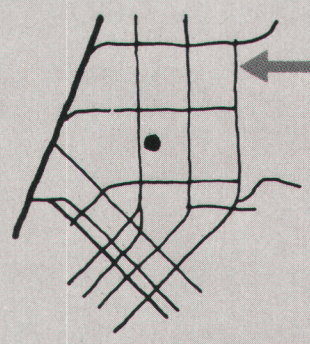
There needs to be a defined relationship of a new specialized street to a limited number of dwellings. If we want to recapture the good qualities of the village, there should be no more than a dozen houses built on a cul-de-sac. The shortness of the street is important in order to discourage speeding. Denser city dwelling areas must subordinate cars to less intrusive places by means of concealed parking levels, pooled guest parking and elimination of curb parking.

In old areas we must break up the endless grid into manageable pieces and develop discontinuity in dwelling streets. Here it is initially a question of minor surgical cuts. To accomplish this,



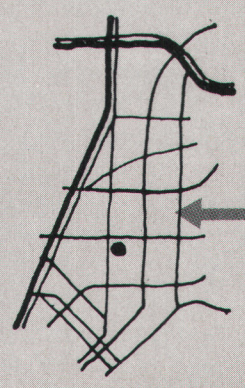
Dwellings

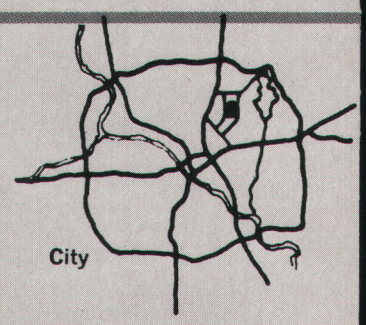
Neighborhood



Group of Neighborhoods

District





City

How to Protect and Improve Existing Neighborhoods

Recognize the natural boundaries of neighborhoods formed by established major streets.

Plan commercial strips and residential areas so they are back to back; separate by making existing street into a 10-foot wide planting buffer. Have convenience store with 10-foot buffer wall at building line.

Keep through traffic and hazardous speeds out of the neighborhood by developing a loop street pattern, removing existing cross street. Close streets by chain to reduce number of neighborhood entrances. Chains can be removed in emergencies. Maintain service on existing alleys which are screened with solid gates at each end.

Take a block if available and make it into a neighborhood park with swimming pool and game courts to appeal to all age groups. If a block is not available, use street which has been cut to create the loop pattern; or make a greenway of the entire street. Build inter-neighborhood greenways to provide safe pedestrian and bicycle links between the home and schools, parks, community center and other shared district facilities.

If there is no elementary school within the neighborhood, add one for preschool children and grades 1 through 3.

Sharing a junior high school, convenience shopping center and churches.

Sharing a senior high school, YMCA community center, linear park system, a major park, a movie, a major shopping center and a district government center providing administrative services, a branch library, hospital or clinic, police and fire protection.

St. Louis put up chains across one end of some of its grid streets. New York in some places puts up barricades, a practical palliative, to keep out cars during play hours. A street may be plugged with a half-block park, forcing traffic to turn out instead of continuing through. The cul-de-sac tied to a collector street becomes an effiicient principle by which to organize neighborhood traffic. Using this principle in planning a quarter section of land to serve a population of a given density, 25 acres would be required for streets, while streets for the conventional grid pattern would require some 37 acres.

Size: How big should a neighborhood be? The problem can be approached in three ways: by psychological geography, by functions and by population density.

The area which an individual can mentally encompass in detail has definite limits. Beyond these he is overwhelmed. On the one hand, size may be a function of the number of persons with whom an individual can feel psychologically comfortable; sociologists and ethnologists must define the latitude in this number. On the other hand, it may be a function of the psychological geography of the area in which he finds himself.

When a city has no comprehensible division of parts, the individual loses ability to interact with it, influence it or assume responsibility for it. To have emotionally satisfying city living we must find ways to encourage the individual's assumption of responsibility for his part in it. Neighborhood boundaries that psychologically do not overwhelm him are one means of facilitating that responsibility and buttressing his sense of identity and importance. This appropriate scaling of the city's parts may then reflect beauty. In engineered abstractions such as big streets and multi-building projects, it is usually forgotten that the successful process of use by the individual is the project's ultimate reason for being and that this scaling of parts to the individual's need is his only means of relating himself to the environment.

Neighborhood size is also determined by function. There can be little doubt that a basic function needed in the neighborhood is the education of the young child. In order for him to maintain his identity in his first school experience, a maximum of 550 to 600 students appears desirable. With this number of children it is possible for the individual to know a significant percentage of his fellows. Judging from statistics on children of school ages 6 to 11, a grade school of this size can be supported by a population of 4,500 to 5,000. But this is too many parents for one neighborhood, as it is the equivalent of a small town, or three villages of 1,500 persons each. The school district, then, encompasses three neighborhoods. If we assume this model of 1,500 persons, or 450 families, to occupy conventional single-family dwellings, they will occupy 60 acres, plus 12 acres for automobile streets, parks and walkways (a radius of some 1,100 feet, or under one-quarter of a mile.)

Concerning size, what does this mean to the adult or child in such a group? The adult can walk around the neighborhood in three-quarters of an hour. Whether he does so is beside the point; he can understand such an area and therefore identify with it, or even assume some responsibility for it. If we arrange the streets properly, a child can walk without crossings to his school on the edge of the neighborhood in 10 minutes. And at a school serving three such neighborhoods, he will find no more than three groups of 15 to 18 individuals of his age.

However, in too many cities there is no working relationship between school agencies siting schools and planning agencies approving new neighborhood plats or reworking older areas. With the thoroughfare revolution having split many existing neighborhoods, grade schools may no longer be safely accessible for small

children. Shifting norms to meet boom conditions are carrying us away from a small-town, 16 persons-per-acre density, that ideal held up for a place in which to raise the young. Plans that reflect ideal life patterns for the small child, whether in suburb or center city, have become fewer as we organize in units too large and without intermediate buffering. Piling up a three-dimensional city of 20 levels is frightening if we do not define the closer physical relationships better.

Boundaries and Interfaces: The psychology of firm, known limits needs to be reinforced with carefully made edges. Nothing can degrade residential property more than to border on a commercial backside made of minimum materials and filled with refuse. Six-foot fences cannot begin to solve the problem; only a commercial conscience or an adequate landscape buffer can.

Within present realities, landscaping on a long-range, large-scale basis with adequate depth to diffuse traffic noise from the roads is the only answer. Platting of property for dwelling use along traffic ways in the suburbs and along gross traffic ways in the cities is nearly always unrealistic for good living; there is no recognition of the noise problem. Use of walls, earth mounds or deliberate grade change, together with a substantial depth of plant material to soften sound, is needed to upgrade present norms. Zoning requiring no container for parking lots visually degrades adjacent dwellings. The container principle needs to be widely applied in the public domain.

Dwelling Variety: When we grew at a slower pace, time gave an order to growth which included a measure of heterogeneity. Recently, we have so forgotten the relation of dwellings to the process of living that we force people to tear up their life patterns and move to distant parts of the city when their family circumstances change.

We must make it possible for all ages to live in the neighborhood. There is often no way that people, no longer wanting large houses, can stay in their neighborhood with their friends and established relationships. This is poignant for the elderly who are sent to "golden acres" and thereby cut off from everything familiar. The banishment of the young to apartment districts separated from other age groups also creates problems. How can initiative in community concerns be fostered among youth living in this milieu of swinging irresponsibility?

Of course, some older persons enjoy living near younger age groups; others object to noisy young families. However, there is not enough provision for choice. Zoning, in oversimplifying and separating dwelling types by size, aggravates our lack of choice.

The scale of building elements needs to be varied for comprehension and for the psychological well-being of the individual. Within present zoning laws, high- and lowrise or detached dwellings can all be improved by more attention to scale. Nothing is more bruising to the autonomy of the individual than to find himself dwarfed by vast numbers of identical housing units. The breakup of rows of identical objects with elements of a different scale will allow the individual a way to better perceive the whole picture.

We must provide for different tastes. By means of dollar-oriented corporation building hundreds of two-story garden apartments 30 feet apart or through urban renewal highrise soldiers with endless corridors filled with anonymous doors giving into identical units, we approach the dreary norms of communist countries. Our elevators work better, there are carpets on the floor and gaudy lights on the walls and all those bathrooms, but provision for variety of living pattern is missing in new housing. We must reverse the present tendency to let a dollar dictatorship establish the norms.

The economic temptation to eliminate variation in size, ceiling height, prospect or front-door identity all limit neighborhood diversity. There is not a tiny or grand house among its equal middle-class neighbors. There is no sprinkling of oddball apartments; only the soap ad family is served. We are providing for a mass norm with no alternatives available for the US middle-class person or for people of the same cultural background but with varying incomes. Our age may have more cash and gadgets, but it provides far less commodiousness and variety than was standard in new construction half a century ago for the middle-class.

In dense cities there is the question of a desirable relation to nature. To shrink the city literally to allow for the projected hoards of new people, to save commuting time, to get the density high enough to support rapid transit, to reduce costs of city services, the three-dimensional city is proposed, to be piled up by means of vertical transport. The expensive answer of Habitat carries this to a romantic conclusion in its diagonal stacking to allow daylight from several directions, natural air streets and generous unit terraces. There is an element of beauty in the wholeness of the living pattern implied. Only at a Pierre would one find grand apartment terraces with broad views of New York, and few even there. For most Manhattanites, these standards of Habitat would be luxury indeed, and nature enough. But from the opposite viewpoint, that of the lover of soil, would they be enough? The suburbs lack in facilities for ideal community living, but the long accepted federal mortgage guarantee for an individual house and garden at least gives nature to many who otherwise would be in five-floor walkups.

We should not fool ourselves that we want a three-dimensional city because the suburbs are awful. We are intrigued with it because it is exciting, dynamic and novel; it is obviously efficient for dense conditions, and it is one way to solve the living place in 20th century terms. And if we return some of the one-level dwelling space to nature as we build vertically, excellent. But we all do not have to give up living on the ground even for a 400 million population. Cities are now using only 2 percent of our land; it may go to four in 20 years. This still seems a not unreasonable percentage.

Major Foci: To bind and give meaning to the whole, we must develop a strong focus for the neighborhood. Although we have moved to the city for its stimulation and richness of choice, one of the chief delights of the village is its simplicity. There is little choice, but all is immediately accessible. We need to incorporate this advantage into the neighborhood. Why not combine primary school, adult education hall, food mart, branch library, neutral meeting place, church, voting place, public health agency, nursery, playground and park into a single facility? With the exception of the food mart, all may double in use since their times of activity do not coincide. Obviously, all individuals will not use such a facility, nor can it provide the diversity to satisfy all tastes. But it would be a powerful step toward synthesizing our immediate necessary patterns of neighborhood living in a simpler, more direct form. It would make living easier and should be less of a burden on the tax purse.

A village study (Thomas Sharp: *The Anatomy of a Village,* Penguin Books, 1946) pleads for a diversity of occupations and the inclusion of some community services to facilitate intergroup activity. In *The Secular City* (Macmillan, 1966 revised ed.), Harvey Cox has pointed out that a desirable reason for city life is the ability to choose one's associations, hitherto impossible in

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Mr. Pratt is a partner of Pratt, Box, Henderson & Partners, Dallas, and chairman of the Committee on Public Education.

small towns. But a limited social cognizance of those living in physical proximity to one another is necessary to structure the community for group life in village, town or city. This we have forgotten. It cannot happen if it is self-conscious. It must happen naturally on the paths of other functions in today's terms—along the paths to work, in the aisles of the supermarket, along recreational paths—at our new village "crossroads."

If we provide the necessary psychological image around which a community may focus, we must give the crossroads strong form. We have seen that the individual requires a unique place to which he can relate. We need a new architectural equivalent of the Italian piazza or of the New England white spire and its village green with which to focus the neighborhood. Reston has the most imaginative community focal place of recent years, with its small lake, quay and shopping plaza overlooked by low- and highrise dwelling units. The influence of a powerful visual image can be a strong force to bind a neighborhood together. A tower, a handsome square, a special building, a body of water can each burn into one's memory and, in the case of Reston, the combination of several such images becomes compelling.

Recreation: More than building particular facilities for recreation in the neighborhood, we need to structure the other basic components to double for this purpose. If means can be found to ban front yard and curb parking or to reroute the sidewalks, the latter may again achieve safety and a recreational use. If park and school facilities can be united to encourage adult use for sports and evening classes, separate facilities need not be built. If our crossroads has a sitting space, older people may enjoy passive participation.

If linear parks connect districts, the child will have recreational potential as well as safe communication. If streets are better organized there can be safety for bicyclists. Rather than defining public obligation to supply recreation for children only, we need to supply simple recreational opportunities for every age group in the neighborhood.

Links Other Than Automobile: Links are means of communication. Given all internal neighborhood ideals, we will not make a successful city without linking the smallest unit to the next larger one. The car link (private), the bus link (public), the foot and the bicycle links are each part of a desired pattern.

In the Copenhagen suburb of Lyngby, a beautiful forest and swamp path winds its way west to lakes and east to a great park and the sea. There, amid highrise apartments, traffic ways and rapid transit, the individual has uninterrupted solitude when he desires it and children may go in safety for miles. The patterns for living artfully have been articulated very successfully with what is in effect a linear park. In Zürich, *Täler und Wege*—intimate green walks along ravines full of rushing water—connect living areas with the forest preserves on top of the hills around the city with a lake in the middle. For a better life, we must bring such facilities into the heart of what Pani calls our "certain hovel areas."

In the US, Reston and Columbia use these kinds of links for communication; in the latter Washington satellite 10 "villages" of some 11,000 each will be connected by walks, bridle paths and a minibus service running on its own right-of-way. We must balance the car link with other kinds of communication.

If the individual has no alternative but to live a great distance from his work, he still does not have the most desirable life. Factories which do not intrude on their surroundings should be near enough to residential areas to be within walking or bicycling distance. We cannot legislate where people should live, but we can encourage the use of walkways and bicycle paths, far less costly to build than concrete highways and far more salutary on the body.

Some American college campuses, such as the University of California at Santa Barbara, do have cycle ways, and the federal government is supporting the building of 10,000 miles of bicycle paths around the country. They can introduce a new kind of beauty to the process of living in the larger city.

We invented grade separation to give continuity to speed streets. By applying this principle widely over other streets, we can regain the 19th century grace we seek in vain in today's suburbs. The charm of the 19th century town came largely from quiet, safe streets. This is not possible in a neighborhood with the car bulls let loose, two or three to a family. Grade separation can give the same continuity to walk paths, bicycle paths, or even bridle paths, as it now gives to freeways.

The art of city living is more than a mosaic of dwelling neighborhoods. It requires a structuring of groups in neighborhoods into a composite of urban design. This extends the neighborhood into the many ingredients of life in the city and relates the small to the large. If this relating of pieces is also organized visually, the individual is able to perceive the structure and personality of his city. Functional order may then reflect beauty.

Citizen, government and school each has a role in getting a better city for the individual through more careful neighborhood organization. For each neighborhood it is the responsibility of the citizens within it to 1) meet and define its needs, perhaps with the help of an independent planner acting as their advocate to the city; 2) see that the city planning commission studies improvements to circulation, housing, park boundary interfaces and all other needs that citizens have; and 3) insist that these studies be translated into bond programs.

It is the responsibility of the planning arm of the city government to 1) define neighborhood boundaries; 2) assume a density range for each neighborhood; 3) lace together neighborhood districts with a leisure and children's communication system linking schools, convenience shopping and recreation (ultimately grade separated); 4) adjust the existing thoroughfare and neighborhood park system after neighborhood living areas are defined; 5) propose a short-range capital improvement program to re-establish safe neighborhoods throughout the city by means of temporary devices such as chained streets; 6) propose a long-range capital improvement program through bonds voted periodically for a group of neighborhoods and ultimately for the whole city.

It should also be the responsibility of the city planning department through the planning commission automatically to re-evaluate each neighborhood when density is saturated, or every 10 years.

The schools have the third responsibility to establish awareness of the civic environment. We do not teach children how to judge this environment, nor that it is within our power to change it. The physical framework in which we live is totally ignored in most schools. We must examine with our children our attitude toward temporizing—do we live now, or in the future? What value has quality?

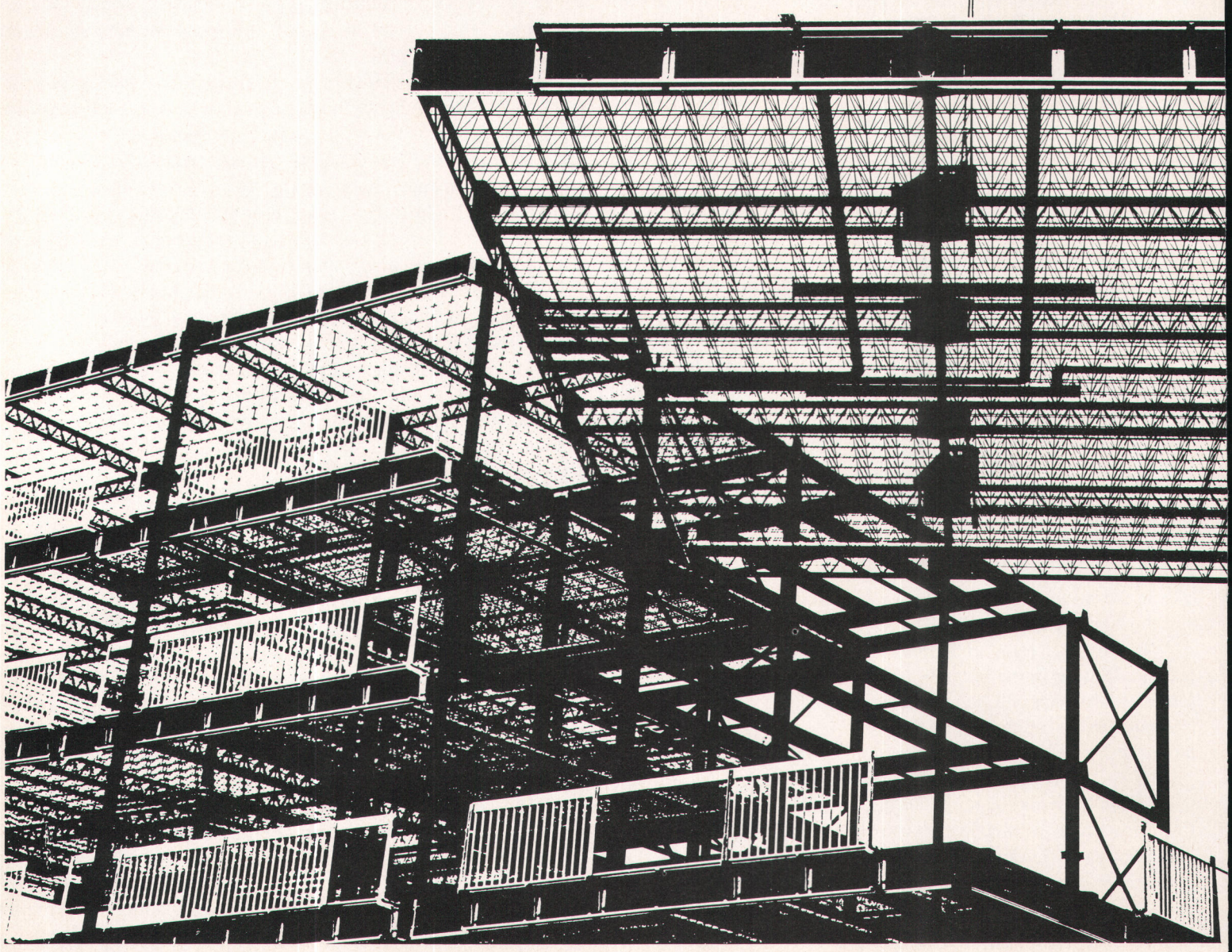
Quality often requires the efforts of several generations. Given a plan proposal, laymen rarely realize that they are seeing it with the blinders of one generation and its problems. But a plan may survive the next generation's evaluation if it still satisfies basic human needs.

The city must plan priorities within its financial capability, but it should never be a question of one ingredient exclusively over another. It should be a question of balancing and relating ingredients one to another to better the process of living, making more obvious the beauty inherent in the successful patterns of human experience. □

THE SYSTEM TO SYSTEMS

by EZRA D. EHRENKRANTZ, AIA

The word "system" is used in such a variety of definitions these days that it is losing its force as a meaningful term in our vocabulary. Modular coordination was a catchword of the late 1950s and '60s; now it is "building system" and "systems approach" that are being overused. This may have been brought on by package builders using "systems" terminology to describe their products to clients who may not have been receptive to the idea of conventional prefabricated or package buildings. Or it may have been confused by those caught up in aerospace lingo, where a number of "systems" definitions apply to the hardware and software relating to goods, services and process management. The following provides a working definition of these two "systems" terms.



The "systems approach" may be defined as a process which is based on viewing a problem as a set of interrelated, interdependent parts which "work together for the overall objective(s) of the whole" (C. West Churchman: *The Systems Approach*. Dell, 1968.) Based on this premise, the design process may be organized so that decision making may take place rationally and consistently, minimizing the deceptions of narrow-minded thinking.

The systems approach does not insure the discovery of a solution to every problem. Nor, if a solution is found, does it insure that it is the best of all possible solutions. It simply provides the problem solver the opportunity to evaluate more rationally the answer which he develops. When applied to building problems, the approach is characterized by a number of steps which are discussed later.

A "building system" may be defined as a set of interrelated building parts with a base of information which defines the relationships between the parts and which determines how the parts may work together to accommodate the varying needs and objectives of a variety of building programs.

An essential distinction between the two terms should be made, however: Building systems may or may not be created by the systems approach, and the result of a systems approach may or may not be a building system.

The systems approach, when applied to building problems, results in a process whereby resources and needs can be related effectively to performance, cost and time. There are five basic resources which one deals with in building: land, financing, management, technology and labor. Needs, or user requirements, may relate to standards of space, services, etc.

The systems approach, as developed at present for resolving building problems, is characterized by a number of general steps. The order and degree of detail with which these steps are implemented depend on the nature of the problem. These steps are:

- statement of objectives
- problem analysis and base line data gathering: analysis of 1) the state of the art in order to benefit from relevant work done in the past and to form a basis for meaningful and organized progress; 2) all parts of the problem and the relationship(s) between the parts; 3) the variables and constraints which will affect attainment of the objectives, i.e., labor unions, building codes, etc.; and 4) identification of the needs of the potential uses of the building through surveys, interviews, etc.
- development of performance criteria (stating what an item or a space must *do*, not what it must *be*) based on identified user needs
- generation of alternative solutions
- evaluation and selection of alternatives based on previously defined performance criteria, or through bidding (and, in some cases, by use of quantitative models which simulate and predict the performance of alternatives).

With the exception of the very last step in the approach, the rest of the process may be quite conventional: detailed development of the selected alternative with subsequent fabrication and assembly of the building(s).

After construction is completed, the last and perhaps most important step in the process occurs: evaluation of the actual performance of the selected alternative in comparison with previously determined performance criteria. This makes it possible to modify the solution and improve it before it is being implemented again, and it provides a basis for meaningful progress and further improvement in future work.

On the preceding page, the jacket illustration of *Systems Building: An International Survey of Methods*, by Thomas Schmid and Carlo Testa. Courtesy Praeger Publishers, Inc., and Verlag für Arkitektur-Artemis, Zürich.

The systems approach has a number of advantages when compared with the conventional design process. It permits completeness of problem definition; it results in an earlier and more reliable prediction of the eventual cost and user acceptance of the product; it enables one to utilize the concepts of performance more effectively; and it provides a means by which one can continually evaluate solutions generated against rationally defined objectives and criteria throughout the design process.

It may be argued that this approach to balancing needs and resources has been a traditional one and is quite similar to conventional architectural practice. In terms of a general approximation this may be true. With respect to actual application, however, it is not believed that the conventional design process provides for a systems approach to building. This process has traditionally begun with the development of a building program by the client, architect, consultant or some combination of the three. Too frequently, this program represents the empire building propensities of the client and the various users. The program is infrequently related to appropriate and well-defined targets with respect to cost and performance. The architect frequently accepts a job where "the client's eyes are bigger than his pocketbook," and he proceeds through a series of compromises to change the scope of the project until it comes within the budget.

This may begin immediately in the schematic design stage where the client's program is interpreted in the first design drawings. Space requirements are often reduced and relationships between spaces altered to fit the budget. The statement, "It costs too much," causes continuous design alterations in the traditional process.

Once the schematic design is accepted, the program is often forgotten and another stage of design compromise begins in the preliminary design phase. At each such phase, the architect is obliged to give a budget which is expected to be more accurate as work progresses. This provides the leverage to bring the project scope into scale with the budget. Again, in working drawings, the architect can make compromises with the signed-off preliminary drawings providing the point of departure.

If the client retains his desire for the orginal program within the established budget, the "ultimate weapon" must be brought into this process of suboptimization: The plans must be rebid if the project goes over the budget. This process is destructive to both the designer and the client and frequently results in significant alterations in the way in which the project is carried out. For example, airconditioning is often deleted from a school program in order to bring design within the budget.

In the past, when there were fewer complexities, a lower rate of building-cost escalation and change in general, one could work with more accurate rules of thumb with respect to cost and performance. The design process was reasonably effective. Today, however, the complexities within buildings in terms of resource allocation for different materials, services, environmental control, as well as basic enclosure of space, call for cost control which requires a new procedure.

If we go back to the establishment of a building program and relate that program to target costs for each portion of the building, it is possible to develop a base of information which might indicate, for example, that demountable partitions cost $2.25 per square foot for school purposes with a 40 decibel sound transmission curve. Or it might show that airconditioning with multizone units done economically will cost from $2.25 to $2.50 per square foot in most regions of the country.

If, instead of beginning to compromise after the design process has started, one develops as an initial step a feasibility study

based on cost data such as described above, gross compromises can be made in the program before design begins. In other words, this initial investigation develops information which is used to test whether the program can be handled within the means of the available budget. Once this is done through hard compromise, the design process can begin for the purpose of design and not with the alternative motive of pruning the client's desires in order to bring the project within the budget. This process is inimical both to the design process and to the client's own needs and budget.

What has just been described is a portion of the systems approach: the development of information based on past construction performances and costs, along with a definition of the needs of prospective users. This base is used, as described earlier, to develop building programs which specify performance criteria and cost targets which serve as guides for the design process and criteria for evaluating the results of that process.

In order to meet current-day building requirements, the cost targets in such programs must be subdivided and related to the many separate parts or subsystems of the building such as structure, floors and roofs, interior and exterior partitions, all of the services, casework and built-ins, etc. It requires that one deals with these costs in terms of functional parts of the building and not in

"A building system may be defined as a set of interrelated building parts."

terms of building trades. Building trade content and cost is important only for progress payment to the specific contractors. Simply knowing the cost of the rough carpentry, however, will not enable one to make appropriate decisions regarding the allocation of money for construction. In order to be able to determine which construction alternatives should be used for each portion of the building, the costs of floor systems, wall systems, etc., are necessary. This really requires a two-way estimating method to obtain control of resources for progress payments and to obtain information for the selection of materials as an integral part of the design process.

The systems approach requires that needs be related to resources until a balance is determined so that one can begin to design in the traditional manner, going from schematics through working drawing without trying to alter the budget at the same time. If, however, the user requirements are such that a set of appropriate needs cannot be answered with available resources, one must look at the total context within which the job is to be done to see if there is a way of altering the procedures, the way in which any of the resources are supplied, or the resources themselves in order to have the opportunity to develop acceptable solutions.

The School Construction System Development Project provided one example as just described. Here, it was not possible to meet basic educational requirements within a California state aid budget for more sophisticated schools. Airconditioning, flexibility for educational evolution within the school over time and a physical quality necessary for a viable educational environment could not be supported within the context of single building projects designed and constructed one at a time.

In this case, the architects and educators had to look at the basic resources—land, finance, management, technology and labor—and seek appropriate changes which would make it possible to meet the requirements. A new management device was then developed which tied 13 school districts together into a single bidding entity. Their needs were expressed in performance terms and bids were taken from a large number of industrial firms in order to obtain prices for new products and technologies which could be developed to meet the specific educational requirements within the allotted budget. In this process, there was concern with the acceptability of these new products and technologies and their incorporation within the buildings without problems caused by jurisdictional disputes on the part of the building trades. Finance and land in this case were taken as given and the development—through a systems approach—of a particular building system was brought about, using quite highly developed industrialized components.

In this particular case, the establishment of a volume market as a management device to bring new products into being was used basically for the purpose of innovation. These products have since been used in a considerable number of schools designed as single projects and in many other building types as well. Products developed as part of this process set new standards within the industry and, once set, many other firms provided products of equal performance and cost. In at least one case the lower costs of equal performance products developed by competitors caused one of the original successful manufacturers in the SCSD project to discontinue production of the particular subsystem he had originally developed.

From this one must understand, however, that a large volume of construction and a predictable market are not necessarily required for a systems approach to building. It may be required only if, within the context of a systems approach, one desires radical change from existing techniques and finds a need to create sufficient incentive in order to bring those changes into being.

The final product of SCSD, as the reader may have already discovered, was a building system. The basic software portion of the system, i.e., the rules or information base, is essential if one wishes to design projects within the context of time, cost and performance in a reliably predictable manner. Each subsystem such as structure, HVAC or partitions within a building system may be represented by a number of equal performance alternatives which may be interchangeable. The rules for the interface of these subsystems and their alternatives must be understood for the group of components to be thought of as a building system.

The selection of the optimum combination of alternative subsystems for a building system in terms of cost and performance may be done through controlled bidding procedures, as on the SCSD

"The systems approach, as developed at present for resolving building problems, is characterized by a number of general steps."

project, or it may be facilitated by using the optimization techniques of linear and/or dynamic programming. Our office is currently experimenting with the latter technique and is developing, with a programming consultant, a computer program to analyze the cost flexibility and efficiency implications of alternative configurations of the building elements that are generally found in a college laboratory building.

Building systems may be classified in two major catogeries:

Mr. Ehrenkrantz is president of Building Systems Development, Inc., of San Franisco. The present article, which he wrote in cooperation with BSD staff member William T. Meyer, was prepared for the AIA Committee on Architecture for Education.

closed and open. Closed building systems may be defined as systems wherein the juxtaposition of the basic subsystems has been predetermined in a specific way so that, for example, particular airconditioning or lighting or partition products must be used with a specific set of structural components. There might be certain options in other component areas, but a significant proportion of the total building must use specific products for the better part of the subsystems.

Open building systems call for more freedom wherein a variety of different subsystems may be used together with a high level of interchangeability. The interface requirements are called out in such a manner that many options may be available. This makes it possible for a building system to remain viable over a longer period of time: As one subsystem becomes obsolete, newer ones which perform better can phase in with the remaining

"Building systems may or may not be created by the systems approach."

subsystems so that the total building system remains cost effective. In such an environment, it is possible for systems to be upgraded over time and to be continually improved in their performances. This may be done by subsequent projects which have large volume to stimulate specific levels of upgrading or by new manufacturers coming into the market to compete with and improve upon products of previously successful companies. Open systems, therefore, provide an opportunity for evolution not known to the closed system. They have longer effective lives, and one does not have to search for better subsystems to subsidize the less effective or obsolete ones in order to maintain the performance of the system as a whole.

Closed building systems, however, may provide opportunities for single companies or clusters of manufacturers to gain tighter control on the use and distribution of their products and may provide, in some cases, a more highly organized total delivery system for the construction of specific buildings. For simpler planning situations and for greater speed and efficiency in construction, there may at times be a case for closed systems.

It should be kept in mind that a systems approach to building does not require the use of industrialized building systems or prefabrication. Nothing has been said as to whether work is done in a factory or at the building site for a particular project; this is not predetermined. Building systems may, of course, provide the best way to obtain a desirable solution in terms of cost, time and performance in a specific job. There are factors in the industry today which may cause us to look favorably toward industrialization for the development of more effective subsystems of the building than has been true in the past. A systems approach, however, may readily be used for putting conventional products together in a traditional manner.

The factors which impel our more favorable attitude toward industrialized products include those which are related to increased building costs, inadequate production capacities, poor technical performance and prolonged construction times. However, these factors may be addressed systematically, for example by a "fast-track" approach to scheduling of the entire building process from programming through occupancy, for either conventional construction or for industrialized building systems.

There is also a frequent shortage of available people with appropriate skills within the building trades. The difference in wage rates between the factory and the craft unions on the building site provide considerable impetus to take advantage through industrialization of lower wage rates, higher production rates and perhaps more effective construction. The increasing cost and complexity of all of the service elements which must be combined within a given project also call for a level of coordination and predetermination of how these products may fit together that moves one toward the use of better produced components with greater quality control. These and other factors are swaying the balance over time in favor of industrialized building systems and products as opposed to conventional building strategies, but a systems approach does not require the use of such products on any given job. Rather, one must evaluate how available products can best be put together within a given budget to meet the spatial, environmental and esthetic requirements of the client.

One can see that a systems approach to building can take place either with conventional products or newly developed ones. It will become easier to take a systems approach, however, as more and more building systems are developed with known performance for specific groups of products working together. However, adequate information developed by architects, engineers, cost consultants, etc., makes it possible to do appropriate system design without specific building systems. In effect, such information in many instances permits the development of a building system out of conventional products. In some cases, architects practicing in a relatively traditional manner have developed such building systems and take a systematic approach to implementing them.

The need is increasing, however, for greater order and better information concerning building elements primarily due to the greatly increased number of new products, capabilities and requirements which must be built into our projects. This constantly

"The result of a systems approach may or may not be a building system."

growing dimension of complexity perhaps calls for greater care in developing procedures for integrating this information into our work.

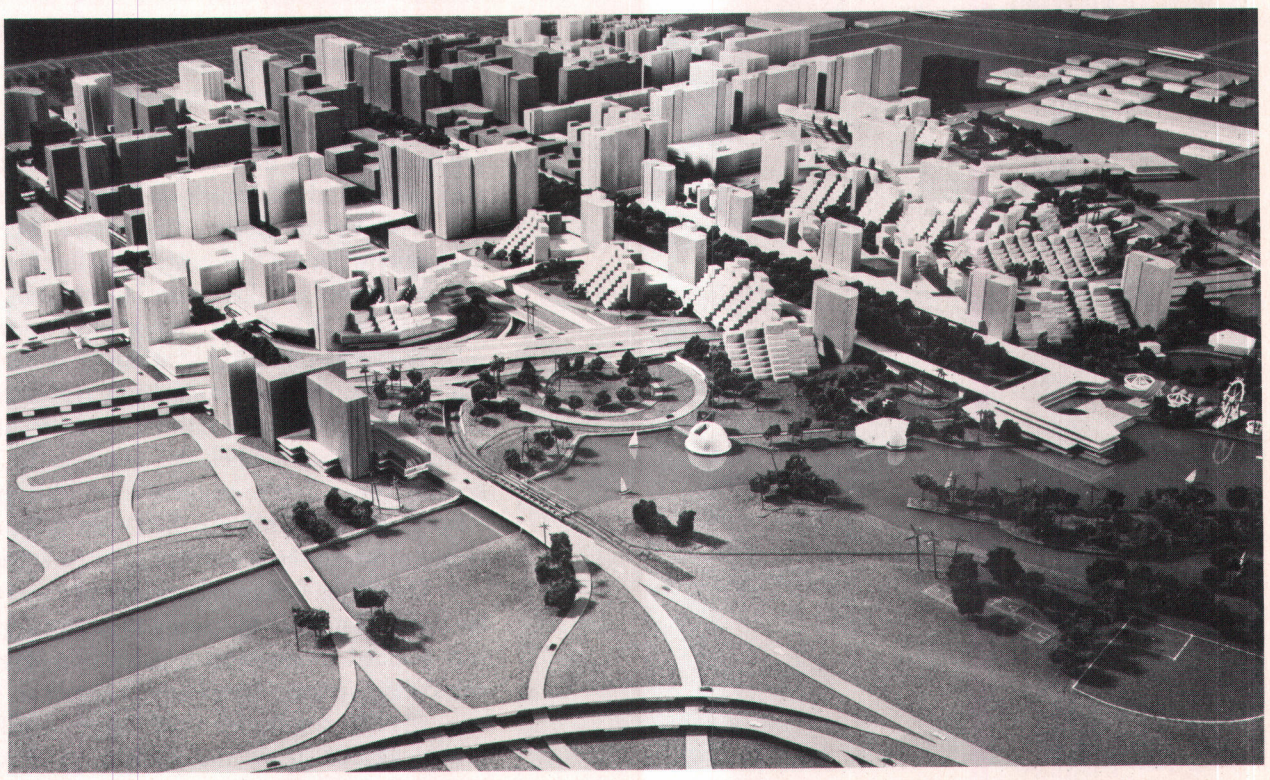
It is not for us to determine, however, what a building system should be or how to value one approach with respect to another. An architect must take a look at the basic requirements of the client and choose which building systems or nonsystems are appropriate to get the best value for the money. In this respect, it is considered important that the AIA Committee on Architecture for Education support not only the further development of the systems approach to building within the profession but encourage also the development of appropriate information packages about the products which we use, along with means of insuring the reliability of that information, so that field costs and performance of those products can be more reliably predicted.

We should pick opportunities to support developmental projects to bring new products and procedures into use which will give us a better chance of meeting our clients' requirements. We must recognize that this will require change with respect to government agencies, management procedures, the roles of those involved within the building process as well as the technologies themselves. If we are to maintain a position of leadership in the determination of our physical environment, we must take a major role in advocating the changes which will result in improvement of that environment. □

NEW SAN JUAN:
Unparalleled Opportunity

by WILLIAM V. REED, AIA
and FRANK A. MOLTHER, AIA

Illustrative site plan shows use of large land area, manageable divisions and comprehensive framework for emphasis on the human scale.



The New San Juan Center site (open land) is seen in the middle of the aerial view above. The view of the model at right shows the symbolic central space in the foreground and looks toward the park area to the north.

More than 200 acres of vacant land in the heart of this metropolitan area provide an almost unprecedented stroke of good fortune. The Urban Design Committee of the Puerto Rico Chapter AIA has conceived a plan for the land's use—a plan whose implementation awaits legislative action.

San Juan, the major urban area in Puerto Rico, recently has embarked upon the development of a city center which, in many respects, is a unique affair. A series of unusual circumstances make this plan both realizable and practical. There is an unparalleled opportunity at hand to utilize land which is presently vacant and which lies almost at the exact geographical center of metropolitan San Juan.

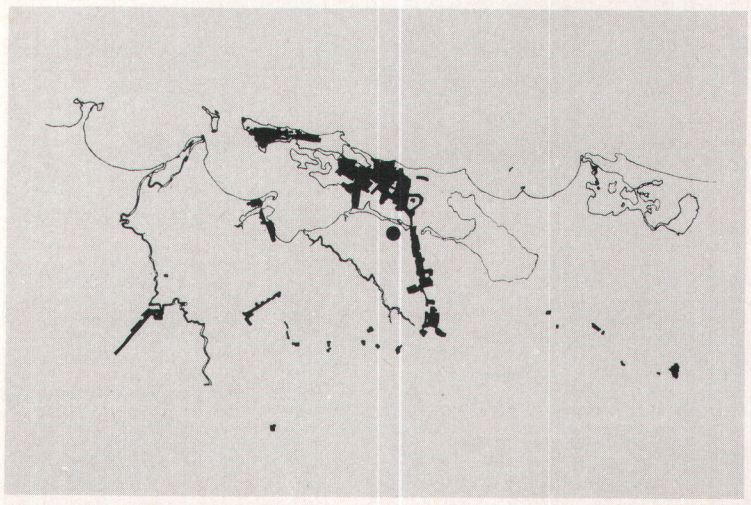
The availability of the land is indeed unique and a stroke of great good fortune. Years ago, a radio relay station was established in this area by the federal government. This is now obsolete and the land has been transferred to the Commonwealth of Puerto Rico at a nominal price. It lends itself almost perfectly to an expression of the highest economic, social and cultural achievements of the Commonwealth; it is a symbolic place where one may sense the dynamism of Puerto Rico's growth.

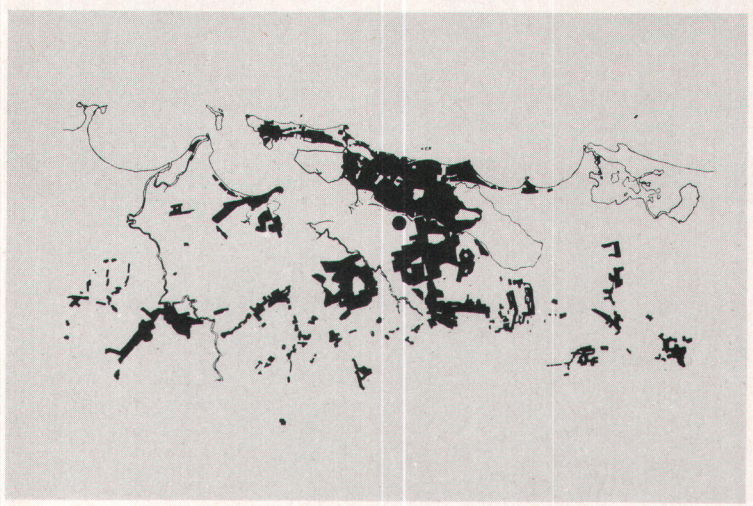
San Juan is a young city in comparison with other urban centers that are undergoing extensive—and expensive—face lifting. The city was founded in 1521, which makes it, chronologically speaking, one of the oldest in the hemisphere. Its problems, however, are the problems of youth. For example, smog literally has smothered other more complex cities for many years, but San Juan only recently has begun to experience this problem.

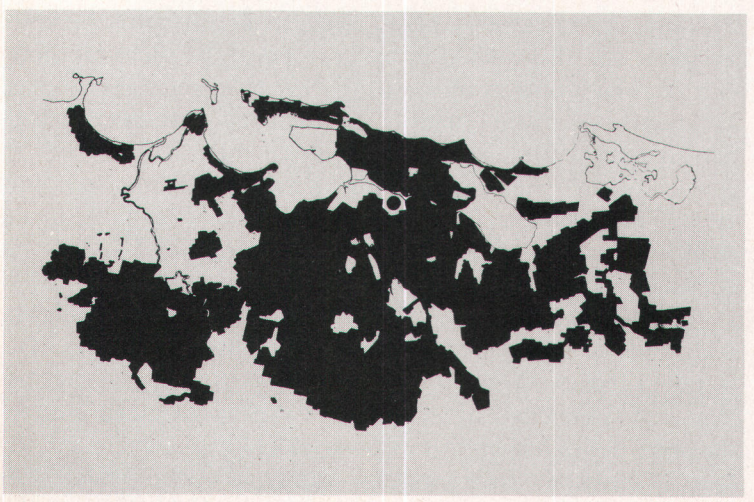
San Juan's youthfulness is one of its most vital qualities. It is young enough to learn from the trials and errors of other larger cities totally committed to 20th century living, yet it is fully involved in being a 20th century city itself.

In the last 20 years, San Juan's population has increased fivefold. The accompanying maps reveal the pattern of growth. The first map depicts the area some 40 years ago. By 1966, as the final map shows, the city had grown into a vast metropolitan area. In the last two years, there has been a decided tendency for the city to grow vertically, increasing the density in many sectors. This growth cannot continue without guidance and direction. At the center of the metropolitan area lies the logical and practical location for a city core, now known as the Hato Rey area.

The Hato Rey area is the most immediate and likely answer to the question of where to establish a city center for four basic reasons: 1) the unique availability of the open land; 2) its location as the geographic and population center of San Juan; 3) its siting at the crossroads of a proposed mass transit system with two main







The first map depicts the San Juan metropolitan area in 1920. The circle near the middle locates the New San Juan Center. The center map shows growth by 1950; the lower one increase of area by 1966.

lines, north to south and east to west, making it well served by transit and also the hub of the mass transit system; and 4) its position in relation to developments already taking place with the nucleus for a major banking center for the Caribbean and a concentration of government agencies.

The Urban Design Committee of the Puerto Rico Chapter AIA became involved in December 1966 when its members became concerned about the city which will predictably have 1.7 million inhabitants by 1985. The members decided that they had a civic responsibility to point the way toward the development of a clearly articulated center in a city that has been characterized by urban sprawl. They believed that the opportunity existing at this moment in history is so propitious that to miss it would be a tragedy for this and future generations. As technicians, they realized that the new center could check the haphazard growth. The various studies that have been made and the solutions that have been proposed for San Juan all serve to justify a city center. The idea had occurred independently to most members of the committee, taking on some semblance of shape in their minds through years of watching Puerto Rico develop socially, economically and physically. When they began pooling their concepts of a center, they discovered that much of the groundwork had been done.

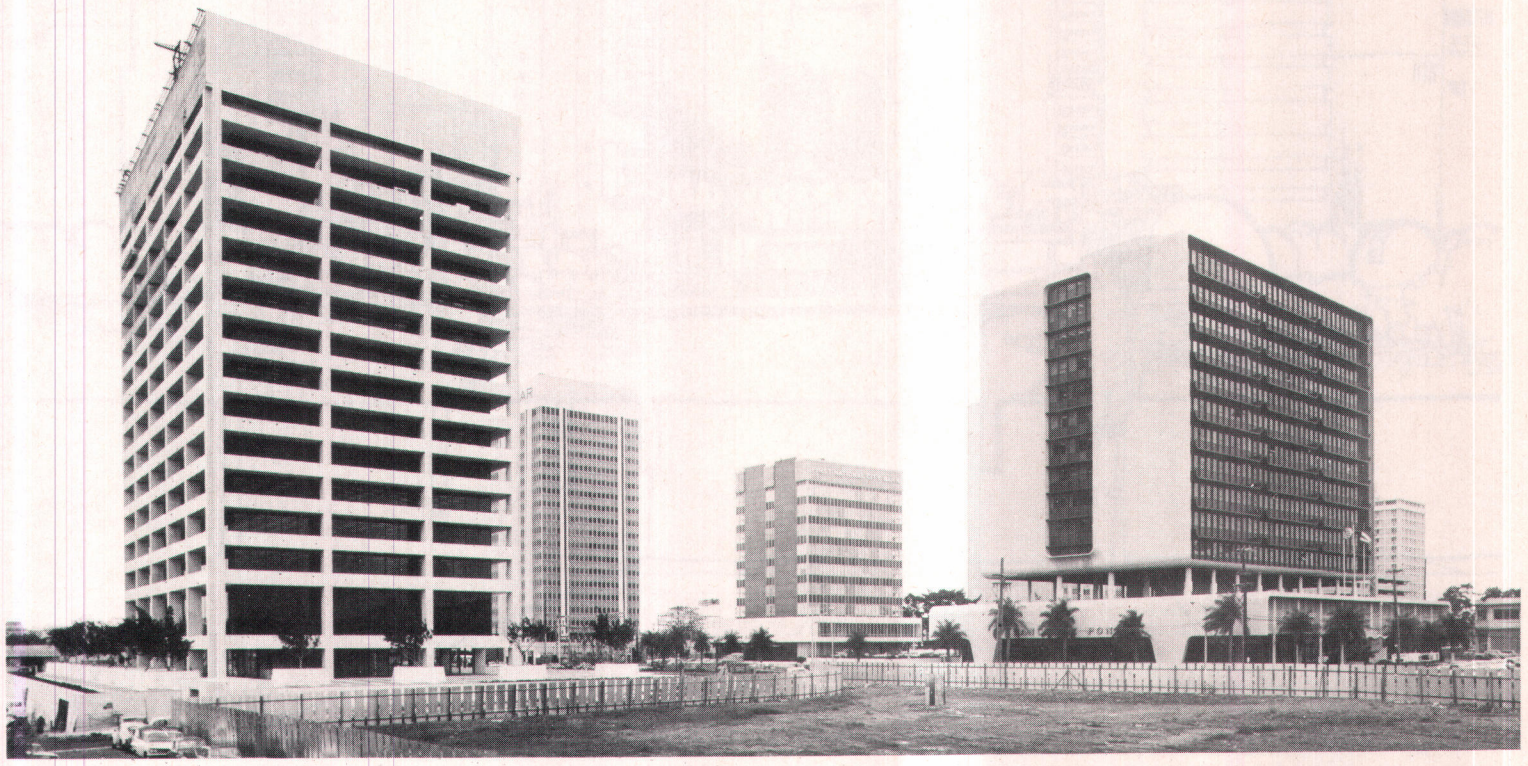
The Urban Design Committee meetings produced many suggestions. In fact, for the first three months the major task was to channel the divergent, independent thoughts and to arrive at a concept. The idea of a city center, a new San Juan adequate to meet the accelerating expectations of an ever-increasing number of Sanjuaneros, emerged from the meetings early in 1967. The project was integrated with existing government programs and private development plans whenever possible. In a matter of weeks, the concept began to take material form with an assist from the Puerto Rico Planning Board and the Department of Public Works, both concerned with the potentialities of New San Juan.

One of the first problems attacked was the handling of vehicular traffic. To serve the needs of both people and automobiles, it was decided to establish a pedestrian level above the vehicular circulation system. Anyone who comes to the center by automobile, whether for business or pleasure, will park in a multilevel garage located below the plaza level, reached from any of the streets that traverse the city center area. From this point a series of pedestrian conveyors will lead up to the plaza level, reserved solely for pedestrians. Thus the visitor will be within walking distance of every city center activity.

The chosen area is a compact one, acceptable as a pedestrian zone. A walk from one end to another will be the equivalent of walking 10 city blocks, say from 42nd to 52nd Streets in Manhattan. Plazas and bridges above the vehicular levels will connect the buildings. The tone of the center will be influenced by the business and commercial offices that already exist in the area, but the New San Juan Center will be multiuse, containing elements of all the activities of a nature required for a rapidly expanding major metropolis. Thus it will serve uses as varied as government housing, commerce, finance, culture, religion, education and recreation. Its function will be similar to that filled by Old San Juan for many generations before the city reached its present size.

The city center will not close at the end of the business day; it will have a night life with cafes, theaters, perhaps an opera house, arcades and an exhibition hall. There will be pedestrian malls flanked by small specialty shops, large department stores and en-

Mr. Reed is president of the Puerto Rico Chapter AIA and **Mr. Molther** is technical director of the New San Juan Office; both are members of the Urban Design Committee.



Vacant land in foreground, backed by Hato Rey buildings, reveals site of new center. Existing structures total 1,161,300 square feet.

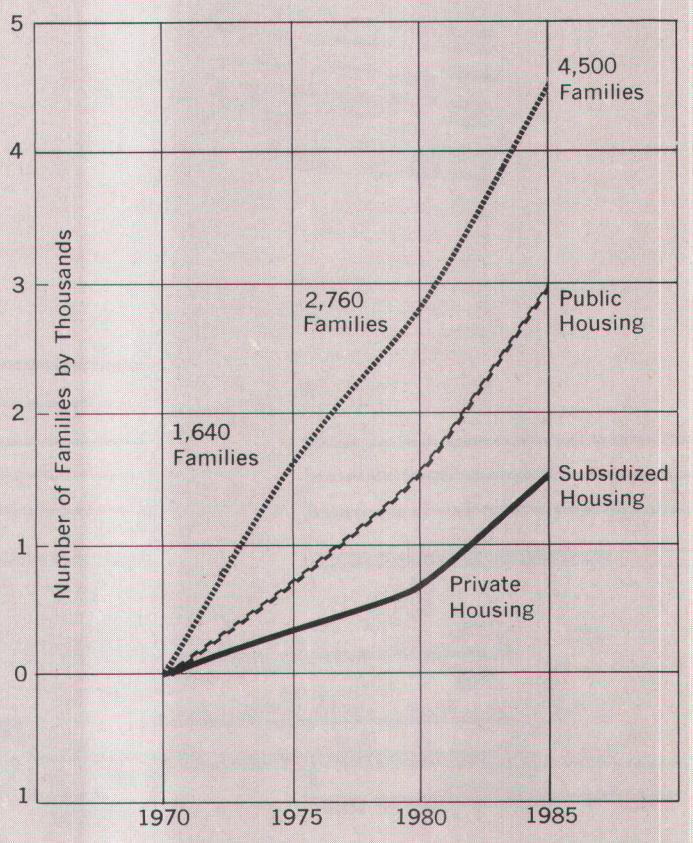
tertainment facilities. Movie houses and restaurants will assure a nightlong stream of visitors and will help create a gay and brightly lighted atmosphere conducive to strolling and window-shopping. Housing for families of all income groups who prefer the conveniences of living in the very heart of a bustling city will occupy part of the area. Sometimes apartments will be located above the commercial levels, sometimes in small enclaves of their own. A large accessible garden-park with amusements, a zoo and an aquarium, not unlike Tivoli Gardens in Copenhagen, will be included. The recreation area will be reached on foot, by car, by rapid transit or by small pleasure craft that will take people back and forth along the Martin Peña Canal. At about the center's midpoint, a park with a fountain pool will be established as a symbol to the visitor that he has arrived at a place of importance and dignity.

The impact of the development of the new center on employment and tax revenues for San Juan shows up in the economic studies that were developed with the plan. It is estimated that there will be approximately 65,800 people employed in the new core area by 1985 and that tax revenues from privately owned property in the area will reach more than $5 million annually.

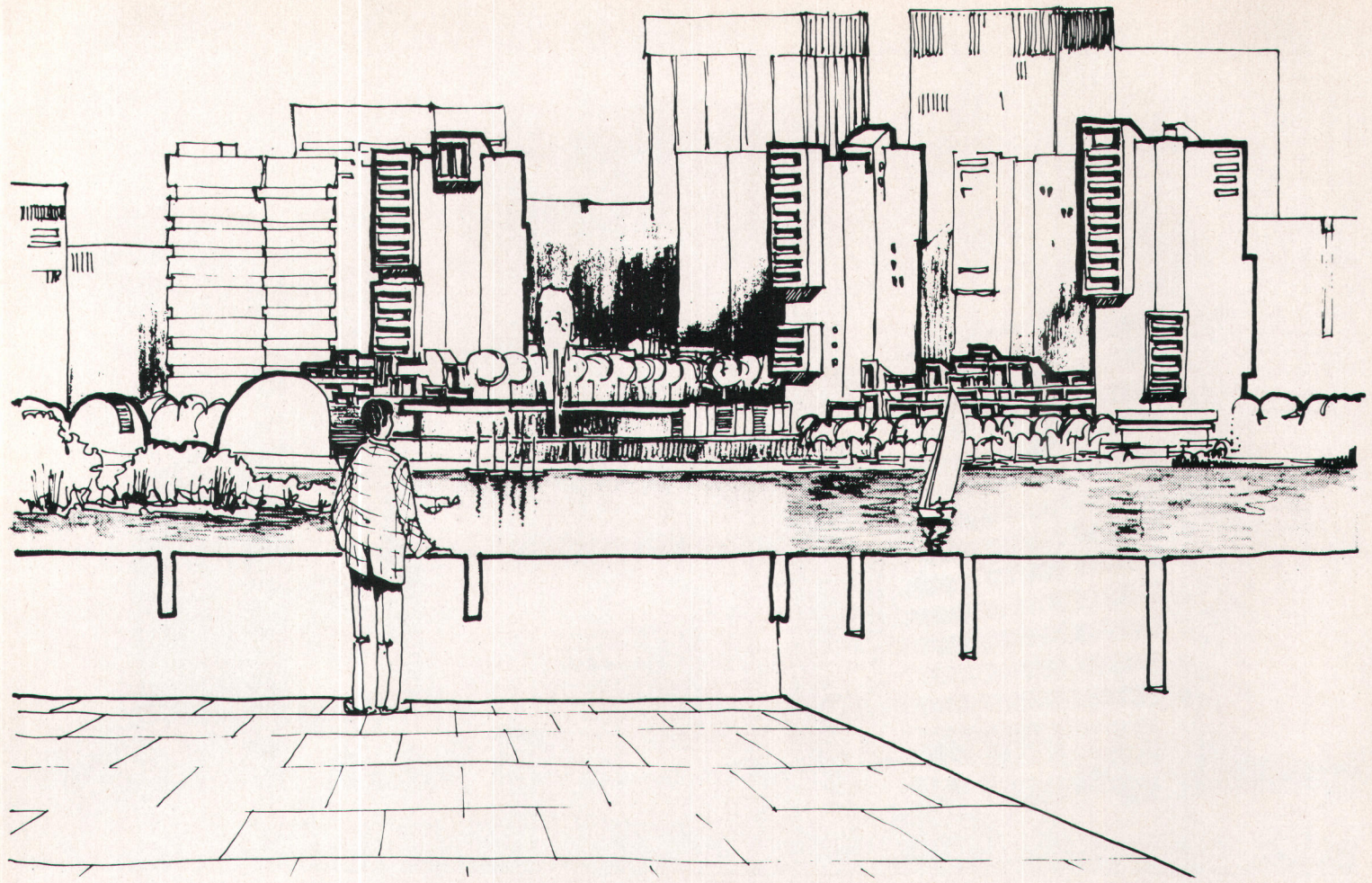
During construction over the next 15 years, approximately 2,500 people will be employed annually in construction work being carried out in the new center itself, while approximately 3,300 people will be employed at other locations in activities servicing construction operations within the new center.

The plan includes the construction of 4,500 dwelling units primarily for middle and low income families, many of whom will be able to walk to jobs which will be created within the area. In addition to the dwelling units, the plan will provide for parks and recreation areas, schools, a cultural center and other community activities related to the housing itself, including a social service center.

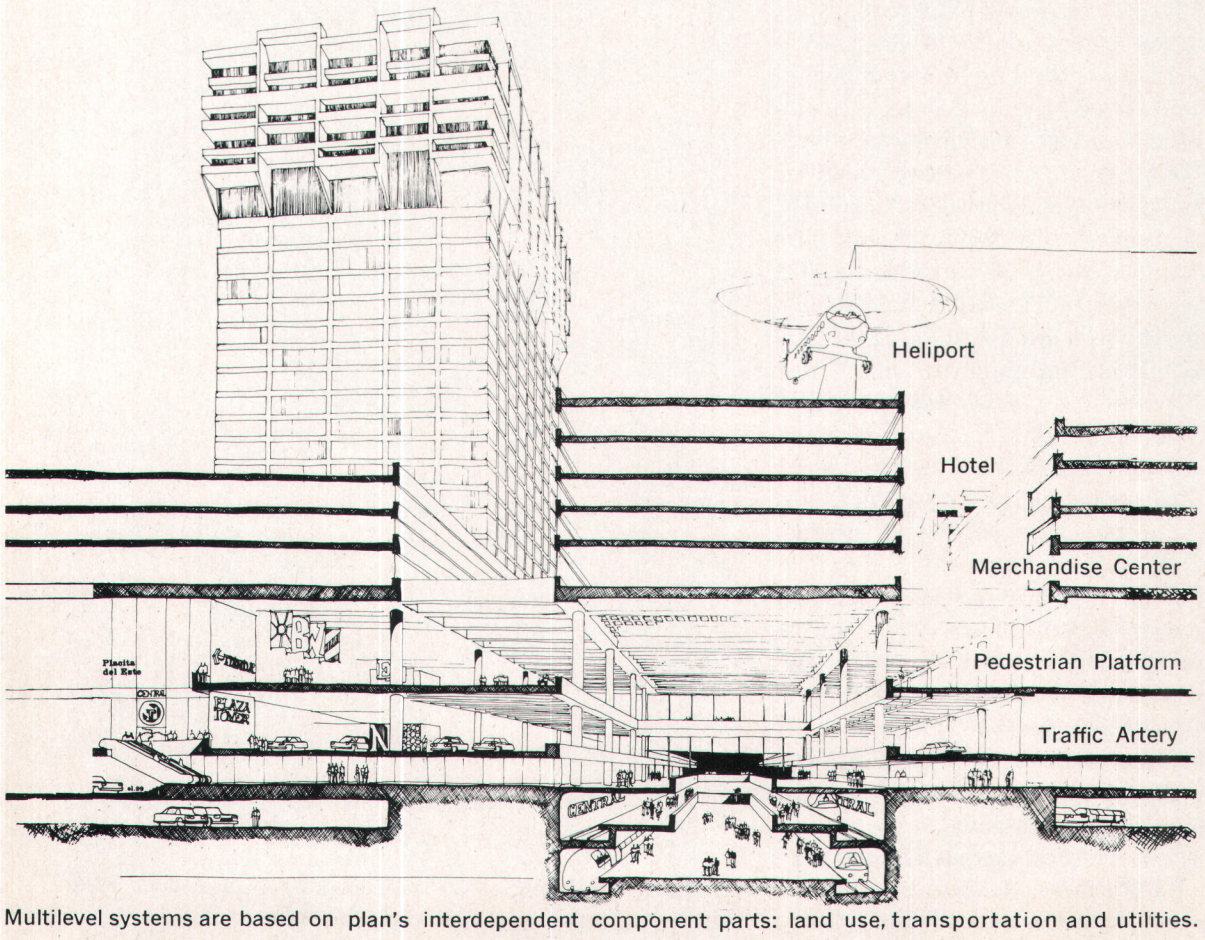
HOUSING PROJECTIONS BY FAMILIES



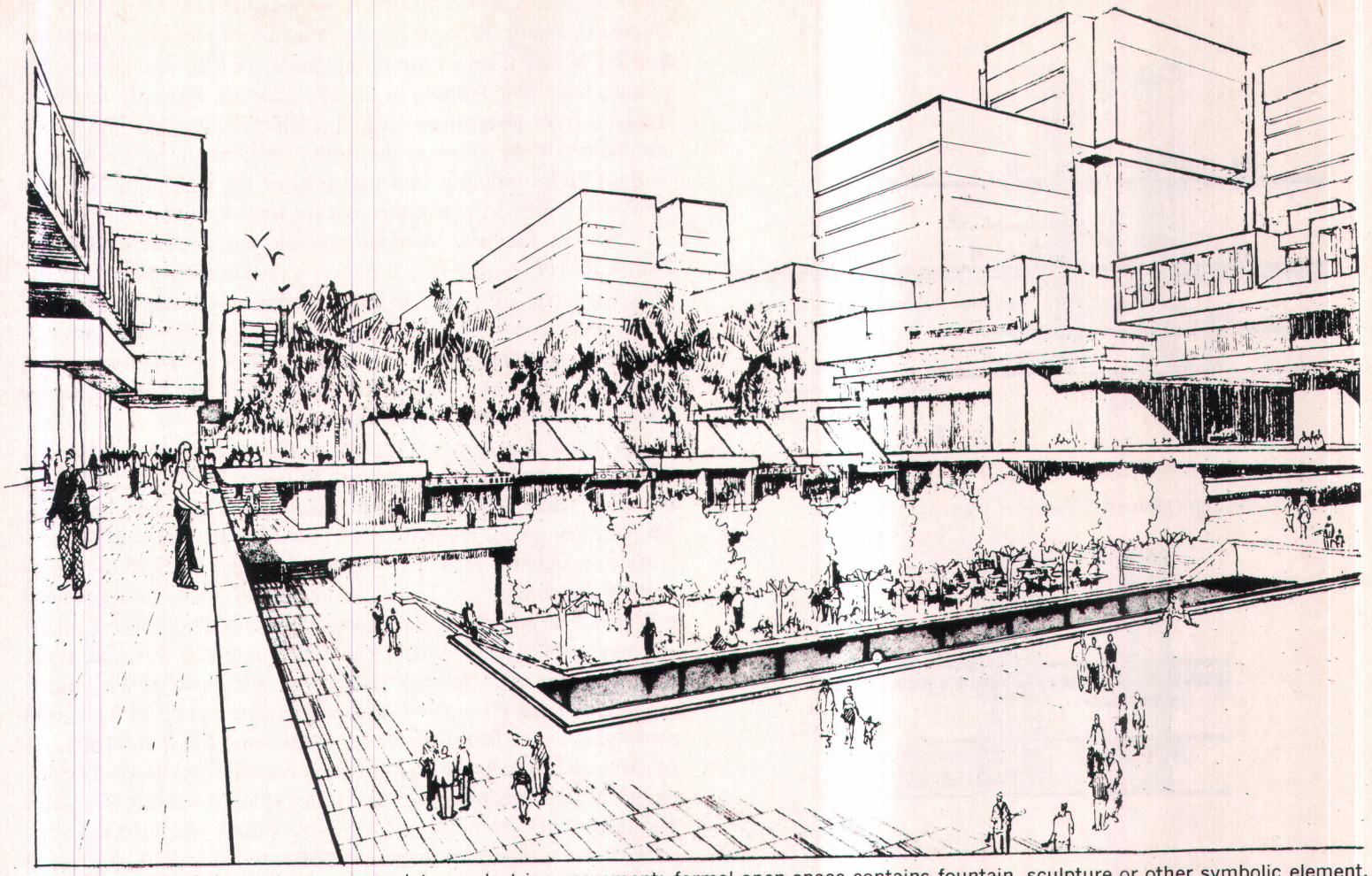
Source of Information: New Center of San Juan



A park takes advantage of the Martin Peña Canal to provide for a water-oriented gateway to the center and for recreational facilities.



Multilevel systems are based on plan's interdependent component parts: land use, transportation and utilities.



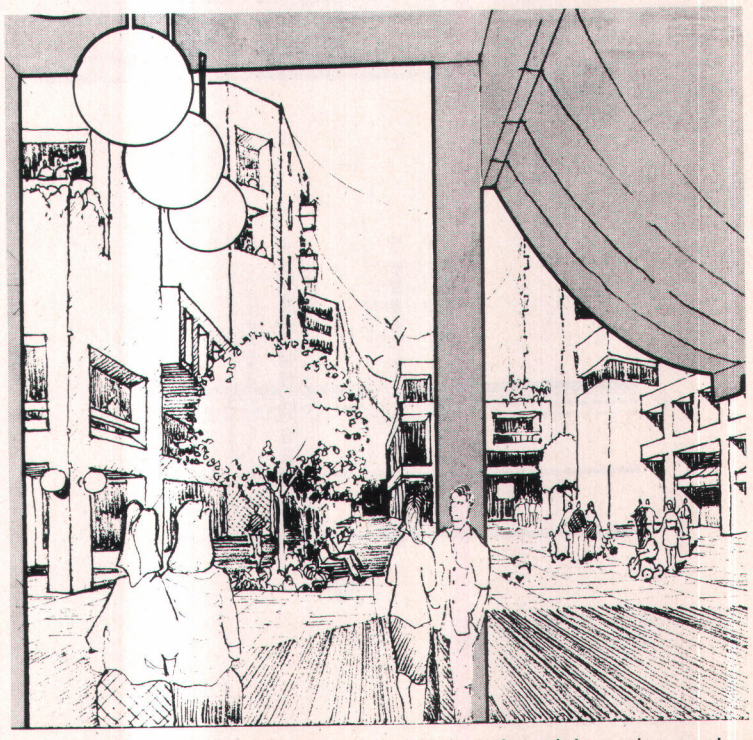
The focal point of the center accommodates pedestrian movement; formal open space contains fountain, sculpture or other symbolic element.

The Urban Design Committee believes that the city would be doomed to fragmentation with none of its component parts strong enough to provide leadership for the whole if the opportunity to develop a thriving urban core on the 200 acres of vacant land was lost. Therefore, much thought was given to the manner in which the plan could be implemented.

After much consideration and after consultation with the Puerto Rico Planning Board, the committee prepared a formal petition which set forth the background and basic concepts of the study and requested that steps be taken to bring the plan into being. The petition, in English and Spanish, was printed on heavy paper and purposely sized so it would be difficult to file and forget. It was presented to the Puerto Rico Planning Board in November 1967 and was circulated widely in both government and private circles, copies being sent to the Governor and to each member of the legislature.

The petition emphasized anew the need for a center and requested action on three important steps: 1) adoption of the city center concept as official government policy and the designation of the Hato Rey area as one subject to a coordinated set of rules of planning and development; 2) further technical studies in depth to establish a sound social, economic and physical basis for all aspects of area development and 3) the creation of a semi-autonomous public corporation with a board of directors representative of both government and private enterprise devoted exclusively to turning concept into reality.

Before circulation of the petition, in May 1967, the central core study was arranged into an exhibit prepared by the Puerto Rico Chapter which gave a graphic picture of what the center was all about. A large model was placed in the vestibule of the Banco Popular building in Hato Rey, where it remained for several weeks.



Residential area has its own community and social service center.

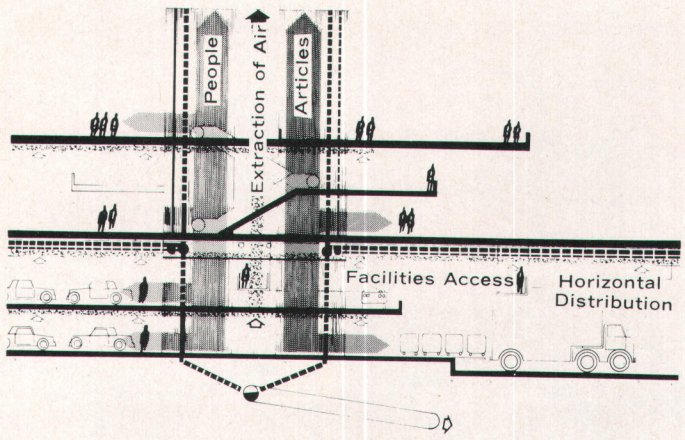
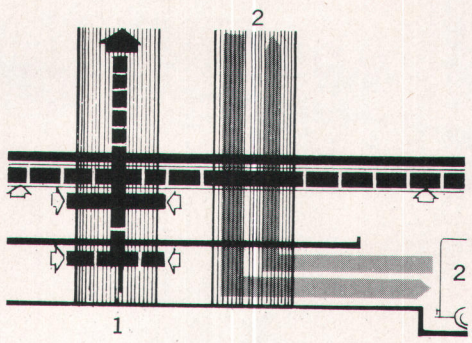
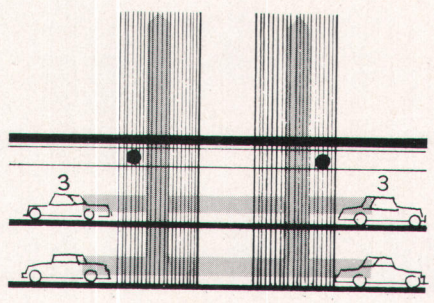
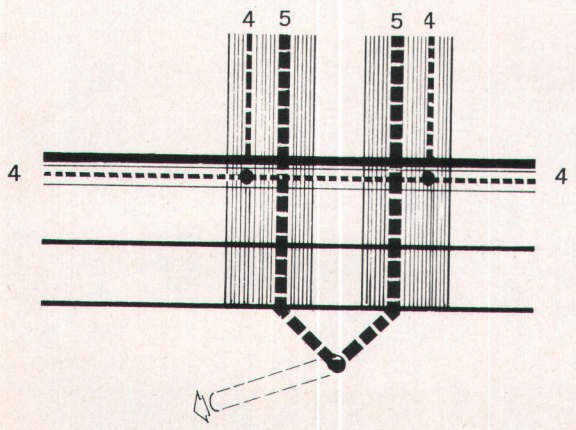


Diagram (Different Types of Vertical Circulation)





Composite diagram of the vertical service system shows all facilities in operation: (1) ventilation system exhaust at high level; (2) trucking deliveries and returns; (3) parking with access to higher levels; (4) utilities supply distributed horizontally; (5) utilities waste through horizontal distributor and to lower levels.



The exhibit was aimed at stirring the imagination and pride of the citizens of Puerto Rico and making them aware of the opportunity that lay before them in the development of this strategically important land. Cooperation in the evolution of the study had been received from government planning officials. At the time of the circulation of the petition, the exhibit was set up in the rotunda of the Capitol building, and members of the legislature were invited to a luncheon where the concept was explained.

Almost one year after the petition was presented to it, the Puerto Rico Planning Board passed a resolution setting forth the Hato Rey area as a district to be planned in accordance with norms to be established. The resolution in no way is the final answer, but it is an important first step on the part of the Commonwealth government and one which lays the groundwork for the subsequent policy decisions that must be taken.

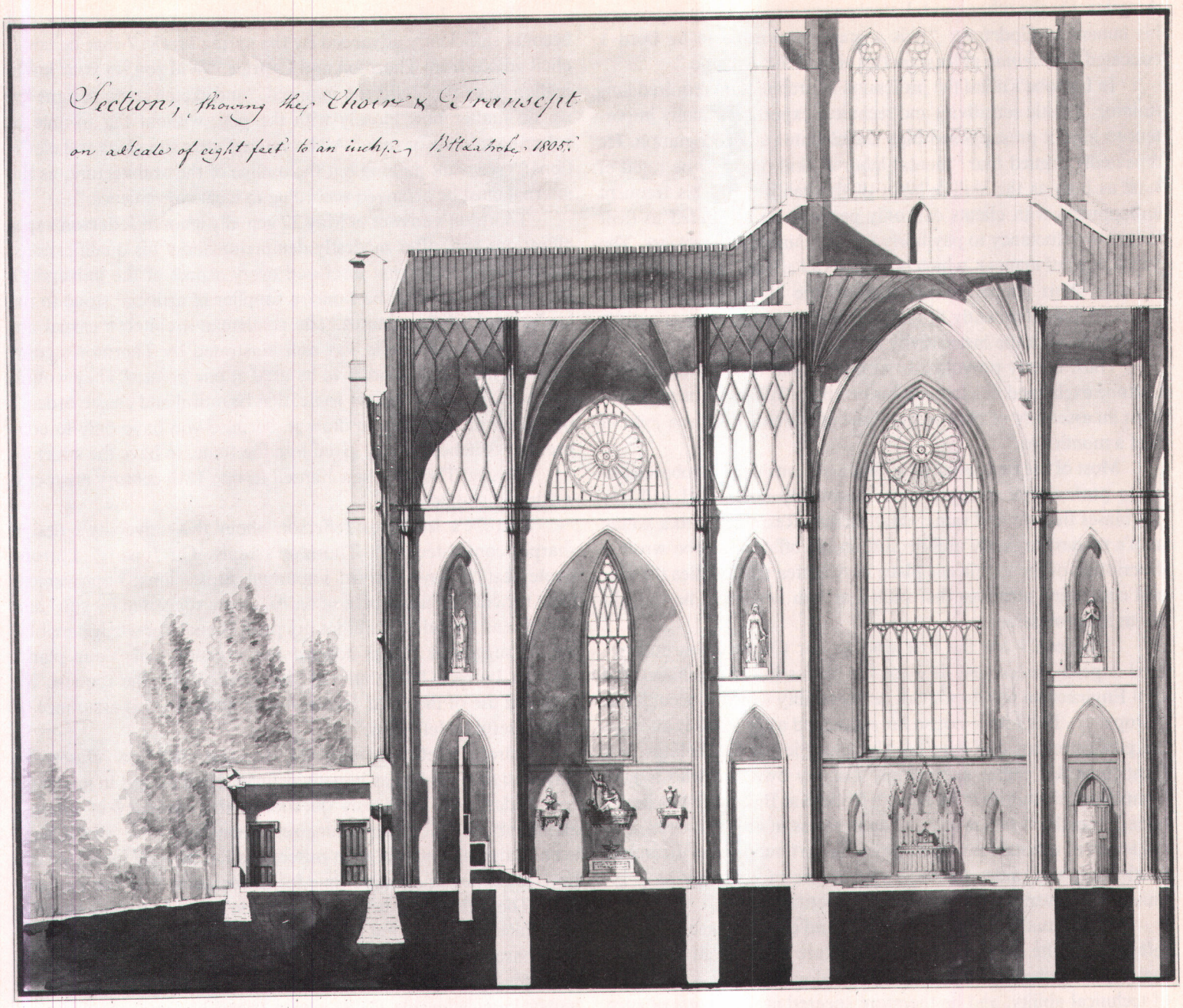
Largely as a result of the efforts of the local AIA chapter, a Citizens' Committee was organized in December 1967, composed of representative leaders of both government and private industry. The purpose of the committee is to establish the necessary framework to realize the plan. Through the energetic work of the chairman of the committee, Tedoro Moscoso, former US Ambassador to Venezuela, and committee members, over $300,000 were raised to carry on the detailed technical studies required to advance the plan from the status of basic concepts to a realistic working document. The Ford Foundation agreed to make a grant of $100,000 contingent upon the raising of an additional $200,000 locally. As of December 1969, $308,000 had been collected or pledged. A technical staff was organized and office space prepared. The AIA Urban Design Committee, serving as advisors to the technical staff, provides important continuity to the entire effort to produce a central area plan. Outside consultants in the fields of urban planning, economics and transportation have been employed to advise, review and assess the work of the technical staff.

The technical staff, in consultation with the Citizens' Committee, the Technical Committee and special consultants, has completed a general plan which responds to the site's characteristics, local conditions and problems and opportunities. The plan was presented to the New Center for San Juan Committee in one of a series of design review sessions and later to the Puerto Rico Planning Board. The technical work was completed in December 1969.

A further accomplishment is the drafting of legislation by the legal counsel of the New Center for San Juan Committee for the creation of the public corporation recommended in the petition. This legislation concerning the corporation was introduced at the session of the legislature in January 1970, and hearings indicate the possibility of passage during this session. Such a corporation, once created and made recipient of the title to the lands being sold to the Commonwealth by the federal government, could sell bonds without compromising the borrowing power of the Commonwealth. The operating expenses of such a corporation will be more than covered by the increase in land values due to the development of the center itself.

The Urban Design Committee of the Puerto Rico Chapter continues its interest in the new center under the able and dedicated leadership of its chairman, Osvaldo Toro, FAIA. It is working with the paid technical staff and the New Center for San Juan Committee to see the plan from concept to reality. □

CREDITS—New Center for San Juan Committee: Teodoro Moscoso, chairman. Puerto Rico Chapter AIA: William V. Reed, president 1968-70, and Carlos Sanz, president 1966-68; Osvaldo L. Toro, FAIA, chairman, Robert T. Eskridge, Thomas S. Marvel, Frank A. Molther, Esteban Padilla, Urban Design Committee. Special consultants: RTKL Inc., urban design, with Richard K. Chalmers, AIA, resident consultant; Wilbur Smith & Associates, transportation; Robert Gladstone & Associates, economics.



The Precarious Professionalism of Latrobe

by J. MEREDITH NEIL

One hundred fifty years after his death, a look at his way of practicing, which was hardly helped by his class arrogance and short temper. Frequently unhappy with his clients and driven to bankruptcy, he was nevertheless proud of his professionalism.

Benjamin Henry Latrobe is commonly given the credit of being the first professional architect in the United States, and this is frequently taken to prove that his life, as Talbot Hamlin put it, "is the story of a man ahead of his time."

Charles Sanford has neatly, if probably unintentionally, summarized the textbook treatment of Latrobe's place in American history: "Benjamin Latrobe, a professional architect of rare sensitivity, integrity and skill, who almost singlehandedly created the Classical Revival in the United States, found so little respect for professionalism, even in the halls of Congress which he had been commissioned to rebuild, that he went bankrupt and was forced into building and promoting steamboats on the Mississippi." (*Quest for America, 1810-1824,* Doubleday, 1964.)

Certainly this reflects Latrobe's own opinion of his situation, at least in his more gloomy moods. "The service of a republic is always a slavery of the most inexorible kind," he advised Count Constantin Volney in 1811, "under a mistress who does not even give to her hirelings civil language." And Latrobe melodramatically wrote to Maximilian Godefroy from Pittsburgh in 1814: "I often resolve to go & taking the benefit of some insolvent act, begin the world again in a small house—build as a contractor or common carpenter & so get on as well as I can. But who will employ me?"

Nevertheless, if the historian stops with such a simplistic interpretation, he will fail to understand the interesting, ambivalent relation between Latrobe and the America of his time. Hamlin, Sanford and other scholars have repeatedly pointed to Latrobe's professionalism as the cause and consequence of his troubled career in

America. On the other hand, Latrobe very emphatically concluded his lament to Godefroy: "It is a great misfortune to be born & educated *Gentleman* at least on this side of the Atlantic."

In Latrobe's mind the profession of architecture required long training, artistic sensitivity and technical expertise; equally important to him, it presupposed high social status and recognition. He repeatedly argued that "mental labor & skill ought to be rated at least as high as the skill & labor of the hands." But his frequent unhappiness with clients can only partially be attributed to their failure or reluctancy to pay fairly for his training and services. The "despotism of manner, which belongs to all artists," as he described his own short temper to Secretary of the Navy William Jones, smacked very frequently of class arrogance rather than of artistic impatience with the insensitivity of the layman.

Thus, utterly provoked by congressional dilatory nitpicking, Latrobe exclaimed in a letter to his brother, "What can be expected from an assembly of clowns from one of *which* I bought a joint of beef a month ago."

Most of the time what we would now consider Latrobe's legitimate professional quarrels were thoroughly intermixed with social biases that we find rather unattractive. Responding to a young man's request to study architecture in his office, Latrobe wrote a description of the architect's place in America that typifies the several competing attitudes that pulled at him whenever he thought about his profession:

"I believe I am the first who in our Country has endeavored & partly succeeded to place the profession of Architect and civil Engineer on that footing of respectability which it occupies in Europe. . . . But I have not so far succeeded as to make it an eligible profession for one who has the education & the feelings of a Gentleman & I regret exceedingly that my own son who is now completing his studies in St. Mary's College at Baltimore has determined to make it his own. . . . The business in all great cities is in the hands of mechanics who disgrace the Art but possess the public confidence, and under the false appearance of economy have infinitely the advantage in degrading competition."

His habitual linking of "Architect and civil Engineer" and his reference to the "business" of architecture symbolized his belief that a crucial characteristic of his profession had to be a high level of technical ability, and he therefore sneered at the efforts of such gentlemen-architects as William Thornton. But, faced by the entrenched building crafts especially in Philadelphia, Latrobe reacted with gentlemanly contempt against the undoubtedly skillful but intellectually narrow and artistically conservative "mechanics." Try as he might, he never really found a satisfactory formula for blending expertise with gentlemanliness.

Latrobe succeeded Thornton as architect for the Capitol and never tired of noting evidence of his predecessor's incompetence as a designer and structural engineer. He went so far as even to write Thornton in 1804 that "it is impossible that you should ever be on a level with me, excepting in your own opinions, and equally so that I should revert to the ignorance of the art with which I began to study 25 years ago."

While Latrobe was undoubtedly far superior to Thornton in architectural skills, and quite properly resented having to redo so much of Thornton's work on the Capitol, the passion with which Latrobe held his grudge against Thornton needs further explanation. I believe that Latrobe found Thornton so obnoxious because the two men represented not only varying degrees of skillfulness but competing approaches to the practice of architecture. Their radically different schemes for the University of Virginia clearly illustrate the difference between architecture as seen by Thornton and by Latrobe.

Thomas Jefferson's plan for the University of Virginia had become sufficiently advanced by the spring of 1817 that he could elicit advice from Thornton and Latrobe. "Will you set your imagination to work," Jefferson inquired, "and sketch some designs for us, no matter how loosely with the pen, without the trouble of referring to scale or rule." All he wanted were site plans and elevations: "We want nothing but the outline of the architecture, as the internal must be arranged according to local convenience."

Thornton's answer of May 27 genially ignored Jefferson's specifications and, after modestly demurring about his qualifications, wrote a long letter that discussed every aspect of the university's design, ranging from the London supplier of artificial stone to the landscaping of the campus. The gentleman architect's casual approach to design details was well illustrated by Thornton's comment on the classical order to be used at one point: "They would, of course, be in the ancient Ionic, that beautiful and chaste order. I thought it unnecessary to draw it, because you have only to connect the sketches already given into the Ionic, to have the effect."

Clearly, Thornton saw himself as one 18th century aristocrat writing to another.

Latrobe's letters to Jefferson about the university's design sharply contrasted with Thornton's reply. On June 17 Latrobe wrote that "I have derived important professional improvement from the entirely novel plan of an Academy suggested by you" and would send by July 1 "all that my professional knowledge enables me to suggest & design toward the execution of Your plan." Though Latrobe felt "flattered and gratifed" by the request, his repeated use of the word "professional" indicated his assurance of being useful to Jefferson.

Latrobe's letter of July 24 demonstrated how closely he stayed to the problem as initially defined. He indulged in no extensive asides, only cautiously questioned the adequacy of internal allotments of space and apologized when he found "that I have been designing under a great misconception of your *local* but also have presumed upon more time for deliberation than you can give me." The differences between Thornton's and Latrobe's practice of architecture could not have been more clearly drawn if Latrobe had consciously set out to do so. Latrobe knew from his experience as Capitol architect during Jefferson's presidency that he had a highly knowledgeable client whose friendship was greatly treasured, but the Jefferson-Latrobe letters pertinent to the University of Virginia had an architect-client focus far more than that of an interchange between friends.

Seldom did Latrobe find a client as congenial to work with as Jefferson, an "excellent architect," Latrobe once wrote his brother, even if he "loves the taste of Queen Elizabeth best."

All too frequently Latrobe found himself unpleasantly at odds with his clients, whether they were individuals, corporations or the US Congress. Part of the difficulty, though this has been greatly overemphasized by biographers and historians, revolved around the unwillingness of some clients to pay the fees. After devoting a great deal of effort to plan the speculative town of Nescopeck, Pennsylvania, for Samuel Mifflin, Latrobe's haughty refusal to accept any payment rather than take the proffered $11.50 surely wins our sympathy. Then there were people like J. C. Williams of Baltimore who replied to Latrobe's bill for $150 by offering only $50 and the statement that "Ten Guineas is the common charge for a design by the first architects in Europe"! Yet any architect

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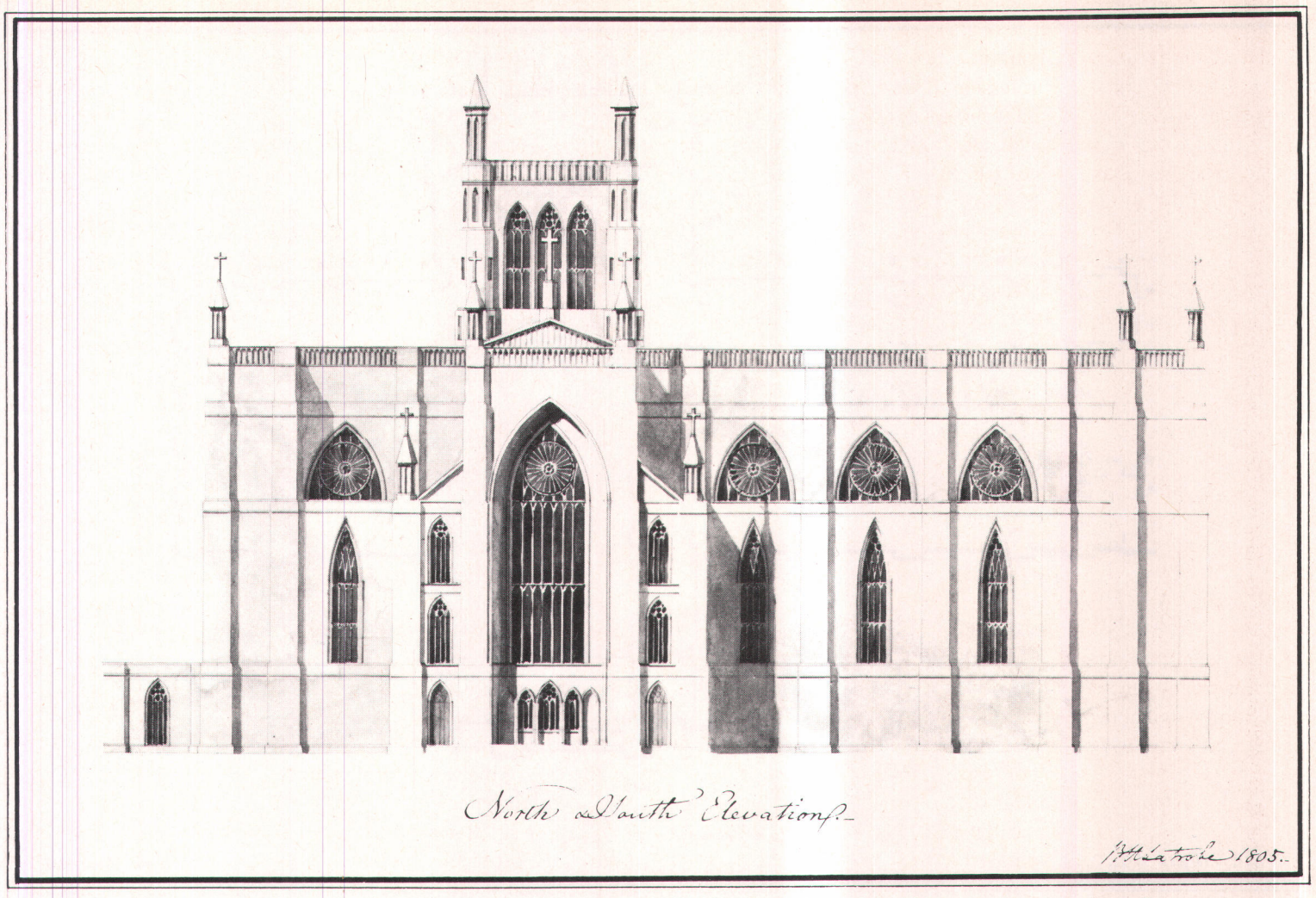
Professor Neil is with the Department of American Studies, University of Hawaii. This article is based on an address presented before the Society of Architectural Historians in Boston. Quotes from Latrobe letters are through the courtesy of the Maryland Historical Society, which has permitted use of its Latrobe Collection.



Latrobe's side elevations and plan for the Roman Catholic Cathedral in Baltimore, dedicated in 1821, are shown on these five pages.

today with an extensive practice could probably equal these howlers. Certainly Hamlin was ready to sympathize with Latrobe on every possible issue, and yet conceded that:

"On his architectural earnings Latrobe could have lived not luxuriously, perhaps, but well. It was his optimistic business enterprises and his generous trust in others that spelled his [financial] ruin."

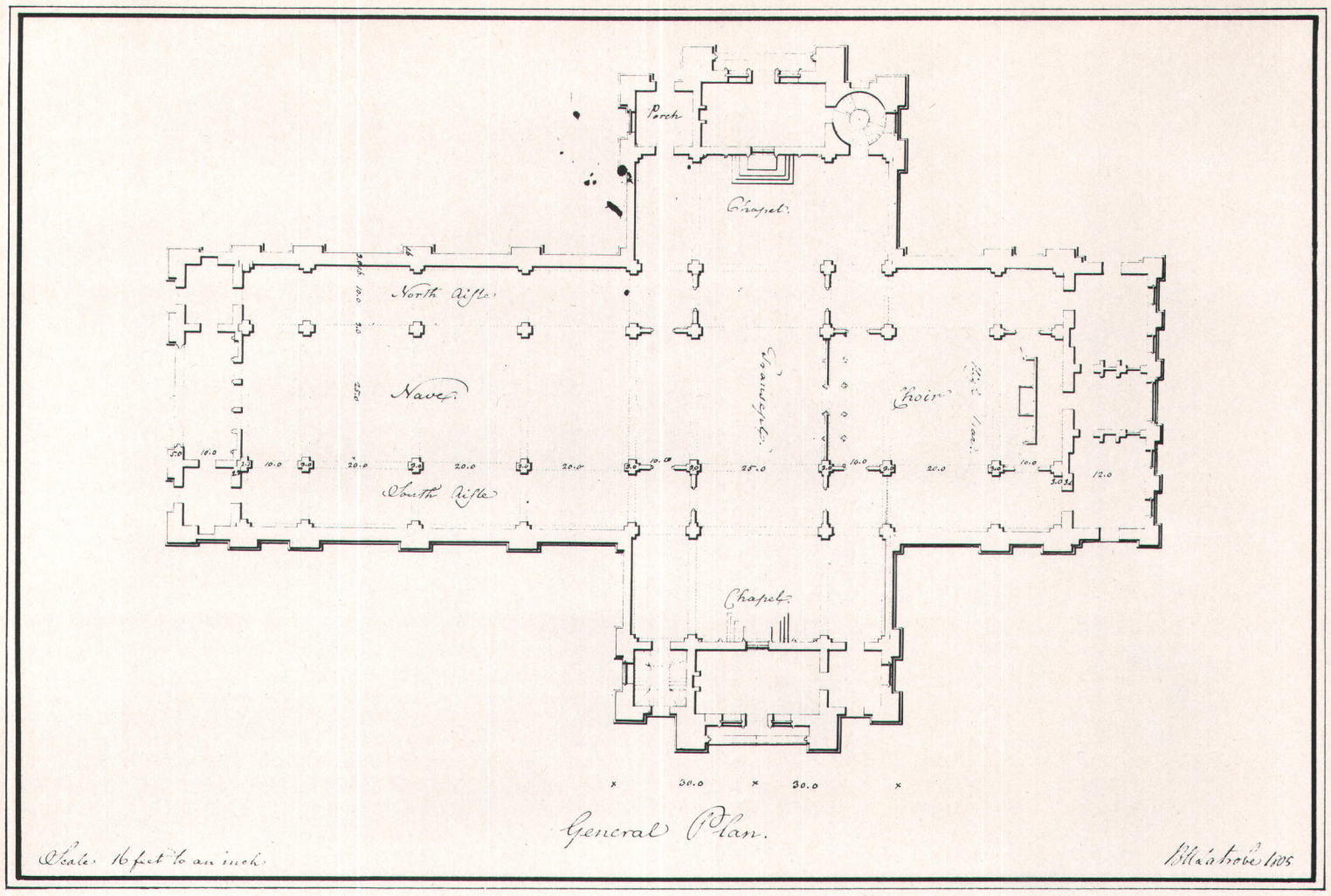
Two aspects of the setting of fees did generate persistent misunderstandings, and Latrobe's opinions here are most revealing. The first came from the question of how to determine a fair charge for architectural services. He repeatedly asserted that legal decisions in Europe had long since settled on the figure of 5 percent of money expended, equally divided between execution of designs and supervision of construction. But then Latrobe would destroy the clarity of his argument by immediately conceding that this "is often too much, & an honest Man will make a charge adequate to his merits." Little wonder, then, that the J. C. Williamses felt they could legitimately haggle over architectural fees, angry though that made Latrobe.

In addition to imprecisely formulating a sliding scale of charges, Latrobe further confused Americans of his time by magnanimously contributing his services on many occasions, though usually still requiring payment for office help. He explained to Bishop Carroll of Baltimore, whose cathedral Latrobe was then designing, that "due to the labor, the expense of education & travel, & the necessary habits of a man professing a liberal art, [he should] be very handsomely rewarded whenever the result of his services are the profit, the splendor, or the convenience of individuals, or of political bodies." It was his duty as a member of society, however, as well as "my pride & pleasure, to promote—as far as my professional talents can promote them," institutions of religious and moral instruction, secular education, or of charity. Consequently he had contributed his services to Princeton and Carlisle Colleges.

Nevertheless, having only limited means, Latrobe assured Bishop Carroll that he would be "candidly & unceremoniously" billed for "all, even of the trifles, which affect my purse." Latrobe might feel that this statement eliminated all possible questions of what was and what was not being contributed, but the subsequent history of construction of the cathedral proved quite the contrary. The frequently quoted letter to Robert Mills on professional concerns stressed as the first rule of conduct: "Do nothing gratuitously." In fact, Latrobe frequently did so, and in such an unsystematic way, as illustrated by his comments to Bishop Carroll, that his clients could not fail to be puzzled by the underlying rationale.

We have seen the side of Latrobe that emphasized professionalism against amateurs like Thornton, but his professionalism looked appreciably different when confronted with the master builders, or "mechanics," as he always called them. Here Latrobe's pride in his craft was liberally mixed with the biases of an 18th century gentleman looking askance at the working class. In the course of telling Joseph Delaplaine why he chose not to write a book on architecture, Latrobe clearly stated his professional objections to carpenter builders:

"What the Mechanics want is a work merely mechanical with construction of the details of buildings in practice, in the first place & in the second a collection of mouldings, & *ornaments* (as anything that is useless & *measures well* is called), and of compact plans of small town & country houses, to enable them to give their employers ideas which will entice them to build. . . . But Mechanics



care nothing about principles. . . . The house designed and built by a Carpenter on a giant Scale, if it be not a copy of another or a design out of a book, is always a house adopted to the ideas of a carpenter who has made his fortune, & who wishes to retire."

When Delaplaine replied that the Philadelphia Carpenters Company greatly admired Latrobe's work and would welcome his book, he sardonically noted that "They have indeed done me the honor to copy & to disgrace by their application almost all of my designs from a Moulding to a plan of [a] whole building." Latrobe had no intention of writing a book for them, "intelligible to the *meanest capacity,* as you say." He could only write for "men of sense, and of some Science."

To talk of "men of sense" even as late as 1812 implied a whole raft of characteristics, only one of which had anything to do with formal education. Thus, those responsible for the first home of the Pennsylvania Academy of Fine Arts incurred Latrobe's wrath both because he wanted to design it himself and because the completed building was structually imperfect. But Latrobe expressed his unhappiness in terms of society snobbery: "One *Sugarbaker,* a bankrupt Merchant, and a senator of the State [who began] his career by selling blacking ball in the market. . . . John Dorsey has considerable natural talents, but they are wholly uncultivated, & the man himself is morally very despicable."

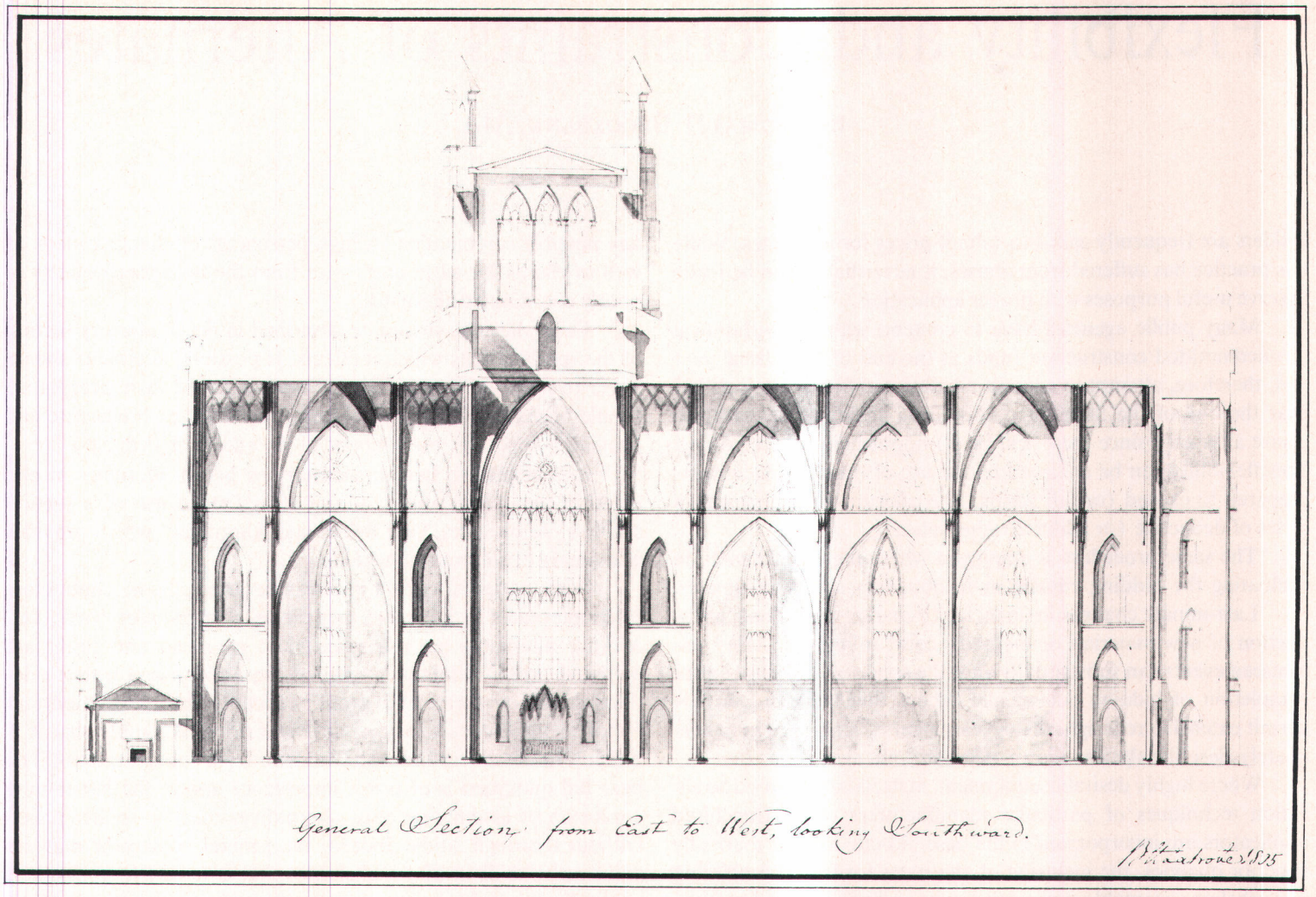
Robert Mills, formerly a student who later angered Latrobe by apparently stealing the commission for Richmond's monument church, was not a man of sense. He struck Latrobe as being "a wretched designer," "a copyist & is fit for nothing else." Furthermore, "He wants altogether . . . professional selfrespect." Equally damning, "He is a poor Sneaking fellow, without any materials of Soul or body to make an artist." Technical abilities, moral character and social standing are here inextricably combined.

In the same way, when Latrobe approved of someone, it was because of their personality as much as for skill. Recommending a sculptor in response to Senator Nathaniel Macon's request for one to do North Carolina's memorial statue of George Washington, Latrobe succinctly stated his criteria for a man of sense and, to a large extent, a professional: "Mr. Andrei being not only an excellent Sculptor, in his line, himself, but a Man of rare personal virtue, united to first rate talents, & firmness of character." Andrei could qualify as a good 18th century gentleman; Mills could not.

Latrobe's curious combination of old-fashioned and newfangled notions about the nature of the architectural profession was both very characteristic of his own personality and that of America in the first generation of national independence. Latrobe saw himself as a brave innovator, as indicated in a letter of 1806: "Innovation is always resisted & my profession is a great innovation."

Yet here was a man with a busy practice who could draw parallels between his own fate and that of Phidias dying in an Athenian prison and St. Lawrence being martyred. Latrobe struggled almost singlehandedly to create a new profession in a new country, and still he can be fairly described by his biographer as "perhaps among the last architects who really attempted in their own lives and thoughts to realize the old Italian Renaissance concept of the universal genius." It is little wonder that Latrobe had some trouble keeping in check these centrifugal forces in his self-conception. That he did manage, most of the time, to maintain even a fragile emotional and intellectual equilibrium is great testimony to his strength of character (to use a phrase that he liked). When the equilibrium fell apart, he would passionately lash out at his opponents or suffer from melancholic depression.

These periods of anger and melancholy not infrequently fol-



lowed dealings with clients who might very well have been baffled by his advice. Thus, he sent two sets of designs for the Baltimore Library, one classical and the other Gothic, which might be built for about the same cost. Admitting that "I feel no preference for either," Latrobe suggested to the directors that the two plans should rather be considered "as texts on which to discourse than as propositions to be adopted or rejected." He even went so far as to say, "Such parts as are thought to be eligible may be retained, the rest rejected or modified, and probably a new & better design may grow out of their ruins."

Only a miracle would bring a completed building satisfactory to an architect as critical as Latrobe and who had encouraged his clients to tinker to their hearts' content with his designs. Even when Latrobe disapproved, on technical grounds, of a client's instructions, he did not always invoke his expertise to force a change in the client's ideas. Perhaps the extreme example of this excessive deference to the client would be his 1804 Survey of New Castle, Delaware. In the accompanying report, Latrobe said:

"The dotted lines represent the proposed extension of certain Streets, and the introduction of others for the enlargement of the town. Though these streets are drawn parallel with the others, I would not recommend them to be so laid out, if in process of time the Commissioners should find it necessary to extend the boundary of the town. . . ."

He had very strong opinions on the necessity of siting residences according to climatic considerations and vigorously reiterated them to the New Castle Commissioners. Nevertheless, the proposed streets had been platted as requested, with no indication from Latrobe where they should have been placed.

Far from labeling Latrobe as an eccentric genius "Out of SPACE—out of TIME" ("Dream-Land"; from Margaret Alterton and Hardin Craig: *Edgar Allan Poe,* Hill & Wang, 1962), we should conclude from this study of his professionalism that he, as much as Thomas Jefferson and Charles Willson Peale, was very much an American of his time. The not-quite-coherent, not-quite-modern flavor of Latrobe as an architect corresponds surprisingly well with that of his contemporary peers. Jefferson, after all, amazed his Virginia friends by building Monticello on a hilltop. Unprecedented though it might have been in Virginia, it had the sanction of the venerable examples of ancient Roman villas.

Similarly, Jefferson's theory of democracy, which seemed wildly radical to the more fearful Federalists, still was that of a Virginian aristocrat and a long way from that of Jackson or "Tippecanoe and Tyler too."

The Lost World of Thomas Jefferson (Peter Smith, Inc., 1959) so sensitively explored by Daniel Boorstin, proved quite congenial to Benjamin Latrobe, as it did to Charles Willson Peale. Peale's museum represented a brave but unsuccessful attempt to blend into one patriotic and moral view what eventually became the circus, the natural history museum and the genteel gathering place of the beau monde. All three of these men, as well as many of their friends, could heartily agree with Latrobe's statement in his 1811 speech to the Society of Artists, that the US would be the hope of the future. "Indeed," he declared, "the days of Greece may be revived in the woods of America, and Philadelphia become an Athens of the Western world."

In our latter-day wisdom, we may query the ability of 19th century America to look anything like Periclean Athens; we may sadly note that the consensus so confidently verbalized by Latrobe and applauded by his audience was even then disintegrating. The fact remains that Latrobe spoke for the Americans of his time because he was one of them. □

Flexibility and Constraints of Alternates

by THOMAS H. BROOKBANK, AIA

Bidders are frequently asked to submit prices for alternates. While this practice has suffered from abuses, it nevertheless can be made to serve useful purposes with proper application.

Many public agencies have to contend with the withdrawal of uncommitted construction funds at the end of each fiscal year and, therefore, attempt to commit all allocated funds. Projects bid near the end of the fiscal year must have sufficient flexibility to insure an award since there will be no opportunity for rebidding. This flexibility can be achieved by the use of base bid documents prepared to exceed (or fall within) the allocation coupled with a series of deductive (or additive) alternates.

The same procedure is employed where there is difficulty in evaluating the bidding climate or in obtaining reliable estimates.

Last-minute changes in financing or market conditions, introduction of new materials or methods, court rulings and other unforeseen events can substantially alter the scope of the project after completion of bidding documents. Where time and cost do not permit extensive redesign, the development of alternates may adequately describe the desired or necessary changes.

Where highly desirable equipment, materials or licensed application techniques of particular manufacturers or of franchised applicators are incorporated in the base bid due to their markedly superior qualities, the inclusion of alternates for less desirable but nevertheless acceptable items can insure realistic base bid pricing.

Design innovations, untried construction methods or new materials, seemingly offering advantages over their conventional counterparts, sometimes prove to be too expensive to adopt. An alternate design utilizing conventional elements may allow an award without the expense of redesign and rebid.

Alternates should not be used if some other method will produce the desired result. Bidders naturally resent pricing a multitude of alternates in order to provide the architect with data he could easily have obtained prior to bidding. In addition to using the bidders unfairly, this is also costly to the architect.

Generally, it is better to negotiate desirable minor changes with the selected bidder prior to the award, rather than to determine their value by the use of bid alternates. The successful bidder will be more sympathetic to the changes and more accurate in estimating their costs.

If two or more materials or methods are equally acceptable, bidders should be allowed the option of quoting on either, rather than stating alternate prices. Further shopping can be avoided by determining which item the successful bidder intends to furnish prior to the award of contract.

Busy contractors with more projects to bid than they have time for will be more inclined to quote on those that are free of alternates.

Where alternates are necessary, their number should not be disproportionate to the size of the project. While 10 alternates might not be unreasonable for an $8 million project, they could very well be too many for a $200,000 project.

An alternate bid, once accepted, becomes part of the construction contract and should be as thoroughly documented as its corresponding base bid item. Multiple alternates must be thoroughly coordinated as to their effect on the total project and for any possible combination. A high percentage of change orders, as well as claims for extra cost, arise from the unforeseen effects of poorly coordinated alternates.

Each alternate should be described in detail in every section of the specifications which it affects. If possible, alternates should never overlap or, if they must, the sequence of their acceptance should be stated. The proposal form should list each alternate and provide a space for the amount to be added or deducted.

It is helpful to have a summary or list of alternates in one place in the specifications. Many offices make use of a section entitled "Allowances, Unit Prices and Alternates" which provides a summary of all three of these items.

Wide variation occurs in alternate prices. Some contractors price alternates in the same manner as change-order work, i.e., additive alternates are overpriced and overhead and profit are included, while deductive alternates are underpriced with no deduction for overhead and profit. Probably the most important factor in the inconsistency of alternate prices is simply that it is difficult to obtain realistic bids on them from subcontractors. The base bid quotation is of prime importance and in the last-minute confusion of assembling bids, alternatives may be hastily priced without thorough study. Indeed, the general contractor may receive no subbids at all on alternates and is forced to guess their value. Such a guess may well be conservative and in the bidder's favor.

In preparing a competitive bid, the contractor must take into account the *modus operandi* and profit motivation of each of his competitors. The introduction of multiple alternates complicates his evaluation of their behavior. In addition, he must also try to guess which alternates are most desired by the owner or architect.

In some cases, bidders may resent alternates so strongly that their quotations are calculated to penalize the owner or architect.

Perhaps the factor contributing most of the unpopularity and alleged unfairness of alternates is that they have been used to award the contract to a preselected bidder. Ideally, the bidding documents should be prepared in such a way that there is little possibility of having more than one low bidder.

Award of contract predicated on low base bid is not the answer because it does not require the bidders to quote responsibly on the alternates.

One method which will insure a fair award and produce the desired results is to arrange the alternates in order of decreasing importance of desirability and specify that they will be accepted only progressively and in order to the extent of available funds, i.e., alternate 1 or alternates 1 and 2 or alternates 1, 2 and 3, etc., can be accepted but not alternates 1, 3 and 5. Thus, while there can be different low bidders as additional alternates are accepted, the award still must be based on price results and not favoritism.

Prebid conferences are an excellent way to explain the purpose of alternates and clear up any questions in the bidders' minds prior to pricing. Subcontractors should be invited. □

Mr. Brookbank is a member of the AIA Committee on Building Industry Coordination and a partner in the Columbus, Georgia, firm of Brookbank, Murphy & Shields.

A Manual to Help Prevent Roof Failure

by C. W. GRIFFIN JR.

A new volume on built-up roof systems, sponsored by The American Institute of Architects with financial support of industry, is previewed here,* featuring the introduction plus several paragraphs from chapter 2. It is aimed at highlighting the information needed by the architect in his daily work, giving him a basic understanding of design and field problems he will encounter.

The volume of built-up roofing annually installed in the United States exceeds 2 billion square feet, enough to cover Washington, D.C., and part of its environs. Probably 10 to 15 percent of the roofs included in this vast area fail prematurely. In severely cold regions, the incidence of roof problems exceeds the national average. Even in mild southern California, more than half of 163 surveyed buildings, 2 to 15 years old, had a history of leaking roofs. And of 1,000 bonded built-up roofs investigated in another survey, one-third were in trouble within a year or so of their completion.

These roof failures are causing growing concern within the building industry for several reasons. A roof failure is expensive; reroofing normally costs twice as much as the original installation. Today's more sophisticated building owners are more conscious of roofing and costs than their predecessors were. Architects and other members of the design professions, threatened by a rising tide of malpractice suits, must devote attention to roof performance and the soundness of their designs.

A number of factors contribute to the high incidence of roofing failures. Basically, they spring from the field-manufacturing process, which makes the built-up roofing system one of the most complex field-assembled subsystems of a building. As new products—decks, vapor barriers, insulation, adhesives and flashing materials—appear on the market, the task becomes more complex.

The built-up roofing assembly (including flashing) functions as a system in which each component depends on the satisfactory performance of the other components. The integrity of the waterproof membrane depends on good anchorage to the substrate and adequate shear strength between the deck and the vapor barrier, between the vapor barrier and the insulation and between the insulation and the membrane. Thermal resistance of the insulation, which can be destroyed by moisture, depends on the effectiveness of vapor barrier and membrane. It may also depend on the dispersion of entrapped water vapor through edge and stack vents. The integrity of vapor barrier, insulation and membrane depends on the stability of the structural deck.

Thermal insulation has a complex effect on built-up roof systems. Largely because it retards heat flow to and from the roof surface, thermal insulation raises the extreme range of roof surface temperatures up to 50 degrees F (40 degrees F hotter in summer than an uninsulated roof surface, 10 degrees F colder in winter), thus accelerating the photo-oxidative chemical reactions that embrittle surface bitumen and make the membrane more susceptible to "alligatoring" and cracking. The greater magnitude

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* *Manual of Built-Up Roof Systems*, authored by C. W. Griffin Jr., professional engineer and a former editor of *Engineering News-Record*, will be published by McGraw-Hill Book Company early this summer. The 256-page manual will retail for $14.50 but will be available to AIA members at a 20 percent discount, or $11.60, by ordering through the Publications Department at the Institute, 1735 New York Ave. N.W., Washington, D.C. 20006.

and faster rates of temperature change of an insulated roof produce greater thermal stresses and a consequent chance of splitting.

An excellent illustration of the interdependence of individual components is the fire test performance of a roof-ceiling assembly. One criterion for qualifying a roof-deck assembly for a given fire rating (in hours) is its resistance to heat flow. As a safeguard against the roof covering igniting, the average surface temperature rise during the furnace test must not exceed 250 degrees F above the initial temperature. Since insulation retards heat flow, the designer might assume that adding more insulation to a rated roof-ceiling assembly must improve its fire performance.

He could be disastrously mistaken. Added insulation would indeed depress the roof surface temperature. But if heat loss through the roof is excessively retarded, it can cause a structural collapse. A lower surface temperature would mean a *higher* ceiling plenum temperature (resulting from undissipated heat). This higher plenum temperature could buckle steel joists or ignite combustible structural members that otherwise would continue to carry their loads. The system designer, like a juggler, must keep his eye on more than one ball. He must never assume that you cannot have too much of a good thing.

To the wood sheathing and cast-in-place concrete roof decks that formerly were predominant have been added newer deck materials—poured-in-place and precast gypsum, precast concrete, preformed wood-fiber planks, lightgage steel and aluminum and asbestos cement. The growing use of insulation, required to reduce airconditioning costs, heightens the risk of membrane splitting and condensation within the built-up roof system. The threat of condensation, in turn, creates the possible need for another roof component—a vapor barrier designed to intercept the flow of water vapor into the insulation, where it can cause a host of troubles such as membrane wrinkling, blistering, leakage or destruction of the insulation itself. The vapor barrier may create the need for venting the insulation. And so it goes, with each solution creating its own subproblems.

Thus the roof designer must never consider a component in isolation; he must always investigate its compatibility with other materials and its effects on the whole system. Far more important than the quality of the individual materials are their design and installation as compatible components of an integrated system.

Expanding roof plan dimensions are a source of roofing troubles. Unlike the old multistory loft buildings, where the walls constitute the major exposed area of the building, a modern single-story industrial building, 400x1,000 feet in plan and 16 feet high, has nearly 10 times as much roof area as wall area. The trend toward huge, sprawling, single-story industrial buildings follows the evolution of modern assembly-line processes, in which raw materials enter at one end of a building and emerge fully fabricated at the other end, possibly a quarter of a mile away.

Its greater size alone makes a large roof a more complex technical problem than a small roof. A roof over 300 feet long must have one or more expansion joints to accommodate thermal expansion and contraction. On the other hand, a roof only 100 feet long may require no expansion joint. A large roof with a vapor barrier is more vulnerable to blistering than a similar, smaller roof. Blisters in a roof membrane indicate entrapped air and moisture heated into a high-pressure gas that must be relieved by venting to the atmosphere. For a given roof plan shape, the volume of air and water vapor to be released per foot of roof perimeter doubles as the perimeter doubles (since the area quadruples). Thus, on a large roof, the internal pressure producing the blisters is greater than it is on a small roof, and the problem of venting becomes more critical.

Large, level built-up roofs also run a greater risk of inadequate drainage—a major cause of roofing failure. A ponded roof runs the risk of membrane delamination, resulting from freezing water that has penetrated into the plies. Fungi growth, promoted by standing water, can deteriorate organic roofing materials. Irregular ponding can create a warping pattern of surface elongation and contraction, wrinkling the membrane. Yet the lure of first-cost economy, achieved through the simpler fabrication of structural steel framing or the elimination of sloped concrete fill, often seduces owners into accepting a dead-level roof.

Despite faulty design, poor field work ranks as the chief cause of roofing failures. According to Werner Gumpertz, a prominent roofing consultant, poor workmanship accounts for the majority of roofing failures. Design errors, structural framing deficiencies and material failure account for the balance, in that order.

Faulty field practices spring from two root causes: the entry of inexperienced, incompetent roofing contractors into the roofing business and accelerated construction schedules.

Under the threat of liquidated damages extracted by the owner if the project is not completed on schedule, the general contractor often forces his roofing subcontractor to install the roof before the deck is ready, or in damp, rainy or severely cold weather. Poured decks (concrete or gypsum) require a longer time to dry than other deck materials. The premature mopping of bitumen can produce a crop of blisters, formed when the trapped moisture evaporates in the spring or summer heat. The water vapor expands to 1,000 or even 1,500 times its liquid volume inside the membrane plies or at the interface between the insulation and the membrane fill.

The roofing industry has lagged in the promulgation of installation standards and test methods, focusing on component material quality instead of the whole field-manufactured roofing system. There are appropriate American Society for Testing and Materials and federal standards for testing important properties of surfacing aggregates, felts, bitumens, insulation, vapor barriers and structural decks. But there are no generally accepted tests for performance of the entire built-up roof system assembled from these components.

There is no general consensus among the major segments of the roofing industry, even on specific field practices. Manufacturers disagree with roofers on a number of vital points, notably:

- The acceptability of "phased" application, in which the lower plies of a built-up membrane are applied and left exposed from a day or two to several months before the upper plies and surfacing are installed
- The tolerance for bitumen weights in interply moppings
- Kettle temperature tolerances for heating bitumen
- Ambient temperatures at which hot bitumen can be applied.

Building code officials lag in adapting their requirements to the increasing complexity of contemporary roof design. Few standard specifications recognize ponding as a problem requiring special deflection limits for the lengthening spans in contemporary roof framing. The Open-Web Joist Specifications, High-Strength Series, for example, limits roof liveload deflection to 1/360 of the span for members supporting a plastered ceiling, and 1/240 of the span for all other cases. The permitted 5-inch deflection on a 100-foot span joist could produce unstable, progressive deflection under rainwater load, resulting in roof ponding and even in collapse.

Yet despite the many industry problems—ranging from technical controversies to disagreements over insuring policies—there is nonetheless a broad expert consensus on good roofing practices. □

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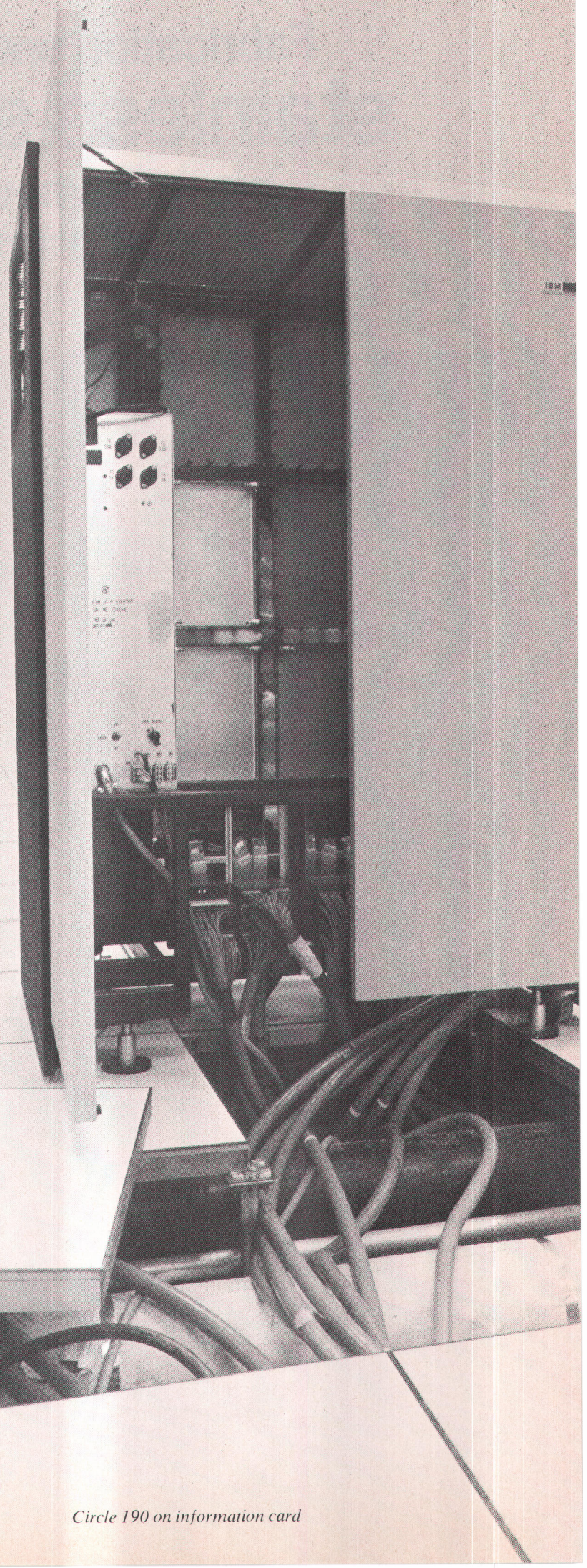

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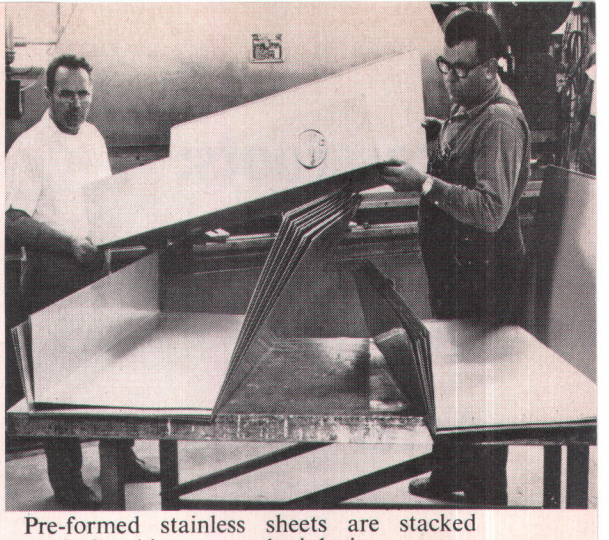
Fabrication and installation ease of

stainless steel flashings

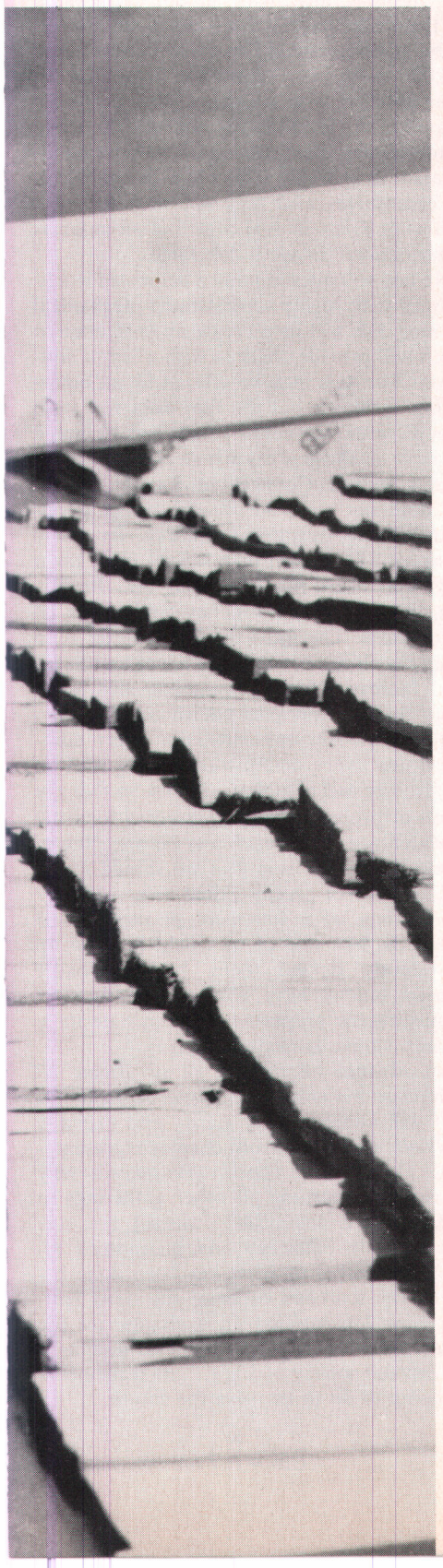
proved in new Eugene, Oregon, department store job.

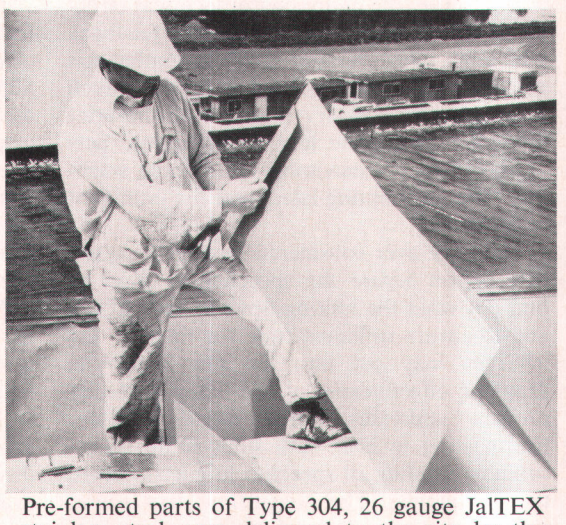
The stainless sheets marked up here for press work, were formed by the mechanical contractor, Temp-Control Corp., Portland.

Pre-forming JalTEX stainless steel sheets at the Temp-Control Corp. plant. Edges for joining were crimped one-half inch for flat-seam joining.

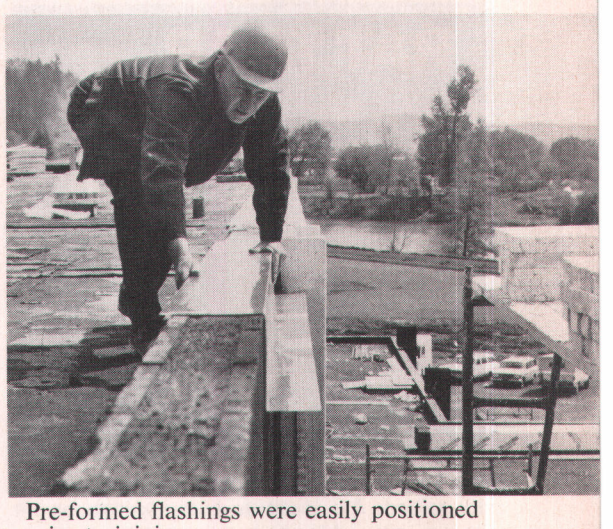


Pre-formed stainless sheets are stacked ready for shipment to the job site.





Pre-formed parts of Type 304, 26 gauge JalTEX stainless steel were delivered to the site by the mechanical contractor.



Pre-formed flashings were easily positioned prior to joining.

Formability, corrosion resistance and compatability with other materials were reasons why dead-soft JalTEX stainless steel was specified for through-wall counter flashing, base flashing, gutters, parapets and roof capping for the Meier & Frank Co. department store in the new Valley River Shopping Center in Eugene, Oregon.

Robert Wynkoop, local branch manager of Temp-Control, mechanical contractors, reported that this was the first job his company had done with JalTEX stainless. "It is so much easier in forming and installation that JalTEX stainless steel must be costing us less in production time and effort," Wynkoop stated.

All forming was done in Temp-Control's Portland plant. Sections were bent to conform to gutters, parapets and the like. Installed gutter sections were held by stainless steel clips secured with stainless steel nails, eliminating the need for nailing through metal. Conventional solder was used for strong joints.

MEIER & FRANK CO.
a Div. The May Department Stores Co.

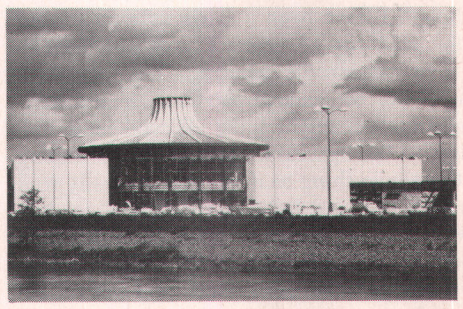
PROJECT ARCHITECT:
Seaton B. Griswold

DESIGN CONSULTANTS:
Raymond Loewy/William Snaith, Inc.

MECHANICAL CONTRACTOR:
Temp-Control Corp., Portland, Ore.

STAINLESS STEEL DISTRIBUTOR:
Esco Corp., Eugene, Ore.

JalTEX:
304 Stainless, .018″, 2B Finish



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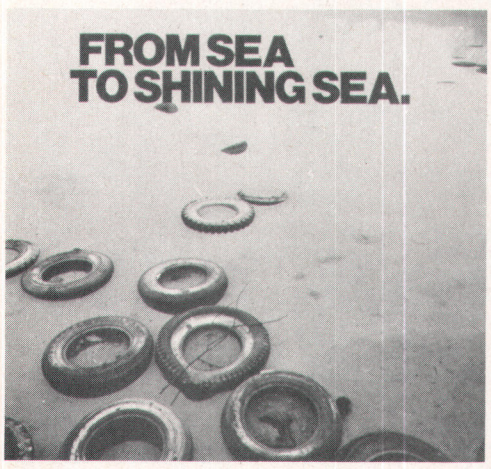
Grassroots: The Morning After

The efforts notwithstanding, the question is still raised: Are Institute communications all the way around lagging, even misdirected?



Robert H. Mutrux, AIA, attending the Grassroots meeting in Washington, D.C., as secretary of the Connecticut Chapter but writing here as an individual, offers a critique.

Although I have been a fairly active member of the AIA for 18 years, I have just been to my first Grassroots meeting. The pervasive atmosphere of general satisfaction and self-congratulation might have allowed us to fall victim to the agreeable temptation of writing off the whole thing as a job exceptionally well done. In the cool light of the following day, however, it appears that after three concentrated days of conference and speeches, quite a few things were left unsaid, and still others left undone.

We were left, as one would leave a concert hall, whistling the recurring leitmotif. But something about its somewhat heavy-handed persistence suggested that it was what might be termed a sequence of well-worn clichés. I find myself buried under the barrage of labored phrases with which the conference was heavily larded. The term *environment*, which means all things to all men, is the continually recurring main theme. The orchestra was *structured* with a *viable* organization of related *disciplines*. *Expertise* was brought in by the violins; *involvement* by the violas; *commitment* by the cellos; *input* by the brasses; and *feedback* by the reeds and woodwinds. Throughout there was a background in resounding bass of *come-to-grips*, *thrust* and *clout*. These pat phrases, which still echo in my mind, are the key to my feeling of basic dissatisfaction.

In a sense, the entire conference was structured in reverse. To provide the feedback which the name "Grassroots," by implication and inference, was designed to inspire, much more time is necessary than the all-too-brief interval between the learned 45-minute perorations and the inevitable two-minute warning, "We are running late," and the imminent coffee break.

Have we ever considered having the question period *before* the speeches in order to find out what the visiting firemen have to say and to ensure sufficient time for them to say it? This may cut into the time—and the dramatic effectiveness of the many carefully prepared addresses—but the intent of the entire meeting to hear both sides could be assured by sending all speeches to guests before the conference. The suggestion may sound naive, due to my lack of experience in convention psychology, and it may be revolutionary, but it could have a beneficial effect on the two-way *communications* the conference intended.

The quality of an address is measured first by its immediate impact upon the audience, and later by the sober deliberations it inspires. Questions on its subject are of two kinds as well: the "quickies" which may be fielded by that contemporary phenomenon of verbal woodwork called the "Panel of Experts" and the "Letter to the Editor," which often loses impact because it occurs long after the fact. My questions were not ducked, but neither were they fully answered, and only now have I found the appropriate phrasing.

For example, "Housing" was listed as a subject to be given major consideration in the AIA's coming year's efforts, and the subject is accepted tacitly as one of national significance. But that aspect of the national crisis with which the architect is immediately identified was buried in the broad heading of "the physical environment." So far as I was able to ascertain, the AIA has no specific program for housing, in spite of the fact that it boasts a committee of no less than 60 members.

In the area of public relations, we were entertained with all the color and enthusiasm of an old-fashioned medicine show. The committee "which gets all the money" is charged with the dissemination of our image vis-à-vis society, basing its presentation on several handsome full-page ads to the tune of $60,000 in *Time* and $15,000 in *Saturday Review*.

There was no time to question why the attempt is made to reach people only at the "decision-making level." There was no opportunity to point out that this seems to reflect the restrictive, ivory-tower attitude that continues to alienate the architect from society. I question strongly whether it would not be advisable to poll a group of students to find out if they, too, would select these magazines for an investment of $75,000, at the exclusion of *Life*, *Look* or *Ebony*.

In my opinion, rather than achieving the desired clout, we have ruled out the whole society we attempt to try to reach through our education programs, as directed by other committees. Instead we reflect to perfection the baldheaded, mustached Brahmin type whose effigy, complete with watch chain, was selected to identify the architect of two generations past.

I question, also, with all due recognition for the work that has been done, the impact of the much-heralded film for which we spent $25,000 of our hard-earned dollars, plus another $50,000 with which we were entrusted in good faith. The film was skillfully done and is entertaining, but, although it may be an inspiration to sporadic school boards and building committees who may not read *Saturday Review* or *Time*, its real contribution in terms of our national image is debatable.

No one will question that a dedicated teaching staff with highly sophisticated mechanical teaching aids will help create an environment which will provide children with a better education. The aids may be offered by an enterprising architect, but the film does not state through what mechanism they can be made available in those areas where they are most needed. Wilton, Connecticut, has the money and does not need the film; it is not populated with disadvantaged children. Its newly approved $12 million high school for a town of 16,000 bears this statement out. Bridgeport, however, has no money, and it has all the children. The most the film will do is to widen the chasm between the haves and have-nots. Increased local resentment will result rather than an improved environment.

It is obviously impossible for every committee and every commission of the AIA to synchronize and complete its work so that the results or proposals can be presented formally at conference time, much less before. Nevertheless, it is surprising that we should spend half an hour of precious time bickering over the wording of a statement of our Ethical Standards. Not one of us would not rise up and stoutly defend them, however badly phrased; but we have been notoriously slow in enlisting the proper *expertise* to state them in clear, simple language.

An advance offering of all or almost all conference materials (i.e., *input* by committees) will immeasurably clarify and expedite the *feedback* invited from chapter representatives. There is no conceivable reason why Grassroots, matching all other gatherings in cordiality and conviviality, should not surpass them in efficiency and guaranteed results. The recital of what has been done before is the scorched earth of the dead past. We came looking for an exchange on the subject of what we as individuals and as a professional society of some 22,000 members are going to do to improve the future. □

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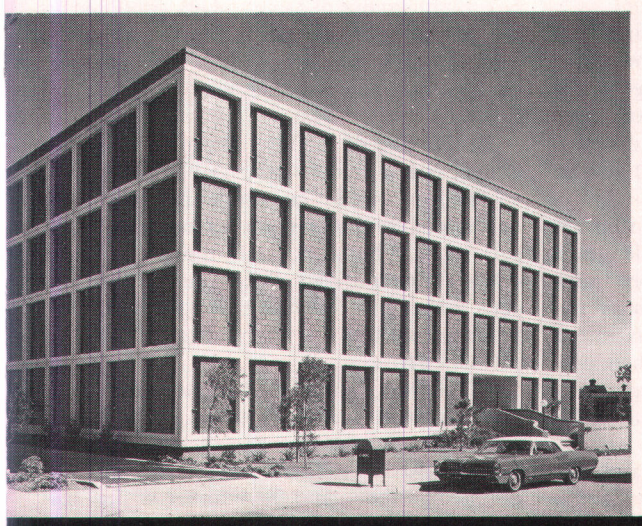

For their El Camino Medical Building, Burlingame, California, Bruce Dodd and his associates also said they chose Buckingham® Slate "to create an air of permanence and solidity." The idea of employing slate roofing shingles as vertical panels occurred as a means of "capitalizing on the increased texture and shadow lines of Buckingham® Slate and at the same time keeping to a tight construction budget."

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A New Breed in Management

The trend toward wider participation by the profession in all sectors of the economy has been made clear by the Southern California Chapter AIA, which with other chapters in the area studied the role of the management architect. The findings are reported here, edited by Jack Albrecht, AIA, business manager for campus planning and the departments of architecture and physical plant maintenance at Claremont Colleges.

Management has traditionally thought of the architect as a pipe-smoking, world-traveling individual on whom you call when the board votes for expansion or when an executive is ready for a new house. In either case, the search begins for the architect who most nearly fits the need. A number of architects are screened, interviewed and eliminated until management awards the contract for the design to the right one.

Then begin weeks, months and sometimes years of negotiations between the architect, who is confident he knows what management needs, and management, which is confident it knows what it wants. The management team finds itself trying to communicate in the language of the architect and to see through his trained eyes, making decisions regarding real estate, site planning, architecture, building codes and a myriad of subjects not usually familiar to the team members.

But today, management is becoming aware that its executives do not have the right background for such work and that an executive's time can better be expended in his own area of expertise rather than trying to design a building. Into this picture a new member of management is emerging: the corporate architect. He is setting a trend which is becoming evident in all sectors of the economy: education, public utilities, industry, land development, government, etc.

An indication of the magnitude of this trend is seen in a recent survey undertaken by the Architect as Client Committee, which was organized by the Southern California Chapter AIA in cooperation with other chapters in the area. Purpose of the study was to investigate the role of management architects and how their functions relate to their employers and to architects in practice. The committee includes a cross section of architects representing the Claremont Colleges, North American-Rockwell Corporation, Southern California Edison Company, Watson Land Company and the City of Los Angeles, plus two architects in practice.

Fifty of the 1,000 members of the Southern California Chapter AIA are employed in all sectors of the economy as corporate architects. In addition, there are other licensed architects in this category who are not AIA members.

Before proceeding, perhaps two definitions of terms would be helpful:

Corporate architect—an architect who is a salaried employee of a company, institution or governmental body and is the owner's representative in the planning, design and construction of capital projects.

Contract architect or practicing architect—an architect, architectural firm or architectural engineering firm which is hired on a contract basis to perform certain professional services for the owner on a particular capital project.

What is the corporate architect's role on the management team? Here, a few examples:

Education: In higher education, with rapidly expanding enrollments and facilities, many colleges and universities employ one or more architects on their staffs. These architects coordinate the building program for the institution. This coordination involves faculty, administration, trustees, donors, planners, contract architects and, to an increasing degree, students. Most institutions have a long-range academic plan and a long-range physical plan for development. The university (corporate) architect is responsible for the implementation of the building program within the long-range plan, which at larger or newer institutions constitutes a multimillion dollar annual budget.

Utilities: The corporate architect in public utility firms is one member of a large family of technically oriented individuals, commonly known as the engineering department. This is composed of representatives of all the engineering disciplines required to supervise the design, construction and maintenance of the facilities necessary for the production and delivery of the company's product or service, and to assist the public in attaining the greatest benefit and satisfaction through their use.

While greatly outnumbered by his engineering counterparts, the architect is the one member of this team with expertise in the fields of functional, esthetic and environmental design. And so management looks to him, and his associates, to develop facilities which will serve the needs of the company and, in turn, the public.

Though the specific facility requirements for each type of utility will vary with the product or service offered, they can generally be categorized as relating to 1) production and/or storage of the product; 2) distribution of the product or service; and 3) service to or for the customer.

Accordingly, the architect and his staff are presented with opportunities and challenges in many divergent areas of design as they translate management directives and policies and technical and functional requirements into a meaningful program. This program, then, provides the necessary guidelines to insure a successful project, whether accomplished by his own staff or by a contract architect.

In the latter case, the corporate architect makes his greatest contribution to the successful completion of the project as a liaison between involved company personnel and the contract architect.

Development Companies: The corporate architect in a land development company may act as the contract architect but more often he is found in the expanded role of master land planner, judge or jury of architectural standards, manager of contracts and lease documents or coordinator of construction. His work is done in cooperation with architects, engineers, municipal planners or administrators and financial consultants prior to making presentations to a board of directors or board chairman. Not only does the corporate architect develop a program and make recommendations but once the decisions have been made, he must implement those decisions and produce a marketable product, which may be a planned subdivision, an architectural design for a facility, a cost analysis for buildings or a completed structure ready for occupancy.

Industry: Much is gained by industry by having the corporate architect in a position where he is able to take industry's particular requirements and put them in terms that the contract architect understands. Many months in the design and construction phase can be saved through such knowledgeable coordination. He is able to show tangible dollar savings in the use of equipment and material for the particular project production.

Another area that is very important to the industrial community is the selection of the contract architect who will perform the final design of new facilities. The corporate architect will know the specialities and interpret the particular capabilities of various architectural firms.

In one large nationally known corporation, the corporate architect reports directly to the vice president for facilities and industrial engineering. He not only has responsibility for all construction projects from design through completion, but is also a member of the facility planning staff. This gives him insight into the company's overall aims, goals and long-range plans and enables him to provide realistic funding information in the development of budgets.

Government: In addition to the areas mentioned above, the governmental staff (corporate) architect has two other responsibilities: budget planning and facility upkeep.

The governmental staff architect assists the chief budget officer by preparing estimates and feasibility studies of facility work proposed by the operating departments. This enables the budget officer to do his work with accurate professional analysis and with realistic cost figures.

In the area of facility upkeep, the staff architect is required to prepare complete plans so that government construction forces or independent contractors can perform the necessary work. This work is always done with an eye to the overall cost effectiveness of the project. Esthetically pleasing, long lasting and maintenance free are the bywords of this field of architecture.

These brief examples illustrate some of the areas in which architects with a particular interest in management are serving their industry and their employers. There are undoubtedly others, and the number of this new breed of architects is bound to grow. □

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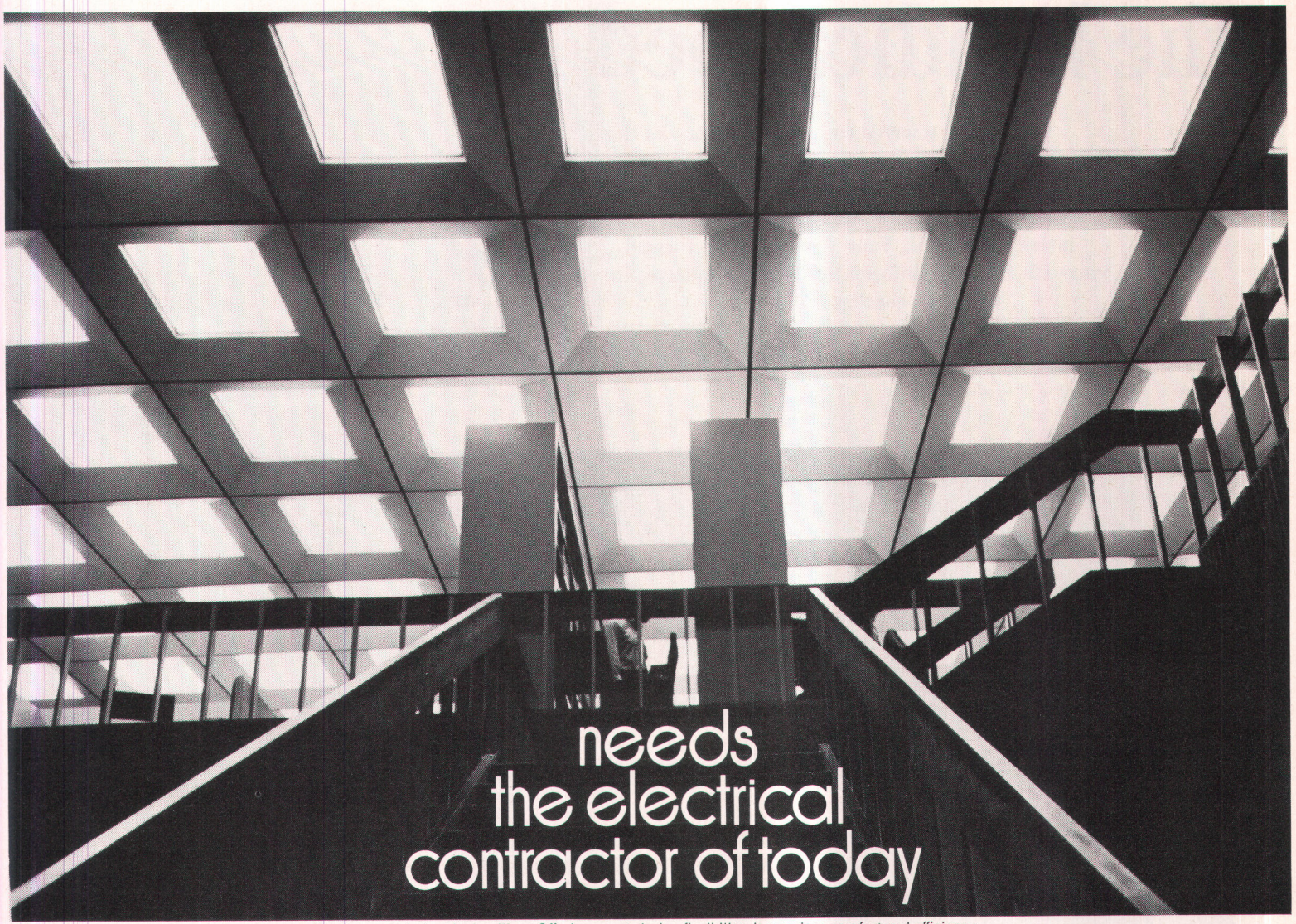

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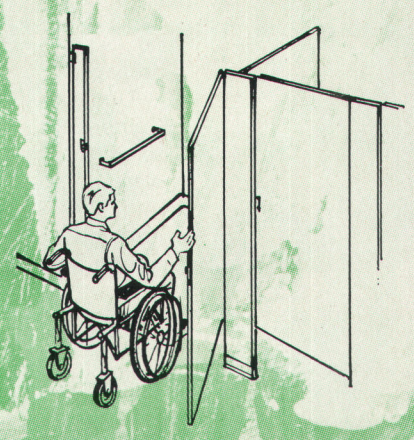

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Charles Abrams: Housing Expert and Admired Humanitarian

A tribute by Murray Illson, here reprinted with some deletions, was published in the *New York Times* on February 23, the day following the noted planner's death.

As one of the world's leading housing consultants, Mr. Abrams had helped nearly a score of countries formulate basic housing policies. He was once described by *Architectural Forum* as "perhaps the foremost housing consultant in the United States" and on another occasion was called the "champion of the urban dweller and pedestrian."

A man of energy, Mr. Abrams had throughout his career combined positions as an official or consultant in private, governmental and international agencies with university lecturing.

He taught at the Massachusetts Institute of Technology from 1957 to 1965 and in 1968-69 took a leave of absence from Columbia University, where he was chairman of the Division of Urban Planning, to fill the Williams Professorship of City Planning at the Harvard University School of Design.

He was the author of numerous books, pamphlets and articles dealing with land, housing, planning and racial problems. For three years Mr. Abrams was housing columnist for the *New York Post*, where he was nominated for a Pulitzer Prize. His articles, which appeared from 1947 to 1950, exposed real estate abuses and shortcomings in city, state and federal housing policies.

Mr. Abrams developed his interest in housing and urban planning through the practice of law and the ownership of property in Greenwich Village, where he pioneered in the '20s and '30s in preserving and renewing the character of buildings and streets. . . .

When W. Averell Harriman was governor of New York, Mr. Abrams was a member of his cabinet, serving from 1955 to 1959. When he resigned as chairman of the State Commission Against Discrimination, it was said of him that his political foes and his warmest friends could unite in calling him a zealot.

But Mr. Abrams said that this was not 100 percent true. Rather, he described himself as "a practical planner who becomes a propagandist when it's necessary."

Until he resigned as chairman of the State Commission Against Discrimination, he had spent two years bringing landlords, employers, places of public accommodation and others into line under applicable laws prohibiting discrimination. Later, he sought to ease job discrimination against the elderly.

Mr. Abrams, a Democrat, was appointed by Mayor Fiorello H. La Guardia to a nonsalaried post on the city's Slum Clearance Committee in 1934. He resigned three years later and then served for three years as consultant to the US Housing Authority and the Federal Public Housing Authority.

In the mid-1940s when the Liberal Party was organized, Mr. Abrams joined it and became one of its state vice chairmen. In 1946 he was named counsel to the State Joint Legislative Committee on Housing and Multiple Dwellings.

Conservative Republicans in Albany used to denounce him for what they called his "socialistic" aims. They reduced the antidiscrimination commission's budget after he became its chairman in 1956.

It was then that Assembly Speaker Oswald D. Heck characterized Mr. Abrams as "a zealot" also and declared that he wanted all New Yorkers to show "zeal, not moderation" in the fight against discrimination.

Mr. Abrams was born in Vilna, Poland, on September 20, 1901, the youngest of four children in an Orthodox Jewish family. In 1904, the family emigrated to the United States and settled in the polyglot Williamsburg section of Brooklyn, where they lived in a cold-water flat across the street from the father's pickle and herring stand.

In a profile in *The New Yorker* magazine three years ago, Mr. Abrams remembered his father as a "noble" man who comported himself in such a way that "even the sale of a miserable pickled herring became somehow a courtly and humane transaction."

. . . After graduating from high school, Mr. Abrams took evening courses at Brooklyn Law School and was admitted to the bar.

With money borrowed from Arthur Garfield Hays, whom he had earlier served as a law clerk, Mr. Abrams opened an office in partnership with another young lawyer. . . .

After joining Mayor La Guardia's administration in 1934 and serving as counsel to the American Federation of Housing Authorities, Mr. Abrams was credited with laying the groundwork for the laws and procedures for public housing in the US. Subsequently he was to become the much sought-after international expert on housing and planning.

In June 1964, the MIT Press published Mr. Abram's book *Man's Struggle for Shelter*. It was described as "the first authoritative eye-witness report on the explosive problems of the worldwide migration to the cities." The book drew on Mr. Abrams's 11 years of observations, beginning in 1953, as an adviser for the United Nations, which had asked him to make a worldwide study of urban land problems and policies.

In 1954, Mr. Abrams was named chief of the United Nations housing mission to the Gold Coast (now Ghana). After that he participated in UN housing missions to Turkey, Pakistan, India, the Philippines, Bolivia, Ireland, Japan, Nigeria and Singapore.

At the invitation of the individual governments, he advised Puerto Rico, Israel, Barbados and Venezuela. He also served as housing consultant to Jamaica, West Indies, under the auspices of the International Cooperation Administration and to Colombia under the auspices of the Pan American Union.

Two problems that Mr. Abrams encountered continually in his UN missions in underdeveloped countries were slum clearance and squatting.

As to slum clearance, he warned that demolition of old housing should follow, and never precede, the construction of new housing. "The worst aspects of slum life," he said, "are overcrowding and excessive shelter cost. Demolition without replacement intensifies overcrowding and increases shelter cost."

. . . Books by Mr. Abrams also were credited with having strongly influenced a generation of housing and planning officials. His *Revolution in Land* (1937) was hailed by Lewis Mumford as this century's most important book in its field and the most significant study of land problems since Henry George's.

In 1946, Mr. Abrams's *The Future of Housing*, a study of housing in the US, was a dividend book of the Book-of-the-Month Club. *Urban Land Problems and Policies* (1953), a UN report, was issued in three languages and had several printings, and *Forbidden Neighbors* (1955) was termed "a landmark in the work of measuring the Goliath of housing segregation" in America.

Mayor Lindsay appointed Mr. Abrams in November 1965 as chairman of a 14-member task force to draw up recommendations for combating the deteriorating housing situation in the city. In January 1966, the task force issued a report proposing a single city housing administrator to have jurisdiction over all capital expenditures involving housing and urban renewal. As a result of the proposals, the New York City Housing and Development Administration was created.

Among Mr. Abrams's citations were the annual award of the League of Industrial Democracy (1954), the Brotherhood Award of the Catholic Interracial Council (1959) and the S. L. Strauss Memorial Award of the New York Society of Architects (1965).

He was a member of the American Institute of Planners and the American Society of Planning Officials and an honorary associate of the [New York Chapter] of The American Institute of Architects. □

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ED. NOTE: Mr. Abrams contributed to the December 1969 AIA JOURNAL with an article entitled "A Wider Horizon, a Fairer Landscape."

books

Better Buildings for the Aged. Joseph D. Weiss, AIA. New York: Hopkinson & Blake, 1969. 286 pp. $22.50.

The publication of such a provocative book as *Better Buildings for the Aged* is advancement toward creating positive attitudes about senior citizens as individuals who have individual needs, specifically in the area of housing. Opportunities for the freedom of choice of living arrangements permeate the introduction. Choices are well illustrated in the variety of designs presented for residential housing, combined residence and nursing facilities, foreign residential and nursing care facilities and nursing homes. Broad guidelines for determining needs, designs related to needs and assistance available through agencies are presented.

Designs of residential areas to meet a variety of needs are outstanding in attractiveness as well as functional arrangements. Glass is used extensively throughout the designs for lightness and contact with the outside world. However, the safety of large glass panels needs consideration as it is recognized that with changes in vision in old age, color contrast becomes important. The translucence of glass, unless it has some undispersed patterns, may be a hazard. It also offers greater possibility of glare which can impair the visual path of older people.

Passageways are shown frequently connecting various buildings. Most indicate a roofing, but few show a side enclosure such as that seen at La Courneuve Center for the Aged. Some climates require side enclosures to protect the elderly, making it more conducive for them to move from one building to another.

Facilities for health services are alluded to throughout, especially those of an infirmary nature. The author stresses flexibility in planning to permit old age homes with infirmaries to convert to full service nursing homes when necessary. He omitted a plan which has worked in Denmark where skilled nursing care is provided without such conversion. Equipment and supplies are moved into the resident's own room so she does not have to move to a different environment known as an "infirmary."

Emphasis is placed upon general design consideration in planning a skilled nursing home. The designs selected in this area show creativity and imagination in exterior planning with efforts to bring outside beauty to the interiors. Imagination ends there; as the interiors of the facilities are viewed, stereotyped planning is evidenced. An example is the "typical" nursing station. There has been little change in this concept over a period of time. Counters act as barriers between the nurse and patient at a time when close relationship between individuals is encouraged.

It is assumed that the recommended architectural standards are minimal and, given sufficient finances, these recommendations would be scrutinized for feasibility. Those pertaining to toilets and bathing facilities, for example, could be expanded especially if it is postulated that privacy and convenience for the patient may influence and increase interest in self care. The availability of toilet facilities could prove the best approach to reverse incontinence. More money spent in enlarging such facilities may reduce operating costs.

A closet 3 feet wide by 2 feet deep will accommodate a very limited amount of clothing. When planning such space, the long stay of a patient needs consideration.

The author has recognized that new ideas must be tried in anticipation of changes which will affect the aging. Therefore, the designs presented with supporting data give rise to areas that need more study for the future, such as: 1) Should facilities for the aged be in quiet, peaceful neighborhoods or in areas of activity? 2) What kinds of older people prefer single rooms to multi-bed rooms? 3) Is separation of patients according to their physical and mental condition the best approach to grouping patients? 4) With new medical advances, will the need for protective care area as interpreted increase or decrease? 5) Should the nursing home design be more like a hospital or a residence?

This book is excellent, but it also points to the need for architectural gerontologists and agents responsible for the delivery of health care to plan together to meet the needs of older persons, particularly in specialized facilities.

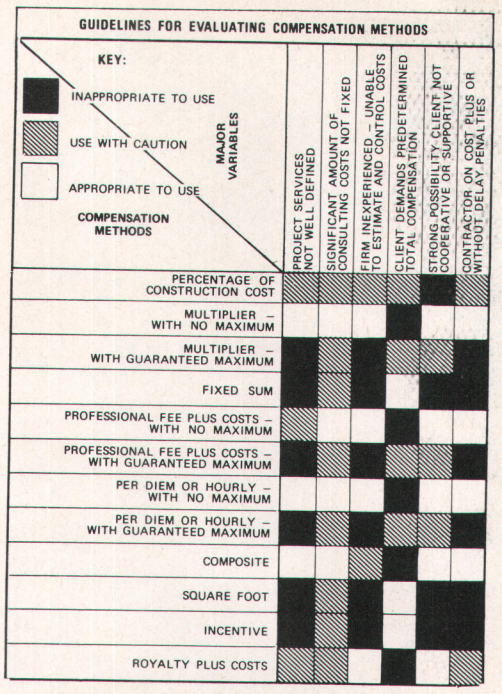
VIRGINIA STONE, R.N.

Dr. Stone is director of the Department of Graduate Studies, School of Nursing, Duke University Medical Center.

Methods of Compensation for Architectural Services. Case & Co., Inc., and AIA Task Force. Washington: The American Institute of Architects, 1969, 104 pp. $4, AIA members; $8, nonmembers.

Don't expect this to swing like *Portnoy's Complaint*. It isn't that kind of book. In fact, it's more of a manual than a book—a manual that belongs in the middle of every practicing architect's desk. As a companion volume to recent AIA publications on economics and profit planning, it is for every architect who wants to stay in business.

The rules of professionalism and prudent business judgment demand that the architect base his compensation on the value of his services. Change "value" to "cost," and you have the meat of this manual. Both usual and unusual methods of compensation are carefully scrutinized and weighed, with each related to a list of a dozen criteria for comparison and evaluation. The reader will find that the basic percentage method is not always the best choice. This manual will not give you a pat answer because each project should be



analyzed individually in advance of signing an agreement for professional services; but it will give you a good deal of comfort and solace (and some guidance) in selecting the method of compensation that is closest to being correct for that job you are negotiating right now.

If you feel at all uneasy about someone else's hand on your wallet, rush down right now to your friendly Octagon book stall and reserve your copy of *Methods of Compensation*. Hopefully, you will rediscover how to set the first essential foundation stones of a profitable practice. If reading puts you to sleep, try sitting and admiring the way-out graphics of the strawberry-pink dollar sign on the cover and absorb the contents by osmosis.

ROBERT ALLAN CLASS, AIA

Where Not to Build: A Guide for Open Space Planning. S. B. Zisman, Dilbert B. Ward and Catherine H. Powell. (Technical Bulletin, No. 1, US Department of the Interior, Bureau of Land Management), Washington: US Government Printing Office, 1968. 160 pp. $1.

Where Not to Build is a significant document, considering that the sponsors are the largest managers of public open space in the United States. This attractively illustrated paperbound book proposes "to provide a working basis of concept and application in open space planning."

The introduction and Chapter 1 are convincing restatements of past and present trends in urban America. Unfortunately, these introductory comments understate the importance of environmental quality for *all forms of life* on earth. Apparently, the authors subscribe to man's self-appointed role of "dominion over all the earth." They fail to base their open space planning proposals on the essential "web of life," which places the human niche in a proper perspective. The short description of the history, acceptance and effectiveness of urban and regional planning is painted in rosy tones.

The authors report that "as a basic principle for public expenditures, the requirement for a guiding comprehensive plan is be-

continued on page 86

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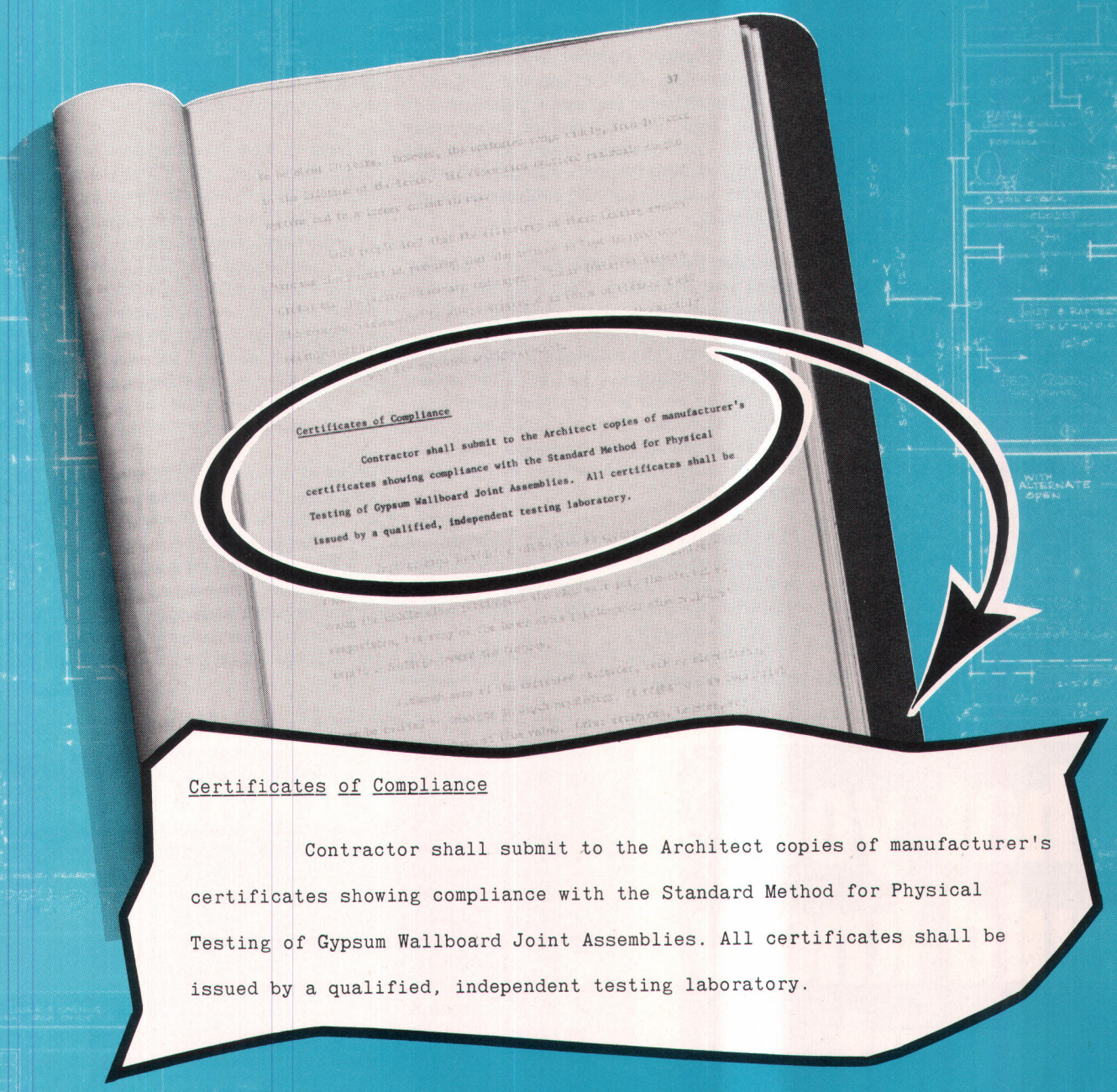

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books *from page 84*

ing accepted at all levels and especially for the undertakings that involve several jurisdictions." In sharp contradiction, local, regional and state development plans for water, power, minerals, timber, highway and freeway systems, reclamation and flood control projects, etc., continue to violate fundamental planning and ecological principles.

A brief section on planning law is useful, but inadequate. It cites examples of federal legislation while the urgent need is for local, regional and state open space and environmental legislation. The basic theme of this study that all forms of open space must be "established as a functional land use, not as an *undesignated use* to be taken over by another use" is an excellent, simple fact.

The chapters describing concepts and classifications of open space are quite true and complete but overly academic. "Guides and Standards for Open Space Planning" and "Application of Open Space Planning" lack the fresh and novel simplicity that puts ideas into action. Unfortunately, most basic studies of this kind tend to restate and rediscover ideas and methods that are not so new—only not used.

The use of Washington County, Utah, as a case study for open space planning seems inappropriate, when the staggering open space and environmental problems of metropolitan Denver, the Los Angeles/San Diego suburbs, the Chicago/Detroit industrial complexes and the endless megalopolises of the Eastern Seaboard continue to spread over the countrysides.

"Where not to build" is a problem everywhere, but it is a practical matter of survival in the metropolitan centers of the US and the world. KENNETH R. ANDERSON

The reviewer heads the firm of planners and landscape architects bearing his name in Roseville, California.

Parking Design Manual. Los Angeles: Parking and Highway Improvement Contractors Association, Inc., 1968. Loose-leaf. $12.50.

A comprehensive and useful publication on parking. Topics covered include design specifications, seal coatings, paint striping and marking, parking bumpers and stops, buttons and other markers, parking control equipment and lighting.

Swimming Pools: A Guide to Their Planning, Design and Operation. Edited by M. A. Gabrielsen. Fort Lauderdale: Hoffman Publications, 1969. 224 pp. $10.

Sponsored by the Council for National Cooperation in Aquatics, this book on indoor and outdoor pools is a comprehensive treatment of all phases of public and semi-public pool development and operation, from the first planning considerations to the final programming.

The Color Primer. Wilhelm Ostwald. **A Grammar of Color.** Albert H. Munsell. **Principles of Color.** Faber Birren. New York: Van Nostrand Reinhold, 1969. 3 vols., boxed, $18.50; $6.95 each.

This "basic color library," available as a boxed set or individually, will be of considerable value to almost anyone concerned with color. Ostwald's historic work, edited by Faber Birren, is one of the most influential of all color systems. Available in English for the first time, it was originally published in a German edition in 1916. A companion volume by Munsell is a classic work describing color harmony, organization and notation. First published in 1921, it is here edited and updated by Birren. The third volume, written by Birren, reviews past traditions and modern theories of color harmony.

Toward a New Architecture. Le Corbusier. Translated from the French by Frederick Etchells. New York: Praeger, 1970, 269 pp. $7.50, hard cover; $3.95, paperbound.

This book, first published in English in 1927, introduced the English reading public to the writings of Le Corbusier. It had a profound influence on architectural thought and is, therefore, a significant historical document. The present edition, an exact facsimile reduced slightly in page size, makes no effort to update the contents nor to use later examples of the illustrations Le Corbusier chose.

Social & Economic Information for Urban Planning. Doris B. Holleb. Chicago: Center for Urban Studies, University of Chicago, 1969. 2 vols. $2 each.

There is a gap between concepts in the social sciences and actual planning practices. This book tells the planner how to extract relevant information from the growing corpus of publications. It reviews the planning process;

continued on page 90

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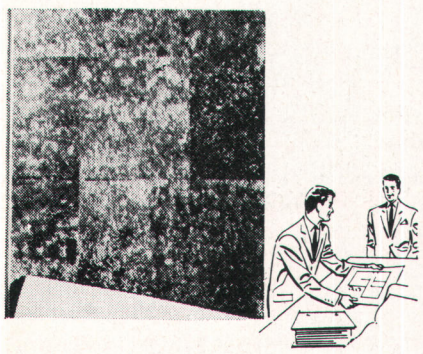

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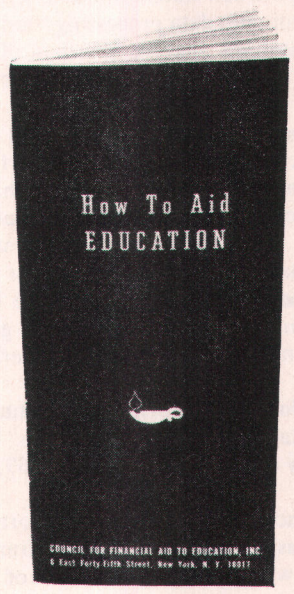

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books *from page 86*

analyzes the information needs of communities; surveys urban statistics; and discusses the uses of automatic data processing, sample surveys and systems analysis in urban planning. Volume 2 is a directory of data sources.

Shelter and Society. Edited by Paul Oliver. New York: Praeger, 1969. 167 pp. $12.50.

An examination of vernacular architecture in which forms are related to the societies and conditions which produce them. A study in depth is made of specific examples in various parts of the world, ranging from the Norwegian *laftehus* to the Hopi pueblo to geodesic structures made from discarded materials.

Conservation of Historic and Cultural Resources. Ralph W. Miner. Chicago: American Society of Planning Officials, 1969. 56 pp. $5.

This concise and to-the-point report covers the broad aspects of historic and cultural conservation within the framework of urban planning.

New Japanese Architecture. Egon Tempel. New York: Praeger, 1969. 220 pp. $15.50.

A survey of Japanese architecture since the 1950's, demonstrating the successful blending of the country's ancient indigenous architecture with the modern architecture of the West. Examples of imaginative designs range from single-family houses to utopian city plans. Works by such masters at Tange, Mayekawa and Sabakura are shown as well as exciting designs by many younger architects.

Sequel to Cities: The Post-Urban Society. Eugene Raskin. London: Rebel Press, 1969. 93 pp. 10 shillings.

An AIA member and urbanologist states in this provocative book that the city is no longer needed, that its demise is in the offing and that only experts, planners and sociologists will mourn the passing. Happily, he contends that "there is a new baby, gurgling and cooing for our attention." He terms the infant "the Post-Urban Society," and here he engagingly plots its growth and development.

Contrasts. A. W. N. Pugin. New York: Humanities Press, 1969. 104 pp. $6.75.

A reprint of the second edition of Pugin's influential work of the early 19th century. He attacked "the wretched state of architecture" of his time and in this work drew a parallel between the "noble edifices" of the middle ages and corresponding buildings of his day, showing "the present decay of taste." This reprint is enhanced by an introduction provided by the scholar H. R. Hitchcock.

York: A Study in Conservation. Viscount Esher. London: Her Majesty's Stationery Office, 1968. 249 pp. $25.20.

A report to Great Britain's Minister of Housing and Local Government and the York City Council, commissioned to discover some ways the old town of York can be reconciled with the 20th Century. Other studies similar in approach and format include one on Chichester by G. S. Burrows and one on Bath by Colin Buchanan & Partners.

Back Bay Boston: The City as a Work of Art. Boston: Museum of Fine Arts, 1969. 148 pp. $5.50.

The Museum of Fine Arts in Boston opened its centennial celebration on November 1, 1969, with an exhibition on its own neighborhood, Back Bay Boston. The catalog of the exhibition is worthy of the occasion. There are eight pages of color plates and over 200 black and white illustrations. Lewis Mumford provides an historical overview of Back Bay, and Walter Muir Whitehill discusses Back Bay patrons. There is a concluding section on artists of the city. Carl F. Zahn of the Museum of Fine Arts designed the catalog.

Twentieth-Century Stage Decoration. Walter R. Fuerst and Samuel J. Hume. New York: Dover, 1969. 2 vols. $3 each.

An unabridged and corrected edition of a work first published in 1929 by Knopf, this review of the development of stage decoration in the early 20th century covers the theories of stage designers and analyzes the productions which have created the foundations upon which the stage of today is built. The first volume is text; the second contains 393 photographs and drawings of important stage settings.

A College in the City: An Alternative. Evans Clinchy and others. New York: Educational Facilities Laboratories, 1970. 42 pp. Free.

Another of EFL's perceptive reports. Applicable to any urban community, the study concerns specifically the educational concept of what a college in Bedford-Stuyvesant should be and a physical interpretation of that concept.

The Beds of Academe. Howard Adelman. Toronto: Lewis & Samuel, 1969. 258 pp. $3.50.

Following a history of university residences, Adelman explores policy and financial issues in student housing. He directs attention to Rochdale College, a highrise student residence in Toronto, giving information about how it was built and about the problems in design and administration. The extensive bibliography is commendable.

Design Fundamentals of Cable Roof Structures. J. B. Scalzi, W. Podolny and W. C. Teng. Pittsburgh: United States Steel Corp., 1969. 139 pp. No price given.

A practical treatise on the use of cables in roof structures. Chapters cover manufacturing, properties and erection of cables; analysis and design; and design examples.

George A Hinds' research report entitled *Perspectives on Housing in a Developing Community* (AIA JOURNAL, Feb. '70, p. 80) was prepared under the sponsorship of the Center for Urban Studies, University of Illinois. It is now available for sale by the US Department of Commerce Clearinghouse for Federal, Scientific and Technical Information, 5285 Port Royal Road, Springfield, Va. 22151, at $3 for paper copy and 65¢ for microfiche copy. Specify title, author and Document No. PB189-409.

Housing Guide to Equal Opportunity: Affirmative Practices for Integrated Housing. Washington: Potomac Institute, 1968. 92 pp. $1.

Guidelines for affirmative practices to achieve integrated housing and neighborhoods, based on a pragmatic study of actual experiences.

Grants and Aid to Individuals in the Arts. Washington: Washington International Arts Letter, 1970. 75 pp. $8.95.

Listings of most professional awards and information about colleges, universities and professional schools of the arts which offer assistance to students.

Trees in a Winter Landscape. Alice Upham Smith. New York: Holt, Rinehart and Winston, 1969. 207 pp. $6.95.

A guide for the identification of trees in winter and for their selection for landscape qualities. Pen-and-ink drawings accompany each tree's description.

Guide to Cambridge Architecture: Ten Walking Tours. Robert Bell Rettig. Cambridge: MIT Press, 1969. No pp. $3.95.

Buildings of all types, styles and periods are included in this field guide to Cambridge's architecture. Arrangement of the walking tours is geographical.

The Landscape We See. Garrett Eckbo. New York: McGraw-Hill, 1969, 223 pp. $16.

Eckbo attributes our failure to improve the quality of the landscape to a lack of proper recognition of both science and art as elements to be taken into account in making decisions about developments. He calls for a total concept of environmental design, for preservation against the pressures of expanding urbanism and the recognition of a need to redesign both high density downtown areas and low density suburban sites. An important and stimulating book for architects.

Saint-Gaudens and the Gilded Era. Louise Hall Tharp. Boston: Little, Brown, 1969. 419 pp. $8.50.

A carefully drawn and sensitive biography of Saint-Gaudens in which he is revealed as an outstanding sculptor of the highest artistic achievement and one of the most perceptive portraitists. His life, loves, disappointments and accomplishments are meticulously recalled by a gifted writer.

Sailing to Byzantium: An Architectural Companion. Osbert Lancaster. Boston: Gambit, 1969. 184 pp. $11.95.

If you know anyone traveling to the Eastern Mediterranean any time soon, get him a copy of this delightful architectural guide. The author's charming drawings add to the book's enjoyment and will be appreciated by the armchair traveler as well.

Egypt: Architecture, Sculpture, Painting, in Three Thousand Years. New York: Phaidon, 1968. 559 pp. $27.50.

A rich resource for the study of Egypt's marvelous ancient art and architecture, surveying 3,000 years of artistic wonders.

continued on page 92

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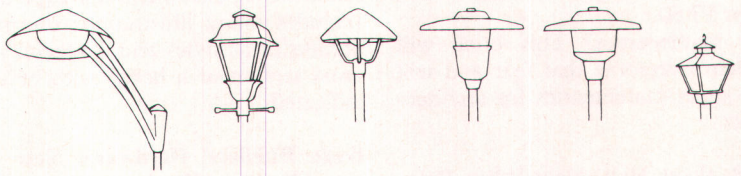

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books *from page 90*

The Railway Hotels and the Development of the Chateau Style in Canada. Harold D. Kalman. Victoria, B.C., University of Victoria, Maltwood Museum, 1968 (distributed in the US by Century House). 47 pp. $3.

A style that became virtually the Canadian national style of architecture originated with a series of hotels for a railroad. And it was an American, Bruce Price, who designed the first portions of the Chateau Frontenac, which influenced the further building in this vein. Actually Price had done earlier work for the Canadian Pacific Railroad, including Windsor Station in Montreal and a hotel at Banff Springs. This is a readable, well-illustrated account of an interesting phase of the architectural history of our neighbor to the north.

American Architecture since 1780: A Guide to the Styles. Marcus Whiffen. Cambridge; MIT Press, 1969. 313 pp. $6.95.

A most valuable, concise and well-illustrated guide for the "building watcher," presenting the visual characteristics of various architectural styles.

Operating Manual for Spaceship Earth. R. Buckminster Fuller. Carbondale: Southern Illinois University Press, 1969. 144 pp. $4.25.

Fuller says that no instruction book came with Spaceship Earth, but we are going to have to keep it in good order or it will fail to function. This is his operating manual, and he calls on us to "spread our wings of intellect and fly or perish."

Professional Perspective Drawing for Architects and Engineers. Friedrich W. Capelle. New York: McGraw-Hill, 1969. 164 pp. $13.50.

Mathematical formulas and guidelines for the production of accurate and esthetic perspective drawings.

New Architectural Drawings. Helmut Jacoby. New York: Praeger, 1969. 101 pp. $14.

A new selection of Jacoby's drawings of the designs of outstanding architects, emphasizing anew the beauty and value of architectural renderings.

Your Community Hospital. Robert E. Walsh. Boston: Beacon Press, 1969. 286 pp. $5.95.

A newspaper reporter's view of hospitals across the country with informed suggestions about improved health care.

Outpatient Health Care. Chicago: American Hospital Association, 1969. 58 pp. $2.25.

In view of medical and social changes, it is imperative that thoughtful and innovative concepts be applied to the design of facilities for outpatient health care. Here are set forth general principles, goals and recommendations of two meetings called by the AHA and sponsored by the US Public Health Service.

Changing Patterns in Residential Services for the Mentally Retarded. Edited by Robert B. Kugel and Wolf Wolfensberger. Washington: President's Committee on Mental Retardation, 1969. 435 pp. No price given.

A careful and serious study by a group of experts who were asked to take a long look at facilities for the mentally retarded in this country. Some of the findings are grim beyond belief. Innovative concepts are proposed and solutions suggested which should be considered by a country presumed to be civilized.

Building the American City. National Commission on Urban Problems. New York: Praeger, 1969. 500 pp. $10.

The National Commission on Urban Problems was established in 1967 to study building and housing codes, zoning, tax policies and development standards in order to help relieve urban blight and sprawl. Its far-reaching review and recommendations are presented in this massive report.

Green-Belt Cities. Frederic J. Osborn. New York: Schocken, 1969. 203 pp. $6.95.

First published in 1945, this new edition of a classic has a foreword by Lewis Mumford, additional notes and a revised bibliography.

Emergency and Disaster Planning. Richard J. Healy. New York: Wiley, 1969. 290 pp. $12.95.

Of interest to architects in its consideration of the design of fallout shelters and the effects on buildings of natural cataclysms such as earthquakes, tornadoes and floods.

Building Acoustics. Edited by B. F. Day, R. D. Ford and P. Lord. New York: Elsevier, 1969. 120 pp. $4.50.

A concise and practical aid to the architect who wants to acquire a better understanding of the acoustic environment. Use is made of graphs and tables.

Building with Wood. Hoffman Griese. New York: Praeger, 1969. 169 pp. $15.

Wood construction has a long shelf in architectural libaries. This book condenses much of this information and adds a good deal more.

Models in Architecture. H. J. Cowan, J. S. Gero, G. D. Ding and R. W. Muncey. New York: Elsevier, 1968. 228 pp. $11.

The visual demonstration of form is only one function of the model, the authors of this book emphasize. Models may be used also in environmental stress analysis and in the investigation of thermal, acoustical and lighting problems. The numerous examples, primarily derived from Australia where the authors work, are presented with detailed information.

Mathematics in Architecture. Mario Salvadori. Englewood Cliffs, N.J.: Prentice-Hall, 1968. 173 pp. $7.50.

Afraid of mathematics? This book will help the student overcome that fear and will teach him to apply mathematics for architectural purposes.

London 2000. Peter Hall. New York: Praeger, 1969. 287 pp. $10.50.

When this book was first published in 1963, it received favorable reviews in the architectural press. In this new American edition, Hall adds important postscripts in which he analyzes significant changes and trends.

The Log Cabin in America, from Pioneer Days to the Present. C. A. Weslanger. New Brunswick: Rutgers University Press, 1969. 382 pp. $12.50.

The log cabin as a symbol of "family solidarity, grassroots origins and pioneer virtues" is considered in this beautifully illustrated social history.

Land, People & Policy: The Problems & Techniques of Assembling Land for the Urbanization of 100 Million New Americans. Gordon Edwards. West Trenton, N.J.: Chandler-Davis Pub. Co., 1969. 159 pp. $5, hardbound; $3, paperbound.

An examination of our national land policies, or nonpolicies, with recommended programs to benefit the quality of urban environment. Edwards maintains that the realistic use of governmental powers of eminent domain, combined with private capital and managerial skills, will help conserve our diminishing resources and provide for a better urban society.

Metalwork. Hanns-Ulrich Haedeke. New York: Universe Books, 1970. 227 pp. $17.50.

The most commonly used metals—copper, brass, bronze, iron and pewter—are examined here in relationship to their development and place in the social setting of every age. The interaction of function, form and decoration is emphasized, showing the craftsman's ever-changing role in society. A most attractive and well illustrated book.

Construction Estimates and Costs. 4th ed. H. E. Pulver. New York: McGraw-Hill, 1969. 644 pp. $16.50.

Step-by-step assistance for the computation of material, labor, plant and overhead costs to insure a profit. Revised and updated to give current information on estimating practices.

Environmental Physics: Heating. C. R. Bassett and M. D. W. Pritchard. New York: Elsevier, 1969. 133 pp. $8.

Fundamental principles of heating presented by experts.

Building on Springs. R. A. Waller. New York: Pergamon, 1969. 88 pp. $5.

Springs in foundations serve to isolate structures from ground-borne vibration. The basic technology is presented here.

Illustrated Encyclopedic Dictionary of Real Estate Terms. Jerome S. Gross. Englewood Cliffs, N.J.: Prentice-Hall, 1969. 468 pp. $16.

Over 2,500 definitions of real estate nomenclature, with over 85 full-page sample real estate forms, documents and legal instruments. Includes many illustrations of survey maps, architectural styles and a specially illustrated cross section of a house with builder's terms indicated.

Basic Builders' Hardware. New York: National Builders' Hardware Association and the American Society of Architectural Hardware Consultants, 1969. 32 pp. $3.50.

A catalog of the principal items of builders' hardware with a brief comment on each one. Included are a bibliography and a helpful glossary of terms. □

events

AIA State and Region

Sept. 24-26: New Jersey Society of Architects, Chalfonte-Haddon Hall, Atlantic City

National

May 16-22: Building Officials Conference of America, Deauville Hotel, Miami Beach

May 21-22: Building Research Institute (Transferring School Building Systems Experience), Shoreham Hotel, Washington, D.C.

May 25-26: Washington Paint Technical Group Symposium, Marriot Twin Bridges Motel, Washington, D.C.

June 7-11: First National Congress on Optimum Population and Environment, Pick Congress Hotel, Chicago

June 8-10: Construction Specifications Institute Convention, Conrad-Hilton Hotel, Chicago

June 17-19: National Exposition of Contract Interior Furnishings (NEOCON), Merchandise Mart, Chicago

June 18-20: NCARB Annual Meeting, Sheraton-Boston Hotel, Boston

June 19-21: ACSA Annual Meeting, Sheraton-Plaza Hotel, Boston

June 19-21: Flying Architects Association, Sheraton-Boston Hotel, Boston

June 21-25: AIA Convention, Sheraton-Boston Hotel, Boston (recessed Session, London, June 29)

July 6-10: Annual Summer Planning Institute (Flexible Learning Environments), Stanford University, Stanford, Calif.

International

May 17-22: World Congress of the International Federation for Housing and Planning, Barcelona

May 24-31: UIA Seminar on the Emerging Social Role of Schools, Vienna

June 14-19: International Design Conference (Environment by Design), Aspen, Colorado

June 29-July 24: Ekistics Month (Networks and Human Settlements), Athens Center of Ekistics, Athens

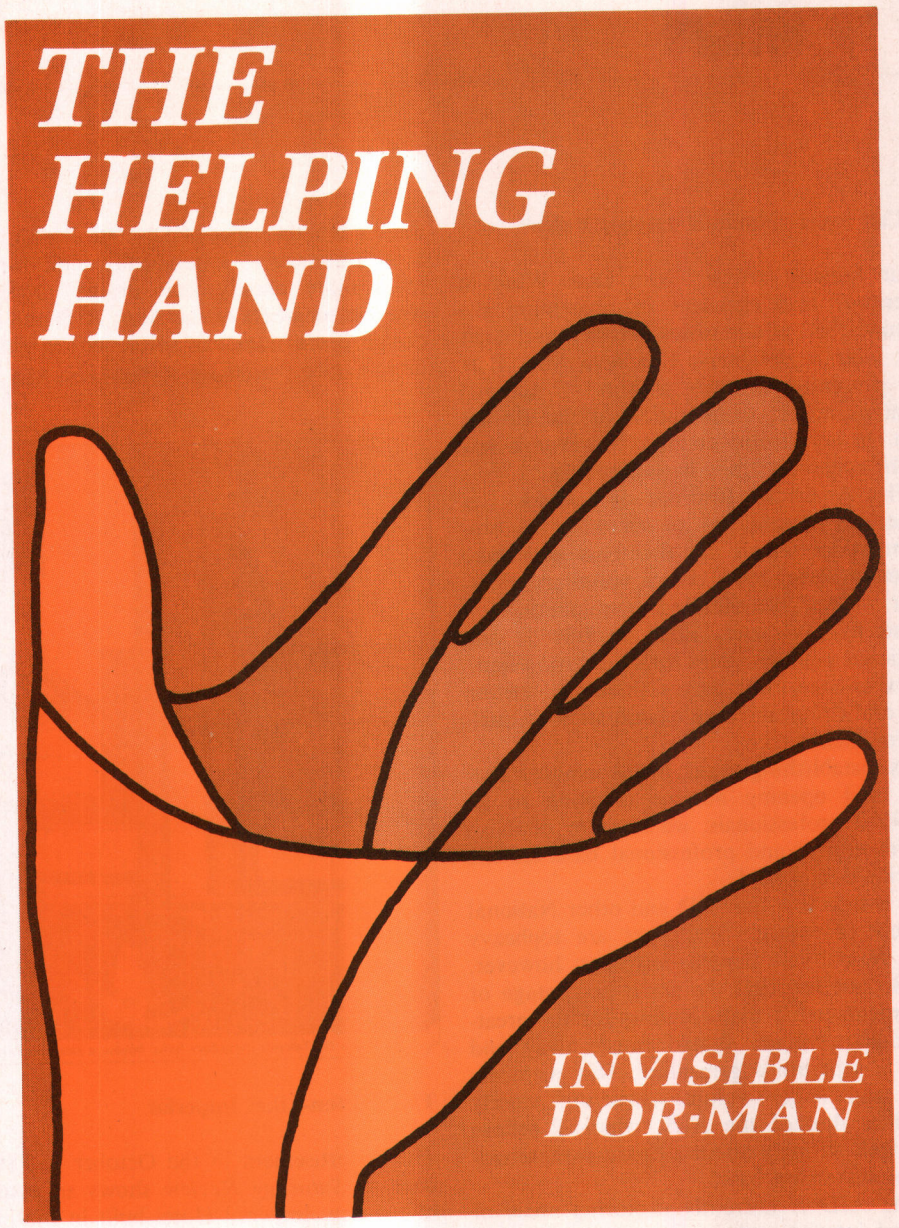
Scholarships and Fellowships

June 1: Applications due, Cintas Fellowships in Art. Contact: Institute of International Education, 809 United Nations Plaza, New York, N. Y. 10017

Tours

May 29-June 14: Conference tour of eight British new towns, followed by sessions on regional planning and land use control in Copenhagen, Amsterdam and Paris. Other urban study tours to northern Europe leaving May 29 and July 10. Contact: Institute for Study Forms Abroad, ITT Building, Suite 470, Washington, D.C. 20036

Aug. 14-29: Oriental American Symposium on Architecture and Urban Design, including two days at Expo '70, for AIA members only. Contact: Professional Seminar Consultants, Inc., 3194 Lawson Blvd., Oceanside, N.Y. 11572 □



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letters

A Call for a "National Design Voice"

Your January article "Who Does What in Interiors" was excellent in presenting the attitudes and relationships between architects and interior designers. I believe Mrs. Barr has presented a cross section of national opinions in her examination of the Boston area. In her closing column, however, a few of the statements may be misleading.

The American Institute of Interior Designers at present has an accreditation program under which our members undertake review programs and take a voluntary eight-hour written accreditation examination, followed by oral ones. Effective July 1, any applicant with six years total education and/or experience must pass a three-day written and oral comprehensive examination to qualify for membership.

By establishing rigid membership standards and opening our organization to all qualified professionals, we hope to establish a firm ethical and professional base for the interior design field.

It is true that the AID and other National Society of Interior Designers are topheavy with residential-oriented designers; however, we do not feel that the small percentage of our membership that accounts for the greatest dollar volume should break away and start a separate organization. Our membership and dollar volume structure closely parallels that of the AIA, which I believe also feels strongly about a broad comprehensive membership base.

The AID is currently exploring areas of mutual interest and common social concern with all design professionals. There are examples of joint AIA, ASLA and AID chapter offices in the Northwest, as well as combined professional programs (such as the Bettelheim/Montgomery breakfast sponsored by the local AID/NSID chapters for the AIA national convention in Chicago last year). AID chapters in Los Angeles, Chicago, Cincinnati, New York and Baltimore, to name a few, have extended invitations to AIA members to attend environmental seminars this spring. We hope to expand such programs to joint endeavors whenever possible.

I would like to add a few personal comments on state licensing activities for interior designers. The AIA has accomplished much in establishing standard examinations, compiling licensing legislation, establishing state councils and the NCARB, as well as recognizing state liability laws and the related insurance programs for the profession. The effort involved in merely coordinating all the various state regulations was enormous. Until such time as the majority of interior designers have established national standards of practice within our profession and recognize the need for a coordinated state council and liability insurance program, I have grave doubts whether piecemeal state legislation is a wise endeavor. I personally look forward to a more closely knit design profession wherein members of the AIA, AID and other design professions can speak with a national design voice. NORMAN R. DEHAAN, AIA, AID
Chicago

On March 10, Tokyo's legendary hotel begins a new chapter.

The 'Hilton-Like' Imperial

The advertisement in the October 15, 1969, issue of *Saturday Review* shows an exterior of the new Imperial Hotel built in the place of the original beautiful and famous Frank Lloyd Wright design.

As an architect I was rather shocked to note the copying of the commonplace American "Hilton-like" hotel architecture that replaces the old beautiful world-renowned original structure. Perhaps Kenzo Tange, a good friend of mine, or Taro Amano or Raku Endo, should have been retained for a more appropriate design. I feel sure Tetsuzo Inumaru, as the owner, could have afforded them, or perhaps it was case of vice versa.

As beautiful a heritage that the Japanese print has accrued to Japan, it is an affront to me to see the advertisement attempt to derive authenticity and heritage from this great art by desecrating the print idea in depicting the new hotel design with Fuji in the background. With this symbol of lack of integrity, I can possibly understand Inumaro's not replying to my letter to him and Ichiro of May 29, 1967, in which I attempted to offer what was considered a practical solution to saving the central core of the old Imperial.

No doubt the owners will do a good business with the new Imperial, but they must always be aware that they let be destroyed an irreplaceable cultural link between a great country, Japan, and ours that no amount of money could ever buy.

I do apologize for the bluntness of this letter, but I am greatly disturbed to realize such a commonplace structure replaces one of the great shrines of man's civilization.

KARL KAMRATH, FAIA
Houston

An Apology from American Appraisal

I apologize for reprinting without written approval the excellent article concerning the *Boeckh Building Valuation Manual* on page 104 of the October issue.

In no way was it our intention in reprinting this article to infer that the manual was a product of, or endorsed by, the AIA JOURNAL or The American Institute of Architects. The article was reprinted verbatim and was intended to be read at face value. The AIA JOURNAL logo at the top of the reprint was included solely to indicate the source of the article.

I hope that the reprinting of this fine article did not confuse those readers who received it. MICHAEL A. ROONEY
Manager, Publication & Education Div.
American Appraisal Co.
Milwaukee

ED. NOTE: The company mailed the reprint in question to a list of registered architects as part of a promotion for the manual.

Architecture for Architects

I read with a great deal of interest the letter by Sam Scheiner, AIA, "about men in related fields picking away at the architectural profession" in the October issue. I have been a strong advocate for such sentiment even before the landscape architects were given official status in the state of New York.

However, I don't think that we as architects should stop there. What about the underdog—the architect with a small practice? In New York, every carpenter, bricklayer, plumber and what have you is, as Sam says, a frustrated architect.

It is almost 20 years now that I have tried to have the laws of New York State amended to restrict the practice of architecture to architects, with no success as yet.

I, too, am a frustrated architect only to the extent that I am aware that no one may encroach on the medical, dental, legal and other professions, but every butcher, baker and candlestick maker may encroach on the architectural profession.

I am now suggesting that we call upon the Institute to carry the ball from hereon to the end that the practice of architecture, with all its facets, be restricted to those who are registered architects. HARRY A. YARISH, AIA
Brooklyn

Correction

The firm of Rawlings & Wilson of Richmond should have been credited as architects for the University of Virginia's new School of Architecture building shown on page 26 in the February issue. It was designed by Pietro Belluschi, FAIA, and Kenneth DeMay, AIA, of Sasaki, Dawson, DeMay Associates, Inc., Associated Architects for Design, Watertown, Massachusetts. □

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Increasingly architects are called upon to design educational facilities for use by the physically handicapped. The following reference list, prepared by the Educational Resources Center (ERIC) Clearinghouse on Educational Facilities, is the third in a series being offered our readers on a trial basis, dependent upon reader interest. The first, *Systematic Methods in School Planning, Programming and Design,* was published in January; the second, *The Luminous Environment for Education,* appeared in March. Inquiries should be directed to ERIC/CEF, 606 State St., Madison, Wis. 53703.

Asterisks indicate major goals, up to a maximum of five, of each reference. Descriptors are geared to the ERIC system.

"Accent on Access," *Rehabilitation Record,* Nov./Dec. 1966, 11-25.
*Architectural Elements; *Facility Guidelines; *Physically Handicapped; *Public Facilities; *Wheel Chairs; Mobility Aids; Recreational Facilities; School Design; Transportation

ALBEE, F. H. "The Effect of Architectural Barriers on the Handicapped School Child," *The Florida Architect,* June 1964, 27.
*Mobility Aids; *Physically Handicapped; *School Design; *School Safety; *Wheel Chairs; Architectural Elements; Cerebral Palsy; Handicapped Students; Multiply Handicapped; Regular Class Placement

American National Standards Institute. *American Standard Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped.* New York, 1961. 11 pp.
*Architectural Elements; *Physically Handicapped; *Public Facilities; *Standards; *Wheel Chairs; Building Design; Educational Facilities; Mobility Aids; Multiply Handicapped

BAYES, KENNETH. *Therapeutic Effect of Environment on Emotionally Disturbed and Mentally Subnormal Children.* London: Kenneth Bayes, 1967, 64 pp.
*Architectural Elements; *Handicapped; *Perception; *Physical Environment; *Therapeutic Environment; Bibliographies; Child Psychology; Environmental Influences; Mentally Handicapped; Reference Material; Research; Space Orientation; Visual Stimuli

CANIFF, C. E. "Architectural Barriers: A Personal Problem," *Rehabilitation Literature,* Jan. 1962, 13-14.
*Architectural Barriers; *Architectural Elements; *Building Design; *Physically Handicapped; *Public Facilities; Architectural Character; Case Studies; Design Needs; Handicapped; Planning; Site Development; Wheel Chairs

COTLER, STEPHEN R. *Interim Guide: Performance Criteria on Spatial Organization for Physically Handicapped.* Albany: New York State University Construction Fund, 1965. 5 pp.
*Architectural Elements; *Building Design; *Interior Space; *Physically Handicapped; *Planning; Dining Facilities; Doors; Facility Guidelines; Public Utilities; Wheel Chairs

Council for Exceptional Children. *Selected Abstracts: Physical Environment and Special Education.* Washington, D.C., 1969. 22 pp.
*Abstracts; *Classroom Environment; *Mentally Handicapped; *Physically Handicapped; *Special Education; Educational Facilities; Educational Programs; Environmental Criteria; Handicapped Students

FEARN, D. *Architectural Barrier Program of the National Society for Crippled Children and Adults.* Chicago: National Society for Crippled Children and Adults, 1966. 14 pp.
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GOLDSMITH, SELWYN. "Aiding the Disabled," *Design,* Nov. 1969, 24-45.
*Design Needs; *Equipment; *Multiply Handicapped; *Physically Handicapped; *Wheel Chairs; Deaf Children; Mobility Aids; Playgrounds; Technology

GOLDSMITH, SELWYN. *Designing for the Disabled.* 2nd rev. ed. New York: McGraw-Hill, 1967. 207 pp.
*Architectural Elements; *Building Design; *Design Needs; *Physically Handicapped; *Wheel Chairs; Multiply Handicapped; Planning; Public Facilities; Site Development; Specifications; Toilet Facilities

GUTMAN, ERNEST M., and C. R. GUTMAN. *Wheel Chair to Independence: Architectural Barriers Eliminated.* Springfield, Ill.; Charles C. Thomas, 1968. 136 pp.
*Facility Guidelines; *Mechanical Equipment; *Physically Handicapped; *School Design; *Wheel Chairs; Architectural Elements; Bibliographies; Dormitories; Interior Space; Planning; Public Facilities; Site Development; Swimming Pools; Toilet Facilities; Utilities

HILLEARY, J. F. "Buildings for All to Use," AIA JOURNAL, March 1969, 41-48.
*Building Design; *Design Needs; *Physically Handicapped; *Specifications; *Wheel Chairs; Architectural Elements; Environmental Criteria; Flooring; Mechanical Equipment; Mobility Aids; Public Facilities; Standards

New York, State University Construction Fund. *Making Facilities Accessible to Physically Handicapped: Performance Criteria.* Albany, 1967. 35 pp.
*Architectural Elements; *Building Design; *Design Needs; *Physically Handicapped; *Public Facilities; Criteria; Facility Guidelines; Interior Space; Mobility Aids; Performance Specifications; Planning; Physical Design Needs

NUGENT, T. J. "Design of Buildings to Permit Their Use by the Physically Handicapped," *New Building Research,* Dec. 1960, 51-66.
*Architectural Elements; *Building Improvement; *Design Needs; *Physical Characteristics; *Physically Handicapped; Crippled Children; Flooring; Handicapped Students; Public Facilities

POMEROY, JANET. *Recreation for the Physically Handicapped.* 3rd ed. New York: Macmillan, 1966. 380 pp.
*Design Needs; *Physically Handicapped; *Planning; *Public Facilities; *Recreational Facilities; Bibliographies; Camping; Facility Guidelines; Financial Support; Multiply Handicapped; Recreational Facilities; Transportation; Wheel Chairs

SCHOENBOHM, W. B. *Planning and Operating Facilities for Crippled Children.* Springfield, Ill.: Charles Thomas, 1962. 311 pp.
*Architectural Elements; *Facility Guidelines; *Hospital Schools; *Physically Handicapped; *Special Education; Camping; Design Needs; Equipment; Facility Requirements; Handicapped Students; Interior Space; Outdoor Education; Planning; Program Design

YUKER, H. E., J. REVENSON and J. F. FRACCHIA. *Design of a School for Physically Disabled Students.* Albertson, N. Y.: Human Resources Center, 1968. 53 pp.
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YUKER, H. E., and M. A. FELDMAN. *The Development and Effects of an Inexpensive Elevator for Eliminating Architectural Barriers in Public Buildings.* Hempstead, N. Y.: Hofstra University, 1966. 20 pp. (Project Report RD-1651-g VRA).
*Architectural Elements; *Building Equipment; *Physically Handicapped; *Public Facilities; *Wheel Chairs; Building Design; Planning; School Design

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*Classroom Facilities; *Educational Equipment; *Educational Facilities; *Furniture; *Physically Handicapped; Auditoriums; Communications; Dining Facilities; Gymnasiums; Handicapped Students; Library Facilities; Mobility Aids; Science Facilities

YUKER, H. E., J. REVENSON and J. F. FRACCHIA. *The Transportation of Physically Disabled Students.* Albertson, N. Y.: Human Resources Center, 1967. 30 pp.
*Bus Transportation; *Handicapped Students; *Physically Handicapped; *Student Transportation; *Wheel Chairs; Costs; Educational Facilities; Educational Programs; Mechanical Equipment; Mobility Aids; Planning; Special Schools □

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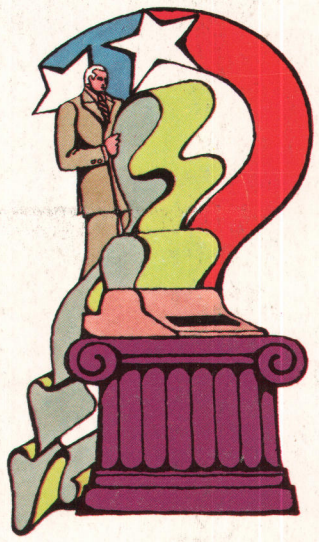

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