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Journal

May 1964



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ON EDUCATION



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Journal

MAY 1964
VOLUME XLI, NO 5

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Opinions expressed by contributors are not necessarily those of AIA

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COVER: An early-morning photo by George McCue of the St Louis Union Station and the Carl Milles fountain taken before the water was turned on. Male figure symbolizes the Mississippi, female the Missouri

*Coming in
the June
AIA Journal*

Design and Criticism

GARRETT ECKBO FASLA

The distinguished landscape architect sees design as a constant research project, and says that criticism has primarily a social function

The Space Between Buildings

EDMUND N. BACON AIA

Philadelphia's City Planning Commission Director conceives the city as a definite art-form, influenced by the movement systems within it

A Portfolio of School Buildings

Twelve schools selected by the AIA Committee on School and College Architecture from the exhibits at the 96th annual convention of the American Association of School Administrators at Atlantic City in February

The Educational Environment

A report on the seminar sponsored by the AIA Committee at the Atlantic City AASA convention

Education for the New Role

ROBERT W. MCLAUGHLIN FAIA

As a part of the series on Comprehensive Services, the Director of the School of Architecture at Princeton discusses the many changes which will be necessary in architectural education, to properly prepare the architects of the future

The 1964 R. S. Reynolds Memorial Award

Some new photographs of the building, along with the jury's provocative comments, which has won the annual biggest prize in architecture—\$25,000



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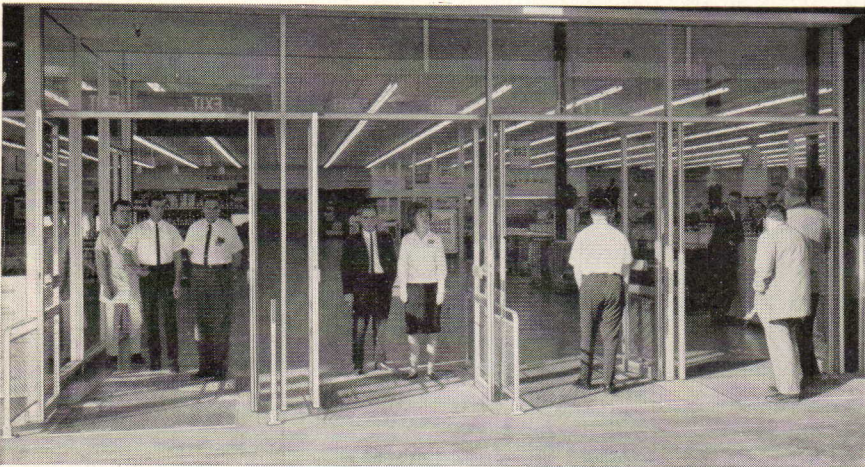
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The Editor's Page

. . . on which you will read only what the Editor currently thinks—not Institute opinions or policies

Farewell, Sweet Princes

The loss of two of the *Journal's*, and consequently its Editor's, best friends within two weeks is more than just a "blow," there's something disintegrating about it. Al Bendiner and Ned Purves each meant something very special to the *Journal*, and to me, each in his own way.

Al had long feared a heart attack, for he lost his brothers that way. His more faithful readers may remember his "Martini Glass" in our issue of April 1958, in which he told of his trials and tribulations in getting home from Paris in a hurry via TWA, when he received the news of his last brother's death. Al did have a heart attack, last fall, but his recovery seemed complete.

So many of his readers knew Al only as he appeared in his "Martini Glass" columns that I want to present him a little more fully, for he was far more than a cartoonist and caustic commentator. First and foremost, of course, Al Bendiner was an *architect*, and a good one and proud of it. He practiced in Philadelphia for twenty-five years. After graduating from Penn in 1922, taking a master's degree in 1927, he worked for Stewardson & Page for a couple of years, then spent ten years with Paul Cret, his old design professor whom he adored. He associated with Cret on several jobs until the latter's death, and continued the association with Cret's successors, Harbeson, Hough, Livingston & Larson. From his own office in the Western Savings Fund Building he carried on a small, but active, general practice. As he said in one of his columns, ". . . I have had over one hundred clients and that presents a fair section of what the average architect can expect of life." Always active in AIA chapter affairs, he was President of the Philadelphia Chapter in 1950-51.

Bendiner was made a Fellow of the Institute in 1956—for design. He was also a Fellow of the Royal Society of Arts of London. In 1926-27 he accompanied a University of Pennsylvania Museum archeological expedition to Iraq as artist and architect, an adventure which furnished anecdotes for several of his *Journal* columns; and in 1960 he accompanied a Museum expedition to Guatemala to make architectural drawings of the acropolis at Tikal—see his wonderful sketches in the October 1961 issue of the *Journal*. And now, word has just come to the *Journal* office today (April 9) that last night Al was elected an Associate of the National Academy of Design, in New York, as a graphic artist.

So you see, with his tremendous zest for life, Al had many interests and activities. His columns and cartoons appeared for years in the Philadelphia newspapers, and for a while in a Washington paper. He wrote articles which appeared in both *Harper's* and the *Atlantic Monthly*, as well as in other publications. He made drawings, lithographs and water colors

which were widely exhibited and sold, including a very recent show at the Philadelphia Art Alliance. In 1952 the University of Pennsylvania Press published his book "Music to My Eyes," a delightful collection of cartoons and comments, made from life, of all the great personalities of the music world—for Al and Betty were inveterate opera- and orchestra-goers.

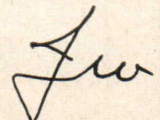
The wonderful thing about Al was his huge enthusiasm for everything in which he had any interest—and that covered a lot of territory. His outlook on life is summed up in two of his best sayings: "For a complete man, give me the architect," and "Don't just *sit* there, when there are so many things to *do!*"

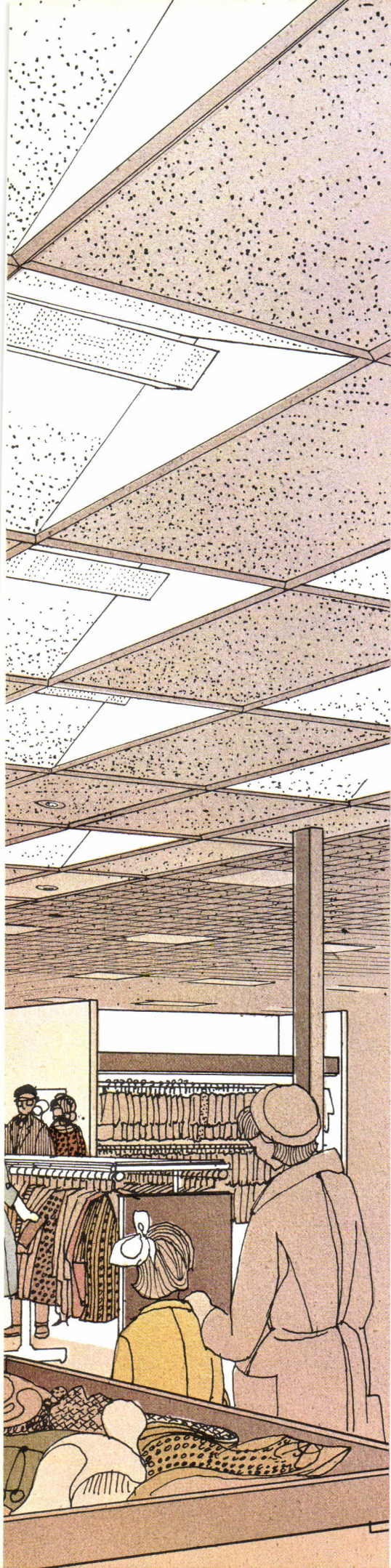
And now, sadly, to Ned. It was Ned Purves who brought me to Washington in the first place. Upon the suggestion of the then President of the Institute, George Bain Cummings, Ned called me up in my office on Long Island one day early in 1956 and asked me if I would be interested in becoming Editor of the *AIA Journal*. Of course I would. I met Ned for the first time for lunch in his club in New York, St. Anthony's, a few days later. I was hired then and there. Thus Ned became my boss until he retired as Executive Director at the end of 1960.

The Institute officers and Board members are always a wonderful group of men, all of them devoted to the profession, or they wouldn't be here. They are also, naturally, a very human group of men. They are a group which is constantly changing in membership and in leadership. So they may often change direction. It falls to the Executive Director to maintain the Institute on a steady course and an even keel through these surges of enthusiasm and sloughs of lack of interest. At this kind of steady diplomacy, Ned was a master. His tact, his perseverance, his wry humor made him always master of the situation.

Ned was Executive Director of the Institute during the period of its greatest growth in membership—from 8,238 in 1949 to 13,225 in 1960. I would say his principal contributions as Executive Director were three: First, he formed a staff and organization here at the Octagon which was capable of coping with the increasing scope and problems of the profession—a staff and organization which formed a sound base for subsequent expansion to keep up with the even greater demands upon the profession today; second, this staff was of high professional caliber, with excellent morale—again, a good base to build upon; and third, outside the Octagon, Ned, by his own grasp of affairs and personal dignity—and again, his diplomacy and wit—built up the AIA headquarters and the Institute into an organization, or a group, to which Congressmen and Commissioners turned for information or guidance.

Ned had a rugged, mountain-like quality of strength which I always admired. I don't remember ever seeing him worn down, either from physical or nervous exertion. He was always outwardly calm, always courteous, always firm, yet always ready for suggestions. His entire staff was completely devoted to him.





At work in Richmond: **THE Armstrong LUMINAIRE CEILING SYSTEM**

Armstrong takes five ceiling functions and creates the first totally integrated ceiling system

This ceiling at the new Thalhimers Southside Store, Richmond, Va., is just one of hundreds of its kind now installed across the country. It's the Armstrong A-50 Luminaire Ceiling System: the first ceiling system to integrate air distribution, lighting, acoustical control, good looks, and finished ceiling surface.

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Architect: Rawlings and Wilson, A.I.A., Richmond, Virginia

Thalhimer Architect: Fritz Koch, Richmond, Virginia

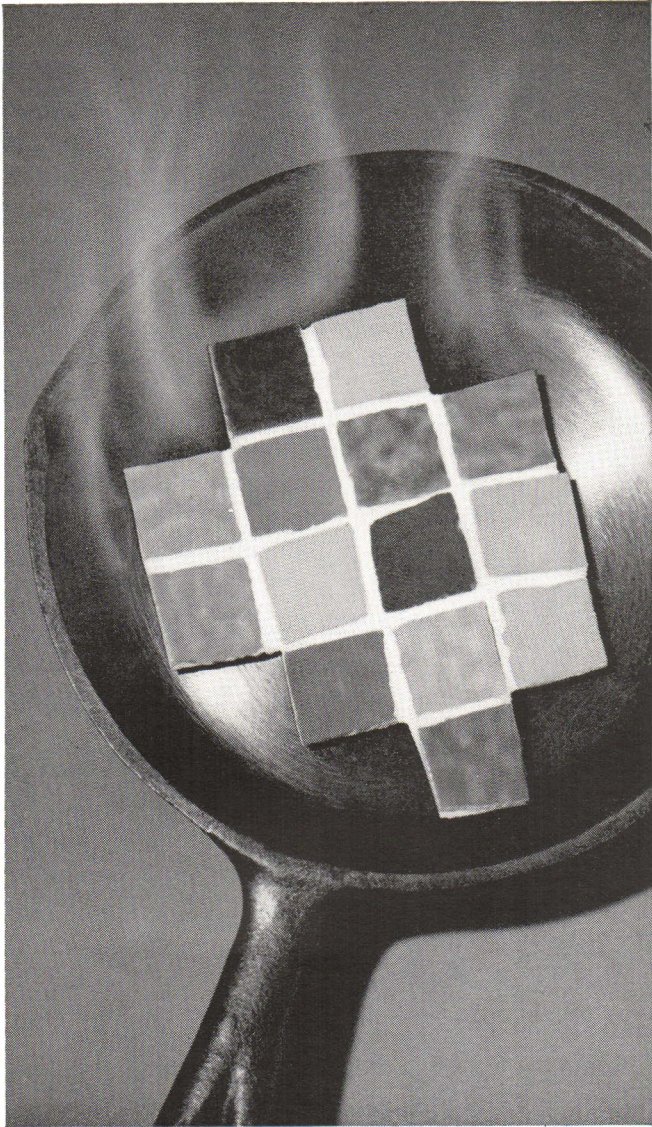
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Letters

Criticism: A Rebuttal

EDITOR, *AIA Journal*:

An article appeared in the February issue of the *Journal* entitled "Two Buildings: Their Street and Their City," and I am writing to register my protest against it because I was closely connected with the design of the building which the author holds up to public scorn. One of my objections is that the critic hides his identity behind an assumed name.

I am not opposed to criticism if it is constructive. Our critic is entitled to his opinions. But when he says that our building is "one of the worst of the new office buildings that mark the city's recent boom," I resent this remark as being intemperate to the point of seeming malicious. He states as fact what is only his personal opinion.

Even his facts are incorrect when he maintains that "The building's entrance is hidden in a projecting arcade which runs between, but does not open into, two one-story wings that flank the nine-story section. The arcade thus leads nowhere." The fact is that the passage does not hide the entrance any more than the colonnade hides the entrance of the Parthenon. If the critic would look at our building more carefully, he would see that the arcade does lead to doors in both of the end wings. Incidentally, he might also notice that the "nine-story section" he mentions is only eight stories high!

He goes on to say "the wings merely provide a symmetrical facade. This alone is a striking novelty in a time when most architects strive for a more dynamic relation between elements." I would question seriously whether symmetry is a novelty or less dynamic than asymmetry. We had to work with two large blocks of equal size, housing an auditorium and a cafeteria, whose height had to be more than that of the typical first story. We tried both symmetrical and asymmetrical schemes but finally chose a symmetrical arrangement as a result of elimination, and not, as the critic suggests, because we thought we "were less likely to offend by a balanced approach."

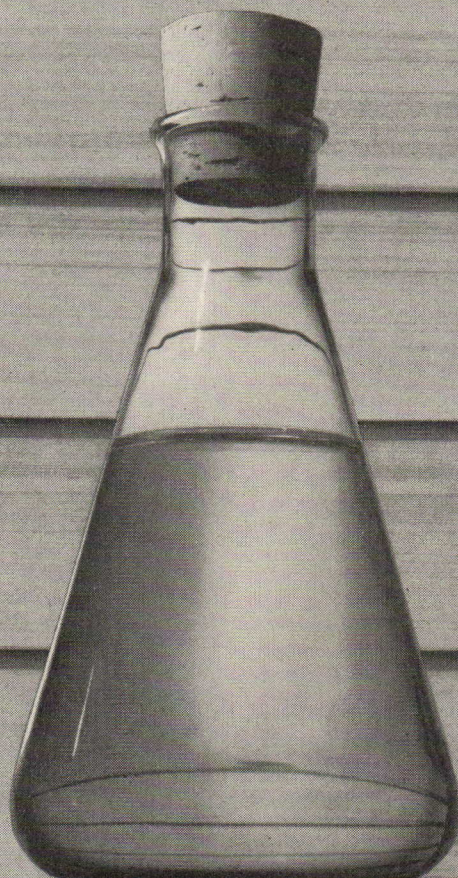
Another item I find objectionable is the illustration of a portion of our building. This was made from one of several photographs taken by the author. It is a fuzzy picture and shows our building to disadvantage.

Altogether, the article appears to be an attempt to discredit our building and thereby to damage our reputation as architects.

I do not know who our critic is, nor whether he is a member of the AIA, but wish to call his attention to the mandatory standards of ethics of the Institute which state that "An architect shall not knowingly injure, falsely or maliciously, the professional reputation, prospects or practice of another architect."

Quite aside from the validity of the criticism, I

Cont'd on p 102



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Octagon Observer

News and commentary from Headquarters and afield

CONVENTIONS / Cruising Down the River

Traditionally one night of AIA's annual convention is set aside for an event that is regional in character, arranged by the host chapter. And so on Tuesday evening, June 16, the St Louis visitors, to the sounds of a calliope and in view of the Saarinen Arch, will board the riverboat *SS Admiral* where gaily-colored tablecloths and balloons will set the mood. Singleton Palmer and His Dixieland Band will join the guests just before departing to provide entertainment throughout the trip on the Mississippi. Other attractions: a dance band in the ballroom, French cuisine at the various buffets and a moonlight top deck, of course. (A final note: the *Admiral* boasts five bars.)

ARCHITECTS AT ASPEN: With Eliot Noyes FAIA, New Canaan, Conn, as program chairman, it is not surprising that the 1964 International Design Conference at Aspen, Colo, will definitely be architect oriented. Generally speaking, in its previous 13 years, IDCA has concerned itself more with industrial and graphic design, and on a most abstract level at that. Among the architectural speakers who will participate in the June 21-27 sessions: Philip Johnson AIA, New York; Paul Rudolph AIA, Chairman, Department of Architecture, Yale University; Joseph Passonneau AIA, Dean, School of Architecture, Washington University; Robin Boyd, Australian architect; and Dr Reyner Banham, Executive Associate Editor, *Architectural Review*, London.

ONE HUNDRED CANDLES FOR ASLA: American Society of Landscape Architects will be joined by architects, structural and mechanical engineers and city planners in observing the 100th anniversary of the founding of the profession when its annual meeting is held at the Hotel Baker, Dallas, June 28-July 1.

PRESERVATION / Saving What's Wright

Frank Lloyd Wright's Robie House officially became Chicago's first Registered National Historic Landmark April 1 during a presentation made by Secretary of the Interior Stewart L. Udall to Mayor Richard J. Daley. Webb and Knapp, developers in the Hyde Park area, gave the 1909-built house to the University of Chicago, which has agreed to use and maintain it in perpetuity if necessary funds can be raised for its restoration.

Meanwhile, back in the nation's capital, Secretary Udall was leading a group of preservationists and architects in a fight to save what is known as the Pope House (present owner: Mrs Robert A. Leighy) from the plight of the bulldozer as it makes way for Interstate Route 66. Plans call for moving the Falls Church, Va, residence to another appropriate site. One of three houses in the Washington area designed by Wright, it is a small, medium-priced dwelling of the 1930's.

Cont'd on p 104

Construction Details

for LCN overhead concealed door closer installation shown on opposite page

The LCN series 2010 closers' main points:

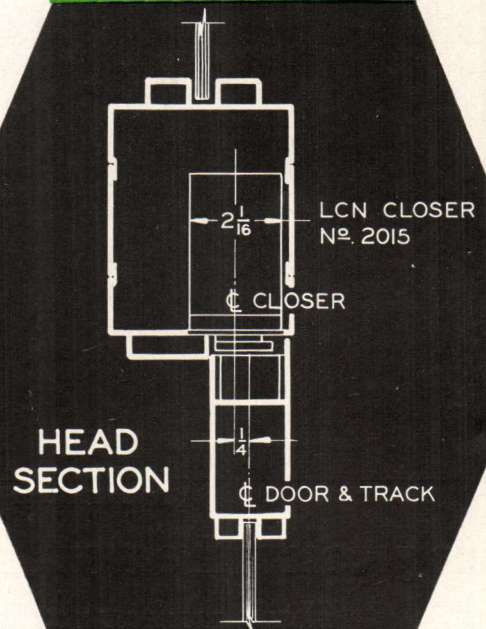
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Send for comprehensive folder and see Sweet's 1964, sec. 19e/Lc, p. 6

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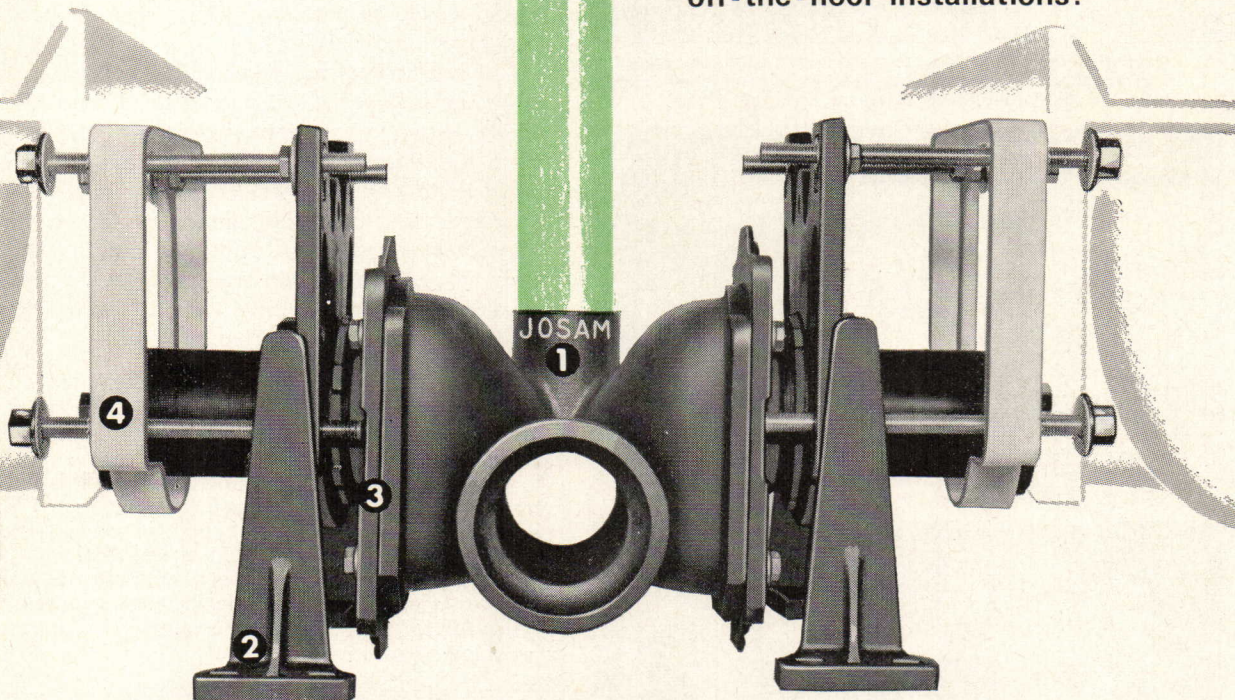
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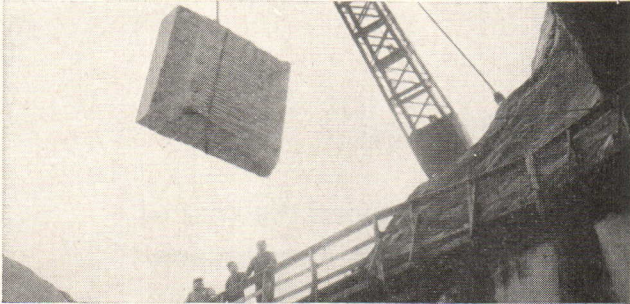
JOSAM MANUFACTURING CO.

Michigan City, Indiana

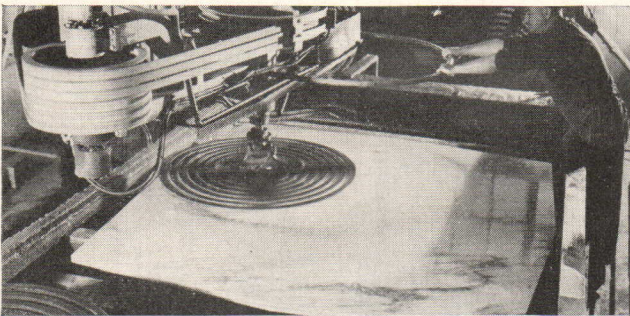
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MONTCLAIR DANBY GOES TO YALE

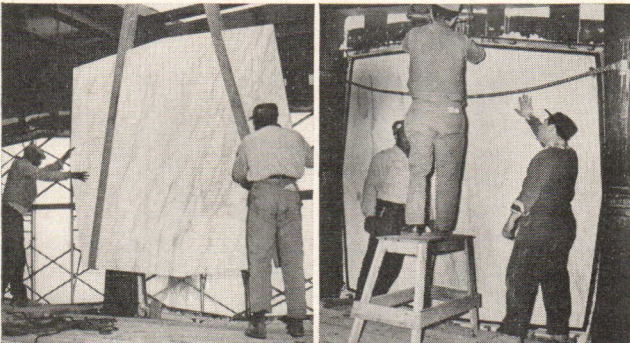
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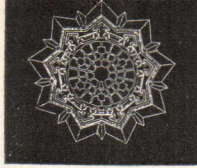
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URBANISMS

A regular column by our specialist
on Urban Programs, Robert J. Piper AIA

Contemporary Client

The client's program requirements were prodigious: an urban building complex providing approximately 10 million square feet of rentable space, to accommodate 130,000 people and to house both private and public uses. A 16-acre site in lower Manhattan was to be provided along with a construction budget of some \$350 million.

These ingredients resulted in architect Yamasaki's now famous 110-story twin-towered World Trade Center to be constructed for the Port of New York Authority. In the words of architectural writer-critic Wolf Von Eckardt, "The bold imposition of these enormous twin shafts on the familiar skyline is somewhat of a shock. It's not only their height, but their shape." To this we would add ". . . and the capabilities of their unusual owner." As the editors of the *Engineering News-Record* noted:

The 43-year-old PNYA, as an agency of the states of New York and New Jersey, can exert the power of condemnation to assemble the plots needed for the site. Also, while the Trade Center is expected to be self-supporting, the Authority's credit is backed by tolls from its bridges and tunnels. And PNYA holdings are tax-exempt, though it usually makes payments in lieu of taxes to local jurisdictions. Thus, the PNYA has prestige, power, resources and privileges that ordinary owners lack, and these can be a powerful force in promising success for the record-breaking skyscrapers.

Indeed, an owner with a combination of prestige, power, resources and privileges that almost all owners, private or public, lack. Neither the cities nor states involved, or even the Federal Government, acting through one of its construction agencies, such as the General Services Administration or the Corps of Engineers, has an equivalent combination of tools for city building.

The PNYA is one of over 18,000 special districts (there are 2,200 in Illinois alone) throughout the United States created to handle some problems beyond the capacity (or willingness!) of a single local government. They are usually tax-exempt themselves, and often issue tax-exempt bonds. Many have the power of taxation. They involve themselves with determining feasibilities, writing and promoting necessary legislation, planning, financing, constructing and maintaining all manner of projects from transportation facilities to fire protection, from soil conservation to urban renewal. Individually, their areas of operation are special purpose and geographically limited; collectively—as a vehicle of public action—they have an unparalleled potential for compiling a record of actual accomplishment in city and regional building.

Special Districts have a reputation for producing top design. PNYA recently completed its George

Washington Bridge Bus Terminal, designed by Pier Luigi Nervi, AIA's Gold Medalist for 1964. The Tennessee Valley Authority has a consistent record of design accomplishment. The new San Francisco Bay Area Rapid Transit District in starting its design operations retained Donn Emomns FAIA as design consultant.

These factors all combine to present a picture of a contemporary client for urban design services that has few equals: a public client with public interest and public powers, but with an organization and flow of authority closely resembling a private venture; a client with the power to choose between subsidized projects or pay-as-you-go projects, between tax or tax-exempt status, between condemnation or purchase. Obviously, here is an owner who has been empowered to get things done with a minimum of bureaucratic review and who has demonstrated a willingness to retain, at adequate fees, top professional design talent.

Knowing these circumstances the urban designer might well search out this contemporary client that obviously is going to have a greater effect upon a city's urban design guideposts than most other private citizens or public officials. ■

An Architectural Credo

The late President of Yale University, Alfred Whitney Griswold, offered "An Architectural Credo for College Presidents," published in the *Princeton Alumni Weekly*, February 25, 1964, in which every practitioner can take heart:

"There are, I think, two simple rules which we should strive to follow in architectural policy. Both rest on the fact that the periodic construction of new buildings has always been and always will be a necessity that can be neglected only at the cost of retrogression and ultimate decline. The first rule is that each new building should be truly functional, ie, it should do what it is supposed to do with the utmost efficiency in terms of its stated purpose. The second rule is that each should come as close to the ideals for a building of its kind as the architectural genius of its era is capable of bringing it. . . .

"There is no certain way that I know of to avoid these pitfalls. It is all very well to talk about integrity, but I know men of great integrity who, when the need for a particular building reaches a certain point in relation to the ideal on the one hand and the funds (or absence of them) available on the other, have felt obligated to make a virtue of necessity. I know, too, of men, ideas and even art of great integrity that have issued from buildings that lacked it; and of buildings of great integrity that have sheltered the enterprises of rascals and pretenders to parts. Still, I believe that my two rules are both wise and feasible. No matter how formidable a challenge they present to us, I believe we should do our best to meet it; and I believe, further, that our best hope in meeting it with success is to trust the creative spirit . . . of the greatest architects of our generation." ■

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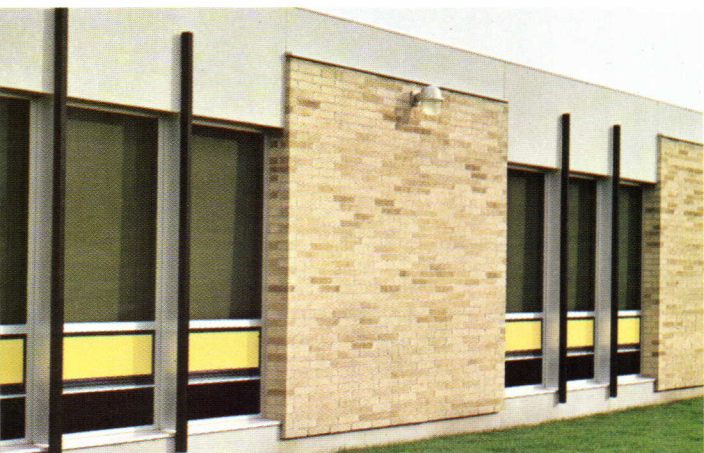
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Architectural Education—Changes and Reforms

*Three threads run through all three of these papers by prominent educators:
the need for coordination of academic training and practical experience;
the need for applying the principles of research to architectural training;
the fragmentation of current education*

SPANNING THE GAP BETWEEN THEORY AND PRACTICE

WILLIAM W. CAUDILL FAIA
*Chairman, Department of Architecture
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LET ME begin by quoting from a letter I received from an old friend: "I wonder if one of the real problems with our physical environment is not architectural education, which has produced over the last several years immature and ill-trained copyists who are anxious to jump on the band wagon of the last cliché (in order to obtain maximum publication mileage), in lieu of serious, well-trained professionals who are aware of the manifest ramifications of architecture and environmental planning. I find it increasingly disturbing to interview young architectural graduates who have their egos so inflated that it is neither economical, profitable nor architecturally desirable to add them to my staff. These people are frequently highly talented in discussing architectural abstractions and on occasions make a beautiful delineation; but they are completely incapable of solving a planning problem or being aware of the structural and mechanical complexity of a building. Also the economics of any project is so completely foreign to their training and experience that they look upon it with disgust and disdain and tend to alienate clients who have economics as one of their prime considerations."

Now let me read a portion of my reply:

"I agree with you about some of the architec-

Adapted from an address delivered at the New England Regional Conference AIA in Cambridge, Mass, in October 1963

tural graduates who come out of school with inflated egos. But I am also even more disturbed by those practitioners who continue to beef at the schools and yet do nothing about it. My good friend, you are entitled to a beefing license because you are doing something about it. We should be eternally grateful to you for taking time from your busy practice to help us teach. If we had more people like you, architectural education would be in better shape. I also get disturbed when I hear architectural teachers condemning the profession. No wonder some of our graduates have no respect for the profession and show it by their swelled heads. You imply that the real problem with our physical environment is architectural education. I suspect you have given architectural education more credit than is due."

Now the stage is set for a question-answer monologue. Here's the scene: Architects don't like what the educators are doing. Vice versa. Lots of talk. Little action. Neither architects nor educators know where they are going, and they blame each other for their own lack of vision.

The monologue begins. Here is the first question:

QUESTION: What do students think of the typical architect?

ANSWER: They think he is a bum. It is amazing to me that when students become intimately acquainted with architects, such as during our preceptorship program at Rice, they are always surprised that the architect turns out to be such a nice guy. I suspect that some teachers of architecture, in their attempts to instill a crusading instinct in the students, somehow convey to the student that the majority of architects are not only incompetent, but are also incorrigible. In fairness to both the professor and his student, I might add that the student is highly critical of the practicing architect because he has been trained to be critical.

Q: Do you believe in architectural specialization?

A: Absolutely. We can't all be surgeons. Some must be bone doctors. Some hospital administrators. To be a good specialist, however, you must be a good generalist.

Q: Do you believe in the Ivy League approach to architectural education?

A: If this means do I believe that two or four years of academic training is necessary before getting into architectural design, my answer is no. I don't think that specialization has to follow generalization. I think the two can grow together. And there are great advantages in the two going together. For one thing, motivation quite often stems from specialization. For another thing, a course in psychology, philosophy, economics or anthropology would be much more meaningful to the architecture student during his senior or graduate years than during his freshman or sophomore year.

Q: How can we make better architects in the schools?

A: The schools can't make architects. There isn't enough time. It takes at least ten years to make a good architect and the program has to involve practice—and a lot of it. This is why we stress summer

practice so heavily. I believe going to school and going to work should be intermingled. It might be a good idea to limit graduate students only to those who have their licenses. Unquestionably experience helps the graduate student. The schools, however, can do a first-class job in developing potential architects.

Q: When does the training of the architect start?

A: Architectural education does not begin at the university, nor will it end there. Students start preparing themselves to be architects when they first make designs in their Pabulum. They were preparing themselves to be architects when they picked up "Oliver Twist" and set it down with a deeper social consciousness. They came a little closer to architecture when they read "Origin of the Species" because they came a little closer to science. I would go so far as to say that the year the student spent in high school playing third-chair trumpet, he was learning the language of architecture. Satchmo Armstrong with his creative spontaneity could have played a mean architecture if he had decided to be that kind of a cool cat. Yes, the education of an architect is endless. It starts long before college and continues long after graduation.

Q: Why do students have "the world owes me a living" attitude?

A: I must admit some do—maybe one-third. One student came in the other day with a letter from an architect in Denver offering him a job for the summer. It would be a wonderful learning experience in a good office. I had stuck my neck way out (the architect was one of our associates) to help the kid get the job. But our boy was going to turn it down because it did not pay enough. I think he was a bit insulted with the offer, in fact. I felt sorry for this boy as well as sick in my stomach. Later on I found out that he needed the money to come back to school. Granted. But even more, he needed dedication to be a top-flight professional. As it turned out, he had it. He worked a deal with the architect to work three additional nights weekly to make up the difference in money which he needed to bring him back to school. I agree, I am sorry to say, that some of our kids are on their way to being incompetent, unmotivated practitioners. And their frustrations will be intensified because they have the intelligence to recognize that they are incompetent. The thing that keeps me from giving up this whole business is that a top one-third of our students in the department really wants to be architects. Oh, how I love that upper third. They live architecture. They are smart and talented and motivated. Intellectuals without motivation are a sorry lot in this profession.

Q: Do you favor extending the five-year curriculum?

A: It takes at least ten years to make an architect. I really don't care whether the academic program is extended or not. Just so the professional training is continuous. And there is advantage in academic training and internship being interspersed.

Q: How many years of design should be taught?

A: Let me ask a question. How many years does it take to develop a concert pianist? A painter? Or a

jazz clarinetist? I cannot agree with the educators who advocate waiting one, two or even four years before introducing design. Should you get a liberal arts degree before you learn to play the clarinet if you are planning to be a professional musician?

Q: What kind of physical and social civilization are we training our young men for?

A: How can you teach architecture when we know not where it will be in just the length of time it takes to train an architect? Maybe some of you know the answers. I don't. As a teacher of architecture I have a gimmick to help me answer that one. I have in my office at Rice University a drawing of a project which I did when I was in college. Adjacent to it is a photograph of a building I did fifteen years later. Believe me, they are from two different worlds.

As I grow older, I become less conservative. Anything can happen. Architecture and architectural practice are changing so fast I not only cannot anticipate such changes but I can hardly believe them when they come. As a matter of fact, I can't do any fairly accurate crystal balling within my own firm. I would never have anticipated ten years ago that we would build a roof with plastic beams spanning 38 feet without a piece of steel or wood in it. Plastic was never mentioned when I was in school. Nor five years ago would I ever have believed that today we would have under construction three projects which incorporate critical path scheduling. One is a fairly sophisticated setup where a computer is fed a progress report every two weeks and it feeds us back the scheduling of the various materials and equipment for the next two weeks. The only computer I knew about when I was in school was my wood slide rule. Even last year I could not have dreamed that right now we would be programming a high-rise building with a computer. But just to let you know that I have a little vision I might say that many years ago I anticipated that I would have a lot of partners. At that time I knew that in order to do the kind of architecture I wanted to do, I had to face the facts of life that I was no Frank Lloyd Wright and had to come to the realization that only with others could I achieve a good architecture.

Q: What is the most important thing about architectural education?

A: Obviously, the *student*. Give me good students any time over good professors. For example, talented motivated students can become good architects despite mediocre professors. The next most important thing is the *teacher*. Give me good teachers over program any day. You can design a program around good teachers, but you can't implement a program without good teachers. The third most important thing is *program*. I have tried my best not to get lost in this academic jungle, but unquestionably the curriculum is important, and *very* important, to the development of the architect. But you can't divorce program from your faculty and your teachers. The fourth most important thing about architectural education is *facilities*. To rate this so far down the list is probably architectural heresy, but if you have good students, good teachers and a good program, you can produce good architects if you have sufficient space

On the other hand, how nice to have all four, which includes inspirational space. In essence, an architectural building can be a dynamic teaching tool or it can deter teaching.

Q: What do you consider one of the weaknesses of architectural education?

A: We have a tendency to teach in pieces. A fragmented curriculum only leads to a fragmented architecture.

Q: What makes a student work?

A: I could answer that with one word. Victories. Accomplishments or victories lead to harder work. He is the most happy when he is working the hardest, provided he is wrapping up packages to his own satisfaction. The satisfaction from accomplishment is the force behind the work momentum which excites us all, and particularly students.

Q: Is design everything?

A: Some people think so. I used to; I don't now. Is form everything? Is function everything? Form, function and cost in architecture are inseparable. Here is another trio that cannot be separated in architectural practice: design, technology and management. It is obvious to all of us that we need top-flight designers, but in this highly complicated construction industry we need also top-flight technologists. And as more and more people become involved, we need more managers for maximum productivity. This year at Rice we decided to teach *architecture*—not just design. We have a subject matter-integrated program, and on each project the student is given a grade in technology and management as well as design. Later on, during his professional practice or at the graduate level he has on his record evidence that he has ability in one of these three main fields of architectural practice. In architectural practice design is not everything if it does not include technology and management.

Q: Why do practitioners and educators continue to fuss at each other?

A: I suspect that every practitioner is a frustrated teacher and every teacher is a frustrated practitioner. One thing we are trying to do at Rice is to put practice and education on speaking terms. I'm not sure how successful we have been. The trouble with architects when they associate with students is that they immediately start acting like professors. And most of them are poor substitute teachers. They should act like what they are—architects.

Q: Should schools of architecture be solely theoretical?

A: Absolutely not. I cannot agree with those who advocate all imaginative dream projects in the school. A well-balanced education program should involve both practice and theory. But we know from some points of view theory and practice oppose each other. We also know that there can be a union of opposites—tension and compression, for example; winter and summer; north and south; theory and practice.

Q: Where does the individual practitioner fit in the education picture?

A: Let me tell you a little story that appeared in Peter Marshall's "Mr Jones Meets the Master":

"Once upon a time, a certain town grew up at

the foot of a mountain range. High up in the hills, a strange and quiet forest dweller took it upon himself to be the Keeper of the Springs.

"He patrolled the hills and wherever he found a spring, he cleaned its brown pool of silt and fallen leaves, of mud and mold and took away from the spring all foreign matter, so that the water which bubbled up through the sand ran down clean and cold and pure. Millwheels were whirled by its rush. Gardens were refreshed by its waters. Fountains threw it like diamonds into the air. Swans sailed on its limpid surface and children laughed as they played on its banks in the sunshine.

"But the City Council was a group of hard-headed businessmen. They scanned the civic budget and found in it the salary of a Keeper of the Springs. Said the Keeper of the Purse: "Why should we pay this romance ranger? We never see him; he is not necessary to our town's work life. If we build a

reservoir just above the town, we can dispense with his services and save his salary.

"Therefore, the City Council voted to dispense with the unnecessary cost of a Keeper of the Springs and to build a cement reservoir. So the Keeper of the Springs no longer visited the brown pools but watched from the heights while they built the reservoir.

"When it was finished, it soon filled up with water, to be sure, but the water did not seem to be the same. It did not seem to be as clean, and a green scum soon befouled its stagnant surface. There were constant troubles with the delicate machinery of the mills, for it was often clogged with slime, and the swans found another home above the town. At last, an epidemic raged, and the clammy, yellow fingers of sickness reached into every home in every street.

"The City Council met again. Sorrowfully, it faced the city's plight, and frankly it acknowledged

CHANGING ROLES IN ARCHITECTURAL EDUCATION

LEONARD J. CURRIE AIA

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THE profession has recently been indulging in a lot of breast-beating about architectural education. Much of the criticism of architectural education merely reveals that the critics have not carefully observed current practices in architectural education; much of the criticism is of methods used thirty years ago when the principal commentators were attending college. It is true that architectural education was frightfully bad and quite fragmented then, but it is hard to explain how these eminent practitioners and intellectual leaders emerged from such an inferior educational program. It was no doubt due to their superior capacities to rise above the limitations of their respective environments, to continue programs of self-education in spite of flimsy foundations. Many who urge the extension of the five-year program to six or more years are themselves products of the four-year course which was prevalent in the 1920's. Perhaps we can only hope that our current crop of students will likewise produce a few from their numbers who will rise above the limitation of the schools and continue the lifelong search for knowledge, wisdom and insight. As educators, we would achieve a great deal if we could simply convey the idea that the university does not purport to produce the educated man, but only to give him the curiosity and method of inquiry which will lead him to a lifetime pursuit of the illusive "truth."

We still have great differences in the quality of programs in our sixty-odd schools of architecture and I regret most that the quality and character of the programs are becoming so similar, perhaps in part because of the National Architectural Accrediting Board, which protests its desire to *avoid* the imposition of uniform standards. We also have an even greater range of difference in the expectations of architects vis-à-vis the schools. Many practicing archi-

Adapted from an address delivered before the Chicago Chapter AIA in January 1964

the mistake of the dismissal of the Keeper of the Springs. They sought him out in his hermit hut high in the hills, and begged him to return to his former labor. Gladly he agreed, and began once more to make his rounds.

"It was not long until pure water came pouring down under tunnels of ferns and mosses and to sparkle in the cleansed reservoir. Millwheels turned again as of old. Stenches disappeared. Sickness waned, and convalescent children playing in the sun laughed again because the swans had come back."

We are not going to do a good job in architectural education unless the individual architect through precept and example does his part to improve education. Every one of us must be a Keeper of the Springs—so that the reservoir is filled with clear, sparkling, fresh water to turn the millwheels, to watch the gardens, to fill the fountains and to bring back the swans. ■

itects decry the lack of "practicality" of the recent graduate; it is evident that they would like the schools to teach skills—working drawings, specs, details, current cost data, business, etc. Many of these matters are best taught in the office during internship. Other architectural leaders upbraid the schools for failing to produce urbane and sophisticated intellectuals and decision-makers; this is a sounder idea and nearer to the hearts of those of us in education, but our success or failure in this task cannot be measured at the point of graduation.

It is evident that we cannot properly evaluate the results of current programs of architectural education until ten, twenty, or thirty years from now when our current students are fully productive in their own architectural practices. The schools of today are castigated for the shortcomings in the education of a generation ago, but how often does anyone give recognition to the schools that produced our current architectural heroes? If a man is good, his success is generally credited to his native intelligence and to his drive to achieve—which is no doubt a valid judgment. However, if we had time, it would not be difficult to take a list of outstanding American architects, spot their schools and dates of graduation, and note the clustering that would take place at certain schools at certain periods in time. This would indicate that at certain times such schools were focal points of contagious excitement and stimulation; either they provided superior education or they attracted superior students.

Schools do only what society demands of them, and they respond to the objectives, aspirations and support rendered to them by society. In the case of professional education, a vital, alert and progressive profession will demand and support and get vigorous education. A moribund, cautious, conservative and fearful profession will deserve and get a corresponding kind of education. To some degree, schools can lead or lag relative to the profession; they can align

themselves with a more advanced and experimentally-minded sector as they have done since World War II.

Universities are subject to institutional hardening of the arteries. Some of the liveliest and most experimental educational programs have been put together quickly and almost spontaneously before too many rules and procedures had been promulgated—while everyone was too busy getting things done to set up many checks and balances—while on fire with passion and commitment. Among our best examples is the Bauhaus with only about eight years of vital and effective life, and Black Mountain College, with Joseph and Anni Albers in art, surviving even a lesser time, and then the "ID" in Chicago under Moholy, with provisional buildings and program and finances.

The profession must solve its problem of identity so that students can prepare themselves with a model of what they wish to become—which will *not* be the gentleman architect of the late nineteenth century. "Expanded services" is a step in the right direction—but not enough, in my view. We must get the architect more vitally involved in the construction process from conception and financing to the end result of total environment. As the profession moves in such a direction in practice, there are many schools eager and willing to move with the advanced element of the profession. However, the schools cannot prepare people for a role in society not yet existing.

Better students are needed; we need a better system of identifying potential architects. One area of great interest and much discussion is that of creativity—how we can identify it, and whether we can develop valid tests for this illusive but essential quality. Authoritarian environment inhibits the exploration of many channels and the development of the individual, and often stifles the deviant personality. From this we deduce that a certain permissiveness, in which the students are allowed to establish their own parameters, gives more freedom to the play of creative im-

pulses, and hence develops more creative "muscle." Qualities of motivation, articulateness, self-discipline and ability to effectively organize personal time and work habits, are all important too. These are qualities that lead to general academic success. Creativity without productivity is not enough, but it is urgent that we learn more about creativity as one of the essential qualities which we must seek and nourish in our students.

The best possible faculty is needed. This includes several types of persons: We need a core of dedicated educators with concern for the student and his development in a total way, and the intellectual capacity and interest to keep abreast with related developments in science, educational psychology and educational methodology, as well as in science and technology as it relates to buildings and to cities. They must debate such issues and develop viable and ever-changing programs. We also need others: practitioners who are advancing in the profession, with good theoretical and academic backgrounds, to bring into the classroom their current experiences on the leading edge of the evolution of architectural practice—to bring in a relatedness to reality. Visiting lecturers are essential—national and international (as we live in a shrinking and mobile world).

An educational program cannot be imposed but must be forged by the working faculty—and each faculty member is convinced that his subject is the most essential in the university. In the educational program, we must be concerned with three broad areas and the student must develop in each.

- 1) General liberal education: arts, sciences, social sciences and humanities
- 2) The visual and plastic arts and design: from a foundation course with simple, limited exercises through a hierarchy of increasingly complex problems, to the design of cities and regions
- 3) A science and technology sequence of courses and experiences from math and physics through to advanced structural theory and the technology of such environmental concerns as illumination, thermal comfort, auditory control, etc.

AS MUCH as possible these subjects should be learned in an integrated way. An interdisciplinary exercise could be posed, concerned with a specific and cogent urban problem of today, not just for architectural students but for students from many fields. The resulting investigations, lectures, seminars and selected reading would be guided by a team of educators in sociology, economics, ecology, history, English and city planning, thus bringing the student to an understanding of political and social institutions in a meaningful way, to perceiving history as a viable continuum, to pursuing English composition through the written reports essential to record the investigations and conclusions.

In the environmental design and technology courses, a comprehensive and integrated project can embrace programming, urban design, landscape design, building design, building structures, mechanical equipment, materials and methods of construction. A faculty team reinforced by expert visiting consultants can weave instruction and learning expe-

rience in these various subjects into a single comprehensive experience.

Construction and mock-up laboratories are essential, of course, for integrated projects, supplementing but not supplanting the drawing, drafting, delineating and scale-model study that has long been standard practice in architectural studios. In posing new educational techniques, we must retain the best of our tried tools and methods and evolve and perfect from an established base. It no longer seems necessary to labor the need for laboratories for architectural experimentation and research. In a short span of years, the requirements of university physics departments have developed from simple laboratory tables to one hundred million-dollar cyclotrons. A few years ago, sporadic building experiments in architectural schools were limited to a few crackpots—you know, of course, that crackpots are any people whose perception is in advance of current practice—such as Goddard, who was so crazy back in 1928 as to suggest launching rockets to the moon. A dozen years ago, Bucky Fuller was astounding students at several schools with his domes and tensegrity structures; Konrad Wachsmann was exploring space-frames with students; Howard Fisher was pushing "developmental design" as an educational methodology not limited to any particular construction system; Bob Davison was advocating research in architectural school laboratories. Now there is little argument about the need for architectural laboratory space, but only about how it can be used to best serve the learning process—which we might hope will be a topic for never-ending discussion. But few schools have other than the most primitive and limited facilities for such work. At Harvard several years ago, Alvaro Ortega had graduate students casting thin concrete shells in an old maintenance shop at a considerable distance from the design studios in Robinson Hall. Alvaro said that this actual handling of concrete proved to be "truly a revelation" to these students who had verbally and graphically played with the celestial music of concrete shells with evident sophistication but who had never before mixed or worked even a shovelful of concrete.

IN MOST states an architectural graduate must work three years in architects' offices before being eligible to take the registration exams. Hopefully, this is a varied and meaningful period of growth and development—as indeed should be the whole of professional life. As a part of his responsibility to society and to the profession, an architect-employer should seriously help to guide the architect-in-training by giving him a variety of experiences to develop his skills and his confidence.

To my mind, the most important part of in-service training is the work done concurrently with school experience—for most students this is their summer work—and the question of how this can be woven into the fabric of the formal education, reinforcing the scholastic program by making its relevance to future practice more evident to the student. This subject is one of direct concern to the practitioner as it requires cooperation between the profession and the schools.

The interweaving of schooling with pre-professional work or in-service training can follow any one, or a combination of three, general patterns: 1) A "co-operative program" of alternate schooling and office work similar to cooperative programs in engineering; 2) part-time drafting concurrent with study in school; 3) summer experience on the construction site and/or in the architect's office.

I shall speak briefly to each point. I have observed the co-op program in operation in engineering curricula so I shall describe it in terms of engineering education. It works most easily with a symmetrical academic calendar as pertains under a "quarter system," with three regular quarters plus a full summer quarter equal to the other three. Of the students who apply and are selected for the co-op program, two good electrical engineering students are assigned to one position with Westinghouse which, as a participating company, has set up five such in-service training slots in its engineering division. Jack Jones goes to school fall and winter quarter (six months) while Bill Smith works and gets apprentice training and wages at Westinghouse; then they swap for the next six months during the spring and summer quarters. When Jack runs into a problem on the job which he cannot solve or even fully understand because of his lack of preparation in thermodynamics, he remembers this when he gets to "thermo"—he sees the relevance of the course to his future work, and he learns with real motivation. Typically, Jack has a financial problem and under the co-op system he is able to finance his entire undergraduate education. Instead of the usual four years (4x3 quarters equals 12 quarters total) he spends six years (6x2 quarters equals 12 quarters total) but he already has three years experience in industry; he has spent *half* his time building up experience. He is a more valuable employee and he receives correspondingly higher compensation than a recent graduate without such experience.

What does Westinghouse get? They perform a public service and contribute to the national wealth of educated and productive manpower—in an area of education in which they have a special concern and responsibility. They are virtually assured of having a junior engineering position filled under contract for six years—not a key position to be sure, but one in which useful tasks are performed. Most important, they have a string on two good, young engineers when competition for graduate engineers is keen. If the company is worth its salt, has treated the young men fairly, and has demonstrated an enlightened policy of promotion and advancement of personnel, they can count on both graduates coming with the firm for at least several productive years.

To the best of my knowledge, no architectural school has adopted a formal co-op program such as I have described—incorporating meaningfully long six-month increments of experience alternated with schooling. Many students at all of our architectural schools work out a sort of informal co-op system of their own with an employer—often staying out of school six months or a year at a time in order to earn money to continue. My experience with such stu-

dents has been that they are generally the most purposeful in their studies; they are highly motivated and make the best use of their time—and they win most of the competitions.

PERHAPS the informality and flexibility of such a student-generated variation on the co-op system would be best for the state of our schools and our profession; I believe we must constantly guard against so over-structuring a program as to suppress individual initiative and freedom of choice. However, I am intrigued with the arithmetic of the co-op system as it might be applied to architectural education. I am sure that we are all fascinated by the prospect of getting five quarts out of a gallon jug. In this case we get eight years of schooling and experience out of a seven-year package of time. Let us assume we have a five-year B Arch program which is virtually standard throughout the country and a quarter-system. The co-op system should not start until after the freshman year, which is always a year of orientation, screening and shake-down. At this time, only the serious and motivated student of demonstrated capacity would be eligible to enter the co-op program. These selected sophomore students, working in selected participant firms, would then be paired off and go through the final four years of schooling in six years, following the schedule I described for the engineering program, and getting three full years of experience en route. Hence, seven years after entering college they would have completed a five-year school program and have racked up three years of solid experience acquired in meaningful chunks of six months each. This appeals to me, especially when most current proposals to improve architectural education suggest adding more years—consequent, deferment of registration.

I realize, of course, that much of the impulse to stretch out the educational process in all disciplines has little to do with effective education but stems rather from a societal response to automation and unemployment—a deliberate attempt to delay the entry of our youth into the job market. Stated in other terms, the aim is to provide a young man with a longer loaf on his old man's dough.

However, I am very much concerned with the plight of our students. Typically, their father has barely enough dough to buy the groceries—if they have a father. Two out of three earn part of the money for their higher education, and one out of three must earn all of it. Many of our students come from the lower-middle economic levels: that large group that lives within our affluent society.

Aside from the economic issues, I am concerned that architecture appears to the adolescent as an old man's profession—and with some justification in fact. Although theoretically possible to become a registered architect eight years after high school, very few achieve it in less than ten years, and the average is considerably more, what with military service and other delays. The three most prestigious heroes of our profession—Gropius, Mies, and Corbu—are all just over or just under eighty years of age and now at long last and after many lean years, are all deluged with commissions. Frank Lloyd Wright had a similar

history. Every city and town has its lesser architects who would have been retired twenty years ago in most occupations but who are still extremely successful in securing most of the choice commissions. At my age this is a reassuring characteristic of the profession, but to an eighteen-year-old entering college, the prospect of waiting possibly fifty years to secure the recognition of his talents has little appeal. My other and related concern in this matter is that we might achieve some real advances in the art and science of building if we could get more of our brilliant young men into decision-making roles before they lose their daring and audacity—before they become conditioned by age and experience to take the cautious course.

To return to my previously cited three ways of interaction between schooling and pre-professional experience, the part-time drafting concurrent with study is a practice that will doubtless continue as it fills an economic need and it provides some useful integration of theory and practice. However, I regard it as undesirable, as a student cannot simultaneously make the necessary commitment to both school and office. I should prefer to see needy students get scholarships or work and study alternately under some variation of a co-op plan. To realize his full potential for development and his unique opportunity for study in a university, an architectural student should really catch fire and be consumed by his architectural program; it should be a 24-hour per day commitment.

The third point, and the one with the most immediate relevance for the profession and for the

education program, is the matter of summer experience. I don't know how many architectural schools require work on construction and in an architectural office prior to graduation, but the number must be great. The only two schools in this country at which I have taught for long periods—at Harvard for five years, and at VPI for six—the students were required to work for one summer on a construction job and at least one summer in an architect's office. It involved the students getting their own jobs—they are remarkably resourceful when put on their own—making their own arrangements on the open market with their employers—getting paid in accordance with their worth, and subject to getting fired if they failed to produce (although no case of this happening came to my attention in a total of eleven years' experience with the system)—no fees or credits were involved—only a simple certificate from the employer and a report from the student which was evaluated by a faculty committee. Note that one of these universities is private, the other public—one is in a major city and the other in the country. The system worked with good results and with few problems in both situations.

I would suggest that practitioners latch on to some of these students as early as possible. It is the very best way to get a string on a good young man. If you treat him well, he will stay with you at least long enough to make the investment worthwhile. And, when he leaves you may pick up another in the shift who has been initially trained by someone else. In my previous post, I often got phone calls in the spring from architect friends seeking a good fifth-

EDUCATIONAL REFORMS IN AN AUSTRALIAN SCHOOL

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ALTHOUGH Adelaide University had a degree in architectural engineering, somewhat analogous in curricular pattern to similar American courses, prior to 1957 when a new course for a Bachelor of Architecture degree was approved, it differed fundamentally from most of the recognized architectural courses elsewhere, and the teaching which had considerable engineering bias was conducted to a major extent outside the University proper. Experience gained in building up an entirely new course for which neither facilities nor staff existed, and which has become one of the most recent, if not the first, comprehensive and completely integrated courses of environmental architecture, embracing as it does architectural and building science studies as well as town planning, may be of general interest to those who will be faced with a similar task in the future.

As a first step, and before any proposals were put forward for a revised curriculum, the opportunity was taken, in a great many cases at firsthand, to examine in considerable detail a number of architectural courses in Commonwealth, Continental and American schools. It was evident from this survey that most of those concerned with architectural edu-

year student, about to graduate, possessing every sterling quality. All I could say was, "Look, friend, all of those who have survived to graduate have jobs to go to—and in almost every case with someone who gave them work and experience during the past two or three summers. If you want to make an investment take two boys for the summer who are finishing their third year of architecture. Two years from now, you can count on one or both of them if you train them well and show them that they will have an opportunity to develop and make a reasonable income in your office."

It is part of the American passion and faith that all problems can be solved through education. If we are to find cures for the sicknesses of our cities, if we are to create a dignified environment for all men, we are aware that we can do so only through education—public education as well as professional education—education that inspires all of our citizens to establish goals that embrace esthetic, social and moral values—education that leads not to cynicism but to hope, not to greed but to service to humanity. In our education of architects and artists our foremost concern is not for the artifacts that they will ultimately produce for a society, but for the development of the unique potential which each of them possesses. As Goethe has said, "You must *be* something before you can *make* something."

Our aspiration as educators is to spark in our students the curiosity and the creative urge which will help to make them *be* something—consequently releasing their full potential—intellectually, artistically and as responsible members of society. ■

cation felt that most existing curricula fell short of the ideal in one or more directions, a conclusion very much supported by personal experience over a long period in professional practice of assistants who had passed through recognized schools.

One major factor has however become clear over the years and this affects not only architectural training in universities but also the whole structure of the profession. This is the increasing tendency to fragmentation, the danger of which it is felt is still not fully appreciated.

It is well understood that widening scope and range of services required of the architect calls for teamwork, as being the only means of keeping abreast of, or better still ahead of, increasing responsibilities in the profession. The larger the team however, the more important becomes strong leadership. It is in this direction that the architect for one reason or another fails so frequently and shows a lack of awareness of the changing nature of his role.

Perhaps it would be true to say that this is in a sense a return to the role of the "master builder," but in such differing circumstances and with such increases in responsibility as to have created totally new problems.

A partial solution to the problem, but one which possesses many inherent difficulties, is that of employing specialist consultants, such as structural engineers, mechanical and services engineers, building economists, quantity surveyors and the like. This is a development which dates back to the turn of the century when the architect first began to show unwillingness to face up to the increasing range of his responsibilities. This process still continues to a very considerable extent in the English-speaking world today, and it cannot be too strongly emphasized that not only is the architect all too often running away from important aspects of his global responsibilities, but in so doing architecture is all too frequently tending to become a superficial or formalistic study.

It is this professional fragmentation which has led inevitably to the "package dealer" who has realized the importance to the client of a complete service without all the inherent risks in the alternative system of "buck passing." The creation in some parts of the world of limited liability companies shows the seriousness of these developments but is the wrong solution applied in a way that can only undermine the standing of the profession.

It is also sadly enough only too rare to find

specialist consultants in the engineering fields who really understand the architects' needs and problems.

Not only must reintegration and full coordination take the place in professional practice of the present tendency to fragment where the architect is all too often willing enough to abrogate a part of his traditional role, but without being aware of the possible consequences; there must also be a willingness on the part of the profession if necessary even further to widen the range of their service. Otherwise it is only a matter of time before the architect is supplanted in vitally important aspects of his work by the building economist, quantity surveyor, civil engineer or the most recent "pretender," the architectural or building scientist. The beginning of this recognition almost inevitably must come from schools of architecture as it must be recognized that the profession is traditionally conservative in its outlook and disinclined with the burden of day-to-day practical problems to face up to major changes or reorganizations. It is even more difficult in such circumstances to expect staffs or principals to undergo supplementary training courses, and unfortunately too rarely do facilities exist for such refresher courses.

The problem of reintegration is however so fundamental and pervades every aspect of architectural training that it must be undertaken where it is likely to be most effective—namely where professional training is already carried out. To say in fact that architectural schools must always be well ahead of developments in the profession itself is a statement of the obvious, and how often this is being achieved in practice and how readily it is an attainable criterion solely depends on the thoughts and energies which the profession as a whole is willing to put into these problems; ploughing back the best experience of all who have something to contribute, and equally important, although outside the scope of this paper, the adequacy of the rewards for those so engaged.

HAVING first of all decided as a matter of policy, and having gained official support for a comprehensive curriculum in which it is hoped before long to be able to include many aspects of industrial design as well as landscape architecture, the problem became one of implementation within the recognized framework of course durations likely to be acceptable both to the university and professional institutions. Alternative methods existed in theory although in practice these were more limited:

1) It was recognized that any improvement in the level of secondary school educational standards for matriculation could have the effect of eliminating certain of the broadly educational subjects in the early years of the course, or alternatively permitting these to be given at a more advanced level. This is a matter however very largely out of the control of a university and certainly of an individual faculty, although trends indicate that this policy is likely to be followed in future to an even greater extent, as evidenced by the insistence now of the RIBA of "A" level entry to schools of architecture.

2) It might also be possible in theory to extend the ubiquitous five-year course in order to allow more time for a better educational spread as well as the

necessary time for professional training; and also perhaps permit some undergraduate research opportunities as well as organized practical training. With courses however already lengthy and demanding, increases such as this will be unattractive to many.

3) A solution may be found in limiting courses to broad educational studies and the fundamentals of professional practice, that with a substantial part of professional training and education carried out subsequently it is assumed at postgraduate level. This is the basis of the system used in a number of American schools and the one apparently being adopted, or likely to be so, by some of the English schools.

SOME OF the implications of this system are that the awarding of a degree becomes simply a mark of academic merit up to a certain level, but no indication of professional attainment. It also implies an optimistic hope, which is usually asking far too much, that professional offices will not only provide a wide range of professional experience at all levels and on every type of architectural problem, but that they will also provide an important supplementary part of professional training not covered within the limited period allowed in the academic curriculum. Experience shows that this virtual reversion to a partial "articles" system is extremely difficult to operate satisfactorily in practice, and the results are bound to vary as do the professional firms who may be concerned. All too often it becomes a question of perpetuating professional obsolescence.

Presumably two registration examinations will have to be held, as is the practice in America, some years after graduation. How long this period should be is a matter for argument, and a compromise will have to be reached as at present between a minimum compatible with professional competence and the more desirable maximum likely to insure high professional attainment. Whatever the answer the extent to which education and training fall outside the ambit of the formal academic curriculum would be a measure of its variability, and frequently its inadequacy as well.

The academic engineer is today increasingly concerned with fundamentals and less with application. How wise this is as a matter of general policy is a matter of opinion, but there can be no doubt that insofar as the architectural professional is concerned this is one of the more important reasons for the lack of understanding many engineers have in their early years after graduation, of the many practical problems with which they are confronted, and in particular the great difficulty in finding an understanding or appreciation of the work of the architect. Inevitably this can only lead to a stronger engineering component in architectural courses which will make architects less dependent on the understanding of a specialist consultant than hitherto.

4) The only other alternative open appears to be that of working within the five-year framework so far as is practicable but with suitable modifications to the syllabus and intensifying the course by providing for more tuition periods throughout. The need to conform over-all with the university calendar does not provide unlimited scope in this direction but

there is still undoubted "slack" which can be taken up during the normal working week, without increasing unduly the pressure on students. Such an intensification within reason provides its own stimulus, enables a far higher proportion of the curriculum to be included within the ambit of the academic timetable, and in the most favourable conditions, and incidentally too makes far better use of costly accommodation and facilities which are becoming a vital part of the equipment that services schools of architecture.

For a variety of reasons, some of which have been mentioned, the alternative (4) was the one chosen at Adelaide. It must be admitted that had it been possible to do so this would have been combined with (2); for the moment however this has not been practicable. An impending raising of the matriculation standard will materially improve the position in the near future but some increase in the length of the course will undoubtedly be necessary as and when it is possible to do this in concert with other schools and the professional institutes and boards of architectural education.

This may also be the right time to press for the introduction in universities of a bachelor's degree at intermediate level—at which stage it might be possible to meet the need for the second rank of "architectural technicians." A master's degree awarded at the end of the six-year course would then be the mark of attainment of a full professional and academic level at least comparable in the duration of courses and requirements for other master's degrees in universities. While there are a number of problems and difficulties in implementing such a policy it would seem a more desirable one to follow than that of attempting to divorce professional from educational requirements at different levels leading inevitably to a disintegration in the course which in the case of architecture is not really susceptible to this form of treatment.

Included within the scope of such a course would also be, as is the case at Adelaide at the moment, the professional practice syllabus together with a substantial part of the practical experience required. The greater extent to which this latter is brought within the control and organization of the school the better, as the recent RIBA report clearly indicates.

While it may be too much to expect that professional offices can be so fully geared to the needs of experience requirements of the school-trained student, a much greater degree of rationalization of this vital part of professional training is undoubtedly overdue and the policy advocated now by the RIBA has in practice been operating very much in the form suggested in Adelaide for the last five years. In time it is hoped with the cooperation of the Board of Architectural Education and the Registration Board to be able to organize postgraduate experience on very much the same lines.

One thing is abundantly clear: The more professional practice requirements can be met within academic courses, and the less these are left as postgraduate obligations, the more likely are we to find architect graduates feeling able to turn towards re-

search—the neglect of which is at present one of the greatest failings in the profession.

Entirely contrary to the tendencies to which reference has already been made in the profession, of severance of responsibilities and particularly to the recent indications of the building up of a new "architectural science" empire, and apart from the arguments already touched on which indicate the vital importance of education and practice presenting a global front, enlightened thought shows the impossibility of attempting to maintain the fiction of the separate world of art and science in architecture, more so perhaps than in any other field.

RETREAT into the shallow dishonesty of the Beaux Arts tradition is no longer thinkable for most architects, but then neither is the completely computerized design process. There can be no doubt whatever that a great deal more can be done in the direction of rationalizing and systematizing much of the functional, material and constructional problems of architecture as an alternative to the present often grossly wasteful and inefficient process of trial-and-error on an ad hoc basis. It is in fact not only system building that is needed but system design as well.

Much of this work could be perfectly competently carried out by technical assistants up to the intermediate level of training. If however we are to insist on architecture rather than building no one surely can doubt the continued need to introduce intuitive esthetic judgment as a controlling factor at all stages in the design operation alongside other factual selections or choices. The need to train people able mentally to surmount this apparent hurdle, while remaining in full control of the whole problem, is as great as ever. The problem of finding the minds capable of expanding to meet the new scope of this responsibility has never been greater.

The application of science has played an extremely important part in the structure of the architectural course in Adelaide. All the component parts of the course are very closely integrated so that it becomes impossible for any student to think in terms of a design problem which is not intimately related to material and structural considerations to the problems of economics, to the whole gamut of environmental considerations and to a scientific evaluation of the functional requirements. Some may quarrel with the Beaux Arts system of analytical design with its obvious shortcomings; but it is equally obvious, surely, that all architects must be enabled at the earliest possible stage to build up a systematic design approach with a full recognition of the scientific as well as esthetic considerations and capable of being applied as part of the synthetic process. That this should be attempted on a purely wasteful trial-and-error basis and a continuous process of destructive criticism cannot any longer be regarded as satisfactory. But a design method there certainly must be.

In arriving at a suitable system it is very difficult indeed to evade the valuable contribution to be made by a study of basic design elements. Subsequently the choices available in the way of interlinked internal and external spaces, in forms and composition, and

in achieving meaningful relationships and proportions, textures and colors, as well as sequential experiences, can only adequately be achieved with three-dimensional studies. It is at this early stage that the architect begins to realize the incompatibility of the design process itself with the needs of delineation for purposes of construction.

This distinction is emphasized in Adelaide by three-dimensional studies preceding in the earliest part of the course two-dimensional projections, and the use of the "modelscope" has become a standard technique applied to design models. Thoughts are at present turning in the direction of coupling this instrument with a ciné camera capable of being moved both inside and outside models of proposed buildings in a way that will make it possible more nearly to experience architecture as occurs in reality.

This more subjective approach to design seems entirely likely to replace the highly speculative assessments derived from the Gestalt system or other forms of psychological perceptual analysis which inevitably beg the question of the related physiological mental processes. Moreover in avoiding the subjective approach they assume that the perceptual response to any set of esthetic criteria is the same for everybody—which clearly it is not.

Other systematic aids to the designer and planner are likely to develop from such systems as PERT or CPM although neither of these at the moment can be specifically related to design problems as such, as distinct from organizational and constructional programming. The scientific emphasis in the course manifests itself more directly in the components dealing specifically with structural design, building construction and building science. And it is here that a concerted attack is made on the presently prevailing woeful ignorance of the professional architect in scientific thought and application.

Although the RIBA has been focussing attention on this problem at least since 1941, it is evident that all but a few of the European schools have lagged behind in applying what even today can in many cases be regarded as far-seeing and well-conceived proposals relating to science in architectural courses. Even where improvements have been introduced in the theoretical teaching in schools these have even more rarely been complemented by the necessary facilities for practical work. It is too often forgotten that one of the important recommendations made by the relevant committee of the RIBA at the time when this matter was first being considered exhaustively was aimed at overcoming "the common weakness in many schools of architecture—namely the absence of experimental and laboratory work."

WHAT may be of special interest, and what at the time it was designed and put into operation at Adelaide was certainly unique so far as is known in any school of architecture, is the Building Science Laboratory. It was thought at the outset important that the laboratory should cater specifically to the needs of the architectural student; and possibly at a later stage be available also for post-graduate research as well as consulting work undertaken on behalf of the architectural profession.

It was thought equally important to avoid the over-superficial smattering which cannot equip the architect to understand fully the properties and problems of durability and use of materials which he may be concerned with, with the variety and capabilities of structural forms, with a thorough understanding of functional efficiency and its detailed implications, and with the range and intricacies of the increasingly complex services so important in contemporary building. Knowledge in these spheres to the extent that it becomes a readily available part of the design tool is vital, and these are not matters which can be applied after the main design decisions have been taken.

With the increasing number of new types of materials and techniques becoming available almost daily, the architect's evaluation cannot depend solely on data obtained from merchants, tradesmen and manufacturers. And yet all too often this is the present position: resulting in too numerous sub-contractors and specialists who can create serious bottlenecks in the building operation.

The laboratory provides facilities not only for undergraduate teaching but for postgraduate research as well, which feeds back to the undergraduate level. This is equally important in relation to town and regional planning and it is for this reason this has been retained within the one department in Adelaide, in the firm conviction that the architect must be closely informed in town planning techniques and developments if his work is to take its proper place in its environment. The view is equally strongly held that the broad responsibilities of town planning together with the necessary guidance and leadership of the team is fulfilled much more readily by the trained architect than any of the other professions. Considerable acquaintance with composite groups both at student and executive level only serve to make this clearer. While this is a matter which always creates controversy it may well be the over-anxiety of the architect to work in harmony with other members of the town planning team that has led him all too often to make an underestimate of his own necessary contribution to the solution of town planning problems, at every level. This is not solely because so much of the ultimate objective, however we may arrive at it, is a three-dimensional realization "in extenso" of the architectural solution of providing the best possible biological environment for human existence and activity, but it is also because the other professions apparently find it much more difficult to take a balanced view not solely concerned with one single aspect of planning.

The town planning field itself is perhaps more subject to a proliferation of narrow specializations than is any other academic field and never was there a greater need to keep theory in firm perspective with a firm eye on reality. One of the ways in which an architectural course can greatly help even a post-graduate course in town planning is through a continual infusion of "bricks and mortar" attitudes. This two-way reciprocal benefit is the final link in the all-important chain of environmental architectural relationships which have seemed all important as the basis of the educational pattern in Adelaide. ■

Design Seminar: Breakthrough for Low-Rent Housing

ROBERT E. KOEHLER



PHA Commissioner Marie C. McGuire receives the Institute's citation from Morris Ketchum Jr, FAIA, Director of the New York Region AIA, as Ira S. Robbins, President of NAHRO and Vice Chairman of the New York City Housing Authority, looks on



Albert Mayer FAIA, recipient of NAHRO's citation, is flanked by Herman D. Hillman, Director of the New York Regional Office, PHA, and John D. Lange, Executive Director of NAHRO

CULMINATING A SERIES of two-day meetings held from coast to coast, the sixth design seminar co-sponsored by the Public Housing Administration, The American Institute of Architects and the National Association of Housing and Redevelopment Officials drew some 200 housing officials and architects from seventy-five northeastern communities to New York March 4 and 5. And like its predecessors which took place in Chicago, Atlanta, Dallas-Fort Worth, Philadelphia and San Francisco, this one too was appropriately labeled "New Approaches to Housing Design for Low-Income Families and Community Renewal."

No mere academic exercise in architecture and planning, the meeting lived up to the promise spelled out by General Chairman Herman D. Hillman. In his opening remarks, the Director of PHA's New York Regional Office set the stage: "This design seminar is a positive manifestation of the determina-

tion to give new emphasis to cultural, esthetic and human considerations in the conduct of programs to revitalize, remake and refresh the urban environment where governmental action is involved. The opportunities for rewarding accomplishments are nowhere so meaningful as in the design of low-rent housing because of the uplifting motivational factors implicit in improved environment."

It was indeed this dedication to the spirit of man—best exemplified by Albert Mayer FAIA, of New York, whose slide-lectures provided the backbone for all six seminars—that permeated the sessions all the way through. This is not to suggest that the participants spent two days in expounding platitudes, far from it, for there was lively talk from both sides of the podium, with more than one barb thrown from housing official to architect and vice versa.

Morris Ketchum Jr, FAIA, Director of the New York Region AIA, warned the audience at the outset that "in the course of the next day or so you are going to hear many complaints about standardized, humdrum, uninspiring and uninspired design in low-income housing."

Continuing in the same vein, Joseph H. Lyons, Executive Director of the Providence Housing Authority, declared: "It is up to the local authority to insist on excellent design, but it won't get it from lazy, indifferent or incompetent architects. It is up to the AIA and the local chapter to encourage the best firms to take on public housing just as they do in England. It is up to the PHA to consider all reasonable or even radical departures from stereotype designs with an open mind as long as the plans and specifications can be justified by detailed cost estimating. It is up to NAHRO in its agency newsletter, regional and national workshops and the *Journal of Housing* to continue to promote good design as it has for the past fifteen years in the hope that some day every stranger in a community driving by a public housing development will not be able to say, 'That looks like public housing.'"

Yet there was a good deal of optimism expressed simply because such a meeting was taking place; and it was the consensus that the considerable progress which has been made designwise in recent years could be attributed to architects with the "vitality and enthusiasm" of Mr Mayer and to the "first lady" of public housing, Commissioner Marie C. McGuire. Fittingly enough, before the two-day seminar was adjourned, both received citations for their leadership and devotion to the cause.

Billed on the program as "architect, town plan-

ner, consultant to private interests and to government here and abroad," Mr Mayer provided the nuts-and-bolts as well as the real inspiration. In the course of his three-part slide discussion—1) sub-community, neighborhoods and districts; 2) site selection and site and topographical planning; 3) synthesis of the two previous topics, illustrating good and bad features—he interwove concepts, ideas and attitudes that make up the social fabric of public housing as he views it through his broad experience and study.

Mr Mayer hinted that big offices may do poor housing work, adding that some of the "anonymous mechanistic jobs" he has seen have come from the boards of well-known architects. He said that the AIA should take the lead in research and recommended the establishment of a central file through which plans, case studies, etc, might be funneled.

In presenting its citation to Mr Mayer, NAHRO cited his "gifted creativity . . . intellectual rigor . . . social vision . . . inexhaustible energy . . . persistent purpose," and noted "the application of these personal qualities by one man has made possible a new opportunity for public housing architecture."

Commissioner McGuire came in for her share of plaudits too. Said Mr Hillman: "With the advent of Marie McGuire to the national scene, fresh from her demonstration of 'it can be done' in San Antonio, Texas, whence Victoria Plaza has stirred the imagination of the nation, new bench-marks of quality, good taste and liberation from the stereotype began to take hold in the public housing program. With Thomas B. Thompson, her Assistant Commissioner for Development, whose unfettered vision and professional competence produced Victoria Plaza, the stage was set for new thinking in the PHA and reestablishment of communication with the AIA."

Director Ketchum, prefacing the presentation of the AIA citation to Commissioner McGuire, told how the agency has redirected its steps toward better design in housing through simplified mandatory standards, more adequate architectural fees, the use of architectural, landscape and engineering consultants in each of the PHA regions, the continuing evaluation of housing for the elderly, the promotion of studies of the design of open spaces and better physical relationships between low-income projects and the total community. "All these goals and these achievements are the results of Commissioner McGuire's courageous, intelligent and determined efforts to create an enlightened national program for low-income housing," Mr Ketchum explained.

"As the late President Kennedy emphasized, 'design must flow from the architectural profession to government and not from government to the architectural profession,'" Mr Ketchum said in an earlier talk, "This does not always happen because many laymen, including some of those who direct and use public housing, are frustrated architects. It is hard for them to resist the temptation to interfere with—sometimes even to dictate—project design to architects. They only succeed thereby in reducing those architects to draftsmen."

In a statement released on behalf of the New York Chapter AIA, President Geoffrey N. Lawford

AIA listed seven points to aid architects in designing projects "which will constitute more secure, more congenial and more attractive living environments, and still not be too expensive to build or to manage":

- 1) Procedures must be simplified and the development period shortened.
- 2) Experiences in other localities should be shared as part of the learning process.
- 3) Housing agencies should engage architects to perform research and experimentation in housing design, construction and materials.
- 4) At least one "Pacemaker" project should be commissioned by the PHA within each of its regions.
- 5) The procedure of using architectural consultants should be continued and expanded as necessary.
- 6) Project architects should be entrusted with the responsibility and authority which is traditionally theirs in private work.
- 7) The problem should be tackled at a Congressional level where a more equitable yardstick governing construction cost needs to be established—one which does not penalize projects in populated urban centers in northern areas where high cost indexes prevail.

Frederick G. Frost Jr, FAIA, of New York, suggested that there are two groups who can bring a depth of understanding to housing problems. One consists of those engaged in the social service and community activities division of the housing authorities.

"They get complaints about what is wrong with individual apartments, hallways, grounds," he said. "They know how community services can be improved. We architects and administrators are inclined to theorize on it." The second group is the tenants themselves, since "there is a temptation to fit them into housing as a grocery clerk fills a bag of potatoes."

Mr Frost recommended the use of architects as paid consultants, explaining: "When a housing authority runs into a rough spot, it could call in such professionals for a day or so, using one architect on one occasion and another on another. Such architects would still be free to accept public housing commissions—they should not be penalized."

Assistant Commissioner Thompson pointed out that a panel of consultants does exist for use in the PHA regions, but that this becomes a difficult matter on the local level. It must be specified that the consultant has been retained for a definite purpose beyond that stipulated in the architectural contract and it must become a matter of record.

One of the most eloquent spokesmen for the housing officials, Ellis Ash, Acting Administrator of the Boston Housing Authority, told his audience to restate the core of the problem, "to relate our job to the whole spectrum of poverty in the US."

We are concerned with more than just a building or buildings in a slum, he said; a building after all, can be transplanted to a slum condition. "Public housing must become a way station to a way of life: a commitment to a better environment."

This was in line with Commissioner McGuire's plea that architects "contribute toward a renaissance, that this effort through the seminars is just a beginning." ■

CRITICISM AND RESPONSE

—The Progress of Architecture

J. ROY CARROLL JR, FAIA

President, The American Institute of Architects

President Carroll was scheduled to give an address to the North Carolina Chapter on the occasion of its golden anniversary meeting in January. But his plane was snowed in and the talk was never given. So here it is—it would surely have been one of his best!

HISTORY MOVES IN GREAT CYCLES and we are often instructed and always fascinated by comparing the present to some appropriate part of the past. Consider the parallels between today and the yesterday of fifty years ago. Our nation was recently shaken to its roots by an assassination; indeed, the world itself trembled for a brief space of time. If the blind panic of the moment had been translated into the kind of action that technology has made possible, international disaster could have been the result. We live in a cold war as nations, old and new, maintain a precarious balance of accommodation to one another. We are entering a new phase in our relations with Panama and perhaps all of Latin America. At home, we find that our burgeoning technology is making profound changes in our nation's social patterns.

Every one of these events has its direct parallel in the history of 1914. At this moment fifty years ago, an assassin was waiting for the opportunity to murder the heir to the Austrian throne. He found it several months later and the world was plunged into war. The United States Marines landed at Vera Cruz,

Mexico. The first ship passed through the new Panama Canal. One year later, Alexander Graham Bell was to speak to Thomas Watkins on the first telephone conversation between New York and San Francisco.

Assassination and international repercussion, unrest in Latin America, a new relationship with Panama, social changes created by scientific invention—all of these things happened to us fifty years ago and now have happened to us again. The history of our profession and of architecture itself has followed a like pattern. Fifty years ago the Institute's Committee on Education held a special position of stature and interest in our professional society. Indeed, it had been the custom for some years to set aside a whole evening of the annual convention for a program of the Committee on Education. In 1912, the United States Commissioner of Education reported that courses in architecture were being offered by 32 schools. Three years later, the Institute was agitating to wrest the educational program from the smothering embrace of the university engineering departments. In that same year, 1915, the Association of Collegiate Schools of Architecture came into being. Contracts and specifications were occupying new attention, too. In October 1914, an Institute committee met with the National Association of Builders' Exchanges in Philadelphia to draw up a revised form of the general agreement and conditions.

In that same year, the Institute was making a survey of the Octagon and talking about the need to move the headquarters into another building.

Again we find the cyclical pattern. Preoccupation with changes in education, an effort to achieve closer rapport with other elements of the building industry, revision of contracts and specifications and physical expansion—the parallel is complete.

On the larger question of the state of architecture, there is much to say of the two periods. The year 1914 and the period surrounding it seethed with artistic ferment and activity. By this time, as it was put so delicately by the critics, the emotional quality of the Eiffel Tower had "revealed itself." It may be instructive for us to remember that, for some years prior to that time, the landmark structure of Eiffel had been protested by architects in the most vituperative terms. European designers in this period were becoming intrigued by reinforced concrete. Cubism was breaking the perspective of the Renaissance and opening the door to abstract art. A book on Frank Lloyd Wright had been published in Germany, setting off a sensation in the world of art.

In 1914, a brilliant architect named Antonio Sant' Elia published a manifesto demanding lightness, plasticity, mobility and change in building. His credo is worth remembering: "Every generation its own house!" In 1914 Walter Gropius unveiled an office building at the *Deutsche Werkbund* exhibition at Cologne which had a profound influence on architecture. The building, it was said at the time, suggested a movement in space that had been seized and held.

The inspiration of the *Werkbund* led directly to the philosophy of the Bauhaus a few years later. Art, in a word, discovered the machine at the same

time that it found the enchantment of abstraction and the plasticity of a new building material. It would be hard to imagine three influences of more importance coming together at the same time.

Now fifty years have passed. What has been accomplished since that time? The Bauhaus infant grew up and aged; its principles remain, though many of its offspring have been malformed. I cannot help but think that, if the leading architects, engineers, craftsmen, painters, and poets who were collaborating in 1914 could look at what we have today, they would be sorely puzzled by the result. Surely what they had in mind was much more than a catalog of parts, an assembly of curtain-wall components. If the average speculative office building—that glossy rentable receptacle which we find in every city—is all that remains of this movement, then that movement was misguided. There are, of course, great buildings that express this philosophy; it is curious however, that some of the greatest of them have been designed by the very same men who were active in or close to that movement of a half-century ago. Mies van der Rohe, Walter Gropius, Le Corbusier—these are three of them. Wright cannot be included in this number because he went his own way. But all four were our form-givers, to use the popular term. Later, another came along—Eero Saarinen, an architect who started all over again from scratch on every job he did.

Do we have such men now in architecture? Perhaps the forms have already been given to us and now we are searching for a better way to use them than we have found so far. Perhaps the contribution we will make in our generation, the house that we will build, will be as great as theirs, but—as Sant' Elia said—"it will be different and our own."

Perhaps the problems of people and the questions of quality are more important to us today than the daring structure or the new material. We are, quite obviously, pausing to get our esthetic breath; examining anew both the new *and* the old. The fact that we know how to design an eggshell doesn't mean that we should. In the artistic morality of another day, however, it may have meant just that. We are on a new quest in our professional society. We are expanding our competence as professionals and adding to the ways in which we can be of professional value to our clients. We are expanding our scale of practice from the individual building to the complex of buildings, the neighborhood, the town and the city. We are recognizing our responsibility as professionals to step into the meeting places of the community and preach about esthetic responsibility. In this, we are enthusiastically taking on the gargantuan but entirely necessary task of educating the great classless American public to the beauty and ugliness of our mass culture.

But as we talk about ugliness, and the need to eliminate it from the community, don't we sometimes fall into a momentary fit of stuttering when some stubborn fellow asks: "What about Park Avenue?" Well, what about it? It is an embarrassing question. We can define garish street signs, vulgar gas stations, slums, overhead wires and traffic congestion as examples of social ugliness. But what about the ugly-

ness of the brand-spanking-new and expensive office buildings that glitter and effloresce along both sides of Park Avenue? Isn't this ugliness, and aren't architects responsible for it? And, if this is so, what are you and I to say to these offending architects? What is our criticism and what is their response?

We can say to the architect that he designed in an incompetent manner. He can respond that that's the way the client wanted it. We can castigate him for demeaning himself. But the next architect we interrogate may tell us that the client didn't want it that way, either. The city law shaped the bulk of the building. The accelerated tax depreciation law dictated that it be built speedily, without regard to permanence or low maintenance, because it would be passed from owner to owner. The courts, he may say, threatened to exact a stern penalty in higher assessments if the building were to be adjudged as fairer than its neighbors. This makes counter-response a little more difficult. If these are the rules of the game, are we to establish an architectural boycott that stops the building process? The answer is obvious.

We expect the criticism of Park Avenue because we know there is something to criticize there. We are finding out, too, that the public isn't entirely insensitive and this is a good thing. The estrangement of modern art from modern man isn't as complete as we thought. The ordinary man still seeks beauty, and now he is beginning to demand it. This means there is hope in democracy. It means that there is a chance, over a long and painful period of time, to strike down the laws, interpretations and restrictions that put a premium on bad building. *This is our responsibility and we must fulfill it.*

Perhaps this is all we can hope for in our own time. I hope not, of course, because we all yearn to produce great works of art—at least to produce something tangible of which we can be proud.

But let us go on and imagine that this great work has been accomplished. What will remain? We will still face the fact that the promise of the machine has not been fulfilled in architecture, that the machine in fact has so far failed to give us the means to art. We will certainly face the fact, once the architect is free of the shackles of archaic laws and encrusted ordinances, that there is a great variation in artistic competence, and that some architects should not design buildings. We will still face the need to realize that we are not all of us sculptors, that what we do must have a social purpose as well as an esthetic one, and that only by admitting this can we hope to become better architects.

As for architecture itself, and its purpose, I have heard no better definition than that of the late Eero Saarinen, who said: "Man is on earth for a very short time and he is not quite sure what his purpose is. Religion gives him his primary purpose. The permanence and beauty and meaningfulness of his surroundings give him confidence and a sense of continuity."

"So, to the question, what is the purpose of architecture, I would answer: to shelter and enhance man's life on earth and to fulfill his belief in the nobility of his existence." ■



The Architecture of Old St Louis and Its Environs

BUFORD PICKENS AIA

A traveler will find a greater variety of character in this city than any other in the Valley of the Mississippi excepting the city of New Orleans. Americans, French, Germans, Spaniards and Indians of various tribes are to be seen here . . . There is a large number of good men here. The savage custom of dueling is disappearing, although there have been one or two tragical scenes of this sort within a year or two. I know not a more pleasant city in the West than St Louis.—FROM ROBERT BAIRD, “VIEW OF THE VALLEY OF MISSISSIPPI,” 1832.

After a hundred and thirty-two years one can detect that the instruments for dueling have changed, and that most of the Indians have given way to in-migrants from the East, the Ozarks and the South, but the variegated image of St Louis remains remarkably faithful to Baird’s general description. Because the continuity of style in architecture is tenuous, any guide—even to contemporary buildings—needs to provide a brief look at the people, the place and the earlier times in order to explain the special flavor of the city visible and invisible in St Louis and its region.

The Colonial Period

Founded in 1764 by a fur-trading Frenchman from New Orleans, governed by a succession of Spanish viceroys until 1804, and later selected as a settlement center by generations of Germans, St Louis attained an early distinction among American cities as a melting pot. A continuing multiplicity of influences was assured by its gateway position at the confluence of two great rivers—midway between North and South as well as East and West. And finally, the time of St Louis’ greatest growth—the expansively American Victorian Era—added another strong determining force that gave its architecture a rich, picturesque and sometimes naive diversity of visual form.

Considering its mixed heritage, midland location, and mid-nineteenth-century coming of age, there is little wonder that St Louis still seeks an architectural identity. More than most inland



GEORGE MCCUE



GEORGE MCCUE

A poteaux-en-terre log house of about 1760, at Cahokia, Illinois, across the Mississippi. Now known as the Old Courthouse

Restored poteaux-en-terre Church of the Holy Family, 1799, also at Cahokia

American cities, and perhaps with less reason, St Louis has been transfixed by the cultural images of Eastern cities with their authentic English Colonial traditions. Instead of seeing an advantage, as Jefferson did, in being free from restraining influences of both the puritan and the aristocratic Georgian past, St Louis has tended to neglect, if not to disown, whatever original French, Spanish and German architecture may have survived the ravages of fire, storm and slum clearance.

The early pioneering French ancestors of St Louis were more adventurous in exploration and ingenious in their building design than were the English Colonists. The Missouri Historical Society has preserved a remarkable collection of drawings showing the open, bon vivant style and variations in the first St Louis dwellings along the riverfront where the Arch now stands. In 1897 Pierre Chouteau, a descendant of one of the founders of 1764, proposed that the St Louis World's Fair recreate the original French village. His idea got lost in the enthusiasm for establishing the city's image in the grandeur of the currently popular Ecole des Beaux Arts; however, one by-product of Chouteau's proposal was the series of pen-and-ink sketches made by Clarence Hoblitzelle who apparently used photos and daguerreotypes as he delineated his reconstructions.

The Hoblitzelle drawings illustrate many of the adjustments made by the French Colonists in changing their northern building types to suit Missouri climate and topography; the resultant style was rational, modular and mutable. These buildings become far more interesting when one looks for what the pioneers added to the French originals than what they retained: continuous galleries for summer air, shade, breeze, view and rain shelter; rectangular plans covered by unified, integral roofs without cross gables; living floor usually raised off the ground, sometimes a full story; frequent use of hillside sites; stockade fences—required by law—enclosing private gardens; stone walls and chimneys; hewn log walls both vertical (*poteaux-en-terre*) and horizontal (American style), and even some half-timber types.

In order to see the few remaining French Colonial buildings one must visit the environs of St Louis where smaller communities have been concerned with the continuity of their own cultural traditions which have never ceased to be proper status symbols. Cahokia, Illinois, just across the river (south of East St Louis), has restored versions of the 1799 Church of the Holy Family and

MISSOURI HISTORICAL SOCIETY



an early dwelling (c 1760) now called the "Old Courthouse." Both demonstrate the *poteaux-sur-solle* construction with closely-spaced vertical timbers and stone infilling. Farther down the river on the east side just a few miles north of Chester, Illinois, tourists can inspect the remarkable, Louisiana-type, Pierre Menard House (c 1802), maintained as part of Ft Kaskaskia State Park.

On the Missouri side of the Mississippi about sixty-five miles south of St Louis (US Rt 61) is Ste Genevieve which, more than any other town north of Louisiana, has retained its characteristic eighteenth-century colonial dwelling types in various stages of alteration and restoration. The two best-preserved examples are the privately-owned Jacques Guibourd House at the NW corner of Fourth and Merchant Streets, and the completely restored and furnished, Louis Bolduc House (c 1770) with its stone kitchen, *galeries* and gardens enclosed within the stockade fence, on South Main Street; the Bolduc House is owned by the National Society of Colonial Dames of America and is open to the public April to November. The St Gemme-Amoureaux House is another interesting variation, once hip-roofed (as was the Guibourd House), and can be seen on the St Mary Road to Rt 61 just south of Ste Genevieve.

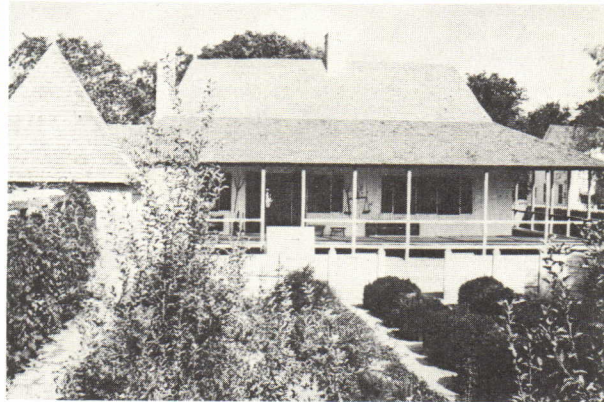
The American Period—Nineteenth Century

In a deft diplomatic double-play, credited to our memorable architect-President, St Louis was transferred from Spanish to French to United States control in 1804. Almost immediately, there was an influx of *les Americaines*, enterprising and speculative New Englanders for the most part, who brought with them the puritan attitudes and architectural ideas from the East Coast where a post-Georgian trend toward geometrical rather than decorative form had begun. Thus St Louis initiated its expansion with vernacular "Federal" type buildings which were frequently built of stone, quarried on the spot, as well as of brick—a simplified and American manner, uninhibited by the baroque tradition of late eighteenth-century English taste. The transition to the Classical Revival was easy, natural and came surprisingly early in the design of the first Court House of 1826, followed by the Old Cathedral of 1831-34, and the extant Old Court House begun in 1839. Both of the latter have been restored as part of the riverfront park.

The prismatic purity of early St Louis buildings and roof-lines is apparent in the panorama drawn by J. C. Wild in 1841.

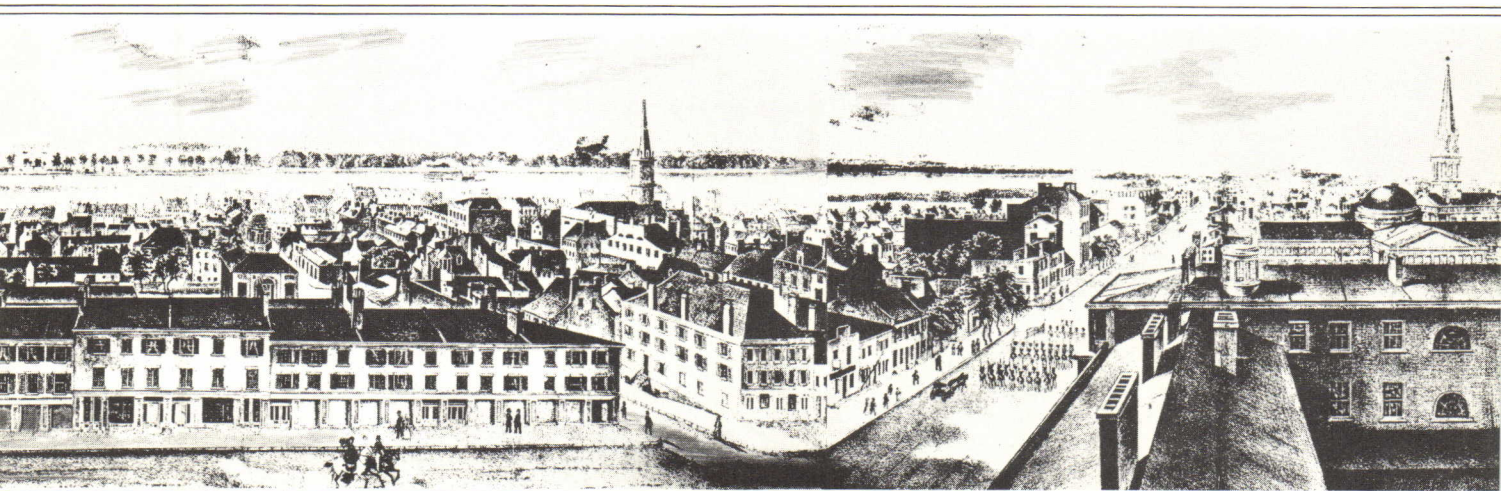


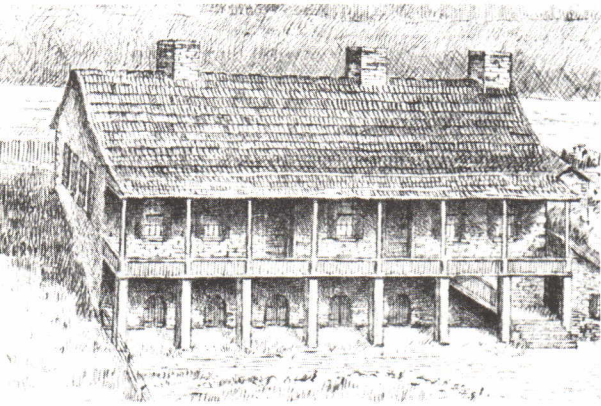
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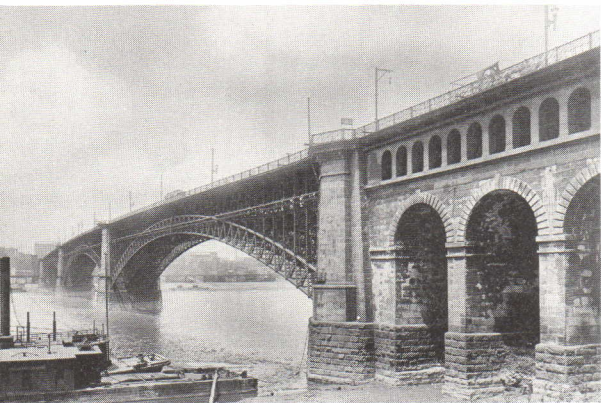
Louis Bolduc house, about 1770, at Ste Genevieve, Missouri, about sixty-five miles south of St Louis

A panorama drawn by J. C. Wild in 1841. It clearly shows the homogeneity of the early city—of all early cities; even commercial and industrial buildings preserve the residential scale





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ST LOUIS CONVENTION & PUBLICITY BUREAU

Gabriel Cerré house, 1770, from a Hoblitzelle drawing

The world-renowned (in 1874) Eads Bridge, for both railway and wagon traffic, marked the beginning of the end of the steamboat era in St Louis

Cupples Station was a distribution center built as a result of the increased rail freight traffic resulting from the completion of the Eads Bridge; other such fine masonry warehouses line Spruce Street



GEORGE MCCUE

In this remarkable rooftop view of the city, one can see that two- and three-storied, domestic structures are prevalent, usually with coupled chimneys and parapets marking the end walls. Commercial and industrial buildings still preserve the residential scale and character, giving unity to the street scene. Lingering French influence may be seen in the occasional steeply-pitched, hipped roof, and in the frequent use of continuous *galeries* which blended gracefully with recessed or projecting porticoes of the later period. The vertical contrast of the church spires enhanced the harmonious, horizontal tranquility of *the city visible*.

The single steamboat seen in the background of Wild's panoramic view is a reminder of the ingenious flatbottomed "fly waggons," as Mrs. Trollope called them, which had already begun to convert the Mississippi and its tributaries into a vast transportation system with St Louis at the crossroads. By 1850, these Western type packets were lining the levee where a contemporary reporter noted: "for two miles, a forest of smokestacks is seen towering above the arks from which they seem to grow. All between this and the line of warehouses is filled with a dense mass of apparently inextricable confusion and bustle, noise and animation." Emigrants and goldseekers, military personnel and supplies, furs from the Northwest, hogs, grain and produce from other river ports arrived and were transhipped from this Gateway to the West.

Among many other European nationals immigrating to St Louis, the Germans were dominant and came in two distinct waves: the first in the 1820's and '30's; the second following the European revolutions of 1848 and '49, continuing in large numbers until the Civil War. Even more than Cincinnati and Milwaukee, St Louis became "Germanized," and for a time at least, *gemulich* attitudes and customs merged with the *joie de vivre* to forestall the eventual triumph of Puritan and Anglican traditions. Many nearby towns in Illinois as well as Missouri were founded by Germans and retain both visible and invisible influences—Hermann and Washington, Missouri, and Columbia, Illinois.

In 1849 a disastrous fire wiped out fifteen blocks of St Louis' riverfront business structures along with twenty-three steamboats and their cargoes. Little wonder that St Louisans turned to the new cast iron construction system which had just been introduced the year before by James Bogardus in New York. According to historian Sigfried Giedion there were nearly five hundred commercial iron fronts built in the St Louis district between 1850 and 1880: "one of the most exciting periods in the development of America." Ironically, most of this interesting architecture was removed when the site was cleared for the Jefferson National Expansion Memorial. Today, only a few originals are left standing. One must consult Giedion's book, "Space, Time and Architecture," or visit the Smithsonian Institution to see the best examples of St Louis cast iron fronts. The National Park Service, under the guidance of Charles Peterson FAIA, was reported to have salvaged a complete facade for exhibition purposes; we hope it will be available for visitors to see.

The completion of the world-renowned, space-frame-like, Eads Bridge (1867-74) for both railway and wagon traffic marked the beginning of the end of the steamboat era and with it the commercial importance of the St Louis riverfront. The downtown center of gravity shifted westward and was given impetus by the erection of the Old US Post Office and Customs Building (1874-82) at Eighth and Olive Streets, one of the best of the country's few remaining, high-Victorian, four-square *palais*, in

what is an Americanized idiom of the French Second Empire style.

Because of its combined cultural, historical and architectural values to the city, the St Louis Chapter AIA, together with other civic-minded groups, is currently trying to convince the General Services Administration to rehabilitate and re-use, rather than to destroy, this irreplaceable urban landmark so closely identified with the city's growth and colorful past. Like a crashing orchestration of a Wagnerian music-drama this granite and cast iron Post Office set the *leitmotiv* for the post-Civil War era of expansion and demonstrated the pattern for elaborate elegance in architecture to which St Louis energetically responded with all its varied French, German and American heritage.

The next milestone in St Louis' architecture was Louis Sullivan's Wainwright Building at Seventh and Chestnut, and the Wainwright Tomb in Bellefontaine Cemetery. Both must be seen to understand the architect's language of color and texture as well as form, which speaks to us more eloquently as time passes. Unfortunately, Adler and Sullivan's St Nicholas Hotel and Union Trust Building have been mutilated in their "modernization."

The Wainwright Heritage

Standing majestically on the corner of Seventh and Chestnut, within the context of the present-day St Louis melée, the Wainwright Building modestly reminds us that Midwestern America produced the first mature and classic example of modern architecture. A completely new building type, the skyscraper, came of age here on the west bank of the Mississippi. Louis Sullivan's ruddy masterpiece was built in 1891, at the time when avantgarde architects in Europe were groping to find a way to break with historicism, when some were experimenting with the illusory forms of art nouveau, and when others were just beginning to explore the potentials of barren asceticism. Sullivan gave us the first full-blown, classical formulation of steel frame, skeleton construction, a great new structural system which ranks next to the post-and-lintel and the arch in the history of architecture. In recent years, after much experimentation, we have seen a return to Sullivan's logic in the expression of the flexible office module in the facades of tall buildings.

Fortuitously, perhaps, but with sure poetic justice, Eero Saarinen framed the Wainwright Building within the great parabolic symbol of the Memorial Gateway. When one looks from the river toward the west, Sullivan's bold esthetic expression will still be visible, just to the right of the Greek Doric portico and the Renaissance dome of the Old Courthouse.

Completion of the Eads Bridge and the resulting increase in rail freight traffic, created the need for the new distribution center along Spruce Street known as Cupples Station. During the 1890's eighteen separate but architecturally related warehouses were built in similar style and height, influenced by the strong geometry and post-Victorian, arcuated style of both H. H. Richardson and Louis Sullivan. The Union Station on Market Street is another good example of this influence in a more romantic but powerful composition. Properly lighted, the tremendous barrel-vaulted waiting room recalls the space and decoration in various parts of the Auditorium Hotel in Chicago.

St Louis Vernacular

In recent years, architects and urban designers have been trying to discover why so few American cities in their growth

GEORGE MCCUE



Gateway to Washington Terrace, one of numerous West End private developments—designed by George R. Mann

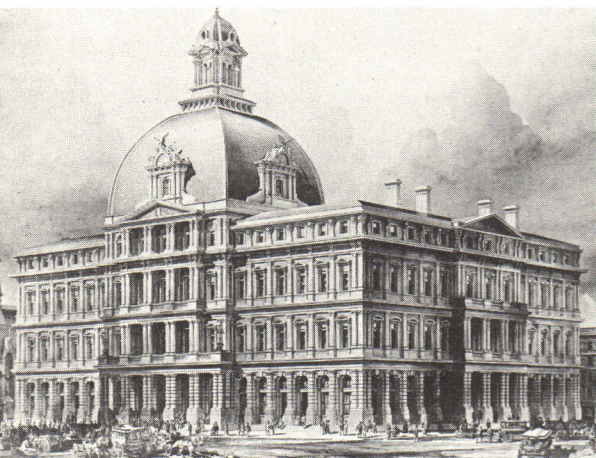
GEORGE MCCUE



Sullivan's Wainwright Building, 1891, the first mature and classic example of modern architecture, is today engulfed by bigger and taller buildings



The old US Post Office and Customs Building (1874-82), designed by A. B. Mullett. The GSA wants to replace it with a new Federal office building, but local resistance is growing against it



BUFORD L. PICKENS

process have retained the viability and visual attraction of their older European prototypes. We send researchers to the hill towns of Italy and to the islands of Greece in search of organic principles; but we seldom look seriously at the results of vernacular growth within our own cities except to exploit the ground it stands on. In the Mill Creek Valley project, a few years ago, St Louis cleared away more than four hundred acres of old neighborhoods termed "blighted"; most of this area just west of the central business district is still standing vacant.

St Louis has its isolated masterpieces that will be described and illustrated in the AIA Guide Book; but by far the most pungent flavor of the city's architecture is preserved in neighborhoods which have retained old streets, parks and places that are still lined with consistent but modest regional variations of the nineteenth-century gamut of styles. Indeed, the melting pot tradition is so strong that stylistic handles derived for the buildings of Eastern cities do not neatly fit. "Late Renaissance Eclectic" may be less helpful and descriptive than "third-phase bracketed style." Some buildings that St Louisans might call "South-Side Deutsch" depend for their provenance more on the aroma of malt from the nearby brewery than from similarity to anything illustrated in Sir Bannister Fletcher's famous history. The more one sees the spread of synthetic, mass-produced, Williamsburg and Cape Cod Colonial in this mid-western city, the more one is inclined to encourage the architectural buff to throw away his historical handbook and look among St Louis' towers and turrets, gateways and gables, doorways and dormers for his own selection of visual delights and discoveries. ■

More Recent St Louis Architecture

GEORGE MC CUE, HON AIA



THE ST LOUIS TRADITION of solid conservatism, which embraces the businessman's lunch of sauerbraten with potato pancakes, and streets with names like Eichelberger, Salsburger, Mallinckrodt and Rauschenbach is owed to an influx of Germans at about midpoint in the city's existence. A tradition of elegance, social amenity, urbane cosmopolitanism and streets with names like Laclede, Chouteau, Gravois and Duchouquette are gratefully credited to the city's French ancestry.

There are times when our civic attributes seem to transfer their historic positions, producing something like a sauerbraten version of elegance or a Gallic *Gemueticlichkeit*. To trace this criss-crossed character to its roots requires that notice be taken of other elements—the substantial Italian, Greek, Czech, Irish, English, Chinese, Japanese and Negro populations, and of the Jewish community of many national origins, together with a growing representation from Latin America and other parts.

The French settlers of 200 years ago didn't know then that their town was the property of Spain, thanks to a confidential real estate transaction of 1763 between the two countries. When they found out, they were indignant, but they kept on being a French community under a Spanish lieutenant-governor for nearly forty years, thus setting an example of urbane pragmatic imperturbability to which we have been faithful ever since in our civic stance.

St Louis has taken a number of prodigious forward steps, most of them as aroused belated reactions to conditions that allowed no alternative. The cost of all the second and third elections held to resubmit bond issues for indispensable improvements would have paid for some of the improvements many times over. But when St Louis finally gets religion and swings into action, the results are at least physically impressive. If we could possibly be said to have a fault, it might be argued that we have at times equated bricks and mortar with architectural design, and rat-proofing with amenity.

Urban renewal efforts of the last three decades were a reaction to intolerable slums that had extended themselves downtown, and squatted with a grim tenacity around the periphery. As smoke commissioner in the 1930's, Raymond R. Tucker (now Mayor) did away with the somber pall that had hovered over the city for years, blackening buildings and leaving gritty deposits on desks.

The abolition of the smoke nuisance brought into view a squalid array of pawn shops, beaneries and slum dwellings along Market Street, which extends from the riverfront past the historic Old Courthouse, past Union Station and on west. These were removed and the street widened into a boulevard. In 1940, the noted fountain group, "The Meeting of the Waters," by Carl Milles, was installed in Aloe Plaza, in front of the Theodore C. Link-designed Union Station, a vast Romanesque vision inspired by H. H. Richardson.

Further demolition in the early 1950's cleared ground for the Plaza Square apartments—six thirteen-story structures on four blocks, by Hellmuth, Obata & Kassabaum and Harris Armstrong. Two elderly churches, St John's Catholic and Centenary Methodist, were incorporated into the site plan and refurbished in expectation of new downtown congregations.

The biggest land-clearance project was the 454-acre tract, Mill Creek Valley, extending west from Union Station to Grand Avenue, and from the railroad yards north to Olive Street. The program called for razing all but 125 of the 2480 structures, of which 2194 were dwellings, including fine town houses of the late nineteenth century that had fallen victim to slum landlordism.

The community actively supported the Mill Creek project, but it has been disappointed in some of the reconstruction. Some interesting developments are taking place along Grand Avenue, where St Louis University is extending its campus across this street into a twenty-three-acre tract, and where two new Schwarz and Van Hoefen apartments have been opened. More apartments and maisonettes are going up in an adjoining area, and Chloethiel Smith FAIA, of Washington, is designing a residential mall that holds lively promise.

On the riverfront, some forty blocks were cleared thirty years ago of century-old warehouses, including, sad to say, some fine cast iron fronts. The land acquisition and clearance constituted the city's one-third contribution; the Federal share was delayed by World War II and other setbacks, but at last construction began last year on the city's most stupendous architectural project—Eero Saarinen's Gateway Arch, which won a national design competition in 1948. Now it has risen past the 200-foot level, and its creeper cranes are on the skyline.

When completed next year it will stand 630 feet high, with the same base span. Clad in polished stainless steel, it will tower more than twice the height of the tallest St Louis structures, and 75 feet higher than the Washington Monument.

HEDRICH-BLESSING



The Climatron, in the Missouri Botanical Gardens, is the world's first greenhouse to be completely airconditioned, with controlled temperature and humidity variations within an unpartitioned space 70 feet high and 175 feet in diameter

The St Louis Planetarium, a hyperbolic silhouette defined by a vertical axis around which straight lines revolve at constant angles to the axis. The flared upper section shields the observation deck from the city's lights

ST LOUIS CONVENTION & PUBLICITY BUREAU



Lambert-St Louis Airport Terminal, one of the country's notable concrete shell structures

Priory of St Mary and St Louis in Creve Coeur, a suburb west of the city. The church is circular, surrounded by parabolic arches; the altar is central, lighted from the lantern



MAC MIZUKI



JAMES K. MELLOW

The Gateway Arch will commemorate the St Louis role as starting and provision point for the westward expansion that followed the Louisiana Purchase, and from its high observation deck St Louisans can contemplate their city—the handsome spires of old churches in the mellowed neighborhoods of many ethnic groups of near north and south, some frowzy patches of neglect, the tin-seled facades of some recent additions to the cityscape, and points where the eye can alight with pride and satisfaction.

In the same area, a four-block expanse just back of the riverfront Memorial park, and paralleling it, the first element of the big Schwarz & Van Hoefen Mansion House apartment complex will soon rise from a deep scar of cleared ground. West and south, a circular stadium by Sverdrup & Parcel, Schwarz & Van Hoefen and Edward D. Stone will be situated within a complex of garages, concession buildings and, tentatively, an amusement block that threatens to rear itself between the stadium and the mall.

If one were asked to identify the more recent St Louis structures of special excitement while standing on one foot, he should manage to encompass also:

The Lambert-St Louis Airport Terminal, 1955, by Hellmuth, Yamasaki & Leinweber, a pioneer concrete shell; the Priory of St Mary and St Louis, 1957, a fountain-like composition of thin-shell parabolas, by Hellmuth, Obata & Kassabaum; the Planetarium, 1963, by the same firm; the Climatron, 1960, by Murphy & Mackey (1961 R. S. Reynolds Memorial Award), using the R. Buckminster Fuller geodesic dome structure, and providing four gradations of temperature and humidity in an unpartitioned space.

Some of the old neighborhoods and private places are likely to engage a visitor's attention as prime attractions, and so is Gaslight Square, the celebrated cabaret and exotic restaurant blocks in the Central West End. In this section may be seen some exemplary do-it-yourself rehabilitation of both dwellings and commercial blocks, and in Gaslight Square this was done with ingenious adaptive use of fine doors, panelling, fixtures and ornament salvaged from the ruins of Mill Creek Valley. ■

Out on the Town in St Louie

Tips on Tables by
ROBERT ELKINGTON AIA



THE CONVENTION and the planned tours will consume most of the visitors' time, but for free moments there are places to go where eating and drinking will be fun.

In the Chase-Park Plaza there are restaurants and several bars. The *Tenderloin Room* is famous for the "Best in Beef" broiled over an open charcoal grill in an atmosphere of lush Victorian elegance. During the cocktail hour drinks may be enjoyed in the *Steeplechase Bar* adjacent to the Chase pool. For those who enjoy dancing, visit the attractive *Merry-Go-Round Bar* in the Park-Plaza.

One block south on Kingshighway is the *Nantucket Cove* in the Frontenac Apartments where seafood is almost too good to eat. It is stylishly dark inside so be sure to take your flashlight or strong glasses. The *Frontier Room* in the Montclair Apartments is another block south on Kingshighway. It is famous for its char-

coal-broiled steaks and Cantonese cookery. Their Tom's Special, a ten-ounce steak, is an excellent buy.

One block east of the Hotel is *Henrici's*, located in the Bel-Air Motel. *Henrici's* is a branch of an old Chicago restaurant well-known for its food. Near *Henrici's* on Lindell Boulevard is the Motel DeVille where you may enjoy dinner in the *French Room*—an opulent French restaurant. In the winter there is outdoor ice-skating and in the summer, swimming. Very few of you will bring your skates so I recommend that you watch humanity at the pool and imbibe a Southern Comfort cocktail.

For those of you who walk the Maryland Avenue shopping area, there is *Amon's*—located at 394 N Euclid—ideal for a pink tablecloth lunch for the ladies where they may also browse in the Antique Shop. Hours: 11:30 am to 3:30 pm. *Amon's* next-door neighbor, *Europa*, is a quaint little bar noted for its unusual sandwiches and cold beer.

Another delightful luncheon spot located at 405 N Euclid is *Sarah's*—known for its lunches. Lunch hours: 11:30 am to 3:00 pm. Cocktails and hor d'oeuvres served, 5:30 pm to 1:30 am. Should it be pizza you are interested in, go no further than 302 N Euclid—*Culpepper's*—this is your answer to pizza.

A Five-Minute Taxi Ride Will Take You to Gaslight Square

Gaslight Square is a grouping of odds and ends combined to create an interesting atmosphere. This is an area for strolling and sipping or nibbling as you desire: at *Carl's 2¢ Plain*—a delicatessen famous for its corned beef and pastrami sandwiches with cold beer—a sidewalk cafe where you can see others as they see you.

You'll certainly not want to miss visiting St Louis' only Japanese restaurant, *Kotobuki*. Here is an intimate setting of old Japan serving authentic specialties and exotic drinks. You can enjoy a complete change of atmosphere by visiting *Kotobuki's* neighbor, *Port St Louis*, an authentic early-levee setting where oyster bars and all kinds of seafood abound. Entertainment on all three floors.

Before leaving Gaslight Square it's a must that you visit the finest restaurant in St Louis, the *Three Fountains*, featuring fine French food. A 1963 Holiday award winner—and our choice.

Downtown Area—St Louie

For those wanting to glimpse our downtown area—you'll be delighted if you make plans to dine at either of the following fine restaurants: *Tony's*—at 826 N Broadway; excellent Italian specialties, all served in a delightful atmosphere plus a complete wine cellar. *Trader Vic's*—located in the very new Bel Air East Motel at Fourth and Washington—*Trader Vic's* of worldwide fame, with their superb collection of rum drinks, curries and Chinese and Polynesian specialties. *Mayfair Room*—*Mayfair Hotel*, 806 St Charles St, provides a distinguished setting of stately elegance for its culinary magic.

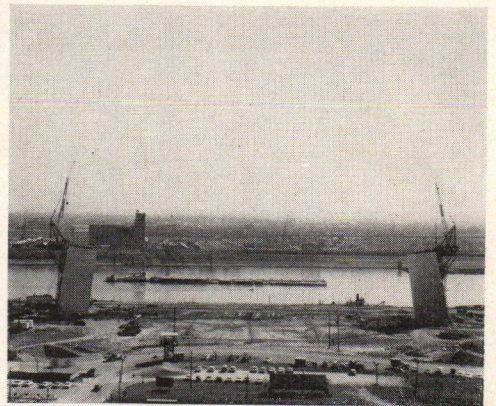
For the baseball fans among our conventioners: They can enjoy delicious food in the nationally-known *Stan Musial & Biggie's* Restaurant—where Stan and Biggie are your hosts. Located at 5130 Oakland Ave. Not too far from historic St Charles, Missouri, is anchored the *Bayou Belle*, a riverboat restaurant. Liquor consumption should be carefully guarded because you enter and leave by walking the plank. Delightfully different.

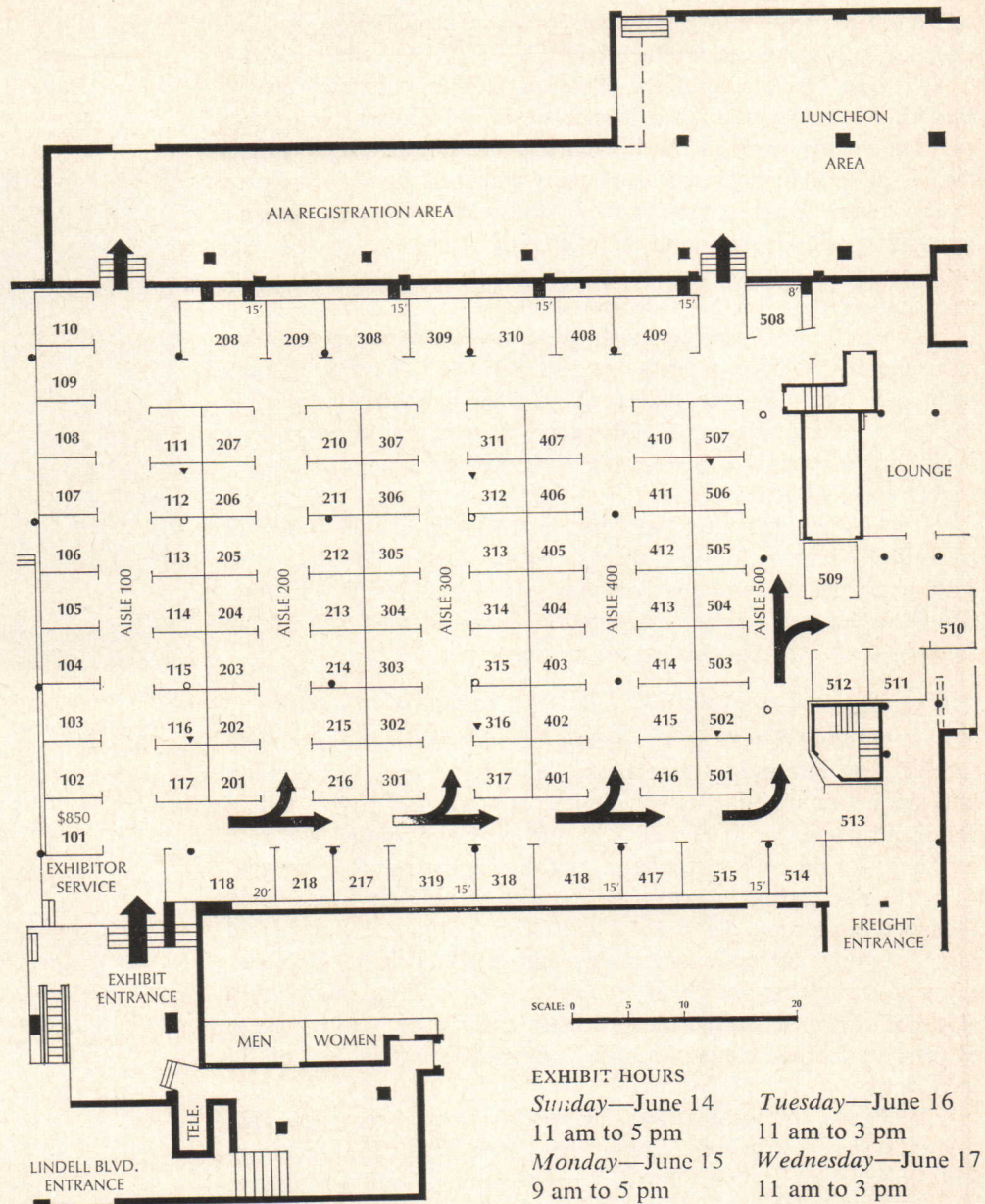
SO, MEET US IN ST LOUIE AND ENJOY OUR FAMOUS CUISINE! ■



Model of the Gateway Arch, the city's most stupendous architectural project. It is part of the Jefferson National Expansion Memorial, administered by the National Park Service, symbolizing St Louis as the new gateway to the West, following the Louisiana Purchase in 1803

The Gateway Arch today. Upon completion it will be 630 feet high—75 feet higher than the Washington Monument; its span at the base is also 630 feet. There will be an observation deck at the top, reached by a cable-drawn eight-car train rising in each leg

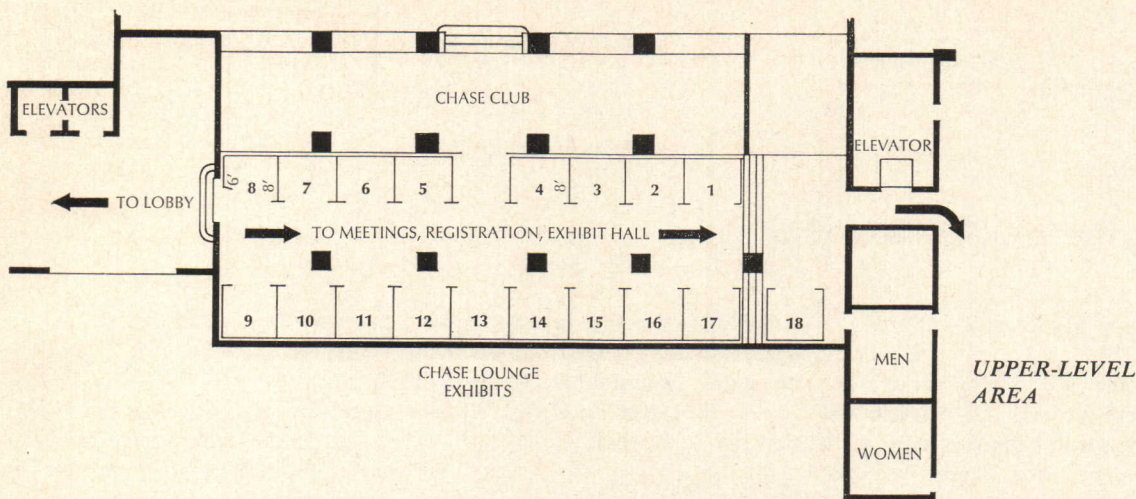




At the Chase-Park Plaza Hotel



THE CONVENTION PROGRAM (see p 52 for highlights) will allow ample time for the architects to visit the eighty-seven product displays which will be housed in the Chase Lounge and lower-level Exhibit Hall proper. A sandwich buffet (free tickets in each registration kit) will be served in the exhibit area on Tuesday and Wednesday noon, June 16-17. The latter also will be the date for the annual Producers' Council luncheon, featuring an address by Dr Humphry Osmond, Director of the Bureau of Research in Neurology and Psychiatry at New Jersey Neuro-Psychiatric Institute in Princeton. He will discuss the architect's role as it pertains to the webwork of human relationships.



1964 Product Exhibitors

Booth/Exhibitor			
310 ALLIED CHEMICAL CORP <i>Barrett Division</i>	514	FLEXICORE MANUFACTURERS ASSN	306 MOSAIC TILE CO
309 ALUMINUM COMPANY OF AMERICA	8	FLXIBLE CO	103 NATIONAL LUMBER MANUFACTURERS ASSN
210 AMERICAN AIR FILTER CO	212	FOLLANSBEE STEEL CORP	508 NATIONAL STEEL PRODUCTS CO
208 AMERICAN GAS ASSOCIATION	107	GAMCO, INC	3 NEW CASTLE PRODUCTS
108 AMERICAN OLEAN TILE CO	308	B. F. GOODRICH	4
116 AMERICAN SAINT GOBAIN CORP	505	HAGER HINGE CO	201 NORTHROP ARCHITECTURAL SYSTEMS
117	408	E. F. HAUSERMAN CO	217 OWENS-ILLINOIS
314 AMERICAN TELEPHONE & TELEGRAPH CO	312	HAWS DRINKING FAUCET CO	18 PHILIP CAREY MANUFACTURING CO
416 ANDERSEN CORP	102	HILLYARD CHEMICAL CO	501 PITTSBURGH PLATE GLASS CO
114 ARCHITECTURAL MANUFACTURING COMPANY OF AMERICA	109	HOLCOMB AND HOKE MANUFACTURING CORP	502
110 ARKETEX CERAMIC CORP	413	HOMASOTE CO	214 RED CEDAR SHINGLE AND HANDSPLIT SHAKE BUREAU
401 ARMSTRONG CORK CO	504	HOUGH MANUFACTURING CORP	105 ROHM AND HAAS
402	414	HUPP CORP	106
113 AZROCK FLOOR PRODUCTS	507	JONES & LAUGHLIN STEEL CORP	418 RONAN AND KUNZL, INC
409 BETHLEHEM STEEL CO	111	JOHNS-MANVILLE	412 R. O. W. WINDOW SALES CO
509 BILCO CO	112		104 RUBEROID CO
411 BRADLEY WASHFOUNTAIN CO	207	JUST MANUFACTURING CO	17 RUSCO INDUSTRIES, INC
407 BRIDGEPORT BRASS CO <i>Hunter Douglas Division</i>	303	KAISER ALUMINUM & CHEMICAL CORP	506 SAINT REGIS PAPER CO
304 BRUNSWICK CORP	215	KENTILE, INC	203 SARGENT AND CO
118 CALORIC CORP	216		115 STEELCRAFT MANUFACTURING CO
305 CECO STEEL PRODUCTS CORP	16	KIRSCH CO	202 STRUCTURAL CLAY PRODUCTS INSTITUTE
306	511	KNOLL ASSOCIATES	515 HALSEY W. TAYLOR CO
319 CHEMSTRAND CO	512		404 TELEFLEX, INC
316 CRANE CO	403	KOOLSHADE CORP	205 THONET INDUSTRIES
317	510	LAKE SHORE MARKERS, INC	307 TIMBER STRUCTURES
6 CUPPLES PRODUCTS CORP	318	LAMONT AND RILEY, INC	5 UNITED STATES CERAMIC TILE CO
7	1	LEAD INDUSTRIES ASSN	213 UNITED STATES GYPSUM CO
13 DAY-BRITE LIGHTING	2		14 UNITED STATES STEEL
503 DEVOE AND RAYNOLDS CO	301	LIBBEY-OWENS-FORD	15
305 DOUGLAS FIR PLYWOOD ASSN	302	GLASS CO	417 UNIVERSAL RUNDLE CORP
101 DOW CHEMICAL CO	313	LINE MATERIAL INDUSTRIES	311 VERMONT MARBLE CO
9 DWYER PRODUCTS CORP	410	W. R. MEADOWS, INC	405 WEYERHAEUSER CO
10	209	MILLER CO	406
218 ELECTRIC STORAGE BATTERY CO	11	MIRAWAL CO	415 WILKINSON CHUTES
	12		
	204	MOLDED FIBER GLASS CO	
	206	MO-SAI INSTITUTE	

Preview Tour of Exhibits

AMERICAN OLEAN TILE COMPANY

Booth #108

Promoting the design service for the architect and the ceramic tile Color Coordination Service which is available for large projects. Among the products shown will be Scored and Crystalline tile, new Contours CV, Precedent ceramic mosaics and Murray quarry tile. George Thorp III, Paul Nelson and Clair Bourgeois will staff the booth.

AMERICAN TELEPHONE & TELEGRAPH COMPANY

Booths #314-15

On exhibit: the latest in public telephone booths for lobbies, hallways, landings, etc. in commercial buildings of all sizes. The new standard booths are designer oriented to enhance decor wherever placed. A Bell System Communications consultant will be on hand to discuss public telephone installations.

ARCHITECTURAL MANUFACTURING COMPANY OF AMERICA

Booth #114

How these aluminum systems can be utilized for decorating, solar screening and modernization will be demonstrated with slides of completed installations and erection sequences of a refacing job plus full-scale mockups. In addition, the display will introduce a concept in customized aluminum railing systems which are factory fabricated and assembled.

ARMSTRONG CORK COMPANY

Floor Division

Booths #401-02

A full line of resilient flooring products will be displayed, including several new products specifically designed for commercial and institutional interiors. Dorelle Vinyl Corlon is a sheet vinyl flooring that has a monolithic design effect; Vistelle Corlon Tile, made with Du Pont Hypalon, possesses a combination of wear and maintenance characteristics. Color transparencies

will illustrate actual installations in some of the newest commercial buildings. Manning the booth will be W. F. Twitmire, R. E. Alexander and R. R. Roth.

FLXIBLE COMPANY

Locker Division

Booth #8

The Sentinel Locker display will show there's something new in the design of coin-operated units. Gone are protruding hinges, overlapping joints, busy handles and locks that clutter up the facade. They are available in patterned stainless steel and decorator colors, with new convenience and security measures to boot.

HILLYARD CHEMICAL COMPANY

Booth #102

Architects who are looking for complete specification files for every floor treatment plus data on special-purpose floors will find it here. Bill Hillyard and John C. Reick will be on hand.

HOUGH MANUFACTURING CORPORATION

Booth #504

Exhibit will introduce self-supporting Hufcor folding acoustical partition to be used in the first California School Construction System Development Program. While designed primarily for school classrooms and team-teaching concepts, this new technique can be equally effective in commercial and institutional design, wherever the combination of room division and portability is a desired objective.

JONES & LAUGHLIN STEEL CORPORATION

Stainless and Strip Division

Booth #507

On display: Corrosion-resistant stainless steel doors and entrances for commercial and institutional buildings manufactured by The Alumiline Corporation, Pawtucket, RI. Booth personnel: Frank F. Goosman and Art Blackman.

LIBBEY-OWENS-FORD GLASS COMPANY

Booth #301-02

Architects who visit this booth will be given the opportunity to make their own reflected glare test in comparing side window wall to an overhead source of light. A miniature classroom with simulated window wall and overhead lighting systems will be an inherent part of the display. By pushing buttons various combinations of lighting sources may be obtained.

LINE MATERIAL INDUSTRIES

Booth #313

Designed to show a variety of esthetic applications for outdoor lighting, the display will present LM's line of Stylette and Styleking luminaires, along with pictorial applications of various outdoor fixtures. Booth personnel: William S. Kingsolver, Paul A. Weninger, A. O. (Curley) Engen, Carl C. Cowles.

MIRAWAL COMPANY

Booths #11-12

Exhibiting a full product line: porcelain faced laminated panels, special faced laminated panels, metal acoustical ceilings, demountable partitions, porcelain faced doors and porcelain enamel faced chalkboards. Transparencies of present installations will be included. Personnel expected: L. H. Armantrout and Wm. J. Remley Jr.

VERMONT MARBLE COMPANY

Booth #311

Feature of this display will be a panel of marble, illuminated to demonstrate the translucent character of thin marble slabs as supplied for the Beinecke Rare Book Library at Yale University. The theme will be enhanced further with exterior and interior photographs of the building. Also shown: marble samples from Vermont and Tennessee. Earl C. Richardson will be in charge, assisted by the Chicago office personnel.

What Do We Look for in a Church Building?

First Report on the Interdisciplinary and Interfaith Exploration Toward Research on Religious Buildings

AS ONE OF THE FIRST STEPS toward implementation of the Institute's broad new program for strengthening the profession, as set forth on the Executive Director's page in our March issue and more fully on the same page in this issue, a unique venture in "experimental pioneering" has been undertaken. Probably for the first time, distinguished representatives of many disciplines have been called together to probe a research problem in great depth. The truly universal scope of interests of this conference called for the thinking of the best minds in each field.

Co-operating with the Institute in this symposium were the Department of Church Building and Architecture of the National Council of Churches of Christ in the USA, the Liturgical Conference (Roman Catholic), and the Commission on Synagogue Administration of the Union of American Hebrew Congregations and the Central Conference of American Rabbis.

Twenty-six men met at the Octagon on March 2 and 3 in an Interdisciplinary and Interfaith Exploration Toward Research on Religious Buildings. The Moderator of the meeting was Robert L. Durham FAIA, Chairman of the AIA Commission on Architectural Design and Director from the Northwest Region AIA. Around the table were theologians, an anthropologist, a sociologist, a psychiatrist, an economist, a historian, a physical scientist, an esthetician, a liturgical artist, a planner, ministers, priests, rabbis and architects—a long list, but spelled out to indicate the comprehensiveness of the approach.

The purpose of the meeting was to prepare the way for a long-range Interfaith Research Project which would aim to analyze our society and the ways in which its religious buildings can make possible a more meaningful expression of its religious convictions and to attempt to define the techniques by which the results of this analysis can be utilized by the professions involved.

In response to the question, "What kind of *people* have we in relation to religion in our contemporary American society?" the sociologist and the anthropologist demonstrated that the patterns of religious behavior in our country are fairly consistent. The basic attitudes of humans have changed little over the centuries. Nevertheless, religious motivations and concepts in America reflect mobility and status characteristics of the society and a concern with moral behavior. In other words, these human scientists said "People are people" and you can't do much to change them. Still, they cast doubts upon American religion as such. The anthropologist insisted that a research project must start by finding a way to achieve a totally objective examination of American religion.

The sociologist's talk contained numerous points of importance to research—the difficulty of finding "control" groups, movement of people in the continuum, education of children to morality, the "competitive characteristics of denominationalism and the competition of the church in the marketplace."

The psychiatrist put the concept of the church's function into terms of the individual, comparing constancy of need for religious fulfillment to the desperate need of the mental patient for a personal contact. He indicated that there was a problem for research in finding the solution to the concept of a comprehensive religious center, based upon the family as the smallest unit to be reached, after the individual.

The scientist and the economist emphasized the great impact of present-day forces upon the American people, stating that civilization is going through a time of change never equalled since man became domestic 7000 years ago. Thus they seemed at first to contradict the common assumption that mankind is unchanged by changing times—at least in his basic attitudes toward religion. Here, it seems that perhaps the most fundamental phase of the proposed research was stated, namely, that the effects of today's civilization upon man must be defined and evaluated.

The planner made a plea for beauty and religious value in the city as a whole, casting doubts upon the importance of the church building itself—at least as an isolated island in an ugly city—and implying that research cannot neglect the significance of man's urban environment. The esthetician addressed himself to the validity of the premise that religious environment fails too frequently today, and made a strong case for it. In speaking of the living timelessness of design and the effects of design upon man, he laid the groundwork for later phases of the research project.

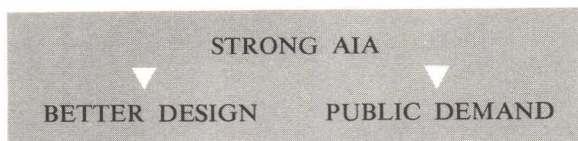
It was indicated by the discussion—and there was much more, not referred to above—that the research project would be dealing with the most fundamental aspects of architectural design in its relation to a complex function which transcends the usual purely practical functions of most buildings. Research in the human and social sciences would come first and be basic in nature. Research on the environment, which might be regarded as applied research, should translate the fundamental findings into usable precepts and principles.

It is the intention to report upon this seminar more fully in a later issue of the *AIA Journal*, when the tapes are transcribed and all information is available. Included will be, of course, a full list of the participants. ■

Investment for Progress

SUPPLEMENTARY DUES PROJECTS FOR 1964 were approved by the Board for total allocations of \$160,895. The list comprises twenty-five new projects, the completion of two 1963 projects and seminars for all regional conventions. The impressive program is possible this year because the conservatively estimated \$80,000 income for 1964 was augmented by an unexpended balance carried forward from 1963.

On my page in the March *AIA Journal* I offered a simple diagram for the Institute's major objectives:



The chart on the opposite page demonstrates how your supplemental dues (and some public relations budget funds) are being used in 1964 to amplify this diagram and how well the projects fit into our master plan for progress.

Following is a list of the projects with brief descriptions, in the order of selection by the Committee on Committees. Every Commission has projects to implement, running the gamut from large to small and from long-term to immediate usefulness and value to the profession. Surely every payer of supplemental dues will recognize projects worth many times his dues payment.

Regional Seminars—More regional convention seminars are being offered on several subjects. The seminars have proven to be the most direct means for bringing the results of projects to the maximum number of Institute members.

Press and the Building of Cities—More regional conferences for newspaper writers and editors, extending the work of the original Columbia University national conference across the country.

Format for Data Filing and Construction Specifications—Printing and distributing this document and a companion circular to give the membership a new working tool in place of one that is obsolete.

Pilot Regional Design Seminars—Two experimental design-concept seminars in the Northwest Region where Institute members and a panel of design experts will explore techniques to increase design capability. A pilot study for nationwide use.

AIA Information Booklet—The 1964 Structure and Services of the Institute booklet already issued to all members for greater utilization of Institute services and recruitment of new members.

Survey of Member Motivation—A professional sampling survey to determine the motivations for

membership in the professional society and strengthen further growth of the Institute.

Criteria for Building Products Usage—Printing of the documents, "Guide for Building Products Development and Usage" and "Recommendations for Production of Educational Films and Slides for Architects and Professional Schools."

Industrial Architecture Reprint Article—Reprinting and distribution of *AIA Journal* article "Crash Construction Programs" to promote architects' services to 22,500 industrialists as potential clients.

Survey: Research and Manpower—A first compilation of architectural research in universities, government and private organizations and architects engaged in research to lay the groundwork for future research programs.

Survey of the Profession—A first statistical analysis of the architectural profession, covering all registered architects in the US, to produce facts for many uses by the Institute and its components.

International Meetings—Funds for partial reimbursement for official delegates of the Institute to attend meetings of international architectural importance.

Combined Urban Design Projects—Completion of the current *AIA Journal* series, new work sheets for practitioners and educational seminars for regional components of the Institute.

Pre-Registration Training Program—Further development of educational materials for the young architect preparing for registration.

Attorneys' Regional Conference—A regional conference for attorneys who defend architects to develop this professional capability for wide usage. (Attorneys attend at their own expense.)

Public Housing Administration Procedures—A study in collaboration with the Agency to set guidelines for streamlining its relations with architects. A supplement to the activity which established the new contract and fee schedules.

Comprehensive Architectural Services—Completion of the current *AIA Journal* series and survey of its usefulness in book form. Exploration of new full-length texts on various aspects of these services.

Survey: The Architects' Public Image—A pilot study of the profession's standing with the public to lay the groundwork for more effective public relations programs at all levels.

AIA Film—A movie, probably the first of a series, to educate the adult public and community leaders to the necessity for good architectural and urban design.

Religious Buildings: Interfaith Seminar—A two-



day meeting, held March 2 and 3, where experts from ten disciplines began the work to promote an extensive research project on religious buildings for Catholic, Jewish and Protestant faiths.

Automated Information Study—An exploration by an AIA task force and consultants of the use and benefits of automation for retrieval and assembly of the vast amounts of architectural and building information. The premise is that current methods will soon be obsolete.

Planning Second Columbia University Conference—Preparation for a conference (similar to the original Press Conference) to educate the editors of consumer magazines and TV producers to better coverage of architecture.

Reprint Church Guides—Assembled reprints of the *AIA Journal* series of Church Planning Guides to foster better design in this building type.

Library Architecture Reprint Show—A traveling exhibition of the winners of the Library Competition of 1963 and 1964 to encourage better design.

Architectural Researchers Conference—A first meeting of national experts in this field to unify their collaboration with the Institute's Research Programs.

Reprint School Plant Studies—Assembled reprints of the *AIA Journal* Series to promote better design of schools.

Fund for Reprints—A revolving fund to finance reprints of *Journal* articles to be used by the profession in educating clients.

W.H.S.

MASTER PROJECT CHART

Survey of the Profession
Survey of Member Motivation

AIA Structure and Services 1964
International Architects Meetings

\$15,545

BETTER DESIGN

STRONG AIA

PUBLIC DEMAND

Design Capability
\$42,750

Pilot Regional Design Seminar
Urban Design Projects
Reprint Church Guides
Library Architecture Show
Reprint School Plant Studies

Business Capability
\$17,700

Data Filing and Construction Specs
Criteria for Product Usage
Attorneys Regional Conference
Comprehensive Architectural Services

Education and Research
\$44,400

Survey of Research and Researchers
Researchers Conference
Interfaith Research Seminar
Automated Information Study
Pre-Registration Training Program
Regional Convention Seminars

Educate the Press
\$11,500

Regional Press Conferences
Plan Second Columbia Conference

Educate the Public
\$17,000

(plus \$8000 from film fund)

AIA Film for Adults
Pilot Survey of Profession's Public Image

Educate Clients
\$12,000

PHA Procedures Study
Industrial Architecture Reprints
Fund for Reprints of Articles for Clients

Other Public Relations Projects
\$21,200 from PR Budget
(not supplemental dues)

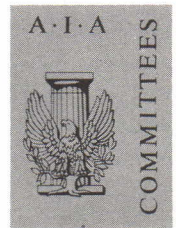
Secondary Education Filmstrip (third in a series)
Feature Article and Speech Kit for Chapters
Editorial Clipsheet for Newspapers
"Selection and Use of an Architect,"
a New Booklet

A Guide for Planning Church Buildings for the Churches of Christ

CHARLES J. BETTS FAIA

Commission on Architectural Design
Robert L. Durham FAIA, Chairman

Committee on Religious Buildings
Kenneth E. Richardson AIA, Chairman



The thirteenth in a series of reports prepared by the AIA Committee on Religious Buildings intended to serve as guides for the architect faced with planning a building for a faith other than his own

Historical Background

Members of the Church of Christ do not conceive of themselves as a new church started near the beginning of the nineteenth century. Rather, the whole movement is designed to reproduce in contemporary times the church originally established on Pentecost, AD 30. The strength of the appeal lies in the restoration of Christ's original church.

James O'Kelly of the Methodist Episcopal Church was an early leader in the Restoration Movement. In 1793 he withdrew from the Baltimore Conference of his church and called upon others to join him in taking the Bible as the only creed. His influence was largely felt in Virginia and North Carolina where history records that some seven thousand communicants followed his leadership toward a return to primitive New Testament Christianity.

In 1802 a similar movement among the Baptists in New England was led by Abner Jones and Elias Smith. They were concerned about "denominational names and creeds" and decided to wear only the name Christian, taking the Bible as their only guide. In 1804, in the western frontier state of Kentucky, Barton Stone and several other Presbyterian preachers took similar action declaring that they would take the Bible as the "only sure guide to heaven." Thomas Campbell, and his more illustrious son, Alexander Campbell, took similar steps in the year 1809 in what is now the state of West Virginia. They contended that nothing should be bound upon

Christians as a matter of doctrine which is not as old as the New Testament. Although these four movements were completely independent in their beginnings eventually they became one strong "restoration" movement because of their common purpose and plea. These men did not advocate the starting of a new church, but rather a return to Christ's church as described in the Bible.

Since the last decade of the eighteenth century, the Church of Christ has grown to 2,250,000 members with 16,000 congregations in the United States. It is one of the fastest-growing religious groups in the United States. The strongest concentration of members is in the Southwest.

Basic Beliefs

The autographs of the 66 books which make up the Bible are considered to have been divinely inspired, by which it is meant that they are infallible and authoritative. However, the basic textbook of the church and the basis for all its preaching is the Bible as it is known today. Reference to the scriptures is made in settling every religious question. A pronouncement from the scriptures is considered the final word.

Christ is accepted as the only-begotten Son of God, uniting in His person perfect divinity and perfect manhood, and born of virgin birth, as described in Isaiah.

It is believed that God is not a respecter of persons, but that each man determines his own destiny by deciding to either accept Christ's will or reject it.

The word baptize comes from the Greek and literally means, "to dip, to immerse, to plunge." In addition to the literal meaning of the word, immersion is practiced because the members believe it was the practice of the church in apostolic times.

Still further, only immersion conforms to the description of baptism as given by the Apostle Paul in Romans where he speaks of it as a burial and a resurrection.

Only those who have reached the "age of accountability" are accepted for baptism. It is pointed out that the examples given in the New Testament are always of those who have heard the gospel preached and have believed it. Faith must always precede baptism, so only those old enough to understand and believe the gospel are considered fit subjects for baptism.

Ministers or evangelists of the church have no special prerogatives. They do not bear the title of "Reverend" or "Father," but are addressed simply by the term "Brother" as are all other men of the church. Along with elders and others they do counsel and advise those seeking help.

It is expected that all members will assemble for worship on each Lord's Day (Sunday). A central part of the worship is the eating of the Lord's Supper. Unless providentially hindered, each member considers this weekly appointment as binding. In many instances, as in the case of illness, the Lord's Supper is carried to those who are hindered from attending the worship. (The Lord's Supper consists of the bread and the wine.)

As a result of the distinctive plea of the church—a return to New Testament faith and practice—a cappella singing is the only music used in the worship. This singing, unaccompanied by mechanical instruments of music, conforms to the music used in the apostolic church and for several centuries thereafter. Because it is felt that there is no authority for engaging in acts of worship not found in the New Testament, this eliminates the use of instrumental music, along with the use of candles, incense and other similar elements.

It is believed that after death each man must come before God in judgment and that he will be judged according to the deeds done while he lived. After judgment is pronounced he will spend eternity either in heaven or hell.

Each first day of the week the members of the church "lay by in store as they have been prospered" (1 Cor. 16:2). This is the church's means of financial support. The amount of any individual gift is generally known only to the one who gave it and to the Lord. This freewill offering is the only call which the church makes. No assessments or other levies are made. No money-making activities are engaged in.

The Church of Christ has no creed in the usually accepted meaning of the term. The belief of the church is stated fully and completely in the Bible. There is no other manual or discipline to which the members of the Church of Christ give their allegiance. The Bible is considered as the only infallible guide to heaven.

In the salvation of man's soul there are two necessary parts: God's part and man's part. God's part is the big part, "For by grace ye have been saved through faith, and not of yourselves; it is the

gift of God, not of works, that no man should glory" (Eph. 2:8-9). The love which God felt for man led him to send Christ into the world to redeem man. The life and teaching of Jesus, the sacrifice on the cross, and the proclaiming of the gospel to men constitute God's part in salvation. Though God's part is the big part, man's part is also necessary if a man is to reach heaven. Man must comply with the conditions of pardon which the Lord has announced. Man's part can be clearly set forth in the following steps (used by all Churches of Christ to explain their doctrinal emphasis):

1) *Hear the Gospel.* "How then shall they call on him in whom they have not believed? and how shall they believe in him whom they have not heard? and how shall they hear without a preacher?" (Romans 10:14)

2) *Believe.* "And without faith it is impossible to be well pleasing unto him; for he that cometh to God must believe that he is a rewarder of them that seek after him." (Heb. 11:16)

3) *Repent of Past Sins.* "The times of ignorance therefore God overlooked; but now he commandeth men that they should all everywhere repent." (Acts 17:30)

4) *Confess Jesus as Lord.* "Behold here is water; what doth hinder me to be baptized? And Philip said, if thou believe with all thy heart thou mayest. And he answered and said, I believe that Jesus Christ is the Son of God." (Acts 8:36-37)

5) *Be Baptized for the Remission of Sins.* "And Peter said unto them, Repent ye, and be baptized every one of you in the name of Jesus Christ unto the remission of your sins and ye shall receive the gift of the Holy Spirit." (Acts 2:38)

6) *Live a Christian Life.*

Church Government and Sequence of Authority

Congregations are independent. They are organized congregationally with local scripturally qualified men appointed to oversee the work of the local church. These men are sometimes called bishops, more often elders. Other men who meet the biblical qualifications are appointed to serve as deacons. These serve under the elders and are generally assigned specific tasks such as directing singing, serving as church treasurer and teaching Bible classes. *There is no earthly authority in matters of the church superior to the elders of the local church.*

Following the plan of organization found in the New Testament, Churches of Christ are autonomous. Their common faith in the Bible and adherence to its teaching are the chief ties which bind them together. There is no central headquarters of the church and no organization superior to the elders of each local congregation. Congregations do cooperate voluntarily in supporting the orphans and the aged, in preaching the gospel in new fields and in other similar works. There are no conventions or official publications. The "tie that binds" is a common loyalty to the principles of the restoration of New Testament Christianity.

Buildings

Since the Churches of Christ are independent of one another, the type of structure which houses them is also an independent decision. There is no architectural tradition nor heritage which is binding. In most instances, the individual churches appoint a certain group of men from their own congregation to act as their building committee, who in turn choose the architects.

1) The worship services are conducted in a very simple manner. The service consists of prayer, singing (a cappella), preaching and the Communion (or Lord's Supper as it is sometimes referred to). All this is done on the Lord's Day, both morning and evening. There are mid-week services usually conducted morning and evening, also. The pulpit is usually (not always) centered on the nave.

2) Men in the local congregations serve as attendants for the Communion, by passing it to the members who are seated. There is no certain order or time during the service for doing this. A communion table is required and is usually, not always, located in the center front of the nave. The communion emblems may be prepared in the church or at a member's home.

3) The baptistry is one for the immersion of a person—its placement is left to the discretion of the architect and his client—but typically is located in the front of the nave and usually centered.

4) The choir, if any, is grouped together as part of the congregation.

5) The buildings usually have an educational wing, which the congregation uses for their Bible study or Sunday School. This wing is usually broken down into the various classrooms.

6) There are usually provisions made for an office or study for the minister.

7) Some of the larger churches try to provide a library, etc, where any of its members may do study or research.

8) Some of the congregations provide for kitchens, which are used at times for fellowship gatherings.

Other Planning Considerations:

1) Acoustics: Since musical instruments are not used in worship services, the frequencies of the human voice alone determine the optimum reverberation time.

2) Pews or seats should have aisles on both sides in order to allow men to pass the Communion.

3) Churches of Christ encourage even very young children to sit with their parents at worship services; however, a soundproof cry-room, with full view of the pulpit, is often required.

Bibliography

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ALFRED BENDINER FAIA 1899–1964



HOW SAD TO HEAR that Al Bendiner has left us.

Al Bendiner saw through the Martini Glass clearly and cheerfully—never darkly. It was in reality a gay crystal ball that he was reading, and often slyly revealing to us what he saw there of our pompous foibles and stuffy styles.

His was a buoyant heart; he enjoyed life, architects and architecture; he had the light touch and his pinpricks at our profundity were too pertinent to brush away but rather to be pondered as we paused in our dreary double-talk. Double-talk often came from those on the dais, ensconced in elegant sem-

inar lounge chairs. He was amused by double-talk whether written or spoken.

Our Northwest Regional Meeting was under way on Columbus Day in 1962 when Oregon's worst blowdown broke upon us. The evening gatherings were carried on by candlelight. We had personalities from afar for that pow-wow, but none will be remembered as long as will Al and Betty Bendiner. We had a grand time as Al carried on with the blow at our backs and the spray of the Pacific Ocean in our faces.

His perception and treatment of our little egos was as amusing, pungent and pertinent as ever. He had a wonderful way of revealing the truth about man and man's environs and habits. I do not remember any of the great who brought us messages of considered concern, but I shall always remember Al's and Betty's visit among us.

He will live long in the hearts of those who find architecture a gay and exciting adventure, a thrilling and useful way of life.

We shall miss him, for who can hope to tilt again with his droll skill and buoyant spirit? The Martini Glass may be gone and the crystal ball clouded for a time, but his memory will continue to sparkle and cheer us for many a year. For that we are thankful.

GLENN STANTON FAIA

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THE AIA JOURNAL in 1962 published a two-part article in its September and October issues that included a complete printing of NCARB Circular of Information No 3-62 regarding NCARB Services, Council Records, Certifications and Examinations.

During the use of that Circular, since May 1962, there have been no basic changes in the Council's eligibility requirements but some interpretations and clarifications have been deemed desirable. The following section has therefore been added to the 1964 edition. Where reference is made to other sections of the Circular, explanations appear later in the article.

Utilization of Circular of Information No 3-62 has pointed out several requirements which need clarification. In order to facilitate the evaluation of the qualifications of those applying for admission to the NCARB examinations, the Board of Directors has therefore made the following interpretations:

1) The phrase "diversified practical training" which is found in Requirement 5 of Section E has been interpreted to require all of the following:

a) Equivalent of three months' full-time supervision

b) Equivalent of three months' full-time specification writing

c) Equivalent of three months' full-time structural, mechanical or electrical engineering; or equivalent of three months' full-time in coordination with consultants or with the engineering departments of architectural firms in regard to all of these phases of engineering.

2) Compensation for lack of the specific experience required by paragraphs 1a, 1b and 1c above may be achieved by having more than the required number of years of acceptable training, as follows:

a) Supervision—one additional year of acceptable training in lieu of three months' supervision

b) Specifications—one additional year of acceptable training in lieu of three months of specification writing

c) Engineering—one additional year of acceptable training in lieu of three months of engineering

d) Each deficiency must be compensated for separately, that is, two years for two deficiencies and three years for three deficiencies

e) For the purpose of compensating for deficiencies in practical training in supervision, specifications and engineering, 100 per cent credit will be allowed for practice as a principal, Item 3-6 of Table F-3 notwithstanding.

3) For many years the NCARB has required the written examination to be of 36 hours' duration. In those instances when the State Board written examination was less than 36 hours, compensation for each one-hour deficiency in duration may be achieved either by two additional years of acceptable experience as an employee or by one additional year of architectural practice as a principal.

4) Table F-3 lists certain acceptable training which may be substituted for Requirement 5 under Section E. In addition thereto, employment or practice in such fields as interior design, city planning and landscape design will be accepted on the same basis as that listed under Item 3-3 of Table F-3. The maximum credit allowed for the training named above plus the training described under Item 3-3 will be one year. This ends the 1964 newly-added section.

Interpretation number one refers to Requirement 5 of Section E, which reads as follows:

5) Have at least three years of diversified practical training in the offices of registered architects who are practicing as principals. This practical training to be had after termination of the required academic training.

Other practical training may be substituted for this requirement in accordance with the provisions of Tables F-2 and F-3, in which event a total allowable credit of three years is required.

Table F-2 defines the credit that may be extended for practical training acquired prior to termination of academic training. Table F-3 defines the credit that can be extended for practical training acquired in circumstances other than employment in the offices of registered architects who are principals.

At 2e of the Interpretations, item 3-6 of Table F-3 is mentioned. Item 3-6 provides a means of using practice as a principle as a part of their credits by those architects who cannot otherwise establish that they acquired the minimum years of employment training under the guidance of other architects practicing as principals prior to the start of their own practice. Normal credit extension under these circumstances is at a 50 per cent rate but Interpretation item 2e does allow 100 per cent credit when diversity of training experience is the key factor involved and minimum training requirements from the standpoint of time alone have already been satisfied.

Item 3-3, as referred to in Interpretation four, is a part of Table F-3 in the Circular. This table specifies the credit allowed for types of training other than training acquired under the direct guidance of architects practicing as principals. Item 3-3 extends credit at a 50 per cent rating with a one-year maximum of allowable credit. Since employment or practice in such fields as interior design, city planning and landscape design were not included in the original document, Interpretation four merely identifies the category of training experience under which these types of training will be considered and the maximum credit extended.

Each interpretation is to help the individual architect in the analysis of his eligibility and to clarify the requirements. ■

Book Reviews

Architecture Worth Saving in Onondaga County. New York State Council on the Arts & Syracuse University School of Architecture. Syracuse, NY, Syracuse University Press, 1964. 202 pp illus 7" x 8" \$3.95

Here is a little gem of a book, a delight to behold and to hold in the hand, visually appealing and delightful in content. A pilot project of the New York State Council on the Arts, it is the first of a series of studies of the regional architecture "worth saving" of the Empire State.

This is no mere catalog of ancient buildings in danger of the bulldozer. It is a varied sampling of the many types of old buildings in the area, carefully chosen for quality and character, emphasizing their regionalisms and suggesting possible uses for those which have not yet been preserved and secured and indicating the new uses of those which have. Chronologically, the buildings range from the post-colonial and Greek revival houses and churches through to the business buildings of the 1890's—and including even an Albert Kahn industrial building of 1910.

A few of the illustrations are of buildings which have been destroyed: "An introspective look at these lost pieces of fine architecture suggests the terrifying thought that in spite of all our egotistic bragging today, we may not be worthy of our inheritance. By destroying fine things and replacing them with ugly ones we make the world worse, not better. If we cannot create beauty, we should at least help preserve that which was given to us." Paste those words up on the wall of your office. They were written, I suppose, by the director of the project, Harley J. McKee, professor at Syracuse's School of Architecture and sometime member of the Institute's Preservation Committee.

Only one thing is lacking, and that is a map of the region. I'm afraid only New York Staters know just where Onondaga County is, and that Syracuse is its principal city. It is a region rich in local history and in buildings from the past. With the exception of Syracuse, it has been relatively untouched by our modern idea of progress. I recommend to out-of-state visitors that it be placed on their itinerary, with this little book as a guide.

The book is more than a guide to the region, however. It is a guide and model to other counties, or regions, all over the country to show what can be done to bring to public attention the richness of their own architectural background, the quality which the preservation of these old buildings adds to the community and beyond that, actual suggestions as to how old buildings can be put to modern uses, to justify their preservation and return them to an active life in the community. J.W.

Estimating Space Needs and Costs in General Hospital Construction. James J. Souder AIA. Chicago, American Hospital Assn, 1963. 32 pp 15 illus 8½" x 11" \$2.50

Reviewed for the AIA Journal by Edward H. Matthei AIA

The study reported in this publication was supported by the US Public Health Service under Research Project W-59, "Collaborative Research in Hospital Planning," and sponsored by The American Institute of Architects and the American Hospital Association. The object of the study is to establish and test a method for allocating space and estimating unit costs on a departmental basis which might serve as a useful tool for programming new acute general hospitals, replacing obsolete facilities or evaluating obsolescent facilities. While the major part of this study consists of a concentrated examination of the experience of three representative hospitals and the determination of guides or yardsticks drawn from these experiences, an attempt is made to broaden the study base with the inclusion of data from seventy hospitals compiled by a nationwide committee of the AIA and five prototype hospital plans prepared by the US Public Health Service.

The architect and hospital administrator responsible for programming a hospital construction project will find the data given in the numerous tables and the instructions for the application of scales for estimating gross area per bed, allocating space to specific departments, distributing costs by categories and estimating costs by type of space, helpful as a guide and interesting as background.

It is important to note, however, that this is a pilot study and, as the author points out, additional data should be collected through analysis of more hospitals and refinements made in the application of resulting yardsticks by revealing inadequacies in method as they might appear with further testing.

Fences, Gates and Garden Houses. Carl F. Schmidt. Rochester, 1963. 106 leaves, photos, drawings, 9" x 11" \$6.50

For nearly fifty years Mr Schmidt has been gathering and recording data on early examples of regional architecture. Cognizant of the fact that many of the fences he had observed on his earlier trips were disappearing, he determined on this presentation of an architectural accessory which added much to the charm of the old villages and towns.

This is not a book on all fences, for the simple rail fence, the dry stone wall fence or the iron fence will not be found herein. Rather it is limited to the fine wooden fences which reflected the skill and workmanship of the master craftsman. The examples shown range from New Hampshire to Mississippi, although the majority are from New England and New York State. There are some fifty photos, and sixty-three plates of measured drawings in clear detail. The introductory text is brief, commenting on some of the examples shown.

Only a few garden houses are included. One is grateful to Mr Schmidt for continuing to make his researches available to a wider circle. G.E.P.

Edmund Randolph Purves FAIA

1897-1964



THE MAN WHO DIRECTED the affairs of The American Institute of Architects from 1949 to 1960 was an architect, but he was more than that. He was a soldier, but he was more than that. He was a statesman who could hold his own with members of Congress, government bureau heads and the able representatives of the powerful pressure groups that influence the decisions of public hearings.

It is a generally accepted fact that his skill as a statesman brought about a new and more cooperative relationship between the government building agencies and the architectural profession. Before that era, a telephone call from the Institute asking for a conference with the administrator probably was treated rather haughtily by a third-echelon clerk. Now the preliminary telephone call frequently originates with the Commissioner, who wants to know how a proposed change in fees or routine procedure would be looked upon by the architectural profession.

This metamorphosis did not come about because bureau chiefs are now being born with a new spirit of reasonableness. It did not come about through unusual powers of persuasion on Ned's part—the fact is that the Ned Purves who came to the Institute was not a good speaker; only through what must have been a period of self-discipline did he develop the ease and lucidity of his later platform speeches that will be remembered by Institute gatherings of chapters, regions and conventions. Ned's bringing about a new era of understanding was due largely to the fact that he depended less on argument than on a willingness to assemble the facts—not what one architect found in New York, but what representative practitioners all over the country experienced. Only through AIA were the architects willing to disclose these facts.

There was a marked strain of his native Philadelphia about Ned—the quiet elegance of life and its trappings, never ostentatious but never falling below the level of unmistakable superior quality.

Essentially Ned Purves was a rather shy man. Among his thousands of friends I would venture to say that he had few very close friends. A better listener than a voluble protagonist. His writing gave him the outlet for his inner feelings, and the exuberance of his writings signaling the joy he must have felt at being able to express himself without having to listen to arguments.

His war experience fits into the picture. It is easier for a shy man to enlist and fight than to argue about one's duty and responsibility. The United States was making up its mind about its national responsibilities in 1917 when Ned was studying architecture at the University of Pennsylvania. His profession would

wait, the war could not. He joined the American Field Service of the French Army. It was not long before the American Expeditionary Forces came into being and he transferred to his own country's flag. His early enlistment in this First World War earned him a course of training at Saumur, the famous Artillery School of France.

His World War I service involved six major engagements, and he returned to the University of Pennsylvania decorated with the Croix de guerre with Silver Star, the Verdun Medal, the Field Service Medal and the Victory Medal with four Battle Clasps.

The University of Pennsylvania gave him his BS degree in 1920, and in that same year he was a finalist in the competition for the Paris Prize.

After the customary period of travel and study abroad, he came back to Philadelphia to open his own office in 1927. Joining the Institute in 1930, he early developed his interest in the administrative aspect of the work of the professional society. His activity in chapter and state association affairs made him president, 1931-38, of the Pennsylvania Society of Architects; a member of the Pennsylvania Board of Examiners for Architects, 1938-50; AIA Regional Director, 1938-41; and AIA Washington Representative in 1941, working on a better AIA image in public affairs.

Once again the call to arms became insistent. This time the Seventh Air Force welcomed his enlistment and sent him to the Pacific area. In after years Ned had many an amusing chuckle over the fact that a man trained in construction should be shunted into counter-intelligence, of which he knew absolutely nothing. But that is how the Army works. Nevertheless, this placing the round peg in the square hole resulted in Ned's final discharge as a major and the Chief of Counter-Intelligence in the Pacific Theater of Operations.

His return to civilian life brought him back to the national headquarters in Washington—and to the title of Director of Public and Professional Relations. Upon the retirement of Edward C. Kemper, after his long and honorable service, Edmund Purves became the logical choice as Executive Director of the Institute, particularly well equipped for the office by having served as a member of the Board of Directors.

The Institute will long miss this gentleman of the old school, this shy man who ruled by virtue of his clear thinking rather than by dependence on insistent directives. We shall long cherish the memory of this quiet leader who did such great things for the Institute and the architectural profession.

HENRY H. SAYLOR FAIA

Comprehensive Architectural Services: For the Large Corporate Client

HOWARD E. PHILLIPS AIA*

Because he has long recognized the need for them, the large corporate client provides for himself many of the comprehensive services architects now perform, but which were mostly neglected by the architectural profession before

**This article reflects the experience of the author, who for many years was Building Engineer for A.T. & T. Company and who is now engaged in a special study for its manufacturing organization, the Western Electric Company*

Coordinating the construction program

The general construction outlook for the future in the United States is bright; some leading economists say that the total construction volume in the next decade may exceed \$600 billion. This would indicate that construction will surely continue to play a major role in the economy. This potential indicates that architects and engineers in this country have a big job to do in the years that lie ahead.

As a part of the total, the Bell Telephone System constructs more than 1,000 building projects each year. These range in size from large factories or multistory office equipment buildings in large cities to small community dial offices in villages. The buildings are dispersed widely throughout the United States and Eastern Canada. In addition to buildings, the construction program ranges from the installation of cables on the ocean floor to microwave structures on mountain peaks.

A.T.&T. is the parent company of the Bell System which includes the Bell operating telephone companies, Western Electric Company (the manufacturing arm) and the Bell Telephone Laboratories. As the business grows bigger and more complex, it becomes even more necessary to delegate the authority for building work to the appropriate level of supervision. In many fields, automation promises great things in easing personal physical effort, but in this particular business the individual has never been more important.

Liaison with the architect is done by a professional building specialist acting as coordinator for the telephone company. He spells out in considerable detail, in writing, the needs and objectives of the owner. The architect then translates the study plans

and instructions into a finished design from which lump sum bids may be obtained from contractors.

This big construction program is carried out with relative ease because the coordinating work is handled by building engineering groups in each of the 23 associated Bell telephone companies; each group operates with a great deal of independence. Western Electric, the manufacturing organization of the Bell System, operates differently; in this company a central staff organization handles most of the construction work on manufacturing buildings, distributing houses and laboratories.

*Comprehensive
architectural services*

In order to provide complete architectural services, the architect must be administrator, artist and engineer. He must consider the entire physical environment. In comprehensive architectural services for many clients, he may provide professional coordination and counsel on feasibility studies, operational programming and assembly of land and money. Actually, many large corporate clients do not need all of the broad services that big architectural firms are traditionally providing today. These clients have set up their own organizations to do the feasibility studies, location and site analysis and other long-range planning.

An architectural firm seems to function best when its ownership is made up entirely of professional men. There is a risk in a firm becoming so large that non-professional members of the firm jeopardize its professional standing.

*Architectural services needed
by large corporate clients*

The architectural services generally needed by large corporate clients are often quite different from those required by small individual clients. Smaller companies may come to the architect with a "one-shot" job, but many big clients have numerous repeat jobs. These clients may come to the architect with a piece of land, money to finance the project and a sketch of a proposed building layout. They may want the architect to prepare only the working drawings and specifications. In the Bell System, much of the early and long-range planning normally performed by architects for smaller clients is done by the companies' building engineering people. Unfortunately, it may be true that, at times, the architect is not brought in soon enough. It is highly desirable for the architect to be brought in at an early stage—before the site is selected, if possible. And more workable solutions are possible when the architect is brought in for the early planning of the various departmental needs in the building.

In the Bell System, the main effort is devoted to the communications business; and now, more frequently, outside professional talent is used for the design and planning of new buildings. Most of this design work is done by the experts who are trained to do this work—the private architects and engineers throughout the country. From an over-all Bell System point of view, this pays off in the long run. It eliminates the big staffs that would be needed at many locations for varying work loads if the companies did all the work themselves. It permits a good coordination job between owner and architect.

The owner's building engineer or project engineer works with the architect much like an individual owner. He makes decisions on questions concerning the building requirements, the use of the building and the systems to be used; and he furnishes the archi-

tect the information necessary to incorporate these requirements in the building. He works with the architect to see that telephone equipment requirements are met; but does not tell the architect how to make the drawings or write the specifications.

Fitting into the community

Operating in many cities and towns over much of the country imposes a real responsibility on the large corporate owner. The Bell System companies, of necessity, are intimately associated with their neighbors; and they try to be good neighbors by using fitting and appropriate architecture. In other words, the buildings should add something to the neighborhood; they must be neither indifferent nor detracting. Generally, the buildings are made attractive through a proper study of strictly functional forms. A capable architect should produce the desired effect by suitable proportions, mass and composition, and by a successful handling of construction materials. In fact, the more attractive buildings are usually achieved this way rather than through "trimmings."

Architects need to study the communities in which these buildings are to be situated and then design structures that are compatible with the environment. They must fully recognize and accept the image the company wishes to present to the public. To assist the telephone companies in providing suitable architecture for their buildings, two New York firms of consulting architects are retained: Kahn & Jacobs and Smith, Smith, Haines, Lundberg & Waehler. Major projects are reviewed in the early planning stage, so that any useful ideas developed in this way may be incorporated into the working drawings.

Specifications

Architects are not told how to write their specifications, but the architects are expected to write them to provide effective competition between producers by specifying two or more products which will serve equally well. Good quality materials are expected but specifications should not be written so tightly as to preclude competition among suppliers. It is believed that the words "or equal" should not be used, generally. Decisions about the comparative quality of various products should be made before bids are taken. Contractors may then submit other materials for consideration, with cost differences, at the time bids are taken.

*Construction contracts
on competitive bidding basis*

It is Bell System policy to award construction contracts solely on the basis of merit. In almost all cases, awards are made on the basis of competitive bidding by qualified contractors. Lists of eligible bidders are carefully screened in advance to insure that bidders are equals in degree of responsibility and competence. In making an award, the reputation and competence of sub-bidders are also taken into consideration; and, of course, the right to accept or reject any or all bids is reserved. In certain cases, bids on some branches of the work may be taken separately.

*Advance approval for
design funds on major projects*

Some of the Bell companies require that study plans on projects and preliminary cost estimates be prepared before management will give an approval to retain an architect. In order to meet such a schedule, architects are often forced to begin drawings almost immediately after the contract is approved. In order to facilitate long-range planning, Western Electric Company (the manufacturing arm) and many of the telephone companies generally get advance approval from management for the design work on large projects before funds for the building itself are

requested. This procedure, also used by many other large firms, not only avoids hurried planning but also provides for more realistic project schedules, more accurate cost estimates for final funds and other advantages.

Early planning

For a successful project, sufficient time must be allowed for advance planning. The client and architect should thoroughly explore the basic requirements and have a complete understanding in their contract. This contract should include the full extent of services the architect is to provide. It is the client's responsibility to state clearly all of his requirements in considerable detail and advise the architect specifically as to the maximum building costs which will be acceptable.

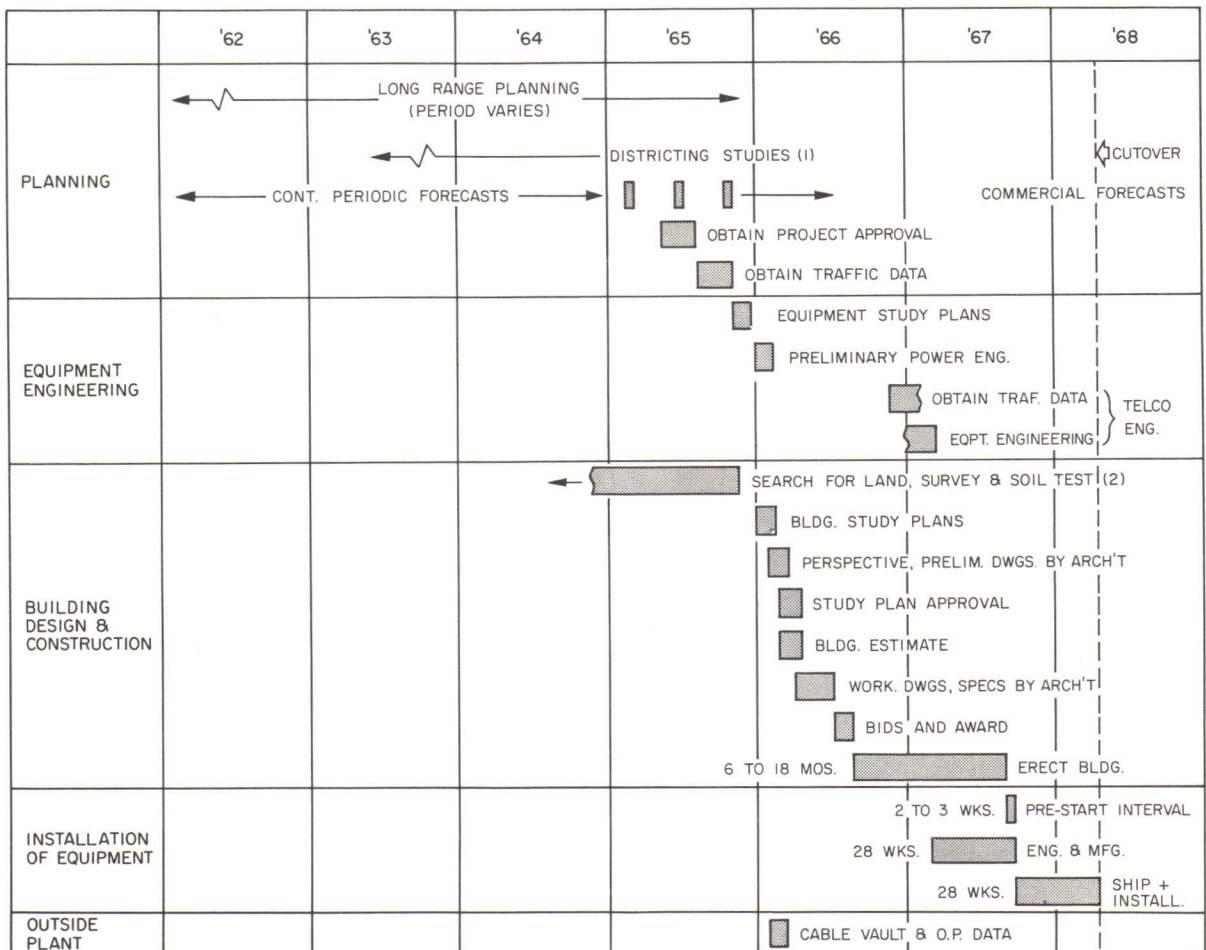
Scheduling

Realistic schedules for all projects should be set up by the owner to facilitate coordination and completion in an orderly manner. However, such schedules should be sufficiently flexible to permit some changes occasioned by unforeseen problems. In this way, scheduling will be a helpful tool rather than a hardship. Discussions with other client companies indicate that the most frequent problem in maintaining a realistic construction schedule has been in not starting the advanced planning early enough. The accompanying chart (page 78) for a typical telephone building shows the large number of items which must be coordinated in the development of a new project. The chart also indicates the importance of achieving the proper sequence, from long-range planning through completion of construction and installation of equipment. The Critical Path Method (CPM) is being used increasingly on major projects when completion dates are important.

In recent years, more time has been required for negotiation and purchase of land because of the widespread adoption of zoning ordinances and the increased use of planning boards and commissions even in smaller communities. The chart indicates that early studies and the search for land for a typical project are usually made more than three years before the building is to be put into service. Unusual or crash projects, of course, may not permit the use of the normal time intervals shown, but adequate advance planning should reduce the number of such rush jobs to a minimum.

Telephone company requirements

Telephone company long-range requirements are established by commercial forecasts of population growth in various areas and by subsequent plant extension studies which indicate proposed wire centers and show preferred locations for buildings. These studies also indicate the rate of growth expected in such areas, together with estimates of the building areas needed for telephone equipment for the economic building period (normally an eight-year-old building before an addition is needed). Each organization to be housed in the building determines its own floor space requirements based upon the established standards, which represent proper directives developed through experience and technological advancements in the communications business. The building engineer or project engineer acts in the role of coordinator. He refines the requirements established by various departments and develops them into basic floor plans. These study plans are given to the architect, along with written instructions and criteria for use in developing preliminary design studies. The purpose here



Typical Telephone Building Schedule

- (1) Studies are generally made to cover over-all plans for an extended period, not for specific project except at time project is prepared for approval
- (2) Period will vary depending on location. Large Buildings may require years, while small equipment buildings only a short period. Longer negotiation period is desirable in order to obtain best buy

is not to dictate to the architect concerning architectural design. However, the basic floor plans developed to meet telephone equipment needs do tend to exercise control over the dimensions and proportions of the building.

The architect usually has considerable design latitude in all telephone company structures, such as general offices and accounting buildings, that are not intended to house telephone switching equipment. Central offices and other buildings that contain switching equipment, however, must conform to certain requirements and limitations imposed by the switching equipment itself.

Some of the important features peculiar to telephone buildings designed to contain switching equipment are the unusually high ceilings (13 to 13½ ft clear), heavy floor loads, standard bay sizes for equipment areas, minimum windows, special equipment entrances, cable entrances and cable holes. Special attention must also be given to ventilation, fire, flood and earthquake protection and to adequate security and protection for equipment areas to assure continuity of telephone service.

Another problem in the architecture of telephone buildings is that the ultimate building often will be considerably larger than the initial structure. In other words, these buildings must usually be designed for expansion, either laterally or by the addition of more floors, as the telephone needs of the locality increase. The final building may well be two to four times the size of the first phase.

These varying and unusual requirements all go to make up a collection of directions and restrictions within which the architect

The owner's organization

must work. Nevertheless, since he is expected to come up with a good design, the architect must be given the freedom to do a good design job within reasonable cost limits.

It has been necessary for the large corporate client to set up an organization to work with architectural and engineering firms. For this work, the Bell System usually selects people who have been trained in architecture or engineering, and, in fact, most of its building engineers are licensed architects or engineers. The size of the organization has been dependent on the type of service that has been made available by private firms. On the other hand as one large corporate client recently was quoted as saying: "If architects would do a better job, we could reduce the size of the organization we now have."

In general, the building engineer is the telephone company to the architect and almost all client contact will be through him or the project engineer. He sets company policy for the architect. He sets up schedules and objectives for the architect. He is responsible for making prompt decisions so that the architect will not be delayed in carrying out his job. The building engineer must have enough authority to make decisions, in conference with the architect, to expedite the job and to provide the best design consistent with cost objectives. In a majority of the Bell companies, the building engineer reports directly to the chief engineer (who is responsible for all telephone engineering work).

In working with the architect, the building engineer of the telephone company generally performs the following functions:

- 1) Does long-range planning for building projects
- 2) Prepares program—collection, collation and integration of data on needs, site, etc.; obtains floor space requirements from operating departments
- 3) Selects architect in consultation with chief engineer
- 4) Arranges for purchase of land
- 5) Arranges for land survey and furnishes survey to architect; sends survey to outside plant engineer to obtain cable entrance data
- 6) Prepares and transmits preliminary study plans to all operating departments for approval
- 7) Presents study plans to architect for preparation of more detailed study plans and cost estimates
- 8) Approves or disapproves perspectives of new buildings prepared by architect; also makes suggestions that lead to acceptable design
- 9) Presents approved study plans to architect along with outline specifications and other instructions for starting on working drawings; reaches agreements with architect on materials to be used, methods of construction and general design concept
- 10) Provides necessary guidance in preparation of working drawings and specifications; reviews and checks drawings periodically to see that telephone company requirements are met
- 11) Reviews working drawings with fire and safety inspection consultants
- 12) Approves contractor bid lists presented by architect
- 13) Holds bid openings and recommends acceptance of bids to appropriate telephone company authority
- 14) Advises successful and unsuccessful bidders

- 15) Prepares and executes contracts
- 16) Advises company public relations of contract award
- 17) Supplements architect's inspection to see that important telephone company requirements are met
- 18) Approves payments to contractors
- 19) Accepts completed buildings from contractors
- 20) Inspects projects near end of one-year guarantee periods.

Western Electric Company follows essentially the same pattern in the design and construction of its buildings. However, Western has a group that designs a portion of its total construction program and another group that supervises and inspects all of its construction work.

Building study plans are generally prepared by the building engineer's staff and routed to the various operating organizations for approval. These study plans, together with other instructions, are given to the architect for preparation of more detailed study plans before starting on the working drawings. The study plans presented to the architect are not necessarily final. The architect, after consultation with the owner, may make changes to provide a more suitable layout, if the fundamental telephone equipment requirements are met and consideration is given to provisions for growth, flexibility, etc.

Architect's responsibilities

The architect generally performs these services for the Bell Telephone Companies:

1) **PRELIMINARY SERVICES**—Conferences with owner, site reviews before actual purchase of land (if possible), preliminary study plans, rendering of exterior and estimate of cost; the owner usually prepares outline specifications and a preliminary estimate as a basis for discussions of the scope of the project with the architect

2) **CONTRACT DOCUMENT SERVICES**—Conferences with owner, working drawings and specifications including preparation of color scheme; bids are generally received by the owner and the owner prepares the contract

3) **SERVICES DURING CONSTRUCTION**—Office administration such as supplemental drawings, shop drawing review and approval of samples; field administration including inspection, issue of change orders, certificates for payment and work-as-built tracings on completion of project

4) **CONSULTING OR SPECIAL SERVICES**—These services are provided as the occasion requires.

In negotiations with architects, written instructions must be provided at the start of a project so there is no question about the scope of the project and requirements of the telephone business. It is also important that the building engineer or project engineer assigned to the job know the status of the job as it progresses. The architect and building engineer should work closely together on each project and should have frequent consultations. The architect should furnish progress prints of the working drawings on a major project for review at intervals (at an early stage, at about the half-way point and near completion).

Cost of construction

In the Bell System, it is recognized that quality of environment has a bearing on the quality of employees that can be attracted. Also recognized is the fact that good design is good busi-

ness. However, architects must realize the necessities of business economics. Good design is required, but luxury must be avoided—even the appearance of luxury—and efficient, pleasing space need not necessarily be expensive. Experience has shown that, if careful judgment is used, the architectural ideas and materials of today lend themselves well to the practice of economy. It has also been found that good building design need not cost more than poor design—many of the best telephone buildings are the lower-cost ones. There is a big difference between an economical building and a cheap building. The economical design is the one with the optimum costs, including both first costs and maintenance for the life of the building. Equipment buildings serve as an envelope for intricate and valuable electronic and other types of communications equipment. Therefore, substantial structures must be built to protect the people who maintain and operate this equipment and to assure reliable service under all conditions.

Today a wide variety of new construction materials are available. These materials lend themselves to new concepts in design, and the Bell companies like to take advantage of them whenever possible. However, radical departures from known design principles are not acceptable when they are accompanied by difficult operating problems. In construction today every manufacturer of building products must keep pace with his competitors. However, some products are rushed to the market without adequate testing data or field experience. Such new materials are not used for large projects in the Bell System until they have been proven satisfactory. It is the building owner's responsibility, along with that of his architect, to make the final selection of materials and to maintain quality control in the building. After all, the owner pays for both the initial building and for future maintenance problems and failures.

Authority of architects

The size and basic form of a building is essentially determined by the program developed by the building engineer, but the attempt is made to give the architect the maximum possible freedom to determine its design. The architect is expected to accept the burden of responsibility for his recommendations and to be responsive to suggestions after his recommendations have been submitted. Because of the considerable building product sales efforts brought to bear on him, the corporate client needs to know the "why" of the architect's recommendations. Sometimes the architect must make comprehensive engineering studies, before the selection may be made of the various materials and systems to be used.

Through long association with many good firms, the Bell companies have become accustomed to working together with architects; the results have been good. The usual expectation is to work with a principal of the architectural firm. The association with the architectural firm should be a team effort and not one of control by the corporate client. The client must strike a delicate balance. He cannot let himself be controlled to the degree that the building no longer meets his requirements. On the other hand, he must not hamstring the architect to the point where he does not get his money's worth in terms of design quality.

Architects who are experienced in telephone buildings enjoy a relatively free hand; others require more careful and continuous

supervision. When architects are given design freedom they sometimes come up with extremes in design which the company management won't buy. However, the architect deserves, and must get, sympathetic cooperation.

The telephone company will have a fixed equipment layout and a definite capital budget for each project. Therefore, it must insist on control of the budget for the over-all project and adequate control over design. These controls are exercised by means of the periodic approvals of drawings submitted. If the choice of materials and scope of the project cannot be controlled by the architect, he cannot be blamed if the project overruns the budget. Therefore, the architect should have a voice in all decisions which importantly affect the shape and function of the building. How far he goes beyond his basic services depends largely on his abilities.

Selection of architects

More than 100 architectural firms are engaged annually for the design of Bell System buildings. A great many of these are smaller firms. The Bell companies generally employ architects who are located in the geographical area where the buildings are to be built. However, if a local architect does not have a big enough staff to handle a project or is not experienced in the type of construction, then the companies go outside of the area to obtain the required services. When several buildings are to be built in an area, the companies try to use more than one architect in order to create what is believed to be a healthy competitive spirit. Choosing an architect takes time and careful thought. The architect's qualifications for a particular project are the most important consideration. Choices made on the basis of personal influence should be studiously avoided.

The factors normally considered in the selection of an architect include such items as the size of the firm in relation to the job, its history, services furnished, ability as indicated by exhibits of work, amount of work designed and constructed in the last five years, proximity to the project, current workload, estimated future workload, estimated time for completion of the project, number of technical personnel and the technical, educational and professional experience of the members of the firm. Once a firm has been found to have these qualifications, it is frequently retained on a continuing basis.

Other companies sometimes turn to package builders and other entrepreneurs. To such clients completion of the job in a very short time is extremely important, even though the cost may be increased. Because many architects will not accept the responsibility for expediting jobs, the package builder has stepped in to fill this need. Such arrangements covering both design and construction generally have not found acceptance in the Bell System. Instead, the vast majority of construction contracts are awarded on the basis of lump sum competitive bids.

Small vs large firms

Smaller architectural offices definitely have a place in the Bell System building program. For the many smaller buildings and additions erected each year, well-qualified local architects often best serve the needs. This not only makes for good public relations, but frequently for better inspection since most telephone buildings are not large enough to justify fulltime resident inspectors.

If an architect is competent and assumes responsibility for

only the number and size of projects that he can handle in a professional manner, the architect should have no problem serving this company, regardless of the size of his office. Large architectural firms often have the advantage of large staffs capable of handling large projects without delay. On the other hand, in some large offices, personal attention from firm members or top-level associates may be difficult to obtain and maintain.

Inspection

The building owner would like to depend on the architect to provide inspection during construction on all major projects—even though the owner's project engineer is on the job to see that his most important requirements are met. The Bell companies probably expect slightly better than normal quality of workmanship—but do not expect all jobs to win craftsmanship awards. If inspections were to become too rigid, the reputation for being hard to work for might soon lead to high prices for a degree of quality that is not essential for the purpose. The architect should write into the specifications the quality desired, and the field inspector should see that these requirements are met. This is a test of a field inspector's ability; and the only way to insure that the client gets what he pays for.

Fees for architects

The number of contract forms sold by The American Institute of Architects indicates that the percentage fee is favored by more than ten-to-one over cost-plus and fixed-fee arrangements. The percentage fee method is used most often by the telephone companies because of the belief that it is the most economical and equitable way. However, for manufacturing buildings, the loading on payroll (cost-plus) arrangement is frequently used.

The future

The Bell System must have buildings that are designed to meet specific equipment requirements; and they must be economical to build and maintain. Relationships with the architectural profession have been excellent. The "Checklist for Architects" that follows is intended to be "constructive criticism" of the architectural profession which is now striving to do a good job better. The checklist is included here with confidence that the kind of teamwork outlined will make Bell System buildings greater assets to the community, to the company and to the architect.

It is always easier to recognize shortcomings than good points. If the architect does a good job, it is only what is expected of him; if he fails somewhere, it is remembered. Some say that the architect needs to expand his services because he is the only individual who is concerned with the total human environment. Some say that he should be more concerned with managing and protecting the practice he has, rather than expanding his services. Others say that he needs to improve the quality of services he now renders. In doing business through the years with many architectural firms, the Bell System has generally had good service from the firms it has engaged, but no job is so well done that it cannot be improved upon. Therefore, the following points are listed as ways that may improve the already fine job.

**Pointers for Better
Job Coordination**

1) *Single Responsibility.* Big clients are big organizations, but the architect usually does business with only one person in the organization. Contacts and responsibility should not be divided. The architect and the company should work through only one man in each office.

**Pointers for
Specific Design
Improvement**

2) *Coordination of Entire Project.* On important matters the client should work directly with the principals of the architectural firm, not with the draftsmen. It is, of course, important that the owner cooperate with the architect and state his requirements clearly, including the amount he is willing to spend; and he should make prompt, understandable decisions that will result in good over-all coordination.

3) *Job Coordination.* Some prominent large architectural firms, though strong in design, are weak on follow-through coordination. Sometimes an architect may accept a commission which his firm cannot handle expeditiously because of a heavy workload.

4) *Coordination in Architect's Office.* Some architectural firms might do a better job of distributing up-to-date information within their own offices. Too often, a lack of coordination has resulted in situations such as a rearrangement of a service core that blocks the path for telephone cables. Perhaps a full-time project coordinator, with no production responsibility, at a high level in the architectural organization, would help.

5) *Coordination of All Phases of Design.* The architect should coordinate all phases of the building design to insure that mechanical and electrical work will fit with structural and architectural. Otherwise, these items must be checked by the owner's representative or costly changes made during construction when the problems are encountered.

6) *Coordination of Engineering.* In the Bell System, the architect is expected to coordinate, and be responsible for, the complete building.

1) *Specialized Design Requirements.* In telephone building design, the architect must realize that he is providing space for very special requirements. The building will serve as an envelope for very intricate electronic and other telephone equipment; further, its use will have been carefully timed to fit in with the growing needs of customers.

2) *Stereotyped Design.* An architect sometimes becomes stereotyped in his thinking and fails to give his client the design he needs or expects. This is often true when the architect has done a lot of work for the client. The telephone companies have specific design requirements that must be met, not only physically but esthetically. A company awards program was instituted several years ago to encourage better architecture at reasonable costs. In the last review, 75 honor awards, merit awards and honorable mentions were presented to architects for good design of Bell System buildings. The attitude of the company toward good design is indicated by the fact that if an architect consistently fails to receive recognition in the awards program, it may have an effect on whether he obtains further contracts for services.

3) *Functional Design for Equipment Buildings.* The Bell System has updated its design concepts in recent years and opened the way for more intelligent use of newer materials and styles of architecture. For example: At one time, architects seemed to think that telephone equipment buildings should be made to look like office buildings by placing many windows in equipment areas. Actually, windows expose the equipment to greater deterioration of the wiring from the sun's rays, greater hazards from fire and less

security in wartime. The elimination of unnecessary windows also reduces building costs and maintenance costs for cleaning, glass replacement, calking, painting and shade and blind replacement. Nowadays, the use of windows in telephone equipment buildings is generally confined to lounge and lunchroom areas where employees may enjoy them while relaxing.

Of course, a different approach may be necessary for a building to be constructed in a residential area. Zoning may require that building be designed to look like a residence. In any case, the design must be such that the building will fit into the community and be accepted by its neighbors.

4) *Design of Small Buildings.* More attention should be given by the architectural profession to the design of medium-sized and small buildings. Except for an occasional large headquarters or manufacturing building, the vast majority of buildings for the Bell System might be classified as small. Too often these buildings seem not to have offered sufficient challenge to architects to produce outstanding designs. This is unfortunate. Architecturally, a modest building is just as important in its own neighborhood as a large building in a great city; and the small building is just as deserving of the architect's best efforts. Then too, the percentage fee arrangement permits the architect a proportionately higher fee on smaller buildings.

5) *Design for Future Expansion.* Almost every building for a growing company should be planned for expansion. This may only mean that the building layout must have enough flexibility to allow additions without extensive alteration of the existing building. However, in telephone buildings, a growth wall that may be easily removed is consistently provided.

6) *Provide Maintenance Space for Building Equipment.* Sometimes sufficient consideration is not given to the problems of operation and maintenance of the building equipment.

7) *Landscaping.* Frequently appearance can be more enhanced through adequate landscaping than through more costly ornament on the building. Landscaping layout should be the responsibility of the architect who designs the building.

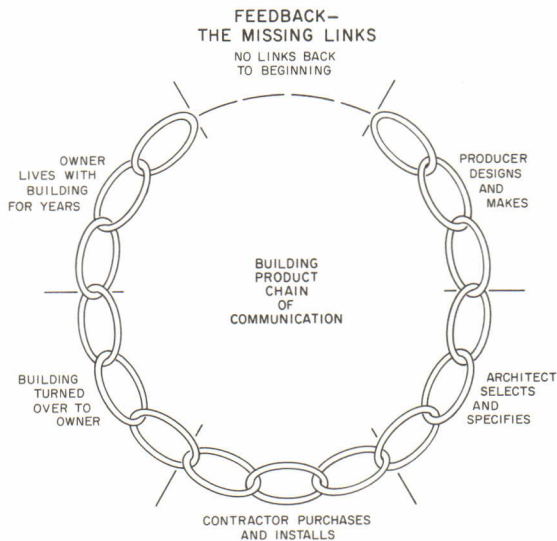
8) *Standards.* The architect must work within carefully circumscribed limits, or standards, to meet certain equipment requirements. However, the questioning of standards is always encouraged because standards tend to become fixed and sometimes the reasoning behind them will no longer apply. Standards are too frequently used as a *solution* to a problem rather than as a *guide* to its solution. Of course, certain standards are needed in order to meet exacting equipment requirements, but the imagination and talents of architects are necessary in the solving of design problems.

9) *Practical Experience.* Every man on the drafting board, every specification writer, every architectural student would benefit from some practical on-the-job experience in building construction. Too many details on drawings are either impossible or impractical to build. This means field revision, frequently at extra cost to the owner.

10) *Cost Estimating.* Some architects have a reputation in the building industry for their poor estimating ability. Particularly lacking is knowledge of operating and maintenance costs. Yet,

Pointers for Better Construction

**Feedback
The Missing Link**



good background in the cost area is necessary, if proper choices of materials and equipment are to be made.

Most architects who have a reputation for good estimating use as many sources of data for their unit costs as they can. The greatest reliance, perhaps, is placed upon records of the costs of previous projects. Such dependable cost records are a necessity for good estimating. Too many buildings have been designed, and bids taken, only to find that the lowest bid far exceeds the money available. When developing solutions for projects, architects should keep in mind any cost limitations which have been established. However, sufficient design freedom is also necessary if a solution is to be developed within the budget.

1) *Field Inspection.* Some architects seem to hire a "man from the street" for field inspection. Architects who have done a good job for the Bell System have used men who are specialists in inspecting telephone work; often these men move from job to job. Many of them have exhibited a loyalty to the company similar to that of its own employees. One good man at a higher salary usually will prove to be more valuable than several less competent lower-paid men.

2) *Inspections by Designers.* It is important that those responsible for the design of heating, ventilating and airconditioning equipment inspect this work during construction to insure that it is built and will operate as designed.

A channel for communications feedback from building owners and operators to architects, builders, manufacturers and building research groups must be established so that information on performance and upkeep of buildings and building components can be made readily available. The chart shown illustrates the current situation.

There are, of course, reasons why performance in service information does not get back to the points where it can do some good—reasons for the break in the chain shown in the chart. Here are some of them:

1) Time has not been taken for intelligent study and analysis of available feedback

2) The producer very naturally wants the world to know the good points about his product

3) The architect does not want it thought that his choice of products and techniques could be improved

4) The constructor wants no reflection on the character of his work

5) The owner, especially if he rents out space, does not want anything published indicating that his building is less than superb.

And so, in the ordinary course of events, those who design and make building products often fail to hear the things that would help them to improve and perfect those products. One important step might be for architects to go back to jobs they have designed, a few years after completion, to find out how the buildings have performed in service. This would not only help to establish the feedback that is so essential, but would be a great stride toward the full meaning of what the architectural profession now calls comprehensive services.

What Is Research for Architecture?

BENJAMIN H. EVANS AIA
Director of Research Programs

ONE OF THE INTERESTING THINGS about being a "research architect" is the perennial question from laymen and architects alike, "What is architectural research?" "What does a research architect do?" Even to attempt an answer leads one to some interesting reactions. Thus the state of the art—or science.

Part of the problem may be that even the architects do not necessarily know what architectural research is all about. The AIA has had a research committee, under one title or another, for more than ten years, but the present Committee on Research for Architecture is still working with the problem of defining a program for the Institute and of making the concept of research fully acceptable as a professional activity. Certainly considerable progress has been made and it appears that the golden ring of success may be just around the corner.

But while the philosophical conclusions are still being formulated, research goes on and many practical matters have certainly been dealt with already. Insofar as the AIA is concerned, research might be classified as Basic, Applied and Product.

Basic Research

Basic research might be defined as that systematic investigation which produces new knowledge and which is applicable to mankind in general. Studies on the reactions of people to color, space and texture, for example, would be considered basic. Investigations of what constitutes physical comfort, social characteristics of row housing, or psychological impacts of new urban developments would be considered basic. Basic research, since it is of broad interest and value, should be financed by broad segments of the population by foundations and/or by government. Unfortunately for architecture, the greatest percentage of activities by present foundation and government sponsoring agencies is more science-engineering oriented than human oriented.

Applied Research

Applied research might involve those investigations which result in new knowledge or in the application of knowledge in new and different ways, primarily of benefit to the architectural profession. Studies, for instance, on communications with the client, critical path scheduling, modular design and office practices would be applied. Since applied research is primarily for the architects' benefit, it should be financed by the profession.

One of the most promising developments in the history of the AIA was begun last year and is being brought to fruition this year—the collection of supplementary dues and their application to special studies, many of which fit into the applied category.

One such project, under the jurisdiction of the Commission on Education and Research, is a study to determine what motivates people to join (or refrain from joining) the AIA. The study will attempt to gain insight into the reasons and purposes for the existence of such a professional group, how the Institute might grow and adjust to include, in its membership, a greater percentage of the architects in the US and how it might ultimately serve its members better.

Another "applied" type project under this Commission concerns a study of the use of automated information systems for the profession. Under this study, the role and benefits of automation for architects will be studied.

Under the direction of the Commission on Architectural Design, a seminar was held at the Octagon in March to discuss and define the objectives and program for a long-range interfaith research project. The seminar was the first step in the development of a program to analyze our society and the ways its religious buildings can make possible a more meaningful expression of its religious convictions, and to describe techniques by which this analysis could be explored. (Sometimes, as in the case of this project,

the thin line between applied and basic research is difficult to define. But of course it isn't really important into which category a particular project fits, so long as it comes into being.) There will be more news in the next few months regarding these and other supplementary dues projects.

Product Research

The term product research is self-explanatory—it deals with the development of new materials, products and systems which normally will result in salable goods. A tremendous amount of research in this area is being done by industry and private research organizations. And, in most instances, they are doing an excellent job. Certainly, industry is well enough equipped, trained, and motivated to perform this type of research. There is doubtful need for new research organizations to take up these kinds of studies. Perhaps the primary concern in this area comes from the fact that manufacturers usually decide which products will be put on the market, leaving the architect to merely choose among them. The more appropriate procedure, of course, would be for the designer to determine what products are needed so that industry could then produce them. A means for effecting better procedure might well fall within the scope of the architectural profession but would probably be termed “applied research.”

Examples

In the past ten years, some rather significant research efforts by architects have been under way in this country. It might be worthwhile to look at a few examples so that the question “What is research for architecture?” might be more quickly resolved.

The University of Michigan's Department of Architecture is currently engaged in a project, sponsored by Educational Facilities Laboratories, Inc (EFL), which is directed toward the development of methodology for establishing and measuring environmental relationships. A series of case studies will be undertaken which will single out specific environmental relationships for study and their effects on the learning process contrasted and evaluated.

The first case study is the evaluation of the windowless classroom. Two near-identical schools in Michigan were selected for the study—one school to act as the “control” element, the other to be altered by elimination of the windows in one classroom and to be studied systematically. All other factors are being kept as nearly constant as possible. The primary objective is to determine, after the children have been using the classrooms for a year without a view to the outside, whether there has been any detectable difference in their learning achievement, so far as achievement can be measured in several learning activities—reading, spelling, writing, arithmetic, and art. The rate and level of learning in a windowless environment will be compared to the rate and level of learning when the view to the outside is present.

The Department of Architecture at Louisiana State University has recently been awarded a grant by the National Science Foundation to study a tech-

nique and develop a facility for investigating the effects of architectural shapes, textures, colors and other environmental factors on human response. The first phase of their program is directed toward the design and development of a facility for the environmental studies. The project is under the direction of Assistant Professor Bertram Berenson. The facility will be planned so that it can be adjusted in size and shape; so that texture and colors of surfaces can be altered; so that lighting and acoustics can be adjusted and so that various kinds of activities can be accommodated. The benefits to be eventually derived from careful studies in the human response areas could be tremendously significant.

At Texas A & M College, in 1949, architect-professor Bill Caudill started a program of research directed toward an intense look at “the effects of geometry on natural ventilation, natural lighting and sound.” The research group designed and developed a low-speed wind tunnel and simulated lighting dome for model studies on ventilation, air flow and lighting. Numerous reports have been produced since that early beginning.

Probably one of the most interesting projects undertaken recently came as a result of the background developed through those many studies on environmental physics. The report was entitled “Shelter for Physical Education,” by William G. Wagner, Ben H. Evans and Matthew Nowak. The study was supported again by grants from Educational Facilities Laboratories, Inc.

The investigation started with the basic question, “What minimum amount of structure is really necessary to house physical education programs in elementary and secondary schools?” After investigating the history and current trends of physical education programs, the authors found few physical plants that would adequately house what the educators were proposing for today's physical education programs. Many physical education programs are based on daily games of basketball, baseball or touch football, depending on the season, and thus a vast majority of facilities for PE has been designed and built around the conventional basketball court rather than around any real concept of the physical education program. Examples of noticeable exceptions were described.

Assuming that the ideal condition for most physical education programs might be on a grass-covered field in temperate, sunny weather, the researchers analyzed the shelter needs with varying degrees of increasingly inclement weather. Here, one of the most significant examples of the voids in man's knowledge about himself quickly became obvious. Some things about what constitutes human comfort are known, and about the extremes of discomfort that can be safely tolerated, but there are many, many things not yet known. Not known, for instance, is what constitutes physical comfort for elementary children engaged in physical activity programs with varying amounts of clothing and with varying metabolisms. Children in Tyler, Texas stay indoors with air temperatures below 65°F. Children in some parts of Canada stay outside to play even

when the temperature is 20° below zero! Why? We simply can't answer the question accurately, based on our present knowledge about comfort.

However, the researchers point out, there is some knowledge available on which to base some assumptions. After discussing the comfort problem in detail, the authors go on to show how shelters can be put together to combat that portion of the climate that might be undesirable and control that portion of the climate that might be desirable. Properly-designed screens can protect the physical education students from cold winds; translucent, movable roofs can provide varying degrees of shade and sunshine to help maintain comfort; gas-fired infrared heaters can supplement sunshine, when necessary; trees and shrubs can help control air movement and provide shade. The conclusion: Reasonable physical comfort can be provided for children engaged in physical education activities with minimum amounts of shelter, even in very cold weather, provided the shelter is properly designed. Design criteria are given to stimulate thinking in this area.

At the Massachusetts Institute of Technology, Professor Marvin Goody has been directing studies on the uses of plastics in houses and schools. The Monsanto House of the Future, at Disneyland, is the result of one of these earlier studies sponsored by the Monsanto Chemical Company. On the MIT campus is a prototype school constructed primarily of plastic. The researchers developed a plastic wall and roof system to fit together around a steel frame, resulting in a unique and foresighted shelter which has been used as classroom space. These studies were sponsored by Educational Facilities Laboratory.

At Princeton, architect Victor Olgyay and his associates have been studying the effects of environment on buildings for many years. Their laboratory includes a thermoheliodome, an instrument used for measuring the combined effects of sun, wind and air temperature on small building models. The results of the work done at Princeton are reflected in Olgyay's book, "Design with Climate."

At Rensselaer Polytechnic Institute in Troy, New York, architects have been researching such subjects as educational facilities, plastics for home construction and economics in school building construction. Their recent report, "Designs for Learning—Architectural Criteria for College Facilities Planned to Utilize Instructional Aids and Media," shows the results of their studies with an auditorium-studio facility, designed and built on the RPI Campus. This project was sponsored by EFL, also.*

A more recent project at RPI has resulted in a publication called "Design Criteria for Learning

* The number of these projects sponsored by EFL is certainly indicative of its interest in the problems of design and construction. For this interest, the AIA has cited EFL as an outstanding organization which has "... actively cooperated with the architectural profession through grants to stimulate research and experimentation and through basic research on capabilities and facilities. . . ."

Spaces," by Wayne Koppes AIA, Alan Green and M. C. Gassman; a project undertaken to assist the Office of Facilities of the State University of New York in the development of design and planning criteria for learning spaces with particular emphasis on the considerations for seating, lighting and acoustics. Much of the work of this project was based on the past experience and current evaluation of Rensselaer's Experimental Classroom and other related educational facilities research.

John Lyon Reid FAIA and his associate, Dariel Fitzroy, acoustical engineer, have recently conducted an exhaustive study, again sponsored by EFL, that provides some indication of the kinds of research, over and above normal office practices, that architects can promote and conduct. Their report entitled, "Acoustical Environment of School Buildings," is a comprehensive study of the acoustic conditions of a number of schools across the United States.

Their work was stimulated by conflicting responses from various people with regard to the relationships between the "scientific" criteria for designing schools (acoustically) and what many had found to be the "practical" criteria. Much of the discussion that preceded this study suggested that acoustic isolation between classes was absolutely necessary and recommendations for maximum allowable transmission factors of 35 to 40 decibels were generally accepted. Subsequently, however, schools were built in which doors and walls were left out of the design. In many cases such open planning resulted in intolerable acoustic conditions, but in some cases the open plans did not seem to create significant problems at all. Why?

Mr Reid's study consisted of extensive measurements of acoustical conditions in various schools and a survey of the teacher's opinions concerning the noise situation. In general, the report shows that although many of the teaching spaces tested fell below the normally accepted minimum conditions for sound isolation, a high percentage were rated as acceptable by the teachers using them. The problem now is in getting educators and architects to realize that, although acoustical isolation is not always necessary to the degree previously demanded, planning open classrooms must be done with great care and with expert assistance.

Conclusion

These are examples of the kinds of research projects that have been under way within the profession. There are many more just as deserving of mention, but, hopefully, this small cross section of projects will provide insight into the question "What is research for architecture?"

Such studies are being done because the time has come when the profession can no longer tolerate the numerous voids in the body of knowledge available for use in design. It is our responsibility to see that these voids are filled quickly. We must then exert leadership and bring forces to bear so that this body of knowledge will be filled and expanded at some rate approximating or bettering the development in other fields. ■

Plastic Canopy for a Garden Court: Case

CHARLES LAWRENCE AIA
Caudill, Rowlett and Scott

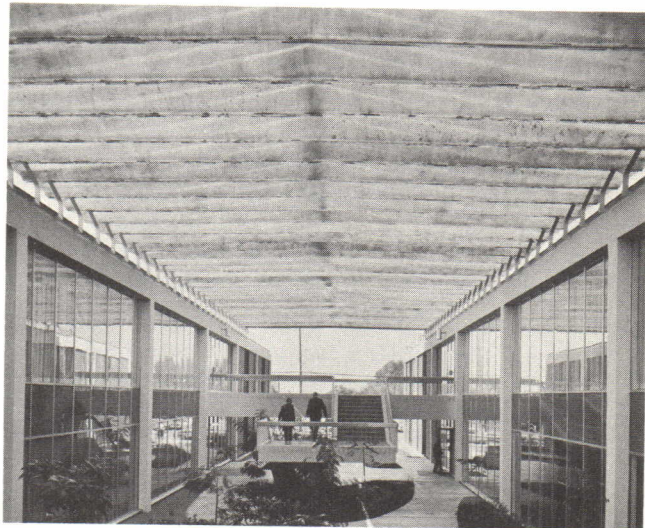
In January, we attempted in these pages some definitions of research for architecture. Shortly thereafter, the author sent us this account of one research effort by his firm. We feel that AIA Journal readers will be interested in this case history of a research project, told by one of the participants

IN OUR PROFESSION "team action" usually describes people and their architectural processes, but it could also apply to the interaction of the many construction systems that go into our buildings. It takes a team of specialized building systems to perform all functions demanded of architecture today. Each system has been developed to perform one highly specialized function. Yet we seem to be searching for systems which perform multiple functions. Look at the recent developments in systems which integrate structural and mechanical needs; also the search for materials with a wide range of physical properties. There is exciting promise in the development of man-made materials. Technology is bringing us closer to the prospect of being able to prescribe a material's characteristics and have industry fill the prescription.

It was a search in this direction that produced the translucent roof units for the Dow Center. As the building concept began to evolve, the need for this roof became clear. We wanted to face two airconditioned building units onto a common outdoor garden lobby containing all stairs and entrances to both units. A translucent roof over this garden lobby would promote landscaping and provide a tempered transition between raw outdoor weather and fully airconditioned indoor space. We could have utilized a "team action" of systems for this roof—one system for structural support; another for roofing membrane; still another for areas of translucency. Instead we sought the development of a unitized system that had the multiple functions of structure, rain cover and sun diffuser.

Contacts made at a conference on structural plastics led us to Buck Winn's ranch in Wimberley, Texas. Buck Winn, an architect by training, is a mural artist, inventor and a "seat-of-the-pants" engineer who had developed a new method of spray-forming structure. The gun he perfected would spray continuous fiberglass roving and any liquid. Although he had

Finished garden lobby



History of a Research Project

been using a Portland cement mix as the liquid (he even claims he mixes in a little lizard dust—we don't know), Buck saw no difficulty in pumping a resin and fiberglass through his gun to form the translucent structural units we needed. After several probing sessions we concluded that it could be done. We discussed the probabilities with our client, Kenneth Schnitzer, and began these premises and processes:

Design Decisions

1) The canopy should be built of repetitive units, each being 3 ft wide (a repeat of the fenestration and plan module) and 40 ft long (to span the 38-ft garden lobby).

2) These units would be designed as structural beams rather than as arches. They were conceived as a membrane stiffened by shape, and their basic form reflects the engineering fact that the moment is greatest at the center of the span.

3) An upturned gutter section along the bottom edge of each unit with a straight line camber at the bottom would direct rainwater gently back to the roofs of the building units flanking the garden lobby.

4) The canopy units should have an average light transmission of 20 per cent. We had experienced this amount of transmission under the translucent canopy (this one was a "team action" of systems) on our Montrose Elementary School in sunny, bright Laredo. The feeling of shade and sense of glow was just about right.

5) Their color should be off-white.

6) These units should support an ultimate live load of 20 pounds per sq ft.

Assumptions

1) Fiberglass reinforced polyester-resin would be the basic material to use.

2) The fiberglass and resin would be sprayed through Winn's pressure gun onto a reusable mold—using a parting compound.

Development

1) Winn first built a small-scale model to test the action of the general shape under load.

2) Ed Nye, partner in charge of CRS structural engineering, undertook some empirical calculations using the physical properties of aluminum to analyze the stresses in fiberglass reinforced plastic.

3) Buck Winn began spraying small area test membranes to predetermine resin formulas, spraying characteristics, texture, color, light translucency and the effective use of parting compounds. The resin finally selected was Laminac Polyester Resin #4152 (American Cyanamid) using Cyrasorb UV9 light absorber (for light stability) and a cobalt-methyl-ethyl Ketone Peroxide catalyst system. Titanium oxide was to be used to impart the off-white color.

4) As a result of 1, 2 and 3, it was decided that the first full-size unit to be fabricated and load tested would be $\frac{1}{8}$ inch thick. Buck Winn joined with Campbell Brothers, Inc, contractors in Dallas, and organized Archilithic Co to contract for the work.

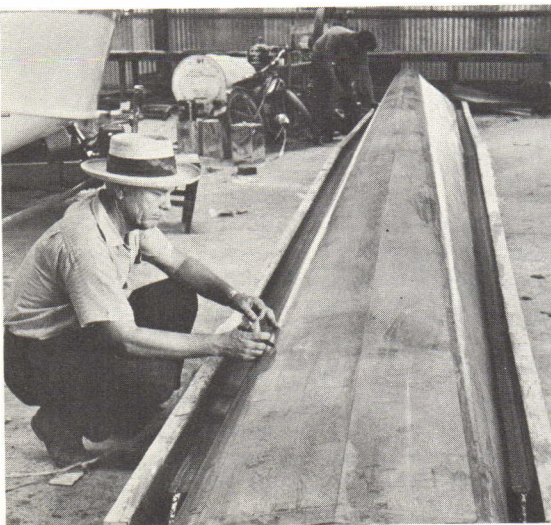
Testing

1) A full-size male mold was constructed of resin-coated wood using boat-building techniques.

2) Several partial test sprays were made using this mold to further develop technique. The production team discovered that rolling of the surface produced better wetting of the glass and a more consistent density.

3) The first full-size unit was sprayed, cured, popped off the mold and set up on sawhorses for load testing with sand bags. The unit weighed slightly over 100 pounds.

Winn with resin-coated wood mold (original shape)



First unit ready for load testing



4) The testing was under the direction of Southwest Testing Laboratory of Dallas and involved the periodic recording of, deflection gauge readings and general observations at progressive stages of loading.

5) During this test the broad flat skin areas of the unit, subjected to compression by the load, began to buckle at less than half of the design load.

6) To stiffen these flat surfaces we job applied ribs using split cardboard tubing coated with fiberglass and a hot polyester mix.

7) The increased load-bearing capacity brought on by this rib grafting indicated that we were on the right track. Final design revision involved two modifications:

a) A pattern of stiffening contours to resist the buckling tendency brought on by the compressive skin loads.

b) An increase of material thickness to $\frac{1}{4}$ inch for the same reason.

8) With the increased thickness of material we were not able to use enough titanium oxide to maintain the desired white color and still hold a 20 per cent light transmission factor. The color of the finished units then is a natural result of the materials

used in the proportions necessary to give the required strength, stability and light transmission characteristics. We have grown fond of it and refer to it as a "built-in patina," since the tone is in the range of earthy-parchment.

9) A second full-scale unit was sprayed on the revised mold and then satisfactorily test-loaded to 20 pounds per sq ft.

Production and Erection

For production of the actual job units a female mold was made of resin and fiberglass. This allowed better control of the gutter section and produced a smooth top side for weather resistance. The weight of each unit is approximately 220 pounds. Erection was a simple matter of bolting the ends of each adjacent unit through the metal support brackets. Adjacent gutters were stitch-bolted and covered with a capstrip of fiberglass cloth and polyester resin. The strength of these units, incidentally, allowed the workmen to walk about on them freely to perform all erection processes.

Performance

As Hurricane Carla ripped through Houston in September of 1961, it took 22 units of the canopy with it. The problem started with a rhythmic flutter of the extended lip on the leading edge of the end unit. The lip was built-in to resist the tendency of these units to dip in laterally toward the center. This flutter eventually tore the end unit loose from its bolted connections. With its concave shape turned up into the full force of the wind, it began pulling succeeding units from their brackets, peeling the canopy back upon itself. Analysis of the action plus an eyewitness account have convinced us that, had the lead unit stayed put, we would have lost none of the canopy at all.

We initiated three modifications for both the existing in-place units and the new replacement units:

a) Reduction in size of the stiffening lip on the end units

b) A steel tension tie sealed in the leading edge of each of the two end units

c) Steel reinforcing plates at the point of connection between each canopy and its steel supporting bracket.

An actual load test with a calibrated hydraulic jack indicates that this revised connection will take an uplift equivalent to 45 pounds per sq ft.

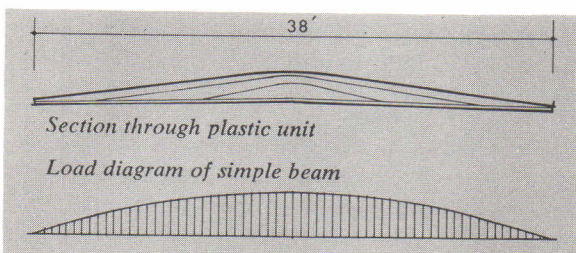
Was the project successful? We think so—as one integral system the plastic units perform their multiple functions and, in addition, contribute to the environment of the garden lobby. Buck Winn calls it "the greatest breakthrough since man first crawled out of the cave." Buck obviously likes what the canopy does for the garden lobby, but what he is really referring to is the process that led to and produced these plastic units. There was a little bit of the cave-man in the way everyone involved was willing to stick his neck out. There was much more of the twentieth century in the way that inventive engineering filled the prescription for a material performance which we weren't sure existed. ■



Spraying first full-size test unit



First test unit with stiffening ribs grafted on



Current Practices in Planning and Building a Hospital

THE AIA COMMITTEE ON HOSPITAL ARCHITECTURE

Commission on Architectural Design
Robert L. Durham FAIA, Chairman

Committee on Hospital Architecture
Rex W. Allen AIA, Chairman



This guide has been developed by the Committee on Hospital Architecture to aid the architect in advising his hospital client, and vice versa. As the title implies, it is an examination of current practices and an attempt to set down the relationships among the various professionals involved. It is being published simultaneously by AHA in Hospitals

HOSPITALS AND OTHER HEALTH FACILITIES provide essential community services. They should be able to give their patients the best care commensurate with community needs and resources. In order to construct medical facilities that meet this standard, teamwork between the administration, building committee and staff of the medical facility, on one hand, and the architect in charge and his professional collaborators, on the other, is vital to the success of the building operation.

The hospital building today has become so complex that it is among the most difficult and expensive building types to plan and construct. To achieve the highest standards of functional efficiency, safety and esthetics; to insure economical operation and maintenance; and to meet the requirements of the many regulatory agencies, it is necessary to bring together a closely-knit planning and building team.

The professionals, consisting of the architect and technical consultants, including at times a hospital

consultant, must work in complete harmony under the guidance of the architect who acts as their representative with the governing board, building committee and hospital administrator. Confusion will be avoided only if all members of this team thoroughly understand their respective roles in the formulation of the building program and its realization, and if clear lines of authority are established at the outset.

The Committee on Hospital Architecture of The American Institute of Architects has prepared this document as a guide to current practices for identifying basic responsibilities and relationships and sound operating procedures relating thereto.

Responsibilities and Relationships

1) *The Governing Board* has legal responsibility for all decisions pertinent to the hospital. It initiates projects and establishes basic objectives, budgets, policies of operation, services offered and courses of action. In building projects it determines what facilities are required and how they are to be provided. It appoints staff, administration, hospital consultant and architect. It reviews and approves recommenda-

A limited number of reprints of this article are available at 50¢ per copy (minimum order five copies). Address orders to Research Department, AIA, 1735 New York Ave NW, Washington, DC, 20006.

tions, signs contracts and authorizes payments. For efficiency in dealing with construction projects, the governing board usually appoints a building committee to study details and make recommendations. The governing board will normally see fit to delegate much responsibility to its chief executive, the hospital administrator.

2) *The Building Committee*, appointed by the governing board, may have limited authority, but if it functions effectively, its recommendations, like those of any other committee, usually receive board approval. The building committee may be called upon to make recommendations concerning the following: selection of the architect; the necessity for engaging a hospital consultant; selection of site; development of the functional and architectural programs; need for publicity; need for and method of financing and fund raising (in cooperation with finance committee); approval of plans and construction policies; selection of contractor; approval of contracts; contract changes and payments. Limits of the building committee's authority will vary from project to project and therefore should be clearly established by the board at the outset.

3) *The Hospital Administrator* is responsible for carrying out the policies of the governing board. He advises the board on all phases of the building project. He attends all meetings of the building committee and arranges for the medical staff and department heads to meet with the architect and consultants. He assists in the preparation of the functional program, architectural program, long-range plan and budget. He suggests planning principles; collects and interprets data; guides the planning process with critical analysis; and assists in presentation of plans to department heads, medical staff, building committee and governing board. He assists in preparation of (or prepares) equipment lists and institutes (or controls) purchase of equipment. Where new work is being added to an existing hospital, the governing board should recognize the added load being placed upon the administrator during planning and construction and should consider augmenting his staff accordingly.

4) *The Medical Staff and Department Heads* should be urged to contribute their ideas in writing, particularly in the programming stage. Conferences with the architect should be scheduled to encourage participation in planning and to permit explanation of the architectural plans. An exchange of ideas will reduce future criticism, develop good will and promote efficient use of the hospital and its equipment. Differences of opinion at this level should be resolved by the building committee, upon recommendation of the administrator.

5) *The Architect* is the coordinator of the planning team. He advises on site selection and programming and may participate in financing arrangements. He prepares the schematic drawings, develops the design from the program and produces the working drawings and specifications. He furnishes a statement of probable construction costs. As an additional service he provides upon authorization a semi-detailed or detailed cost estimate and secures approvals from

controlling agencies. He advises on bidders and awarding of contracts; acts as the agent of the owner during construction; makes periodic visits to the site to determine general conformance with the contract documents and percentages of completion; recommends amounts of payments to the contractor; checks shop drawings; prepares and issues contract modifications; and recommends approval and acceptance of completed construction work.

His design services include structural, plumbing, heating, cooling, ventilating and electrical engineering, whether furnished within his own staff or by independent consulting engineers. These basic services may be supplemented, when required, by those of food service consultants, chemists, physicists, radiation protection experts, interior designers, acoustical engineers, artists, landscape architects and other specialists. As an additional service, the architect may also be retained to assist in the selection of furnishings and equipment, or to consider problems of urban design, community esthetics, site development and master planning for future growth.

6) *The Hospital Consultant*, if one is engaged, performs an advisory service, usually under separate and independent contract with the owner. He will study the need for health facilities in the community. It is important at the outset to make a clear statement of the consultant's responsibilities. Through experience and statistical analysis he may recommend the size and services to be provided by the hospital, both present and future, and appropriate methods of financing its construction. He may be commissioned to develop a functional program describing in detail the operation of each department. Such a program will act as a communication bridge between the planners and users of the facility, spanning the time gap that intervenes between design and operation. He should cooperate with the administrator and architect in developing the architectural program. He may assist, if requested, in site location, equipment selection, personnel recruitment and capital financing arrangements. It is not his province to prepare drawings of any kind, but he may review and comment upon the architect's drawings.

7) *Government agencies*, Federal, state, regional and local, regulate the construction of hospitals. Generally, regional, state and Federal agencies can also provide valuable assistance in hospital planning. In any case, the architect should be familiar with code requirements affecting construction and operation, to avoid costly delays and changes during construction or after the building is completed. State agency requirements for grants-in-aid applications may affect architectural schedules and should therefore be considered well in advance to provide adequate time for the development of program and design.

8) *The Land Surveyor* is retained by the owner to provide the architect with a certified survey of the site. This survey should include grades and lines of streets, alleys, pavements and adjoining property; rights of way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries and contours of the building site; locations, dimensions and com-

plete data pertaining to existing buildings, other improvements and trees; full information as to the available service lines both public and private.

9) *Testing Engineers and Laboratories* are retained as required by the owner to determine subsurface conditions by borings or pits, or suitability of materials for particular applications by appropriate tests. Results should be analyzed and documented.

10) *The Project Representative* should be a full-time employee on all but the smallest projects. On large projects, one or more assistants may be needed. All should be well-qualified by experience, with particular knowledge of the installation of mechanical and electrical work. They may be retained by either the architect or the owner with the other's approval; in either case, their salaries are paid by the owner.

11) *The General Contractor* constructs the building in accordance with the approved plans and specifications. He assumes total responsibility for providing skilled craftsmanship in executing the work, even though many of the specialized skills may be performed for him by subcontractors. Contracts may be let either as one general contract or as separate contracts for the various trades. Coordination of the work of separate contractors requires additional services on the part of both the architect and the contractor, and must be paid for accordingly.

Selection of the Professionals

In a new project, the hospital administrator and the architect should be selected at the inception of the planning process. If either has had only limited prior experience in hospital planning, a consultant should also be retained. The relationship of all professionals to the governing board is one of mutual trust. Therefore, careful investigation of competence is desirable prior to entering into contractual relationships. It is recommended that former clients or employers be queried to determine how satisfactorily responsibilities were fulfilled on prior projects.

If it has not been possible to appoint an administrator, a hospital consultant is essential to lead in the establishment of the operational policies and practices of the new facility.

The experience and reputation of the mechanical, electrical and structural engineers should also be evaluated, whether on the architect's staff or not, since they will contribute extensively to the design.

Careful selection of professionals, development of close working relationships and establishment of clear lines of authority are the best guarantees of a satisfactory project.

Outline of Procedure

Hospital planning begins with recognition of needs and progresses to completion of the project. The process is divided into three successive stages: I) Program Development; II) Project Design; III) Construction and Occupancy. Each stage of project development requires teamwork, professional competence, effective coordination, orderly procedure and mutual understanding between the parties concerned. The following is a checklist of the essential

steps in the team effort. They are not in chronological order.

I Program Development

1) Community Survey

- geographic study of community area
- demographic study of community population
- analysis of bio-medical statistics
- survey of socio-economic status and trends
- survey of organized health activities and services
- appraisal of health services utilization
- survey of health personnel and medical practice
- assay of health resources and projected needs
- determination and delineation of service area
- comprehensive long-range community program for health services
- community expectations as to hospital services
- evaluation of facilities existing in the community

2) Functional Program

- response to community needs
- statement of purpose and objectives of project
- long-range program envisioned for project
- initial program to be undertaken
- specific services to be provided in hospital
- other activities to be accommodated
- organizational structure and staffing pattern
- proposed operational policies and procedures
- anticipated utilization and service loads

3) Architectural Program

- summary of services and functions by departments
- evaluation of existing plant
- detailed schedule of space allocation
- list of fixed and movable equipment
- site and parking requirements
- anticipated future developments

4) Financial Program

- cost estimate of site, utilities and landscaping
- construction cost estimate
- estimate of professional fees and expenses
- equipment cost estimate
- reserve for move-in costs and initial supplies
- allowance for overhead and administrative expenses
- allocation for project promotion and fund-raising
- interest and other loan charges during construction
- contingency reserve against underestimates and unanticipated costs
- tentative project budget
- preliminary financial arrangements

II Project Design

1) Site Study and Development

- preliminary investigation of suitable sites
- evaluation of neighborhood
- analysis of zoning regulations
- study of traffic, access and egress
- economic analysis of site development
- site selection and acquisition
- survey of plat boundaries and elevations
- topographical analysis
- sub-surface investigation, including test borings and geological analysis
- study of potential building volume and land coverage

- analysis of climatic exposure, environment, view
- preliminary study of approaches, landscaping and parking
- master plan of site development
- adaptability of existing structure for new addition (floor to floor heights, ramps, construction framing, utilities, etc)

2) *Schematic Design Phase*

- analysis of functions, services, and planning data
- diagram of functional relationships and flow of services
- block-out of areas by departments
- schematic plan arrangement of departments showing entrances, exits, corridors, stairs, elevators and indication of future expansion
- schematic sections or isometrics
- model—if indicated
- cost estimate
- presentation of schematic design
- submission for approval by governing board and by government agencies

3) *Design Development Phase*

- departmental space and equipment layouts
- study and cost analysis of typical structure
- study and cost analysis of mechanical and electrical systems
- plans, elevations and sections
- perspectives and models—if indicated
- outline specifications of materials and finishes
- preliminary equipment list, including existing equipment, if any, and required utility connections
- check of building areas and cost estimates
- review and approval by governing board and government agencies
- authorization to proceed with construction documents

4) *Construction Documents Phase*

- development of architectural construction details and finish schedules
- detailed structural design
- detailed design of mechanical systems
- detailed design of electrical systems
- detailed design of kitchen and other equipment
- landscape design
- development of complete working drawings, specifications and general conditions
- coordination and checking
- preparation of contract forms and instructions to bidders
- revised cost estimate if indicated by changes in scope or construction costs
- submission for review and approval by governing board and government agencies
- authorization to request construction proposals

III **Construction and Occupancy**

1) *Construction Contracts*

- selection and review of prospective contractors
- request for construction proposals
- submission of proposals by contractors
- opening and analysis of proposals
- budget review and election of alternates for additions or omissions
- negotiation and tentative award of contracts

- review of subcontractors
- completion of financial arrangements, including approval from government agencies, if required
- executing and recording contracts
- ground-breaking ceremonies

2) *Construction*

- selection of project representative
- issuance of building permits
- submission of bonds and certificates of insurance
- approval of contractor's lists of materials and equipment
- clearing of site and acceptance by contractor
- designation of working areas and erection of protective barriers
- excavation and rough grading
- submission and checking of samples, schedules and shop drawings
- foundation preparation and building erection
- materials testing, job inspection and approval
- development and approval of color schedules for finishes, furniture and equipment
- construction accounting and certification of progress payments
- securing required guarantees and instructions
- determination of date of substantial completion and preparation of lists of items to be completed
- final inspection and acceptance
- filing notice of completion
- securing waiver of liens
- prior to expiration of guarantee period, preparing list of items to be corrected by contractor

3) *Equipment and Furniture*

- equipment and furniture schedules by departments and rooms
- collated listing by classifications and items
- analysis of service requirements and performance standards
- market review of available selection
- selection of prototypes and standardization of typical items
- specification and solicitation of quotations
- review of quotations and budget allocations
- final selection and purchase of equipment and furniture
- receiving, checking and temporary storage
- installation and testing of equipment
- collection and filing of operating instructions, maintenance data and guarantees
- provision of all instructional material and/or courses to be offered by special equipment manufacturers

4) *Occupancy*

- schedule of building occupancy, including obtaining necessary approvals
- program of staff recruitment and assignment
- possession of premises by owner-authority
- activation of safety and insurance program
- establishment of utilities services
- official inspections and licensing for operation
- staff orientation and instruction
- trial staff operation of systems and equipment
- dedication and opening ceremonies
- stock distribution of supplies and accessories
- occupancy and opening for initial operation

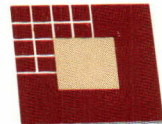


EXTRUDED QUARRY TILE RESISTS EVERYTHING

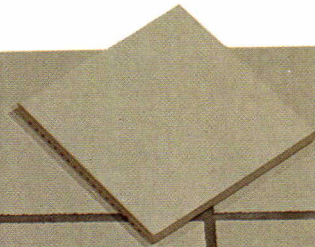
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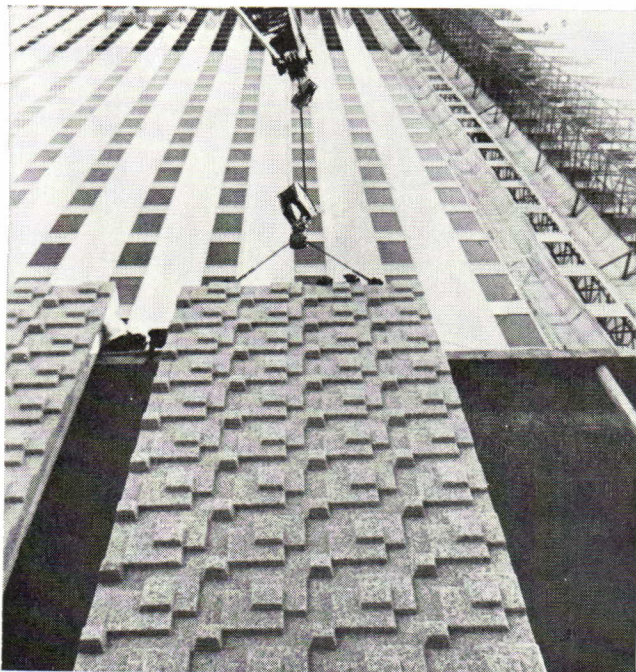
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Suprema Siskin Green	Suprema Pink Granite
Suprema Black Obsidian	Suprema Light Gray Granite
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Architects: Piel, Slater, Small & Spent Denver, Colorado
 Construction: Mead & Mount Construction Co.
 Denver, Colorado
 Mfg. by: Buehner Concrete Products Co.
 Denver, Colorado

For further information and samples, write to:

COLONNA & COMPANY OF COLORADO, INC.
 CANON CITY, COLORADO

Letters Cont'd

wish to raise a question of policy. Is it proper for the *Journal* of the AIA to publish an article of this sort about the work of any of its members without their permission, or without even the courtesy of showing it to them before it is printed?

WALDON FAULKNER FAIA
 Washington, DC

EDITOR, *AIA Journal*:

Congratulations on publishing the fine piece by Plinth in the February *Journal*. I hope that any controversy over publishing criticism of an AIA member's work will not obscure the importance of the article. The uncomplimentary remarks about the Brookings Institution were, after all, only a small part of a sincere attempt to alert us to the larger implications of our individual work.

If we are serious about comprehensive services then we must reflect this approach in our commissions. It is hypocritical to speak of the expanding role of the architect and then to design buildings that disrupt the visual and social fabric of their surroundings. True comprehensive design is a moral act and must start with a thoughtful and questioning evaluation of the building's place in the larger setting of street, neighborhood and city. The current preoccupation with urban design and townscape will be of value only if the principles set forth are conscientiously applied in each and every building we design.

I am proud to see the *Journal* remind us of our responsibilities by printing such thoughtful criticism.

ROBERT B. RILEY AIA, Editor
Potomac Valley Architect

Industrial Architects and Clients

EDITOR, *AIA Journal*:

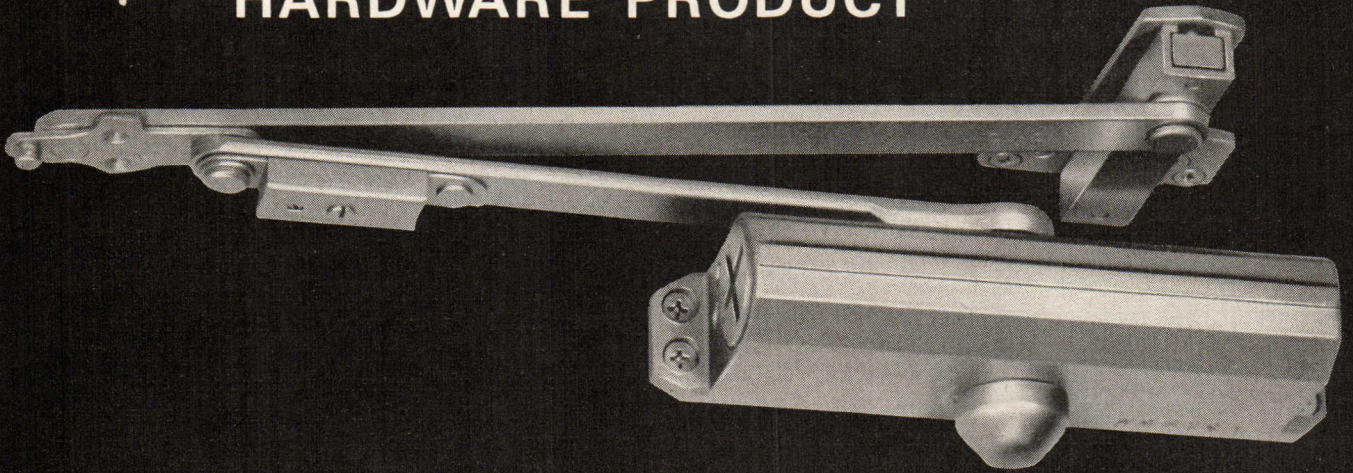
Because of my trip to Europe last fall, I overlooked the excellent article by George T. Heery AIA about industrial leasing in the August *Journal*. Your recent reminder to purchase additional copies brought it to my attention now. Working as an independent architect also in the industrial field, I read it with great interest and sent for additional copies.

I agree wholeheartedly with Mr. Heery that industrial clients are—in the most cases—best served by qualified independent architects, and I hope that more articles along similar lines will follow. His example of an architect losing out with his own client because of his failure to offer his services in a leasing agreement seems to oversimplify the architect's plight. Unfortunately, too many commissions are lost to eager and conscientious architects on account of many alluring promises by "package dealers" and other entrepreneurs of "thrown-in" architects' services, "inexpensive local knowhow," etc.

Very much could and should be done to alert potential but still misinformed industrial clients, and I suggest that you continue your fine efforts.

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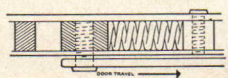
At almost full open, the arm engages a spring in the shock absorber mounted to the soffit plate. Opening momentum is absorbed.



(2) Stops the door



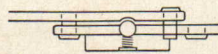
As the spring in the shock absorber is compressed, the door is stopped. There's no shock to the door, hinges or Uni-trol.



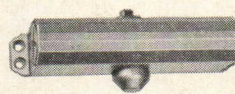
(3) Holds the door open



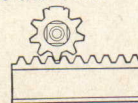
Spring loaded hardened steel ball in the holding mechanism is engaged by a recess in the Uni-trol fore-arm. The door is held open.



(4) Closes the door



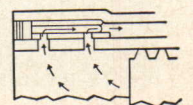
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PEOPLE / Another Medal for Gropius



The Art Directors Club of New York will award its President's Medal for 1964 to Walter Gropius FAIA, first Director of the Bauhaus, "who will accept in the name of the distinguished faculty and alumni this tribute to the Bauhaus contribution." The AIA's Gold Medalist

in 1959, he is a principal in The Architects Collaborative, Cambridge, Mass, current winner of the Institute's Architectural Firm Award.

The medal will be presented during the Club's ninth annual Visual Communications Conference May 27-28, at which another architect, Herbert Bayer, Aspen, Colo, will be the keynoter.

NEW PRESIDENTS: Ulysses Floyd Rible FAIA, Los Angeles, former Institute Director, has been elected president of the California Council AIA.

Brandon H. Backlund, consulting engineer in Omaha, has been named to head the National Society of Professional Engineers.

SPEAKER: Harold Spitznagel FAIA, Sioux Falls, SD, will give a firsthand report on "Architecture Around the World" when the American Institute of Steel Construction holds its conference in Omaha May 14-15.

JURORS: John A. Burdick AIA, Cincinnati, will serve on a five-member jury for a national sculptural competition: a statue to be housed in a Shrine to Blessed Elizabeth Ann Seton which will be built near the campus of the College of Mount St Joseph on the Ohio in Greater Cincinnati.

Judges for the 1964 Architectural Student Design Competition sponsored by Koppers Company, Inc, were Peter Blake AIA, Managing Editor, *Architectural Forum*; Karl Kamrath FAIA, Houston; and Richard W. Lilliot, Dean of the University of Houston's College of Architecture.

EDUCATION / Professor Wolf's Memorial

The Iowa State Architecture Foundation which Professor Leonard Wolf FAIA had envisioned for several years prior to his passing in October 1962 has become a reality on the Ames campus. As a development of the Leonard Wolf Memorial Fund, it will be administered jointly by the Alumni Achievement Fund and the Head of the Department of Architecture. Widely known and respected both in architectural education and the profession, Professor Wolf, at the time of his death, was national secretary of ACSA, chairman of the Governor's Committee on Housing and Institutional Care for the Aged and chairman of the Governor's Housing Survey Committee.

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PLANNING / Gargantuan Goals

Among the newcomers to the Institute's roster of Honorary Members is Dr Anthony G. Adinolfi, Manager of Planning for the New York State University Construction Fund, which is faced with this herculean task: doubling the present physical facilities to accommodate an estimated full-time enrollment of more than 160,000 students by 1970. Established by the 1962 Legislature, SUCF directs the building responsibilities of the three University centers, two medical centers, eighteen four-year colleges and six two-year agricultural and technical institutes. But SUCF is making the job easier for everyone by providing the commissioned architects such assistance as a series of "milestone" meetings and the issuance of a comprehensive "Guide for Campus Planning."

A noteworthy postscript is that the Educational Facilities Laboratories, Inc, this year's recipient of AIA's Citation of an Organization, in the latest publication "Bricks and Mortarboards" praises New York State, along with Illinois and California, for "wide-ranging, imaginative campus plans."

AIP AWARD: American Institute of Planners will accept nominations to May 15 for its 1964 Honor Award for outstanding achievement in comprehensive planning by an American city, county or metropolitan area. Write: Jury of Awards, AIP, 917 15th St NW, Washington, DC, 20005.

PUBLICATIONS / Editor's Chair for Demarest

William Demarest, onetime staffer at AIA headquarters, has become editor of the *Construction Specifier*, monthly journal of the CSI.

NEW TECHNICAL JOURNAL: Building Research Institute introduced its bimonthly *Building Research* in February as a 64-page journal featuring technical papers on impact noise and on high-density, low-rise housing. For further information write BRI at 1725 De Sales St NW, Washington, DC, 20036.

ENGINEERS DIRECTORY: Consulting Engineers Council has set a mid-year publication date for a special

directory listing members who are interested in overseas work.

PUBLIC AFFAIRS / Spreading the Architectural Gospel

In teaming up with the Small Business Administration on a brochure titled "Remodeling for Better Retailing," the New York Chapter AIA has engaged in the type of public affairs project that should benefit architects generally. Small Marketers Aid No 99, which carries the Chapter's byline, offers a five-point program to serve as a guide and indicates some of the areas in which the architect can assist the retailer.

The Chapter also is the first to develop a formal program to insure equal opportunities for Negroes in the architectural profession. Its initial objective: an annual \$10,000 scholarship aid fund.

FOOTNOTES / Von Eckardt Picks a Plum

Wolf Von Eckardt, HON AIA, well known to *Journal* readers for his "Allied Arts" column, has received a \$10,000 fellowship from the Ford Foundation. The grant will permit the free-lance architectural critic and contributor to the *Washington Post* to "travel in the US, England and the Continent for preparation of a report comparing current urban design of major American cities with the most significant contemporary urban projects in Europe."

Among the 10 other recipients of fellowships for critics, reporters and editors is writer Ester McCoy, Santa Monica, Calif, who will "travel in the US to study work of young architects."

APPOINTMENT FOR DE ARMAS: The author of "Design and Construction of Veteran Administration Hospitals" published in the February *Journal*, Emile de Armas AIA, has been named to both the Steering and the Sectional Committees of the American Standards Association Project A-117—"Making Buildings and Facilities Available and Usable by the Physically Handicapped." He will represent the VA, of which he is director of preliminary planning service of the Office of the Assistant Administrator for Construction.



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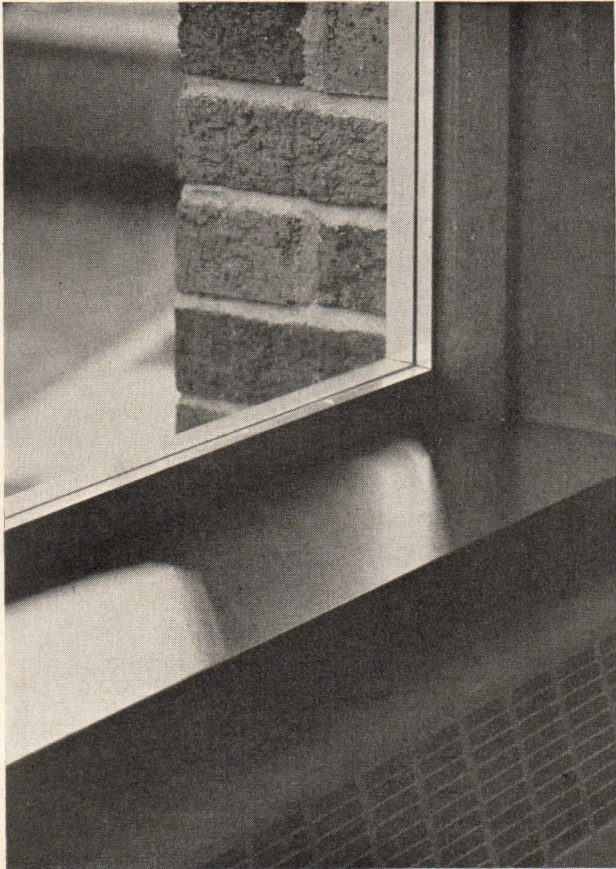
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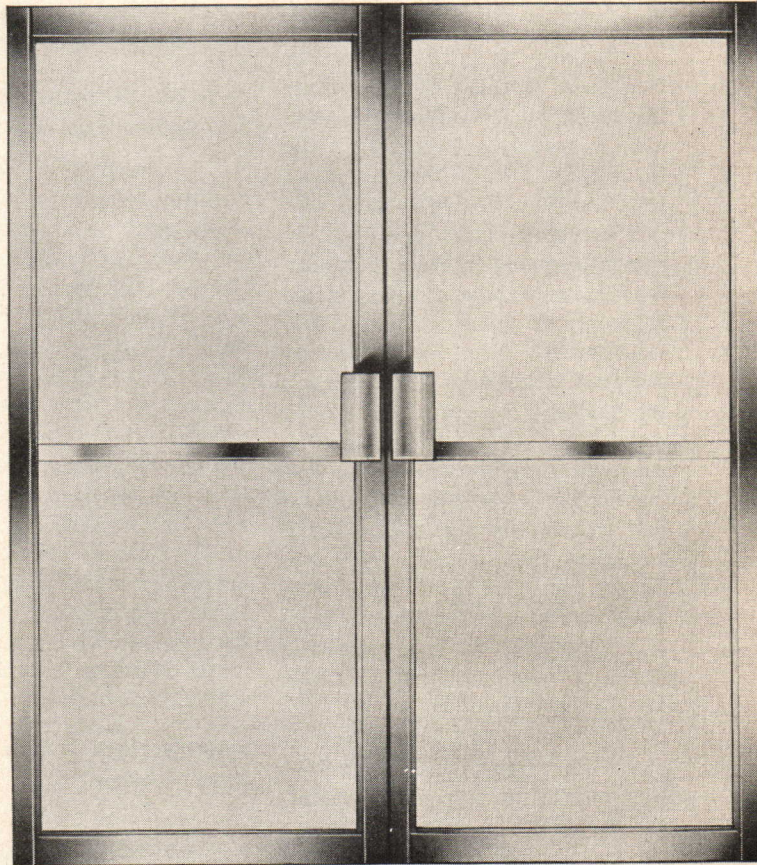
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