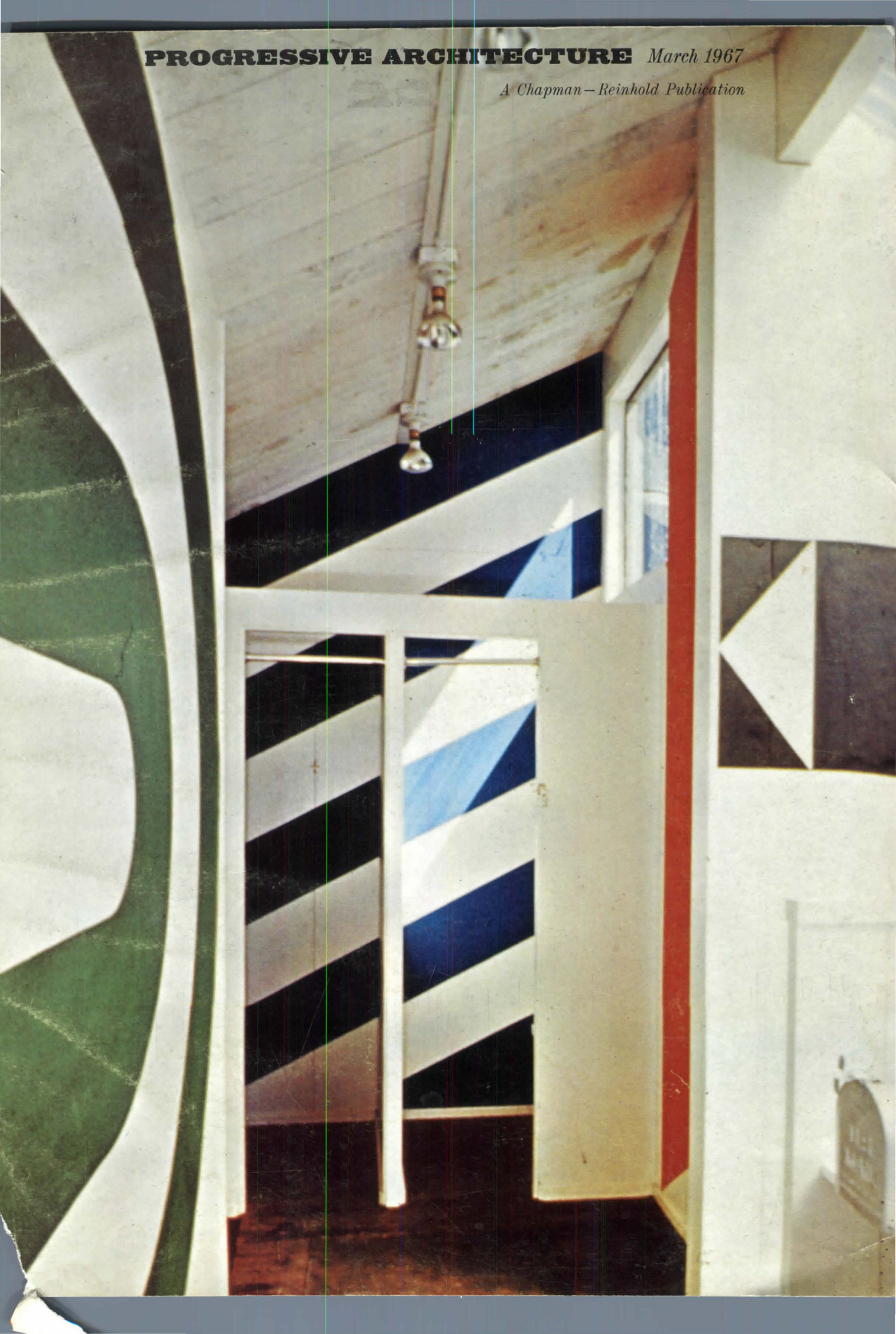
PROGRESSIVE ARCHITECTURE *March 1967*

A Chapman–Reinhold Publication



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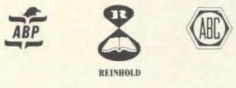
Progressive Architecture ® *March 1967*



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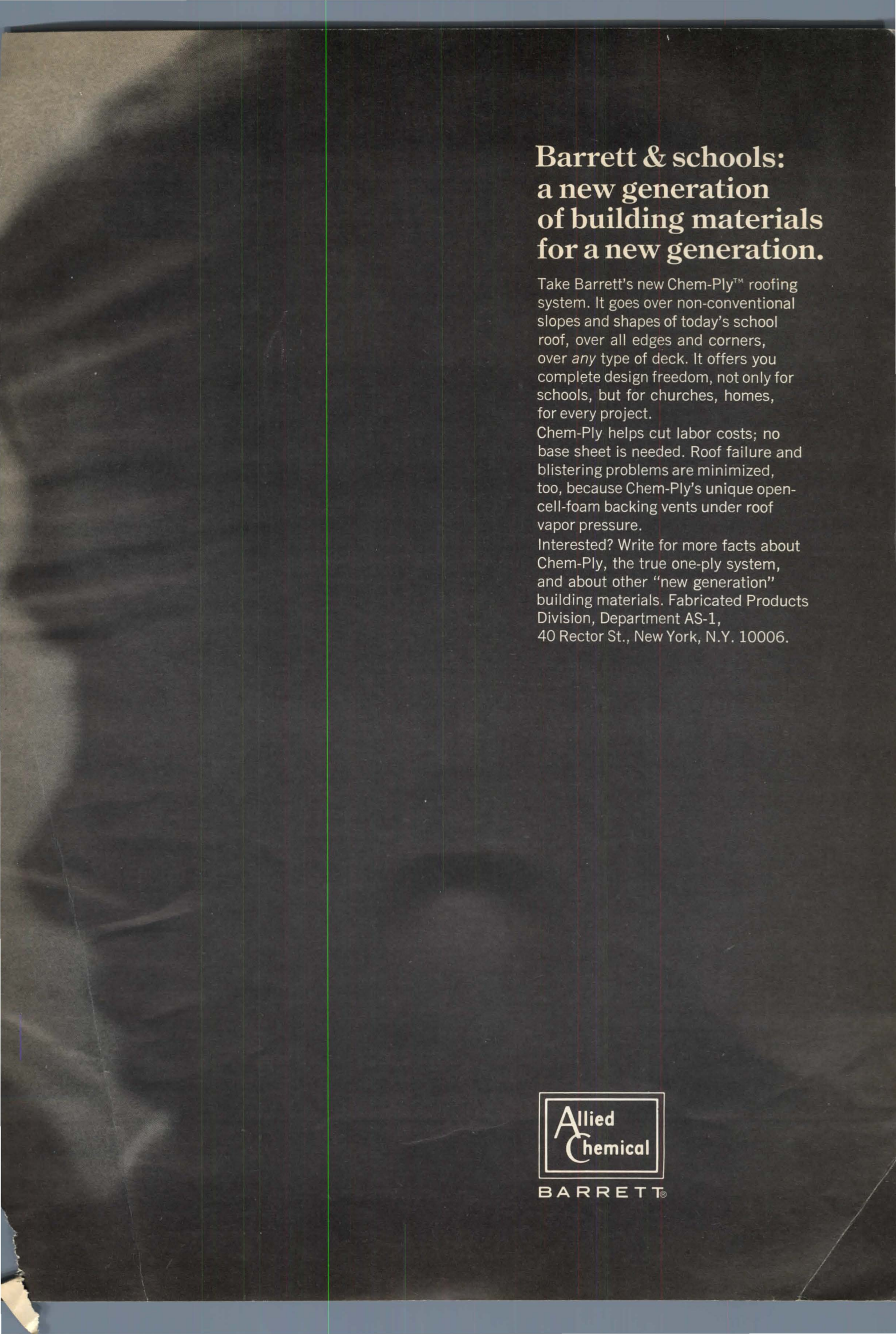

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VIEWS

Toward the Third Millennium: More Comments

Dear Editor: "Toward the Third Millennium" (DECEMBER 1966 P/A) is tremendous — well written, well organized, thoughtfully conceived, and timely. It is a most valuable overview. Thanks.

WILLIAM CAUDILL
Houston, Tex.

Dear Editor: The subject of the future has become vitally important to all of us. As your writers point out in this comprehensive survey, the technical breakthrough and the social changes that are occurring now at an accelerating rate will, in a few decades, result in a completely different and new world. It will require all of us, perhaps especially architects, to wipe out many of our preconceived ways of thinking.

This year, one of the principal projects being undertaken by the AIA is a survey on the future of the profession. A more factual and less intuitive study is, we feel, vitally necessary to determine what our profession may be doing 20 years from now. The technological and social changes will affect our education, our practice, our clients, and the projects in which we will be involved.

Recently, a new way of dealing with the future seems to have emerged, and this "systems analysis" will undoubtedly play a decisive part in the development of American business and government and our own profession.

The AIA is planning a series of seminars attended by leading businessmen, economists, social scientists, educators, architects, and representatives of this new breed which we call "futurists" and "factualists." Hopefully, these seminars may result in information which will help us plan more intelligently for the future of our profession.

CHARLES M. NES, JR.
President, the AIA,
Washington, D.C.

Dear Editor: May I congratulate you on your splendid December issue? I found it truly exciting, with its great eye turned toward the future. Having just returned *from* Europe, I found your magazine and its approach so refreshing. I would like to take a copy back with me to Europe to amaze and delight and confront my associates with.

Again, thank you — and best wishes for a continued fresh approach; certainly progressive.

DAVID ALEXANDER
Vancouver, British Columbia
Canada

Dear Editor: I was much interested in your December issue.

With a few exceptions, the comments by architects to your questionnaire on the future were unenlightening and the result pretty much of a guessing game. However, the articles on the revolution in philosophy, science, technology, society, engineering, and the senses were really splendid; several friends in education have referred to this issue as the best and most compact report on these matters available. I read it thoroughly and feel, as should the whole profession, much richer for it. The technical depth to which each article reaches offers more than can the off-hours efforts of most architects. The arts are so closely allied, and in many ways so brilliantly ahead of architecture, that I wish you had devoted an entire article to them.

The last article, "The Architect's Third Millennium," although it brought together the attitudes and achievements of broader fields, failed to restate them convincingly in architectural terms. In addition, I have several points of disagreement. First, I do not believe that Sigfried Giedion or Cézanne are in touch with the multisimultaneous station point that is part of the new architectural experience. Second, imagery and illusion, given undue importance, are too scenic and illusory to be considered mainstream revolutionary architecture. Reference to my thinking in this connection is to miss the more fundamental elements of change in my article in *The American Scholar* last summer, "An Architecture for the Electronic Age." Third, under "Architectural Revolution," page 150, there is a weak effort to tie most recent architectural design together as an interest in form, space, light, and tactile qualities. Here you have lost the thread. I would conclude from your research, which agrees with my own thinking, that the truly revolutionary idea is rather the substitution of: configuration for façade, permutation for fixed structure, slang for eloquence, assemblage for composition, action for form, and accommodation of event for design. Kahn, Venturi, Rudolph, and Moore are not much a part of this revolution. They are, very successfully, searching in quite other directions. Their names seem to have been thrown in more out of professional awe than from thoughtful analysis, while Stirling and Cook of Archigram were not even mentioned.

In any case, it is up to the architect to find the architectural equivalent or expression of this new experience world. You and your staff have done your good part and contributed valuably to the profession, if you have helped reorient the minds of a confused profession.

JOHN M. JOHANSEN
New Canaan, Conn.

Dear Editor: I have derived too much satisfaction and stimulation from the December issue to remain silent about it. It could easily be a publishing classic of the present, as well as of the future.

My congratulations to you and all your staff for assembling and presenting such comprehensive material — particularly in the chapter on "The Social Revolution" — in so compact and readable form.

Surely, or so I trust, this issue will soon become a Reinhold book, and when it does, the very least it deserves is a Pulitzer.

ROBERT FISH
Los Altos Hills, Calif.

Dear Editor: My reaction to your December issue is: Good God.

CHARLES COLBERT
Visiting Critic, Iowa State University
Ames, Iowa

Dear Editor: I have read your December issue and was most impressed. You deserve the highest accolade for your treatment of this subject.

It took tremendous courage, talent, and research to develop the articles, and I was amazed that they came from an architectural magazine.

The content was truly progressive and discarded all traditional views. The scope was vast and in harmony with the subject.

I have reread the issue three times and have gained with each reading.

Again, my compliments on a superb job.

NATHAN S. LEVENSON
Pittsburgh, Pa.

Dear Editor: I thoroughly enjoyed your "distillation" of the state of our times, with all of its ramifications. If it serves no other purpose than to somehow or other encourage the retreading of those of us in practice, it will indeed be valuable; because most of us who have been in practice for many years are inclined to ignore the many tracks in which we must run.

WILLIAM L. PEREIRA
Los Angeles, Calif.

Dear Editor: The December issue was the most excitingly informative thing I've read in a long, long time. I can appreciate the time and effort that went into the issue.

DONALD S. FOWLER
Albuquerque, New M.

Dear Editor: Congratulations on the December issue. It gave me pride to see such broad assessment of our point in time appear in an architectural journal.

We are indebted to you for the direction you have given to the profession through this excellent and comprehensive look to the future.

BILL N. LACY
Dean, School of Architecture
The University of Tennessee

Continued on page 12

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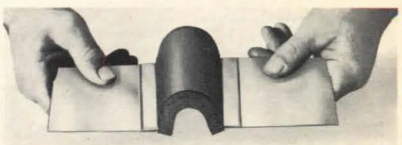

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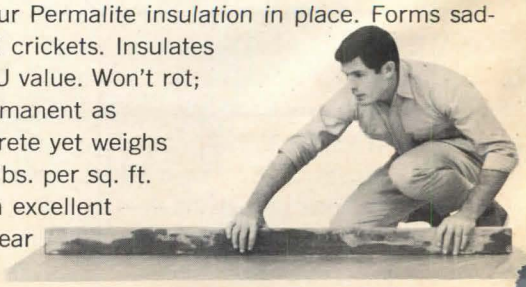

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Continued from page 6

Dear Editor: The December issue is meaty enough to cover three or four months of editorial matter in the magazine. I might add that it will take me that long to digest all that I am now reading.

I want to commend you and your staff for undertaking such an Herculean task. Your efforts are going to be appreciated increasingly over a long period of time as your readers refer in the future to the issue. I can imagine that some who looked over the text upon receipt of the publication (especially during the pressures of the holiday season) may have looked too quickly to understand what you were trying to do, and therefore may have shrugged their shoulders with a kind of "so what" attitude. But I think most thoughtful readers will react with a highly positive feeling. We think you did a great job.

We have an obligation as architects to add all we can to our small store of knowledge and do the best job we know how to do at all times.

Considering the quote from your article — ". . . a child born as you read this will be emerging as a practicing architect (if that be his designation) at the turn of the century" — hopefully, these babies will do a better job of reacting in a creative manner to the challenges of the total environment than we are in today's world of architecture.

The future may belong to the young, but this does not mean that we can justify the luxury of "waiting" and "playfully" use 10 yards of concrete when one will do the job.

A. QUINCY JONES
Los Angeles, Calif.

Dear Editor: I have heard of Humanists, Mind Opening, Existentialism, Scientific Method, Matter, Glue in Atoms, Nuclear Force, Gravity, Matter-Energy, Galaxies, Genetic Code, Mind and Computers, etc., etc.

Did you run out of architectural subjects — i.e., buildings — or decide that everyone would be so busy over the Christmas holidays that no one would have the time to care what was in P/A?

R. COGLEY
Port Huron, Mich.

Dear Editor: The December issue is, by far, the most misguided effort in journalism I have encountered. It is nothing but jargon, framed by a debatable quote of Wyndham Lewis', "The artist . . . is the only person aware of the nature of the present," and an unintelligible last sentence: "We look forward to it with anticipation."

With few exceptions, your study on the future strikes this reader as a pseudo-intellectual and pedantic pastiche of curiously sophomoric zeal. (Read this issue and, man, you're on the right track to "The Third Millennium.")

Informed open-mindedness — yes, by all means. But we are neither informed nor enlightened by superficial attempts at ordering the vast and complex body of contemporary knowledge. This role — to seriously present and interpret the developments of our time in intellectual terms — is more adequately performed by the quarterlies and reviews of universities and private institutions than it can be by trade journals.

TED SANDE
Cranston, R.I.

Dear Editor: You have trumpeted in the third millennium with a fanfare of wide scope, touching all areas and pointing out that no mortal could possibly cope with it all. It would seem best for the architect to remain with his basic responsibility — that of relating man to his environment, and, conversely, his environment to himself.

Having touched upon some of the new thinking in this area, it would make sense to bring to your readers continual data relating to architecture from the fields of behavioral science, anthropology, human factors science, sociology, etc.

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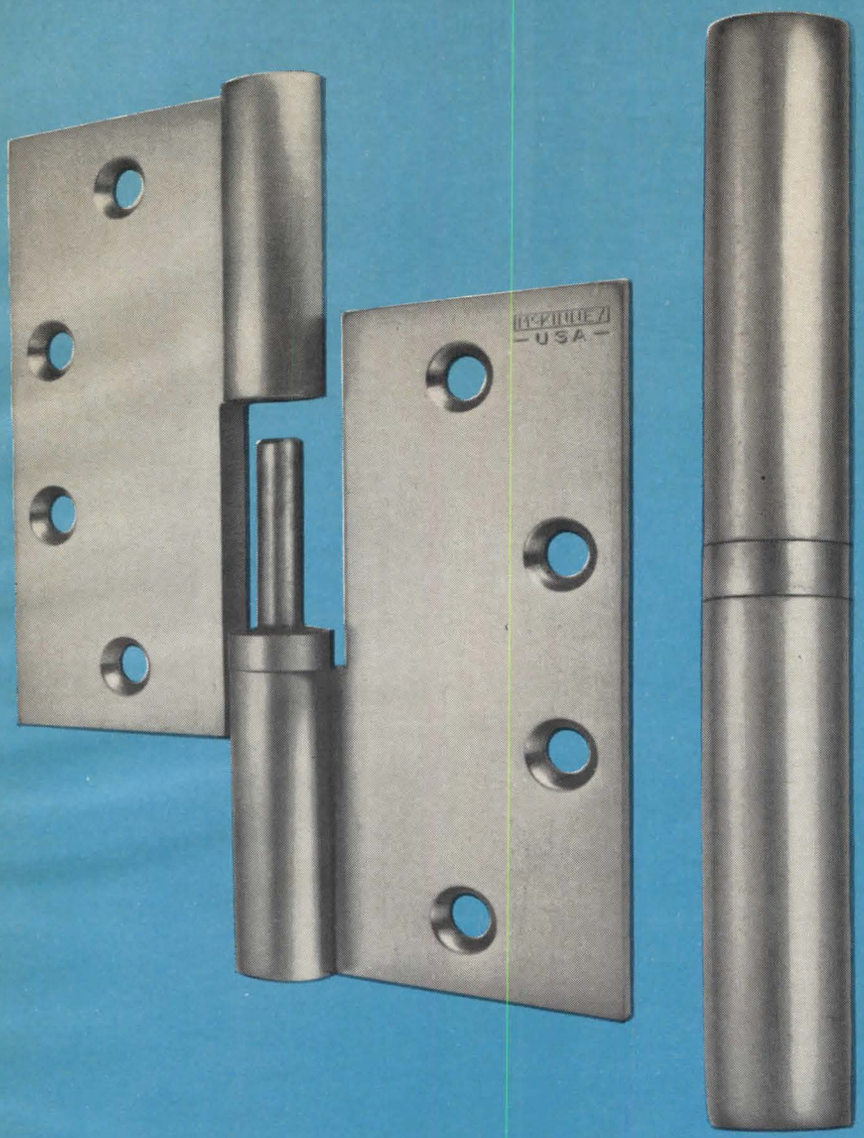

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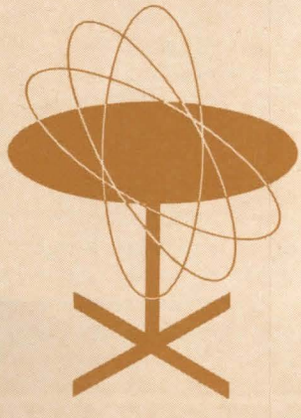

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New River Room
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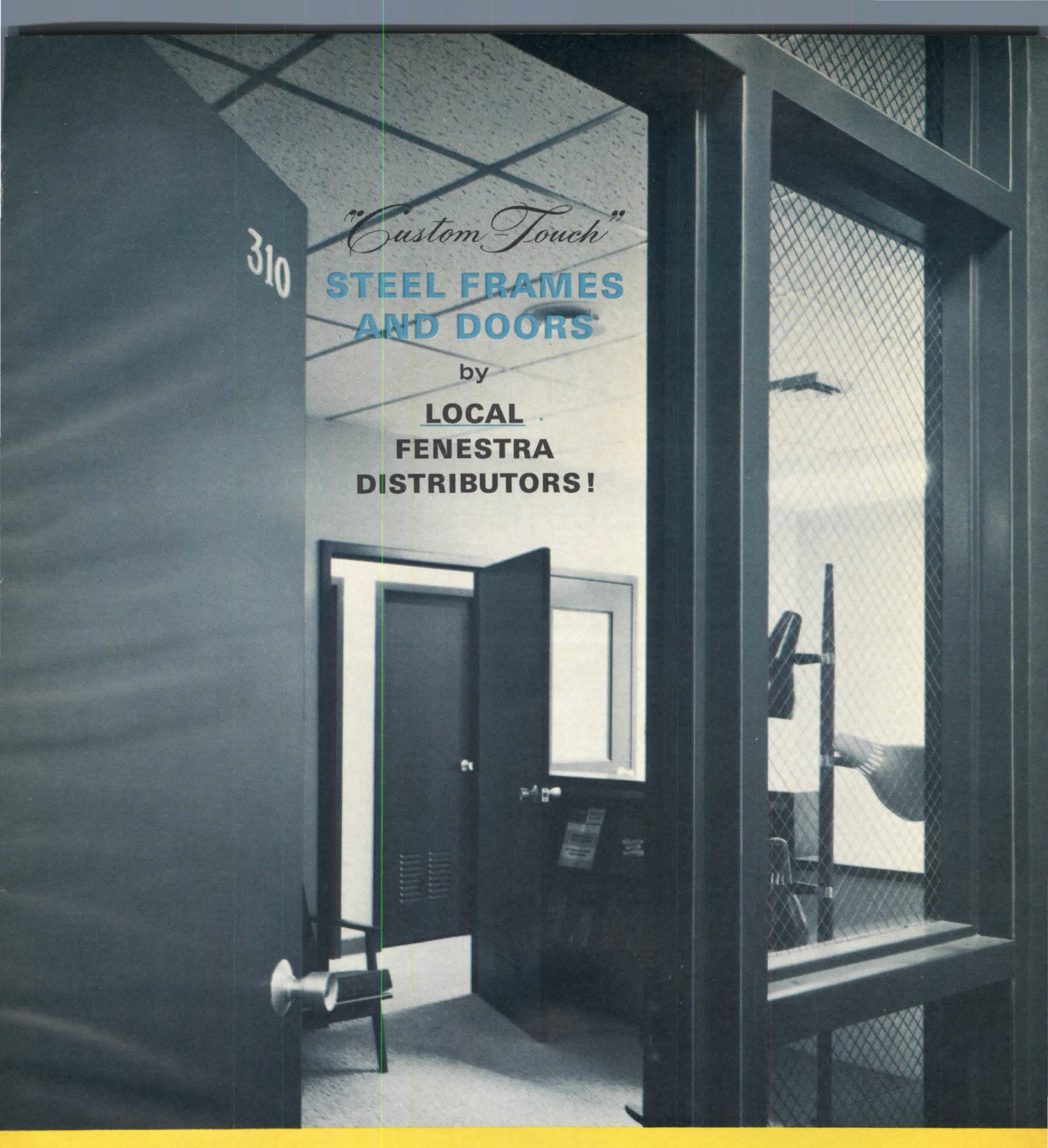

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Continued from page 12

The approach to understanding the function of the senses is to view the human information system of: sensing (the stimuli for relevance); decision processes; responses, and feedback. In this context, the total process is revealed. Then, not only are the functions of the five basic senses mentioned in the article understood, but also the interplay of orientation, positional, and motion senses as well.

ARCHIE KAPLAN
Human Factors Design and Research Inc.
New York, N.Y.

Reactions to P/A Design Awards

Dear Editor: Your Fourteenth Annual P/A Design Awards issue (JANUARY 1967 P/A) has a very exciting series of comments by a great group of thinking judges.

The difficulties in selection and the near impossibility of expressing exact criteria for selection is evident. But what stands out is a sincere effort to achieve the best solution, and, as always, the best projects most often emerge. The search for a direction in architecture continues.

ARNOLD A. ARBEIT
New York, N.Y.

Dear Editor: I had thought in 1966 that your jury reached an all-time low in selection, but now I am forced to admit your jury has broken that level and gone even further into the depths.

This year's jury has seen fit to substitute wit for intelligence, queerness for charm, and adroitness for skill.

Who needs it?

SAM CARSON
Los Angeles, Calif.

Dear Editor: About the Fourteenth Annual P/A Design Awards: Can they be serious? One juror almost hit it when he said, apologetically, that "every young kid is going to be . . . saying 'Wow, this is it this year!' " This young kid says, "Wow, this was *it* for architecture!" Pipes, moongates, zaps and zips — that jury just couldn't be "turned off."

TOM RAMSEY
Georgia Tech.
Atlanta, Ga.

Dear Editor: So this is the year of zip and zap. Pow, Zam, Karoom! We, too, wonder what the devil they (the jurors) were doing at P/A offices on Park Avenue last September 19. Certainly along with arguing, joking, and philosophizing, they must have been kidding. Snap, Crackle, Pop! One thing is certainly apparent — no longer will *your* journal be referred to as P/A: Progressive Architecture, but P/A: Pop Architecture! Zip, Zap, Zonk!

THE JUNIOR ARCHITECTURAL DESIGN CLASS
Carnegie Institute of Technology
Pittsburgh, Pa.

Dear Editor: The Fourteenth Annual P/A Design Awards Program was, as always, no disappointment. Rather, it was its usual riotous tour through a lot of foolish, useless verbiage that has not yet, to my knowledge, become the medium of architecture.

Let's meet our jurors: There's the intellectual, who always says a lot of things like environment, pastiche, and cultural heritage. There's the jury jester who, every year, develops a whole new vocabulary, which threads its way ultimately throughout the entire jury session. This year we had plenty of "zips," "zaps," and "zoops," and a whole lot of people being "turned on and off" (assuredly, an extremely popular phrase, much akin to doves, hawks, iron triangles, and A-Okay). There's always one juror who is a rebel, and, depending on how favorably he impresses some other jurors personally, his violent outbursts of "rotten" or "fantastic" may each spell either doom or the highest award for a given project whose merit is, at best, questionable.

"Boy, we got so carried away with excitement over this one that we gave it a citation even though we unanimously agreed it was horrible and really not a legitimate architectural form in the first place."

Let's also not forget that when we get involved in a discussion that goes to the very roots of our beliefs and, indeed, our

Continued on page 20

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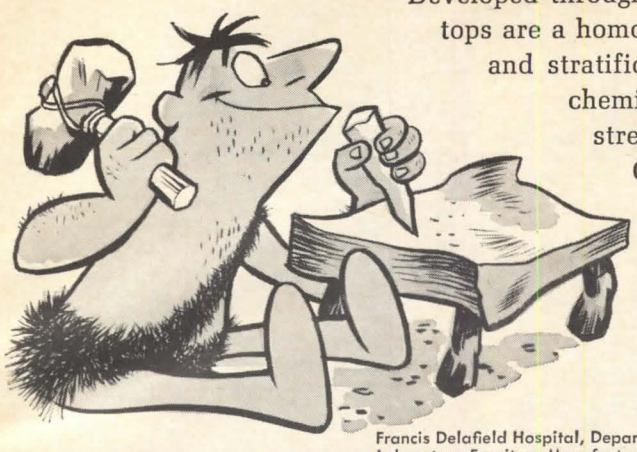

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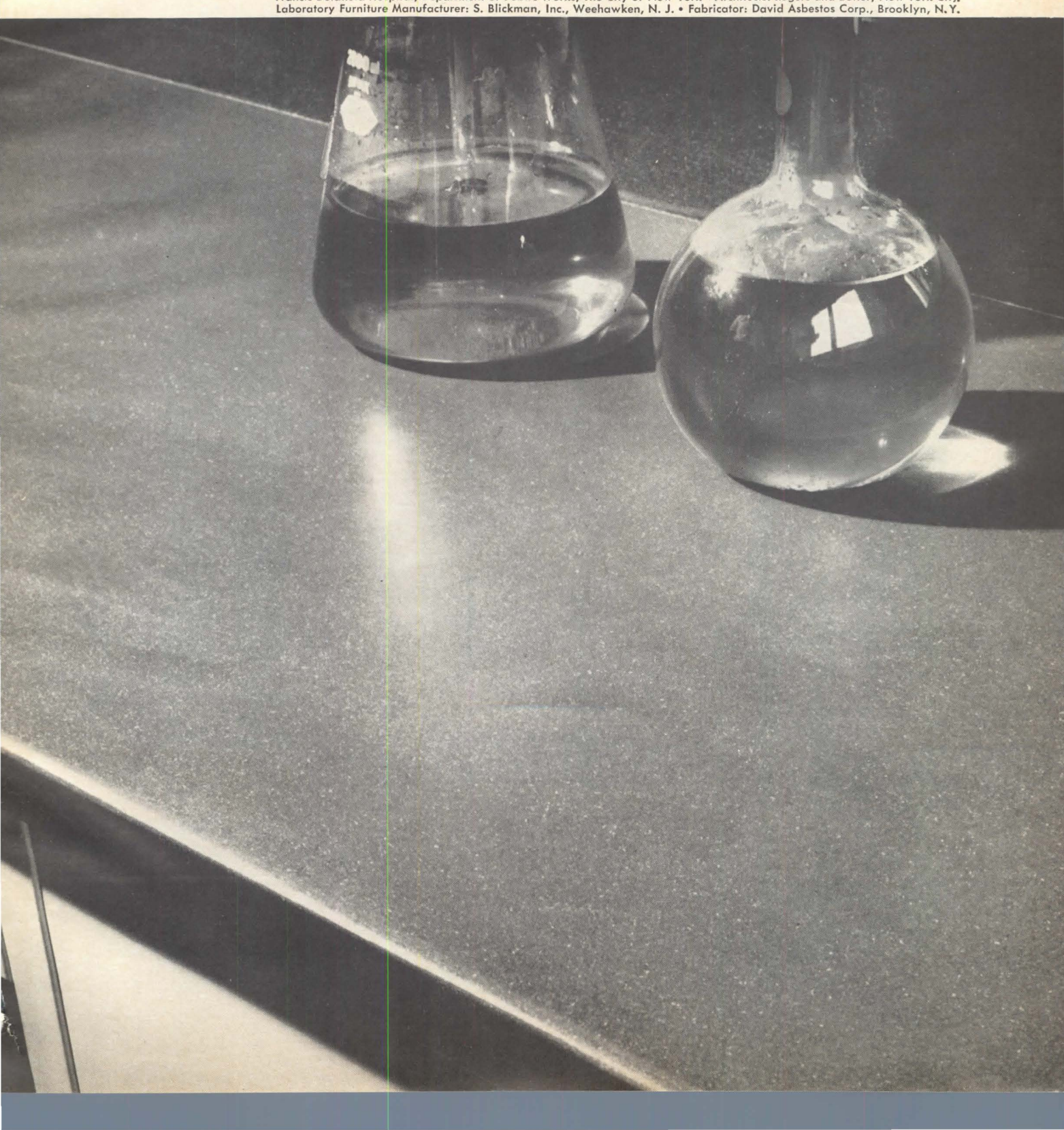
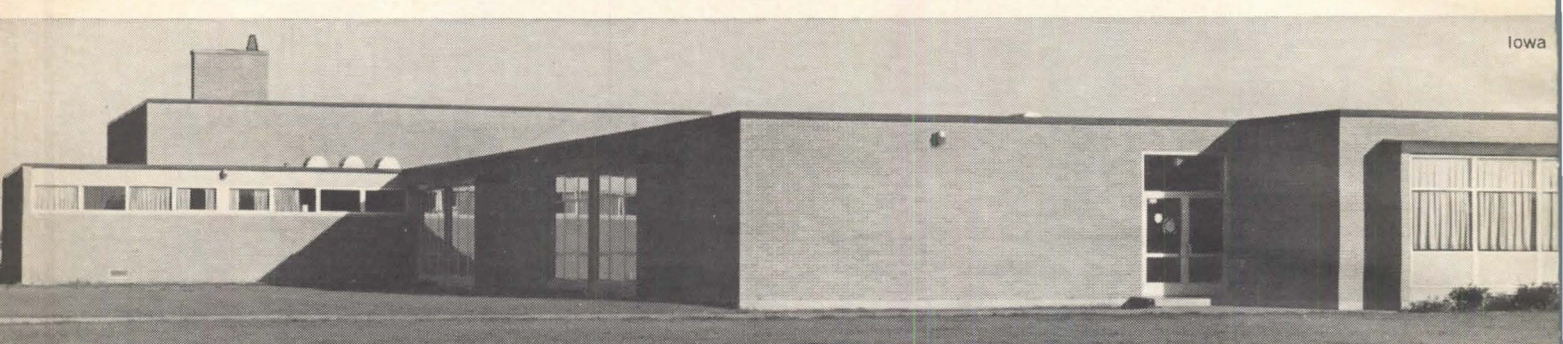
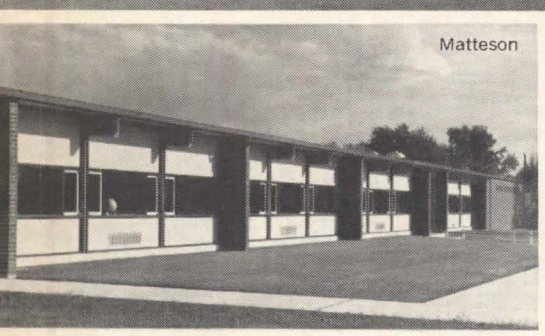
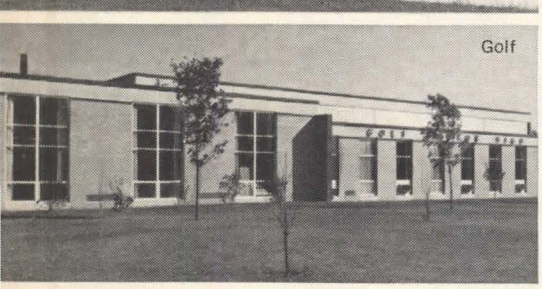


New facts on Gas vs. Electric Heat: Eight Illinois schools are bid both ways.







Now actual figures from independent sources have cut through the cost confusion about Gas and electric school heating.

In first costs: A study was made of 8 new Illinois schools, each bid two ways. The actual-bid figures at the right tell the story. The consulting engineers who made the study concluded: no basic first-cost difference between Gas and electric systems. (Low Gas operating costs made it the unanimous choice.)

Is there proof of Gas operating economy? Actual-cost data on two identical New York schools (one with Gas heating, the other with electric) showed Gas 50% less to operate. And a 4-year Midwest school system study showed an even bigger margin: Gas 7 to 1 over electricity. (Wherever you are, count on at least 2 or 3 to 1.)

Learn more about these carefully controlled tests. And the great economy of Gas. Your local Gas company has all the details. AMERICAN GAS ASSOCIATION, INC.

For heating and cooling...Gas makes the big difference

Result:

no basic difference in first costs. Gas heat is chosen for operating economy.

TOTAL CONSTRUCTION BIDS

Location, Name of School	Square Feet	Gas	Electric (Resistance)	Date of Bid	System Installed
Crestwood (Kolmar)	34,000	$418,153	$444,054	Mar. '64	Gas Heat
Matteson (Matteson)	11,720	154,886	151,900	Mar. '64	Gas Heat
Morton Grove (Golf)	28,653	474,730	466,982	Dec. '60	Gas Heat
Villa Park (Iowa)	24,130	309,847	304,880	Feb. '62	Gas Heat
Glen Ellyn (Glen Crest)	34,270	436,838	456,467	Apr. '62	Gas Heat
Malta (Malta High)	35,470	430,353	424,122	Feb. '64	Gas Heat
Joliet (Oak Valley)	20,400	336,561	337,684	Mar. '64	Gas Heat
Plainfield (Eastern Ave.)	20,800	290,348	284,755	Aug. '63	Gas Heat

Continued from page 16

livelihoods and that discussion happens to be with some people who are equally involved, there is a human inclination, to whatever small degree, to create an impression, whether it be by humor, by intelligent observation, by remaining quiet and attentive, or by the highly fashionable method of endlessly expounding irrelevant nonsense.

The unbelieveable aspect of this annual charade is that a great many renowned architects continue to stumble along in the seeming belief that the medium of architecture involves words rather than building materials. Indeed, some practitioners have achieved that renown using the former medium, contributing little or nothing to real architecture. The whole thing is somehow reminiscent of Frank Lloyd Wright, who went through life creating exciting architecture with genius, and then rambled off into writing about it with somewhat less than genius.

Architecture, like art, can only be experienced by looking at it, feeling it, living it — not by hearing it described, were we to use Webster's every word.

There is a redeeming factor: Architectural "theologians" are, at least, and, at best, very amusing.

FRANK L. NEUBEK
Palos Heights, Ill.

Dear Editor: The work you have chosen to represent progressive American architecture is, in general, whimsical, shallow, commercial, and insignificant except for the fake FLW — which is as bad as the rest, only in another direction.

The art work is not even good. Is your research department that bad or is the lack of appreciation for good work the fault of the editors?

These projects cannot withstand objective analysis, and, in that respect, your appreciation of them leads me to believe you are in trouble. Even the cover is bad.

DONALD M. MULLINS
Omaha, Nebr.

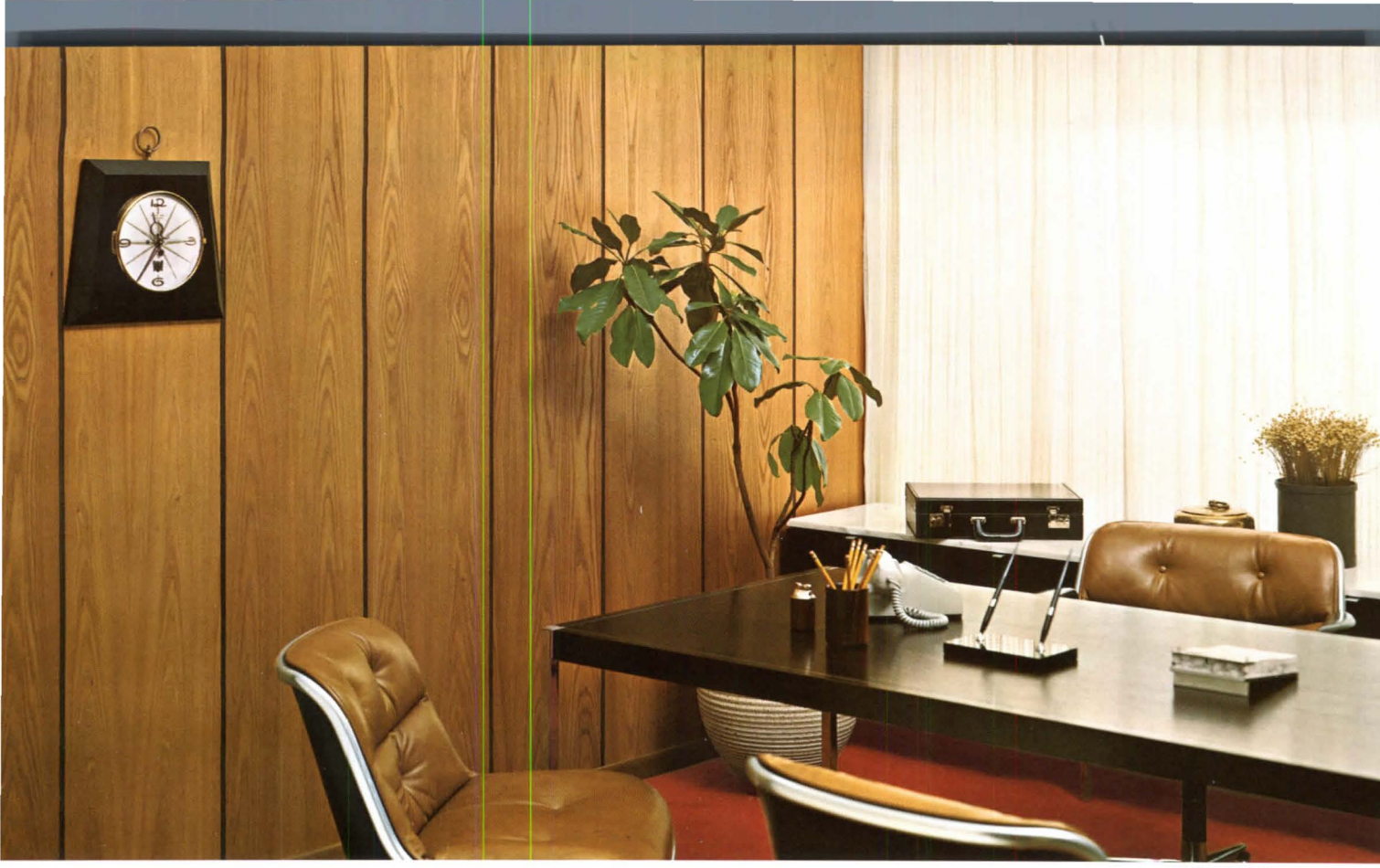
St. John the Divine: A History of Happy Accidents?

Dear Editor: St. John the Divine (p. 37, JANUARY 1967 P/A) seems to be the tangible souvenir of a history of happy accidents and unhappy building committees. The year 1892 was well content with something mildly innovative, not exactly Gothic, not Romanesque, not Byzantine, partaking of all. The year 1911 wanted Gothic, the real thing, although Dr. Cram was allowed to wed Bourges to Barcelona, a thing he doubtlessly enjoyed. More recently we have gotten "realistic" in an indecisive way, but now we see a plan for the reconstruction, and are told that the building committee intends to begin raising money for it soon.

Unfortunately, the model suggests that the architects in charge have absolutely no sense of how to live up to their predecessors. The model reveals a mindless quality that would be present, I am convinced, in the executed work. This is modernistic of 1930 — and not the best 1930 at that. There is no more true architecture about this than in, say, the Lenin's-tomb affair that Con Ed has built down the street, or any of the other affected hulks that institutions are putting up on Morningside Heights these days. The completion of St. John's need not be Gothic, it need not be as expensive as Gothic, but *it must be just as good* in its own way, and I would like to hear anyone offer a plausible argument that this Adams and Woodbridge design is good at all, except, perhaps in its general massing; and an argument based on general massing alone is valid only if a perpetual fog around the building can be guaranteed.

No, let us hope that the building committee will find that it is impossible to raise money on this design. Meanwhile, P/A might turn up a print of the original design for Seagram House and send it to them; they, too, might have a revelation.

WALTER C. KIDNEY
Brooklyn, N.Y.



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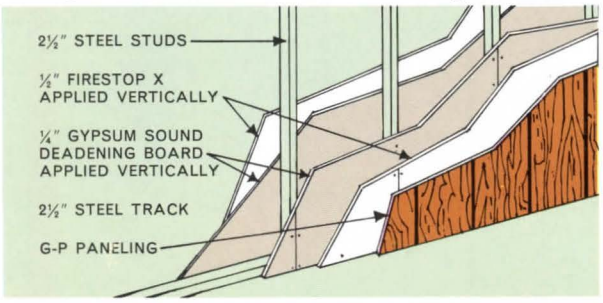

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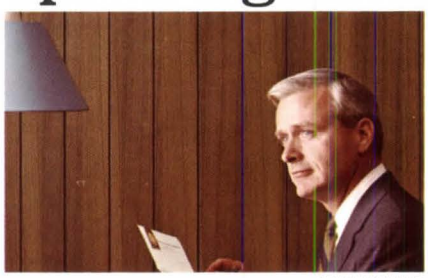
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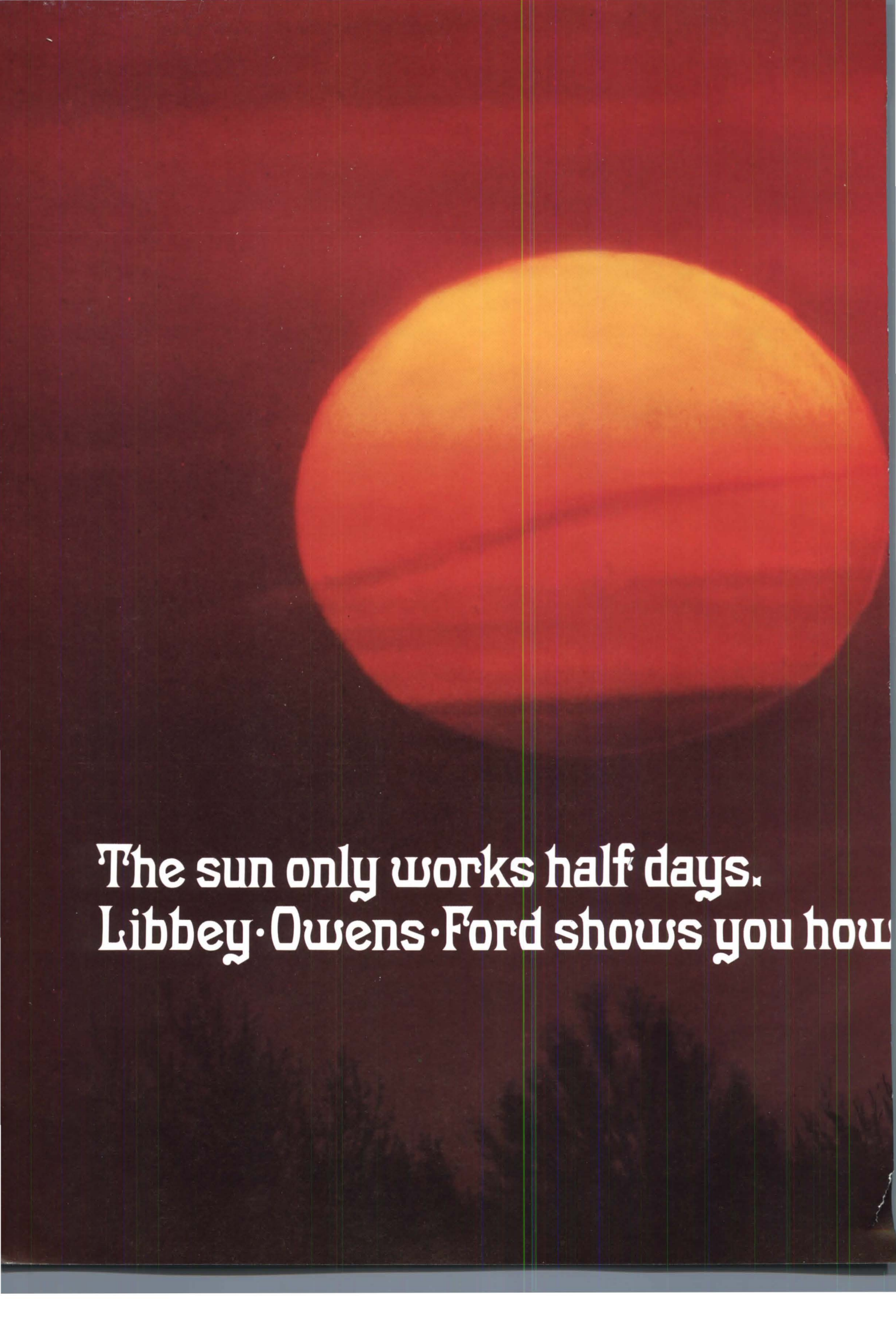
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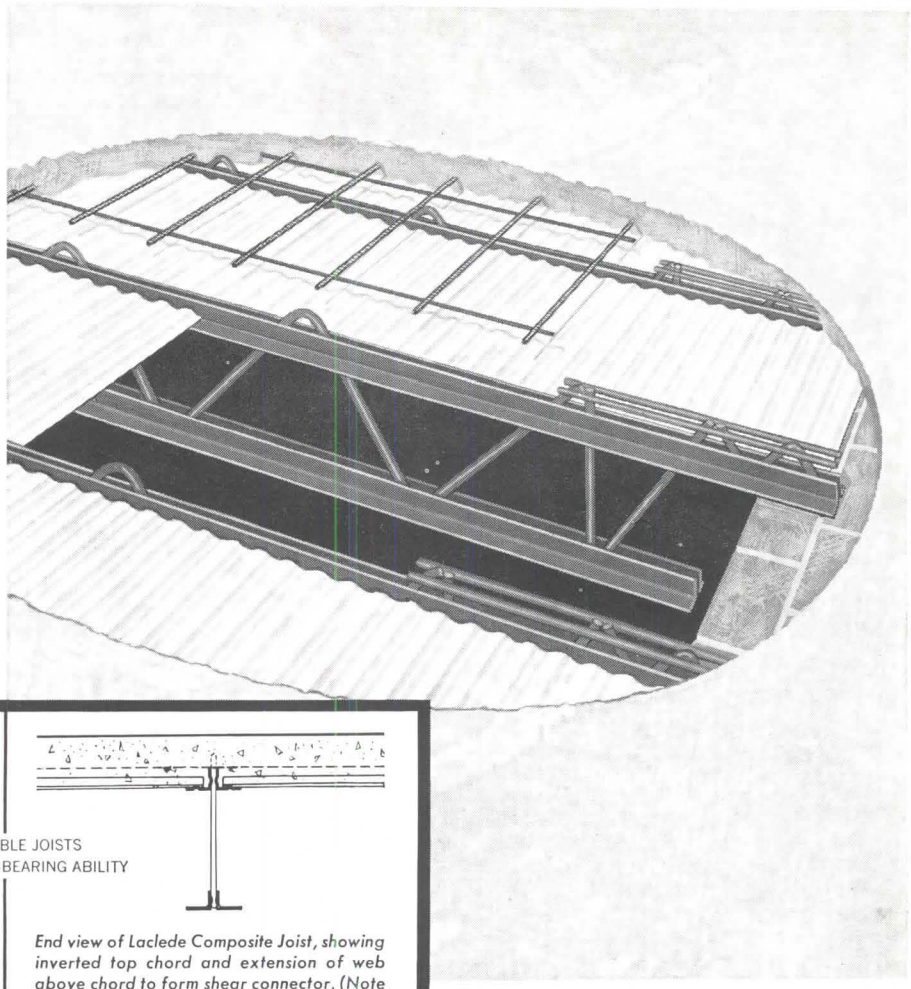
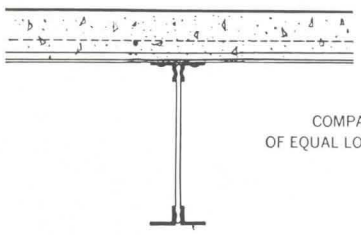
LACLEDE composite joists improve floor construction





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End view silhouette of conventional open web steel joist.

End view of Laclede Composite Joist, showing inverted top chord and extension of web above chord to form shear connector. (Note additional head room).

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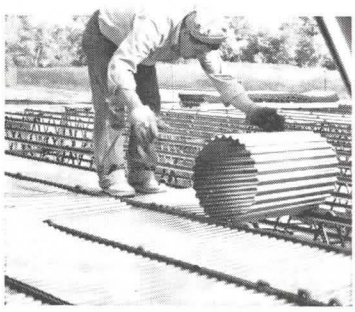

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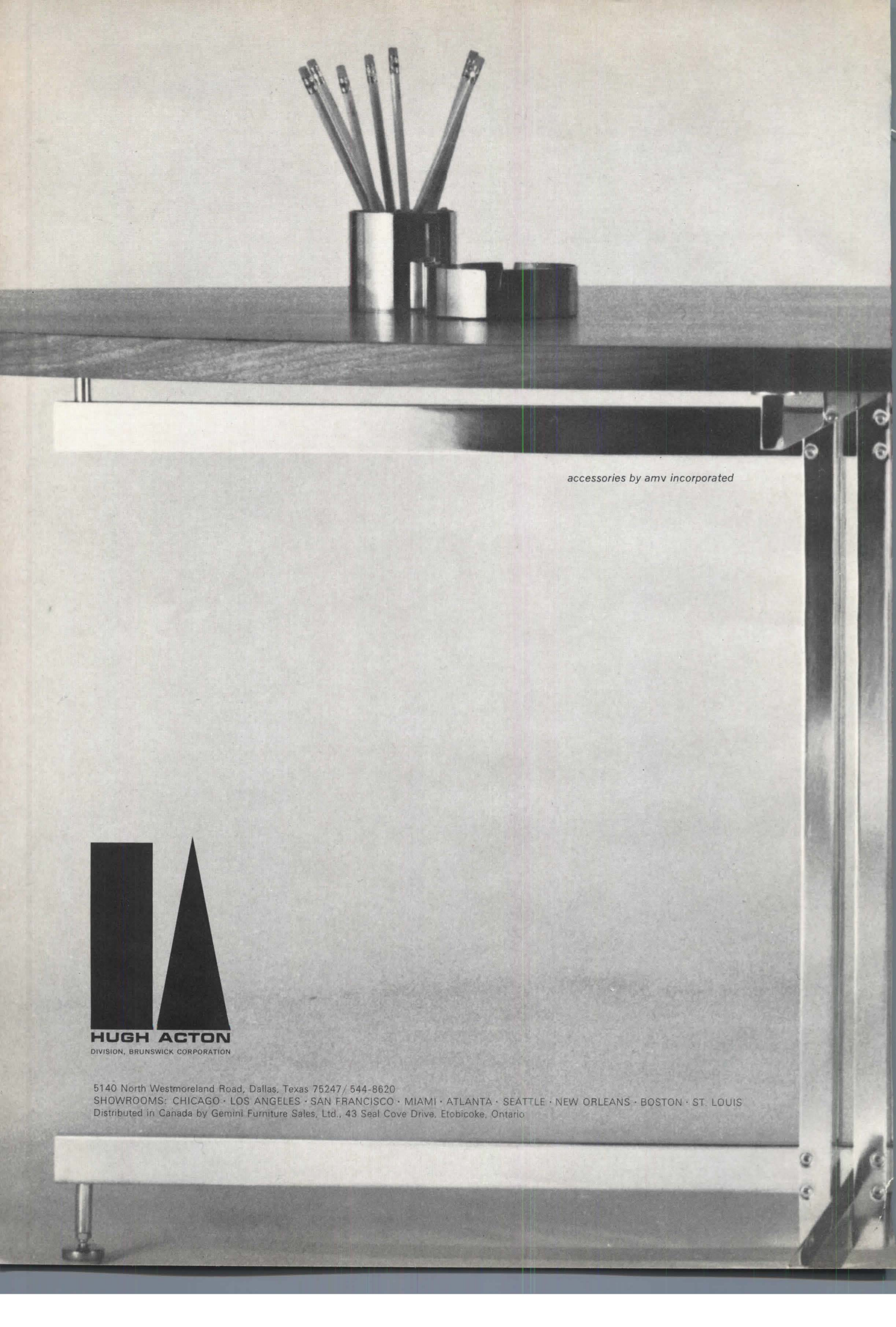

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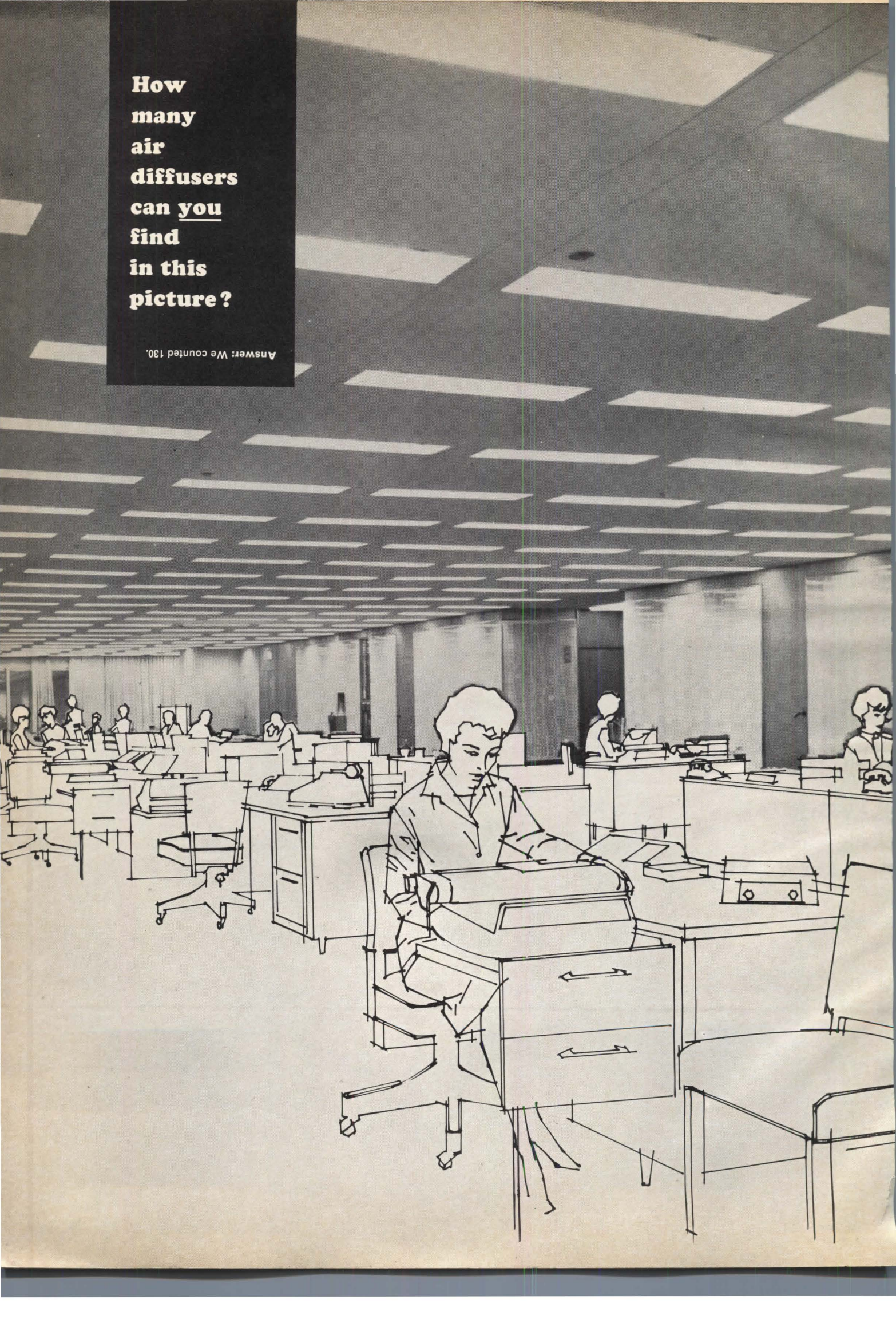
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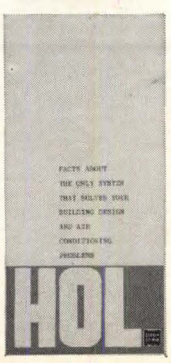

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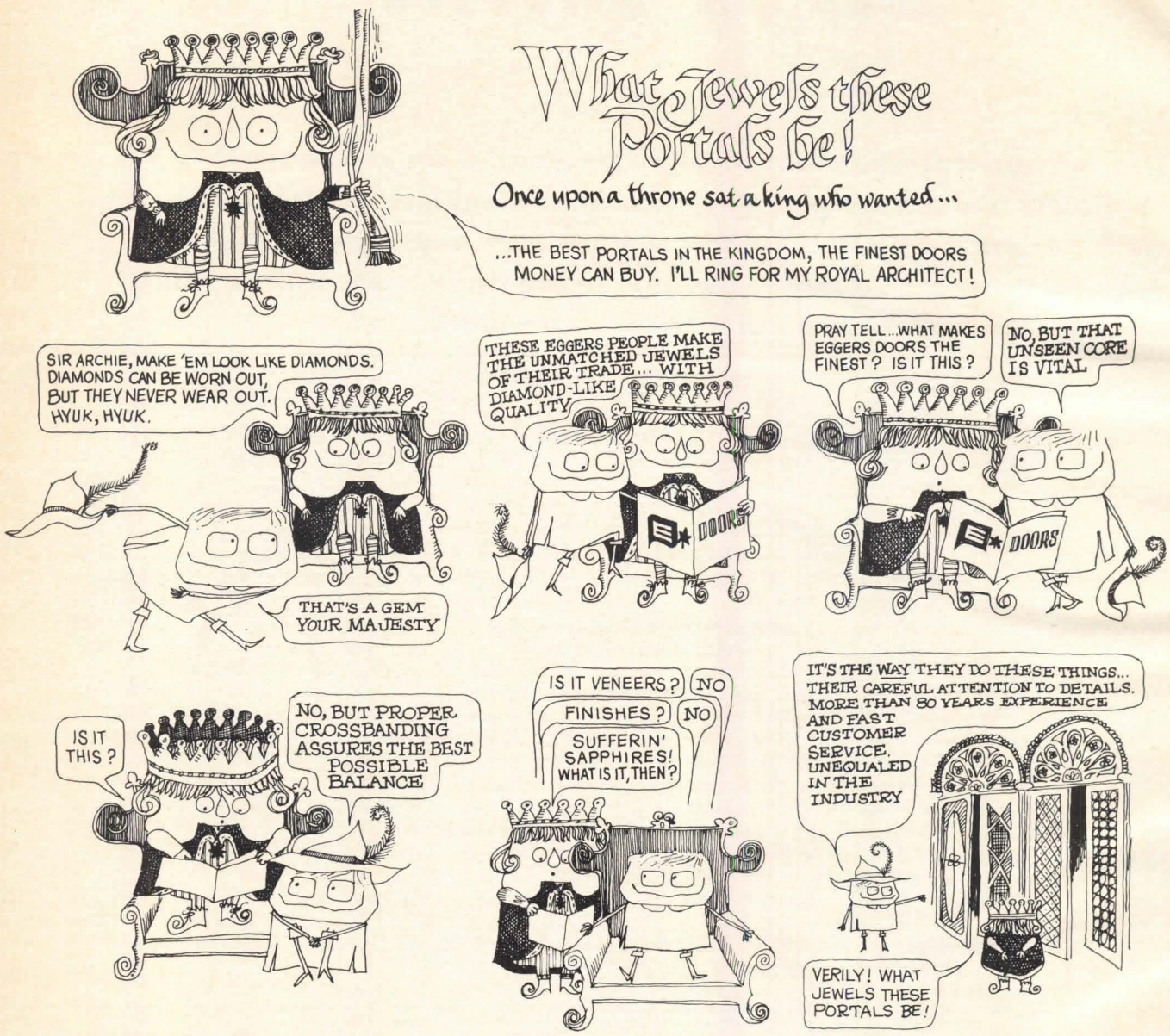

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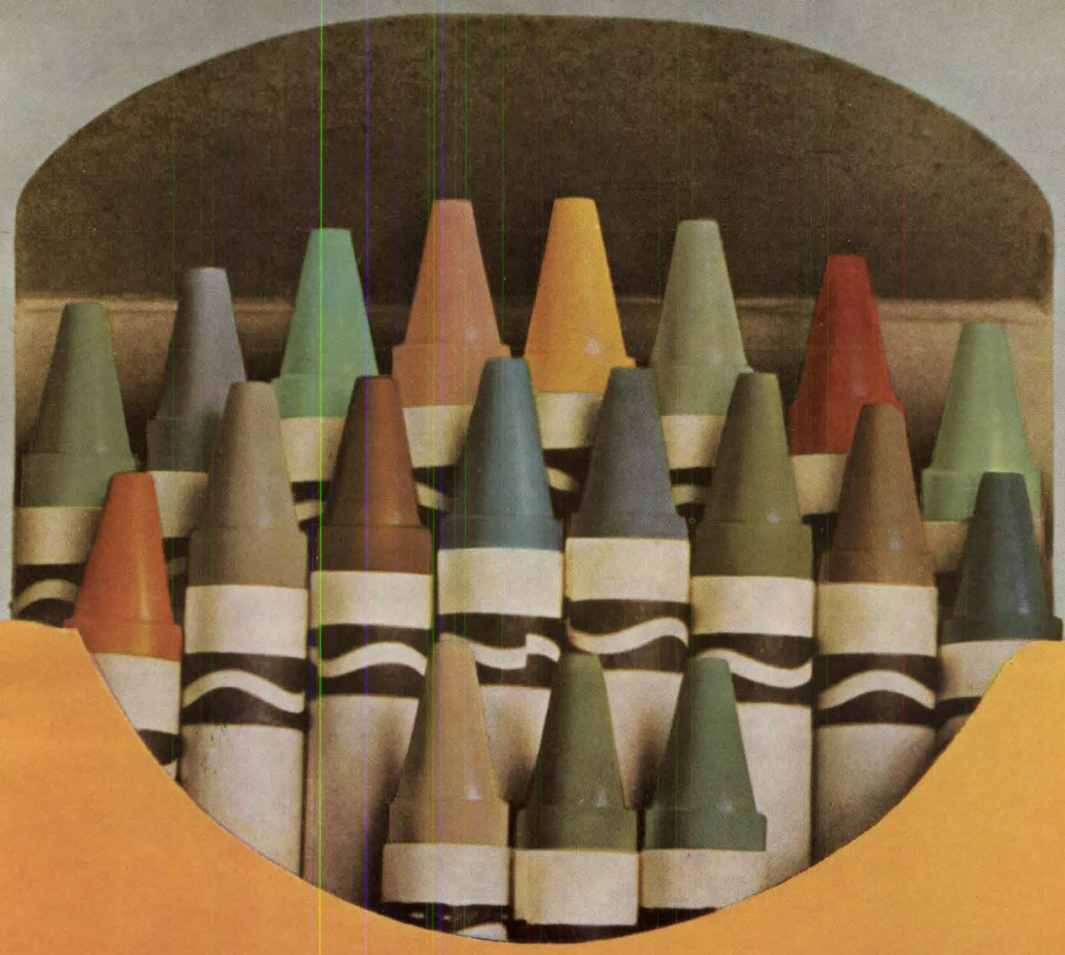

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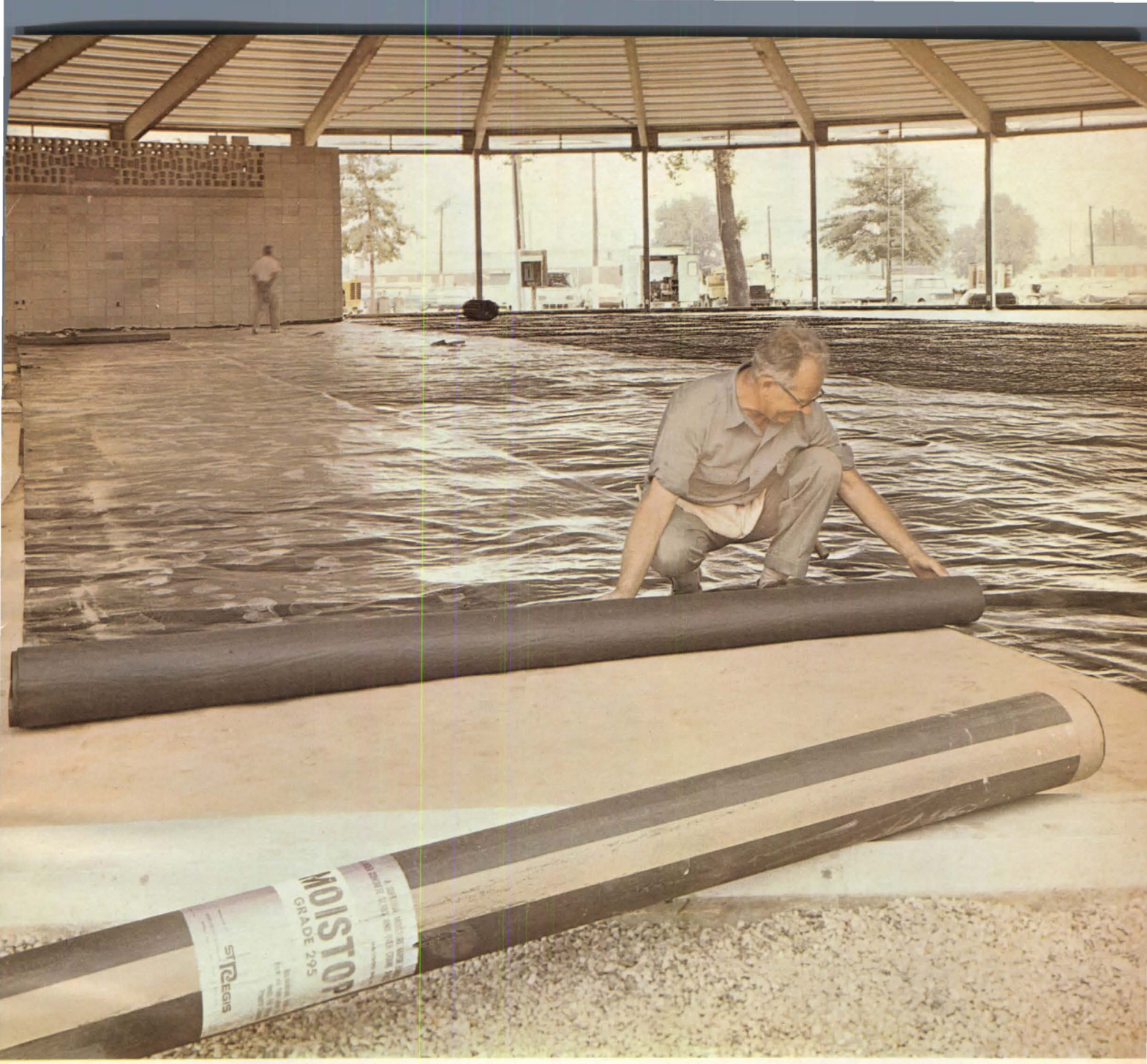

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Curved buildings house 346 family units.
Architect: Bertrand Goldberg Associates

Hilliard's twin cylindrical towers together contain 364 units designed for the elderly.

This thrusting tower of concrete and glass is one of four powerful buildings making up the Raymond M. Hilliard Center, Chicago's newest low-income housing development. • The configurations of the buildings—two are cylindrical, two arc-shaped—create a vigorous outward orientation and afford unobstructed views to all residents. • The Center's elliptical windows are glazed with ASG's Lustracrystal® sheet glass. Lustracrystal has the superior transparency and lustrous surfaces you look for in the glass you specify. And, like all ASG sheet glass, Lustracrystal has an exceptional lack of "color"—the dull greenish cast so common in most sheet glass. • For full information on Lustracrystal and the complete ASG family of architectural glasses, write: Dept. E-3, American Saint Gobain Corporation, P.O. Box 929, Kingsport, Tennessee 37662.

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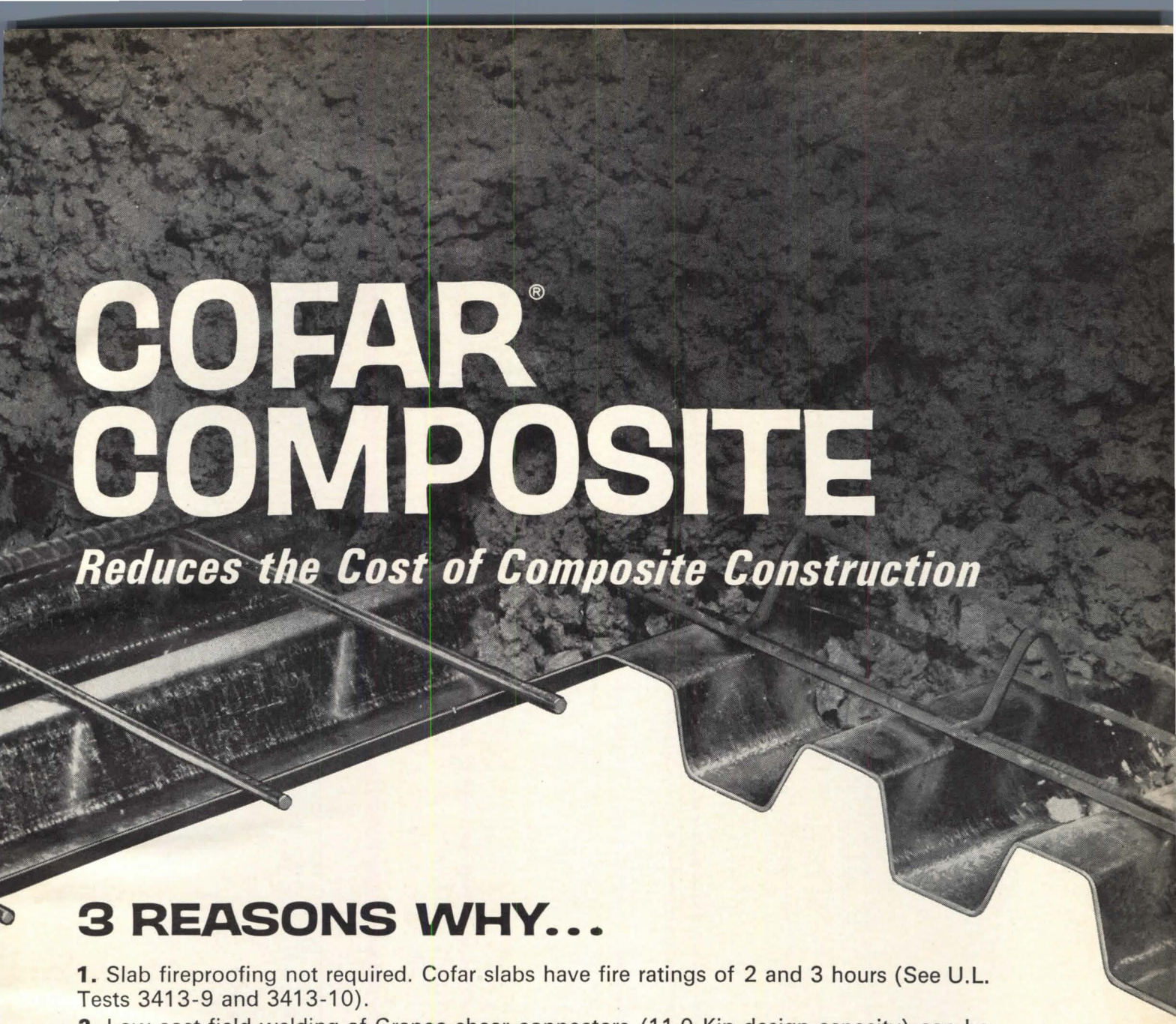
(Above) Belle and Jack Linsky Pavilion
Beth Israel Hospital, New York, N. Y.
Flooring Contractor: Circle Floor Co., New York, N. Y.
General Contractor: Lasker-Goldman Corp., New York, N. Y.
Architect: Schuman & Lichtenstein, New York, N. Y.
Decorator: Michael Rabin, New York, N. Y.

(Below) Good Hope Intermediate School, Mechanicsburg, Pa.
Flooring Contractor: Bellwood Co., Inc., New Cumberland, Pa.
General Contractor: Reisinger Bros., Inc., Carlisle, Pa.
Architect: Bender Burrell Assoc., Camp Hill, Pa.



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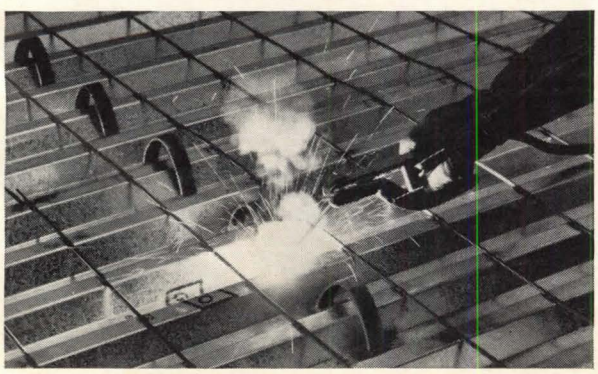

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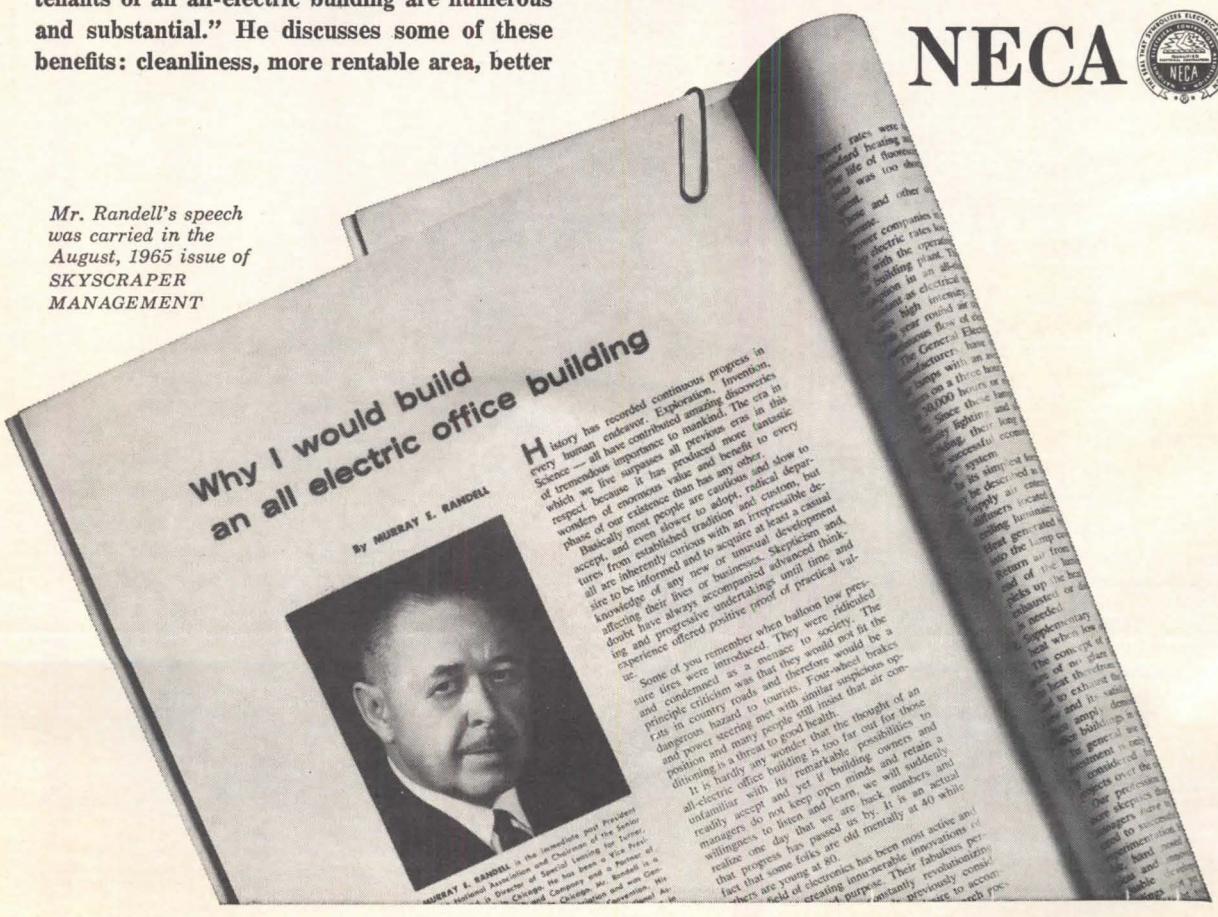
"I believe the all-electric office building has a distinct advantage competitively and can demand and obtain higher rentals resulting in better earnings than the average standard office building can produce," says Murray Randell, Director of Special Leasing for the Chicago firm of Turner, Bailey and Zoll.

Mr. Randell made this statement in his speech, "Why I Would Build An All-Electric Office Building," given at the annual convention of the National Association of Building Owners and Managers, of which he is past president.

Mr. Randell points out that "the advantages and benefits accruing to the owner, manager and tenants of an all-electric building are numerous and substantial." He discusses some of these benefits: cleanliness, more rentable area, better light, use of light for heating, efficient temperature and humidity control. And he points out how these benefits not only give the building a competitive advantage now but will prolong the economic life of the building. He believes that experience to date indicates that the operating costs of the all-electric building are lower than in a conventional building and cites figures to support his contention.

Because Mr. Randell is an acknowledged expert in his field, and has no connection with any phase of the electrical industry, we believe you will want to read his speech in full before you plan your next office building. For a free copy, write: NECA, National Electrical Contractors Association, 610 Ring Building, Washington, D.C. 20036.

NECA


Why I would build an all electric office building

By MURRAY E. RANDELL

Mr. Randell's speech was carried in the August, 1965 issue of SKYSCRAPER MANAGEMENT

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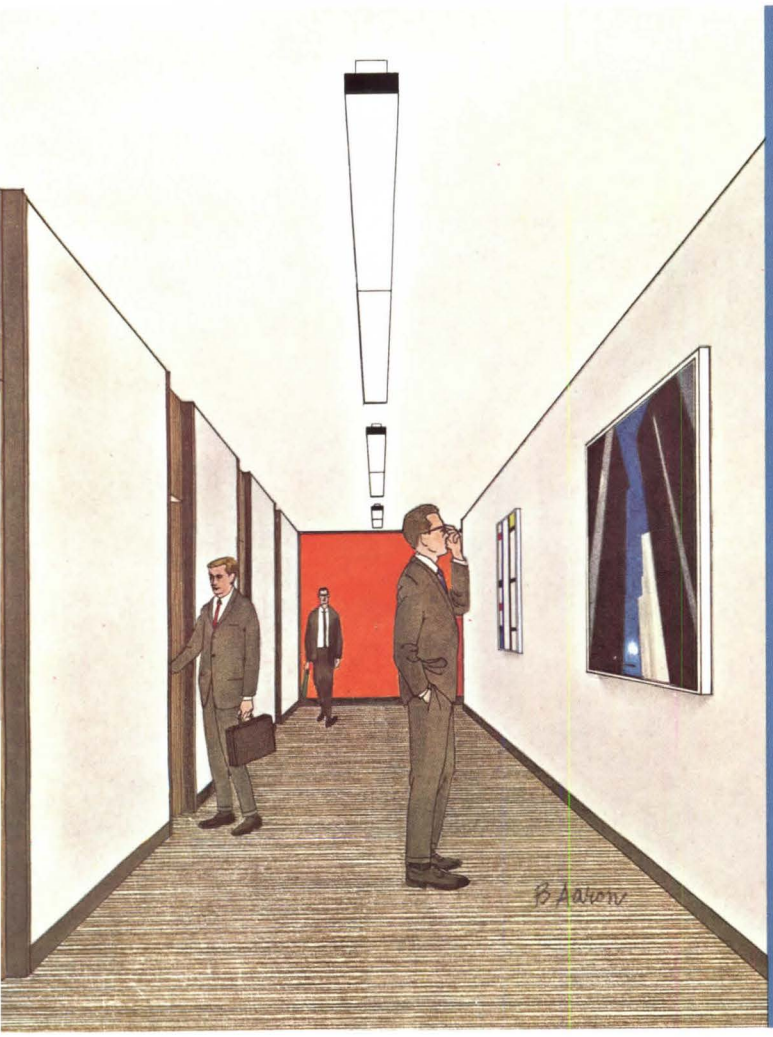
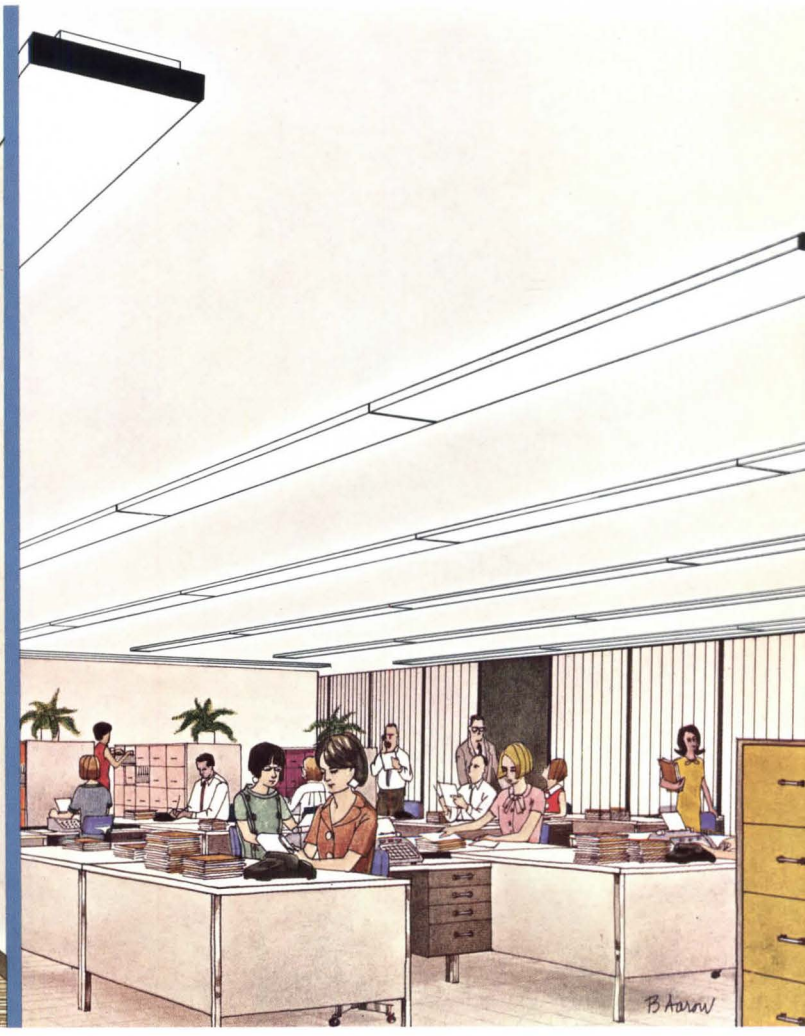
Black finish on end caps, and on sides of channel provide distinctive options for decor planning . . . accentuate the look of shallowness.

The two and four lamp versions are ideal for lighting stores, offices, classrooms, hospitals, laboratories, hotels, and public building areas. Indigo-1, the companion single lamp unit, is particularly well-suited for corridors, stock rooms, and utility areas.

Plastic closures employ the exclusive, Miller M-1 Lens Pattern on bottom exterior and linear, interior prisms along sides. Utilization is high with most of the light directed downward to the work plane or merchandise. Lamp concealment is good and sidewall brightness is low. Result is a uniform, pleasing lighted appearance. Indigo units also available with closure that *satisfies I.E.S. Scissors Curve Requirements.*

For complete information on this outstanding new fixture family — write Dept. 1166, or contact your Miller Representative.





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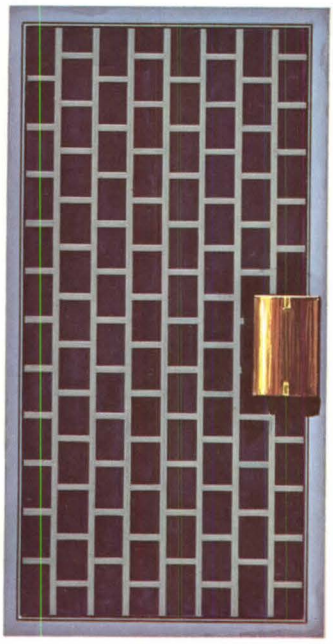

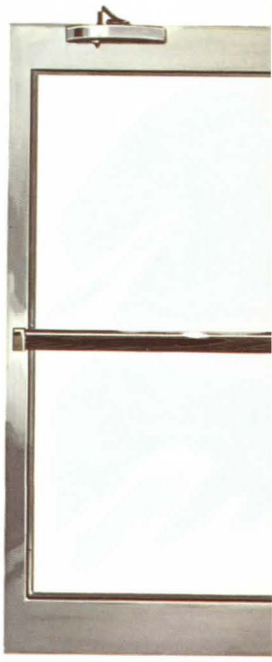

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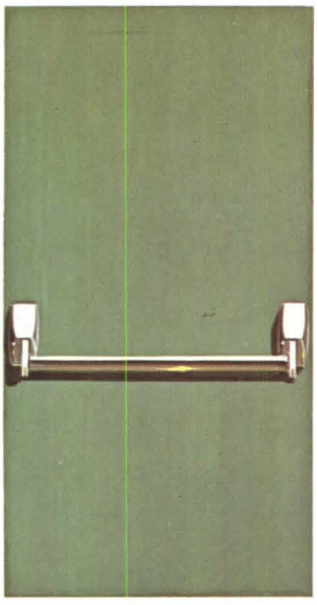

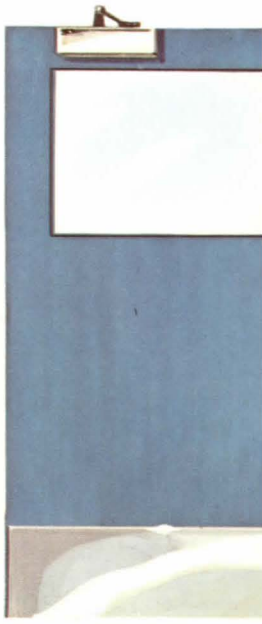

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Partitions of PROFILITE in offices of Stoeffel Seal Co., Tallapoosa, Ga. • *Architect:* Dale and Smith, Marietta, Ga. • *Glazier:* Pittsburgh Plate Glass Co., Marietta, Ga.

Put Your Client in this Picture . . .

At long last the advantages gained by employing large areas of structurally strong translucent glass free of masonry joints and unencumbered by division bars has been solved practically . . . beautifully . . . economically . . . with new PROFILITE glass by Mississippi. PROFILITE is the American version of the trough-shaped glass being widely used in Western Europe.

Now available to your clients is a fresh, new concept in daylighting practice wherein the inherent strength of the channel construction of PROFILITE permits its widespread use in such installations as skylights, roofs, walls, partitions and screens of virtually any dimension. When double glazed, excellent heat and sound insulation is achieved. Look into PROFILITE today. At leading distributors of quality glass.

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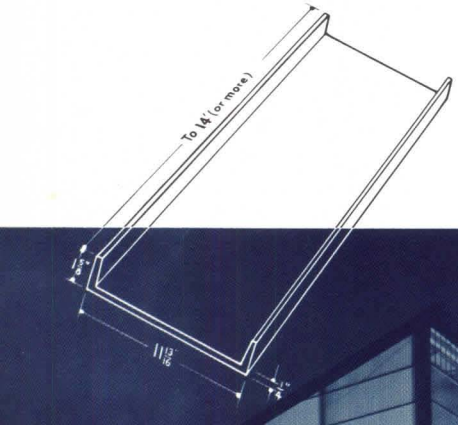
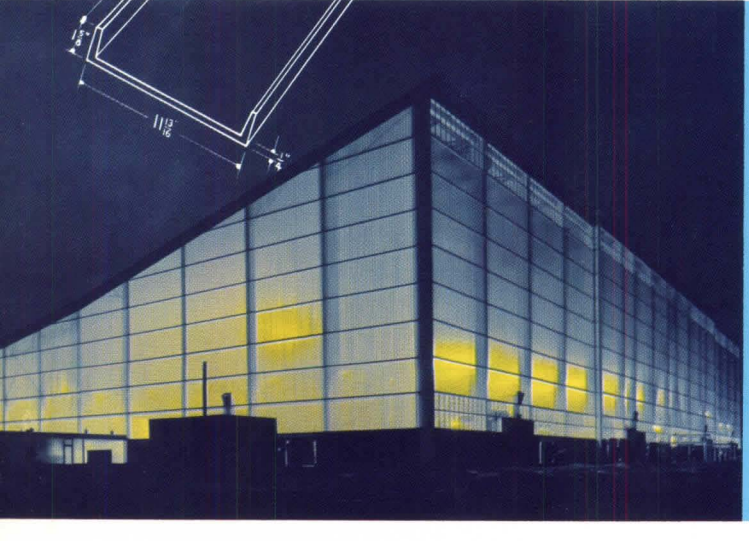
PROFILITE...GLASS of the Future TODAY

PROFILITE channel glass attractively employed in office partition of Henry A. Corsini, Bankers Insurance Building, Macon, Georgia.



The exceptional strength of PROFILITE resulting from its unique shape permits virtually all-glass construction in large buildings. Maintenance of steelwork is reduced to a minimum.



Sound deadening and insulation qualities are features of this daylighting partition of double glazed PROFILITE in Olson Warehouse, Compton, Calif. • Designed by John R. Anderson, Consulting Structural Engineer, Pasadena • *General Contractor:* Alex DuBordieu, Long Beach.

Technological advances in the development of channel-shaped PROFILITE has resulted in unmatched versatility for the new product. In addition to interiors, its load bearing qualities make it the ideal material for glazing wall and roof construction in exposed positions. There is no limit to the horizontal length of the glazing area which can be filled with PROFILITE and without the need for intermediate construction. When double glazed, the 1½″ air cushion between the interior and outer units provide optimum heat and sound insulation. Send for new catalog. Contains technical data and complete procedures for installation. Write today.

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P/A NEWS REPORT

Progressive Architecture's Monthly Digest of Buildings, Projects, People and Products *March 1967*

RALPH W. REINHOLD

Photo: Fabian Bachrach

Ralph W. Reinhold, founder of PROGRESSIVE ARCHITECTURE's predecessor, the Pencil Points Press, died on January 24 at the age of 88. Having begun his career in business publications with the *Real Estate Record* in 1902, he was for 15 years associated with the *Architectural Record* as business manager, and with *Architectural Forum* as part owner and advertising manager. In 1915, he and two associates formed the Chemical Catalog Press; the Pencil Points Press followed in 1920. A merger of the two companies in 1933 produced the Reinhold Publishing Corporation, of which he was President until 1945, and Chairman of the Board until 1950, when he retired from his positions in the company, retaining only the honorary post of Chairman of the Board.

Ralph Reinhold was born in New York City on January 13, 1879. He graduated from Horace Mann High School in Westchester County and attended special courses at Teachers College and Cornell University. He died at the home of his son, Paul.

FDR MEMORIAL FAILS SECOND TRY

WASHINGTON, D.C. In turning down Marcel Breuer's and Herbert Beckhard's design for the Franklin Delano Roosevelt Memorial, the Fine Arts Commission was laconic. They issued a formal announcement of the unanimous decision: Such a memorial, they said, "requires the highest standard of artistic achievement and significance. . . . The proposed design does not fulfill either criterion." None of the commission members would say anything else, except that they rejected the design "with great reluctance, aware of the many difficulties that have been faced by the designer and the Roosevelt Memorial Commission."

Breuer's design had the approval of at least one member of the Roosevelt family, which had turned down the earlier competition-winning design by Pedersen, Tilney, Hoberman, Wasserman & Beer. The Fine Arts Commission had approved *that* design.

The seven-member Fine Arts Commission, established by Congress in 1910, is a permanent, continuing body. Currently composed of chairman William Walton, architects Gordon Bunshaft, John Carl Warnecke, Hideo Sasaki, and Burnham Kelley, with Aline Saarinen and sculptor Theodore Boszak, it advises the President and Congress on building in the capital. But when Congress passed legislation (late in 1963) authorizing a memorial to FDR, it took the unusual step of making Fine Arts Commission approval *mandatory*, before the memorial could be built.

Breuer and Beckhard had been hand-picked by the Roosevelt Memorial Commission to prepare a design, after the competition failed. What will happen now may be long-term cocktail conversation. The Roosevelt Memorial Commission has a $125,000 Federal authorization to prepare a design, but there is no time limit.

As P/A goes to press, it is expected that Senator Eugene McCarthy of Minnesota will be elected new chairman of the Roosevelt Memorial Commission early in March; McCarthy is on record favoring construction of the Breuer-Beckhard design. Whatever happens, it is impossible to see how the Memorial can become more politically embroiled than it already is.

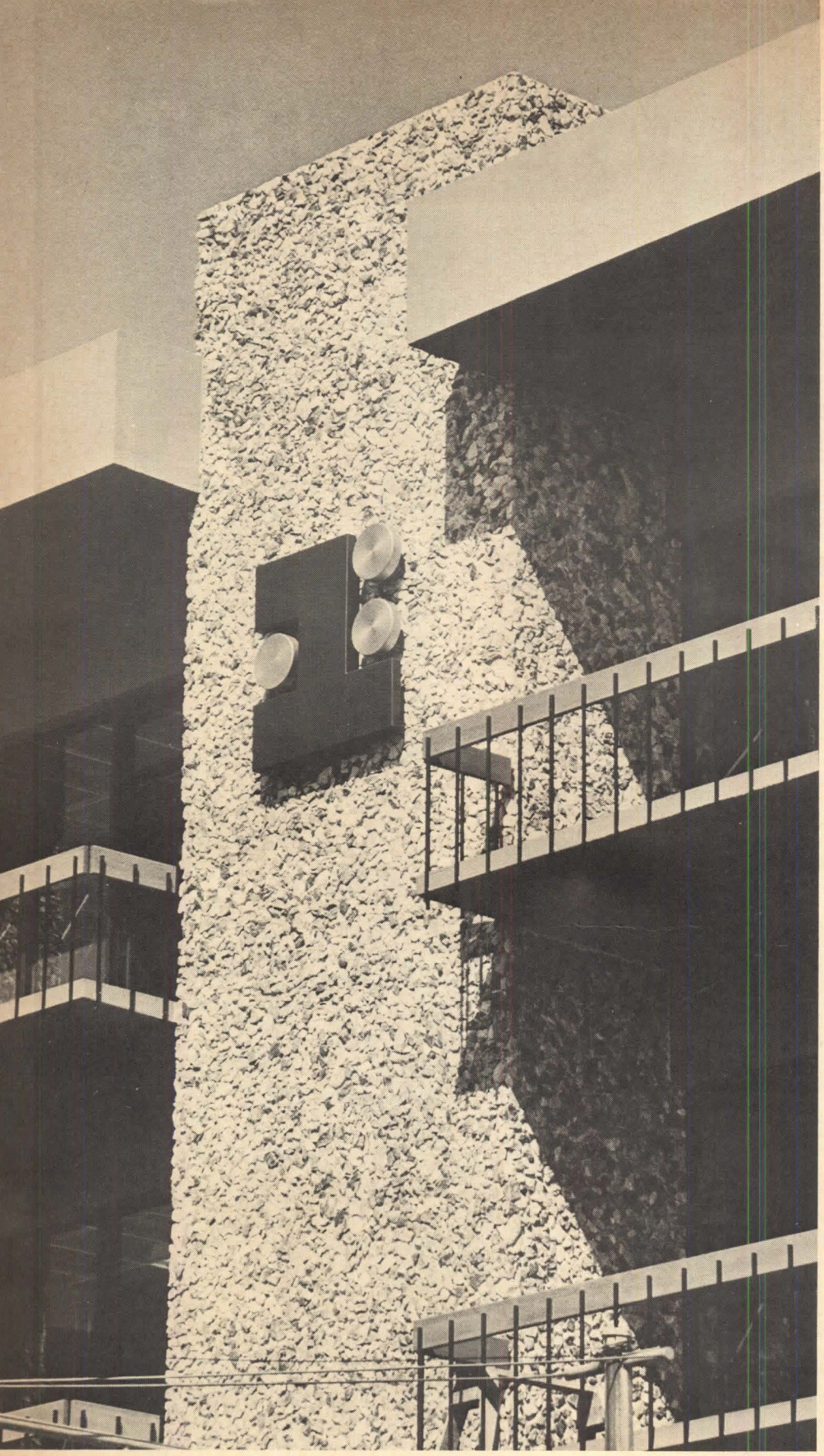
P/A DESIGN AWARDS PRESENTED IN SEATTLE

Larson, McGough, Rowan, Walker, Gorasht, Foltz.

SEATTLE, WASH. A blustery gray rain was sweeping in off the Pacific and into Shilshole Bay as the winners of the 14th Annual P/A Design Awards Program assembled in the Captain's Room of The Windjammer Restaurant for the reception, luncheon, and presentation ceremonies conducted by the magazine. Despite miserable winter weather throughout most of the country, almost all of the award and citation winners managed to be present at the Seattle meeting to see Walker & McGough presented with the First Design Award for their design of the Convent of the Holy Names in Spokane (see pp. 110–117, JANUARY 1967 P/A) and to receive their own P/A honors. Among the winners attending were Robert Venturi of Venturi & Rauch, Princeton, N.J.; Hugh Hardy and Norman Pfeiffer of Hugh Hardy & Associates, New York; Roy Harrover of Roy Harrover & Associates; Robert B. Church, III, Memphis; Douglas Michels of Yale University; Rai Okamoto, William H. Liskamm, and Roderick T. Freebairn-Smith of Okamoto & Liskamm, San Francisco; Daniel L. Dworsky, Los Angeles; Euine Fay Jones, Fayetteville, Ark.; Carl J. Hunter of the office of John Stephens Rice, Des Moines; and Jorge Del Rio of Puerto Rico.

Pfeiffer, Wallace, Price, Deitz.

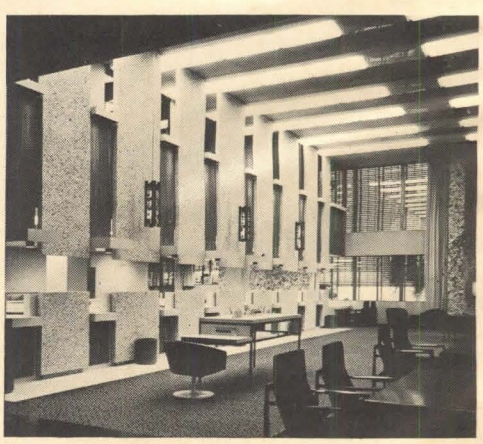
Also present were noted professionals of the area, including Robert H. Deitz, dean of the College of Architecture at the University of Washington; Frederick W. Mann, University of Washington university architect; Walter Foltz, president of the Spokane Chapter AIA; William E. Schneider, director of the Washington Department of General Administration representing Governor Evans; Harold A. Goltz, Director of Campus Planning for Western Washington State College; James D. Cowan, Executive Director of the Washington State Council of Architects of AIA, Inc.; Clayton Dekle, State Architect of Tennessee; Edward Bolling, vice-president of the University of Tennessee; A.O. Bumgardner, architectural editor of *Architecture/West;* Victor Steinbrueck, architectural professor at the University of Washington and architectural critic of the *Seattle Post-Intelligencer;* Arthur Riehl of the U.S. General Services Administration; John L. Wright, president, the Washington State Council of Architects; and many prominent local practitioners and



Mo-Sai projects an image of strength and solidarity for savings and loan offices

Deeply textured Mo-Sai facing units 9 feet wide by 25 feet tall were used as forms for the poured-in-place concrete structural columns. The few required joints were well concealed, giving the columns a monolithic appearance both inside and out. Random quartz aggregates from dark brown to almost white impart a warm, friendly color. Mo-Sai in contrast with exotic wood paneling was used to create the dramatic teller windows and was also used throughout the unusually beautiful offices. The rough textures and colors of the Mo-Sai were chosen by the architects as an expression of the rugged beauty of the Northwest.

First Federal Savings & Loan, Bremerton, Washington
Architects: Branch, Branch & Garrison
General Contractor: Hainsworth Construction Co.



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businessmen. P/A was represented by Publisher Philip H. Hubbard, Jr., who welcomed the participants; Editor Jan C. Rowan, who made the presentations and moderated a seminar following the ceremonies; and Senior Editor James T. Burns, Jr.

The seminar consisted of a detailed presentation by Partner John W. McGough and Design Job Captain Gary H. Larson of the First Design Award winner. McGough said that, during the preliminary design stage, they determined that the Convent scheme should be monastic but still reflect a bright and happy outlook, since this "town in a building" would be the nuns' whole life. The firm is now finding that the new ecumenicism is occasioning a few changes in program, but that the idea of main circulation spines and large communal area is still valid. Larson described the project as an aggregate kind of building, with the aggregates — or sleeping and ancillary quarters — located around the big volumes of the communal spaces.

The critique of the convent design was offered by Paul Hayden Kirk, who noted that architecture is beginning to take its part in today's culture, a move he has noticed in other media and disciplines, and one he sees and approves of in the Walker & McGough design. He thinks it appropriate and exciting that the convent was handled as a building and not as a campus. All elements of the concourse, he said, seem to unite strongly and work better than a similar scheme such as Simon Fraser University, uniting as it does everything around the central interior quadrangle or cascading units over it to overlook the landscape. Kirk said that this design expresses a true 20th-Century feeling through controlled environment and control of interior climate. His few cavils about the design concerned the introduction of the box form of the dining area at the juncture of the "cascading" elements, with an abruptness he found somewhat disturbing; the lack of something growing out of the "knuckle" or jointure of the elements to make a sort of vertical accent mark; and an uncertainty he had about the conflict between the dramatic river site and the generally inturning nature of the convent design. He felt, however, that the interiors will be dramatically practical in a processional sense, with the nuns moving through the corridors and larger spaces.

During the question-and-answer period following the critique, Fred Bassetti took the opportunity to "compliment the jury for choosing a top winner with quality and staying power and not just something devoted to 'jazz' or 'turning people on' or 'making a big new statement.' "

Since the work of Venturi & Rauch bulked large in the considerations of the jury (with one award and two citations presented out of four submissions by the firm), Robert Venturi was asked to say a few words concerning his design approach. He said that architecture today should reflect the complexities and contradictions of modern experience, that we should get away from the "simplicity" that architects have emphasized so much in this century but which so often becomes "simplification" instead. He said that the complexity of a design can come from the program but also from the medium of the art itself (as has been evident in other media for some time). The inevitable problem, he feels, is that of juxtaposition between what is perceptual and what is conceptual and dealing with the frequent disparity between them. To the label of "pop" architect, he stated that young architects dealing with small jobs and small budgets should not try making something heroic out of it, but deal with commonplace problems with conventional elements. If this results in "pop" effects, perhaps so did the Renaissance in a more sophisticated way when it dealt mainly in the "pop" elements of Roman art and architecture. To use commonplace elements and means but use them in vivid contexts is to enhance them and give them other, newly derived meanings and scales, Venturi concluded.

As the seminar began to break up, the rain that had shrouded the harbor all day began to dispell, and the assembly was treated to the spectacle of the sun piercing through above the mountains over the water.

Hardy, Okamoto.

Rowan, Hunter.

Michels, Liskamm, Mrs. Carroll Burkhard (Michels' grandmother).

Rowan, del Rio.

Dr. Jordan, Rowan, Harrover, Church.

Rowan, Dworsky.

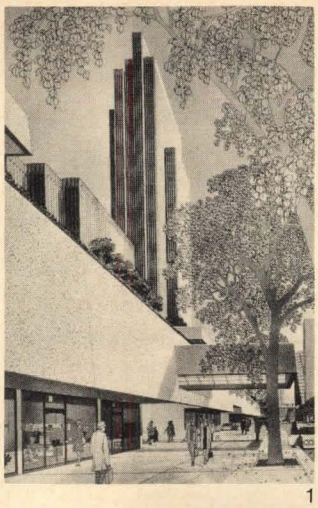
Jones, Bassetti, Kirk, Bumgardner.

Bassetti, Arthur Riehl of GSA.

Rowan, Venturi.

MORE FOR THE GOLDEN GATEWAY

SAN FRANCISCO, CALIF. When four out-of-town investors were low bidders for the job of designing and building in the remaining area of San Francisco's Golden Gateway urban renewal district, both eyebrows and voices were raised in this highly chauvinistic town. Now that the plans are unveiled, both can settle back into place. David Rockefeller, Trammel Crow of Dallas, John Portman of Atlanta (whose architectural firm, Edwards & Portman, prepared the plans), and Cloyce K. Box, chairman of the George A. Fuller Construction Co., are the investors. Their $125,000,000 scheme, which they call Embarcadero Center, will cover five entire blocks (8.5 acres) overlooking the Embarcadero. Proposed are three towering office buildings, of rough-textured, precast concrete: One is 60 stories **(1)** (making it the tallest structure in San Francisco), one 45 stories, and one 25 stories **(2)**. Each of these will have unevenly staggered façades, like a deck of cards whose ends have not been tucked in securely, providing more corner office space, and, not incidentally, breaking up the blockbuster appearance that severe rectangular slabs would produce. At the northeast corner of this site will be an 800-room hotel **(3)** — the city's largest — shaped in a solid-triangle with its balconied



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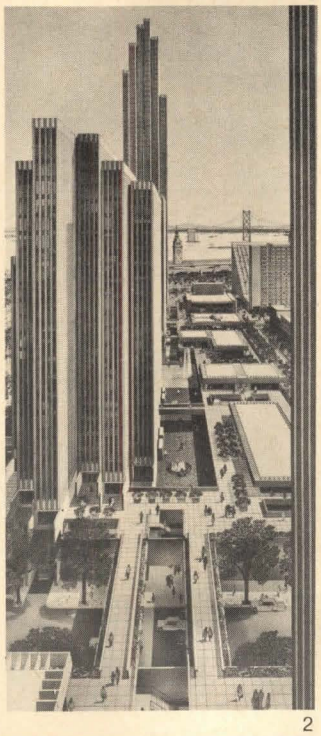

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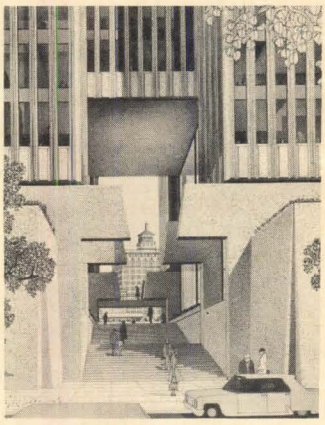
rooms pyramiding from base to top. And stretched out next to the base of the office structures (see site plan) will be an entertainment center, with three theaters, art galleries, a wine museum, restaurants and shops, all surrounded by a pedestrian mall elevated two stories above the ground-level traffic. Underground will be parking space for 2000 cars.

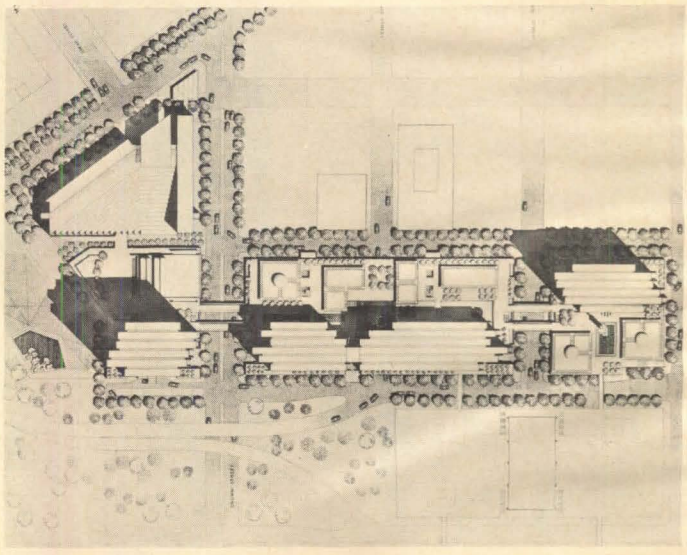
Architect Portman credits his investment partner Trammell Crow and M. Justin Herman, executive director of San Francisco's Redevelopment Agency, with the idea of making the five-block area into a single development. The area will be tied together by pedestrian bridges to the largely residential Golden Gateway Center, now nearing completion across Clay Street. When the entire area is developed, pedestrians will be able to walk through 45 city acres completely free of vehicular traffic. At least part of the Embarcadero Center will face a new park being designed by Lawrence Halprin,



Mario Ciampi, and John Bolles. A feeling of light and space will be achieved, for, despite the size of the office towers, they are being spaced so that their combined mass does not become oppressive and so that residents on the hills behind them will be able to see between them to the Bay. In addition, the developers plan to add more than $1 million in sculpture to the site, some of it by Bay Area artists, some, hopefully, by internationally known figures such as Chagall, Picasso, Miró, and Marini.

The Embarcadero Center will add a total of 2,851,800 sq ft of office space to the city when completed in an estimated six to eight years.

Judging from the design stage at least, it looks as if San Francisco will profit from outside talent. After all their worrying, San Franciscoans may well be treated to a renewal project much more sympathetic to the city than the adjoining Golden Gateway Center. And the Golden Gateway was done by San Francisco firms.



NEW CANAAN, LAND OF THE HOMELY BILK

NEW CANAAN, CONN. The main street of this New York City commuter town is lined with cutely designed shops and offices, with painted wooden or stucco porticos and cloisters. It's a little bit artsy-craftsy in a stiff sort of way, without the carefreeness and charm of a Carmel or even a Scottsdale. It resembles a little what the creators of Disneyland might build in reproducing a "typical" American suburban town. Yet, because it is the home of many New York City professional people, the city has an image of sophistication its actions belie.

Last November, architect Philip Johnson ran for office there on a platform of urban design and was soundly defeated (see p. 54, DECEMBER 1966 P/A). And Paul Rudolph, commissioned to de-

sign a New Canaan high school with Lyons & Mather of Bridgeport and Desmond & Lord of Boston, has recently resigned from his contract. Rudolph's resignation ends a strident controversy in New Canaan over his choice as architect, and although his departure from the job does not automatically doom New Canaan to a mediocre school building, mediocrity seems to be what the people want. In a letter to the school board, 10 parents wrote in January: "We should move toward an attractive school building, one in keeping with 20th Century building trends, but without revolutionary structural appearance, by eliminating Paul Rudolph." Perhaps what New Canaan wants is a Hilton Hotel. But perhaps not. Charles F. Kelley, the town's first selectman, commented: "We don't want a monument or an architectural landmark that people will drive miles to see. We just want a school." Then he added with a sort of old-time, New England seclusiveness: "Citizens here want to be left alone, and some of them are afraid that if we let Rudolph do the school, people would read about it in national magazines and say, 'Look what Rudolph did in New Canaan; lets move there.' " It is perhaps flattering to Rudolph that someone should think people would leave their homes and move to another community so that their children could study in one of his buildings, but it is hardly flattering or wholesome to have a town full of people who think that way. It might be all-right to move next door to someone like that, but would you want your child to marry one?

Ironically, the architects had submitted a preliminary model to the school board and the building committee, both of which had enthusiastically endorsed the architectural direction it expressed. Nothing, however, had been made public, and the furor arose before a single dissenter had seen even a sketch. Commenting on the situation, Rudolph, fingering the lapel of his gray suit, said, "Some people feel more comfortable in a gray suit, like everyone else, with the same muted colors in their neckties. Clothes are something they can hide behind or in. I do not believe architecture should be like this. Evidently, the people in New Canaan do."

PEI'S 1-A PLAN

Photos: Associated Photographers — Artists

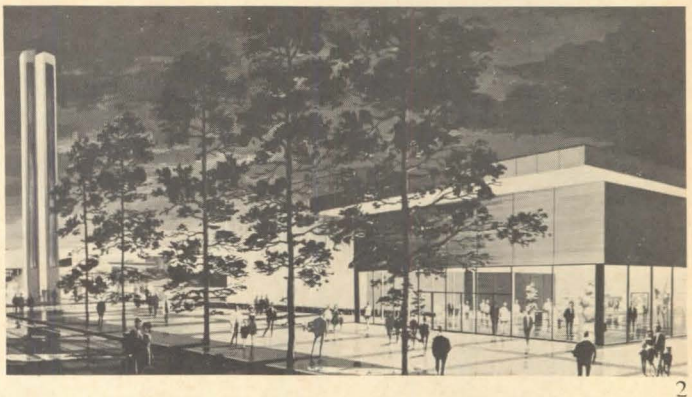
1

OKLAHOMA CITY, OKLA. This is the way it is in Oklahoma City. Since 1948, sales in the downtown area slumped 29%, while sales throughout the metropolitan area increased 49%. Since 1953, 77 businesses have moved away from the central business district. And the trend is continuing. It has gone so far, in fact, that the city's Urban Renewal Authority feels the only way to stem the attrition is to take immediate and drastic action. Under a plan prepared by I.M. Pei & Associates and approved by the city council in December, the agency hopes to clear about 138 acres (29 city blocks) and rebuild on a scale that will make the central city a merchandising hub for the entire region.

In the first phase of the plan (project 1-A), 340 buildings of the 427 located in the area will be demolished. Replacing them will be, among other things, a convention center **(1)** capable of seating 15,000; a new Mummer's Theater **(2)** (to be built with a Ford Foundaton grant); a 30- to 40-story office tower **(3)**; parking facilities for 8000 cars; and a major department store retail area **(4)**. In addition, street patterns will be changed, and major expressway construction around the site will be completed eventually.

When completed by 1989, the city's one hundredth anniversary, the area will include the Oklahoma Tivoli gardens, a retail galleria, and a residential community comprising both high-rise apartments and town houses.

Cost estimates are, at this point, diaphanous, but, depending on how you read them, the reconstruction will cost between $50 and $100 million.



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STANFORD WHITE'S GIRL IN THE RED VELVET SWING DIES QUIETLY AT 82

Evelyn Nesbit, the golden girl of a gilded age, whose *amours* both thrilled and scandalized New York society at the turn of the century, died January 17 in a Santa Monica, California, convalescent home. She was 82.

Evelyn arrived in New York at 15, already a popular artist's model. As a Floradora girl, she attracted the attention of such personalities as actor John Barrymore, artist Charles Dana Gibson, for whom she posed, and the most prominent architect of the time, Stanford White. When,

in 1906, Evelyn's millionaire husband Harry K. Thaw shot White to death before an opening-night audience atop the White-designed Madison Square Garden, Evelyn's affairs became the focus of a public sensation.

At the murder trial, Thaw's defense was based on the right of a husband to defend his wife's integrity. Thaw, heir to a railway fortune, resented Evelyn's relationship with White, prior to her marriage. When the trial ended in a hung jury, a second trial was held, and this time evidence of insanity in Thaw's family was introduced. The result was a verdict of temporary insanity, and Thaw was committed to an institution for the criminally insane. He spent the rest of his life in and out of mental hospitals.

Divorced from Thaw in 1916, Evelyn's mode of living had already altered with her changed fortune. She attempted to carry on a career in show business, but was never able to regain her former popularity. In later years, her "true story" was published in various magazines and papers, and in 1955 she sold her life story to 20th Century-Fox

Photos: Culver Photography

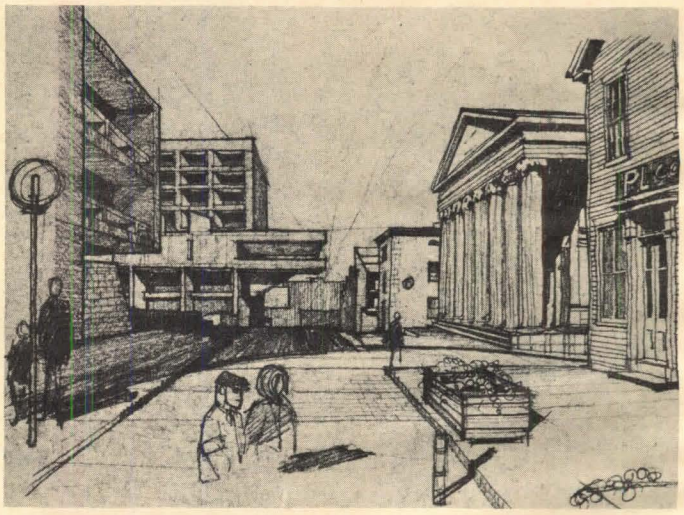
for the movie "The Girl on the Red Velvet Swing," starring Joan Collins, Ray Milland as Stanford White, and Farley Granger as Harry Thaw.

Several years ago, Evelyn was interviewed by Aline Saarinen, who found her living in an old hotel in Los Angeles. Her later years were as quiet as her early one's had been flamboyant. But despite the effects of a stroke suffered in the 1950's, she was still a lively and extremely attractive woman. A son, born in 1912 in Germany, helped support her in her last years.

CALENDAR

The National Association of Home Builders has scheduled a discussion of **"Keys to Success in Remodeling and Rehabilitation,"** to be held April 3–6 at the Chase-Park Plaza Hotel in St. Louis. Enrollment forms are available from the Department of Seminars and Workshops, NAHB, 1625 L St., N.W., Washington, D.C. 20036 . . . **The Eastern U.S. Modern Living Show** will feature displays of new homes, apartment buildings, vacation homes, and mobile homes. The show will take place inside the Cherry Hill Mall, Cherry Hill, N.J., from April 18–22 . . . The Hardwood Plywood Manufacturers Association plans to hold its **Annual Spring Meeting** at the San Francisco Hilton April 19–21 . . . The latest developments in steel construction will be discussed at the **19th Annual National Engineering Conference** of the American Institute of Steel Construction in San Francisco, April 20 and 21. Headquarters will be at the Sheraton-Palace Hotel. For details and program, write to AISC, 101 Park Ave., New York, N.Y. 10017 . . . The Urbana campus of the University of Illinois will be the location of the **Third North American Conference on Campus Planning and College Building Design,** April 23–27. Topics include design of the college library, communications, and learning centers. Inquiries about the conference may be addressed to Architectural Conference, Department of Architecture, University of Illinois, Urbana, Ill. . . . All aspects of the design of furnishings for commercial and institutional buildings will be presented at **Contract '67,** trade show to be held at New York City's Coliseum, April 25–27. More information from Contract '67, 14 W. 40 St., New York, N.Y. . . . The International Association for Shell Structures will sponsor a **Colloquium on Pneumatic Structures,** May 11 and 12, at Stuttgart, Germany. The University of Stuttgart is acting as organizer of the conference, assisted by German architect Frei Otto. To register, write to D. Feder, Institut für Modellstatik, Technische Hochschule, Stuttgart 1, Postfach 560, Germany . . . May 14–16 are the dates for the **Third Annual Theatre, Television, and Film Lighting Symposium** sponsored by the Illuminating Engineering Society. The conference will take place at the Hollywood Roosevelt Hotel, Hollywood, Calif. Contact T.M. Lemons, Sylvania Lighting Center, 100 Endicott St., Danvers, Mass., for further information . . .

NEW BEDFORD: SOMETHING OLD, SOMETHING NEW



NEW BEDFORD, MASS. A study underway in this historic New England whaling town may set a precedent for the revival of decaying historic urban areas. New Bedford, of course, was once a thriving seacoast port, but its downtown waterfront area has suffered the blight common to so many towns as population spreads into the surrounding countryside and its industry shifts from fishing to inland manufacturing. New Bedford's plight is compounded by the planned construction of an expressway spur that will soon go up along the water, providing the blight with a concrete stamp of approval. Planner Robert J. Kerr, II, a member of the Urban Design Group of the Corinthian Company, Inc., realized New Bedford's plight back in 1963 when he stopped briefly in town on a speaking engagement, and since then he has talked the city fathers into doing something about it. The Urban Design Group's plans for the 190-acre waterfront area call for a blend of new contemporary structures and renovated older ones, and a complicated financing scheme, now being worked out, which will include grants from several Federal agencies and perhaps from private ones as well. The sources of funds for these urban renewal projects are just now starting to be sorted out, muddled as they were by the formation of the Department of Housing and Redevelopment. If the New Bedford project is completed as planned, some of these

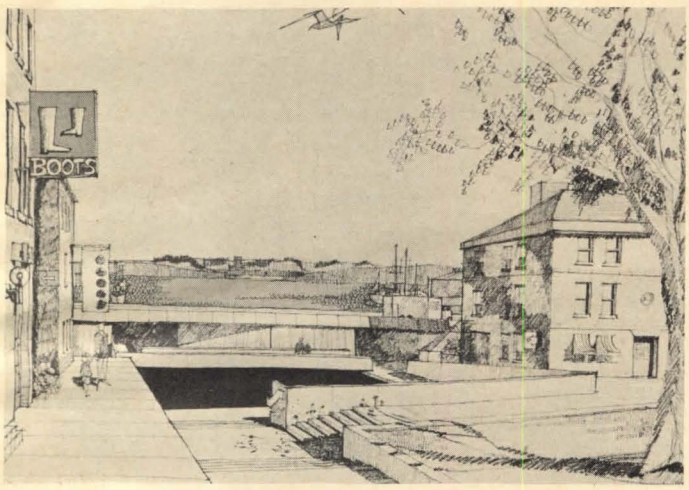
sources and their potential contribution to similar projects may become clearer.

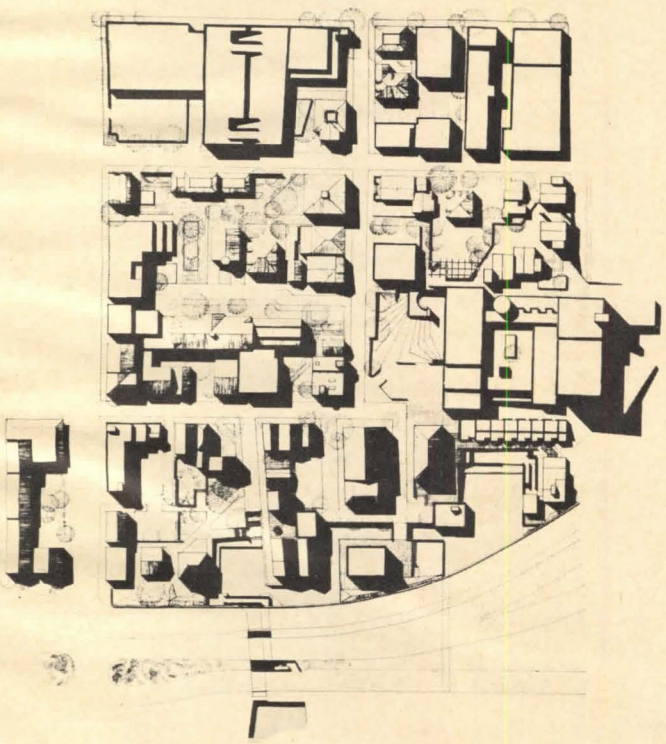
The Urban Design Group's study was financed in part by a HUD grant to the local Redevelopment Authority, in part by a foundation grant, and was helped by services provided by the Waterfront Historic Area League (WHALE). Cooperating with the Urban Design Group on the study were the New Bedford City Planning Department and an economic advisor, Peter J. Laudati. Design work, during the early stages, was reviewed by a jury composed of Jacob L. Crane, planner, Frederick Gutheim, urban affairs consultant, and Stephen W. Jacobs, associate professor at the Cornell College of Architecture.

At present, the design team is preparing a report for distribution to agencies and foundations that may help fund the renewal.

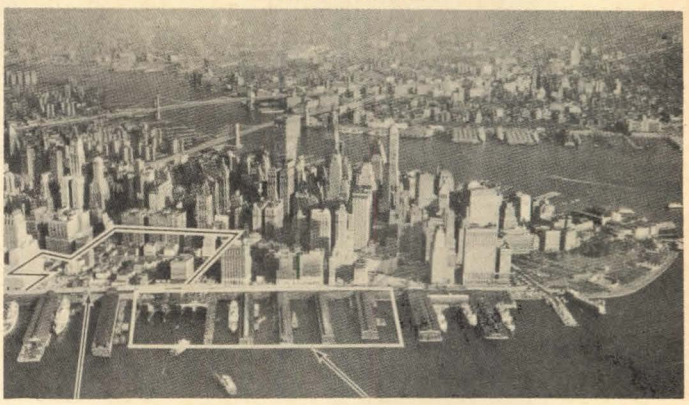
Kerr emphasizes that his group's plan is a guideline rather than a fixed proposal, and he also stresses the importance of recommendations they make for new structures within the historic area. Just because a building is old does not mean that it has historic value and can be incorporated soundly into a revitalized downtown area. And revitalization is perhaps the key word, for no one sees the New Bedford waterfront as a museum of repainted buildings. Plans even include moving historic buildings into the area from other sections of the city, to replace dilapidated structures of little historic value. And some existing structures may be bought by the city, renovated, then resold to private owners. Two considerations help tie the area together. One is the proposed conversion of vacant lots and present parking areas into green spaces and connecting landscaped walkways. The other is a proposed water basin that would bring the water to the people, now that the expressway will keep the people from going to the water. Two connected basins created by conduits running beneath the highway will fill these basins with 3′ of water, recreating some of the waterfront atmosphere that will now be lost. In addition, a walkway tunneled beneath the highway will lead pedestrians to the old wharf area for a view of the real waterfront, with its wharves and fishing fleet. To create space for the water basins, the planners, after a long hassle, convinced the Bureau of Public Roads to move the highway 50′.

Also proposed by the planners is a rezoning that would restrict height-floor area ratios and percentage of land coverage of new buildings to keep them in scale with existing structures.





FANCY FOOTWORK FOR THE WORLD TRADE CENTER



NEW YORK, N.Y. As winter winds and snows howled across lower Manhattan Island early last month, work got under way on the foundation of the World Trade Center. Most of the Center's site is now cleared, and two large vaults have been sunk on the eastern perimeter to hold the mass of telephone cables that now run through the site to the telephone company building at its northern boundary. Just offshore in the Hudson River to the south, workmen are demolishing five unused piers, and barges are sinking pilings to bound an area where landfill will be dumped (see site photo), dug from the Center's site and trucked under the West Side Highway. In all, the landfill will create a 23-acre site on the edge of the island, to be used by the city for some as yet undetermined project. Most of the landfill will come from the excavation for the foundations of the Center's twin 1350′ towers, which will cover about 8 acres on an area of Manhattan that was extended into the river about 100 years ago. Because the area is porous landfill — sand, some gravel, and silt — the water table runs only 5′ to 10′ beneath the surface. Normal excavation would lead to cave-ins and flooding, so the Port of New York Authority, whose project this is, decided to try a method of excavation never before used in the U.S. First used on hydroelectric projects in Italy, the technique consists of casting a concrete wall in the earth around the site; at the World Trade Center site, the wall will be anchored in bedrock 65′ beneath the surface. Extending 3100′ around the area to be excavated, the wall forms what has been referred to as a giant concrete bathtub — with a bedrock bottom — one that keeps water out instead of in. Excavation proceeds normally within the tub. The earth fill is scooped out mechanically, eliminating the need for complicated floor matting or hand work.

Low bidder on the wall was Icanda, the Canadian branch of ICOS, an Italian firm that perfected a technique of sink-

introducing CHAPMAN-REINHOLD

There is a significant change on the front cover of this month's issue of PROGRESSIVE ARCHITECTURE. We have added the words, "A Chapman-Reinhold Publication."

This is our way of announcing to you, our readers, that Reinhold Publishing Corporation has consolidated its properties and personnel with those of Medical Economics, Inc. Our parent company's name, as the cover indicates, is Chapman-Reinhold, Inc.

The name derives from the founders of the two companies. Medical Economics, Inc., was founded in 1923 by Lansing Chapman. Reinhold Publishing Corporation was founded in 1933 by Ralph Reinhold, who formed the corporation by merging The Chemical Catalog Company and Pencil Points Press, which were established in 1915 and 1920 respectively. The home office of Medical Economics, Inc. continues to be Oradell, New Jersey, while Reinhold headquarters remain in New York City.

With the consolidation, Chapman-Reinhold, Inc. becomes one of the nation's largest publishers of specialized magazines, books, catalogs and compendia. It has a staff of 600 and an annual sales volume of more than $20 million. The eight Chapman-Reinhold periodicals, among the leaders in their fields, have a circulation of more than 500,000. The six catalogs and compendia have a circulation of more than 750,000. The four book divisions have an output of 650 current titles and a total of 3 million copies in use. In addition to its own periodicals, catalogs and books, Chapman-Reinhold provides advertising management for the fifteen journals of the American Chemical Society.

We at PROGRESSIVE ARCHITECTURE see the Chapman-Reinhold consolidation as a new, creative force in specialized communications for the professions, the arts, the sciences and industry. We see a new company concerned with all forms of information gathering, storage and transmission by whatever media are appropriate to the mission. We feel that our concept of professional journalism is in close harmony with those of our new Medical Economics associates. Further, we are confident that our association, with the larger complex of Chapman-Reinhold, will make it possible for us to provide an increasingly more meaningful service to the architectural profession that we serve.

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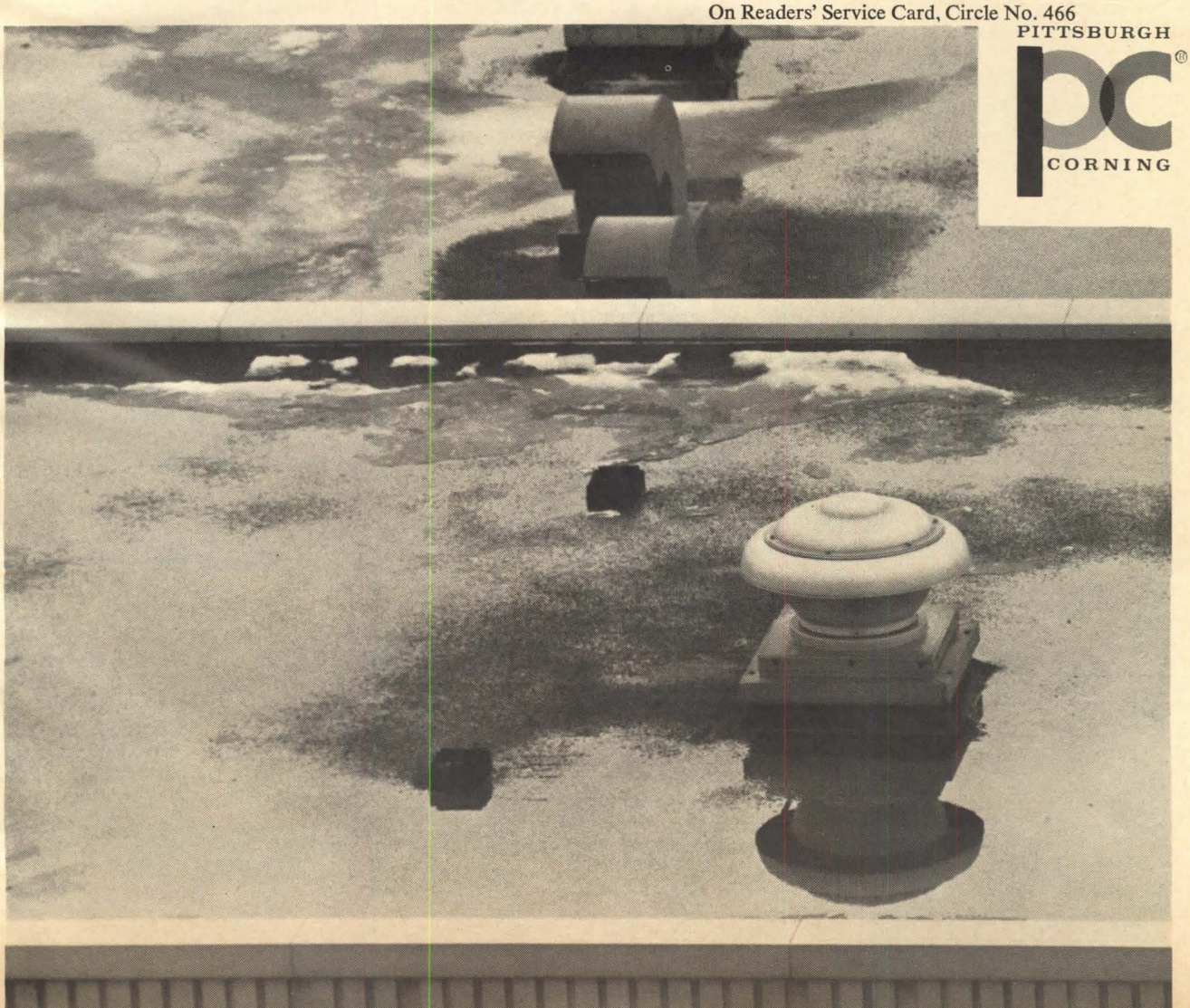
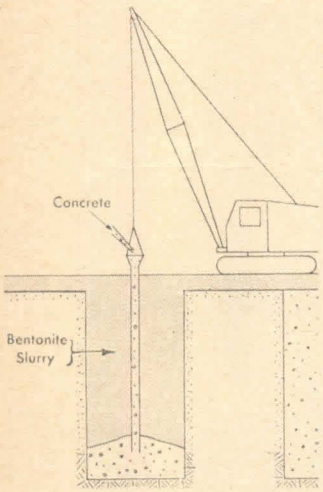
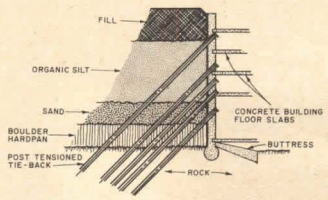


ing these walls. They used it successfully on the Milan subway construction, where it first caught the attention of Port of New York Authority engineer John M. Kyle. Icanda, whose bid was $8,426,424, plans to complete the wall in 18 months.

First step is to dig a trench about 10′ deep and 20′ long, and about 3′ wide. The walls of this trench are lined with concrete to guide the clamshell digging rig, and digging then proceeds with a trench about 3′ wide being excavated down to bedrock, some 65′ beneath the surface. As the clamshell-bucket excavating rig removes the earth — the rig moves on rails laid on the surface on either side of the trench — a bentonite slurry is poured into the trench. With a specific gravity higher than water, the bentonite keeps water from filling the trench and also prevents earth caveins. Once bedrock is reached, a special slicing tool cuts a groove in it. Next, a mesh of steel reinforcing rods is lowered into the trench; then tremies are inserted and concrete poured through them beneath the bentonite slurry. As the concrete rises, the bentonite floats on top of it and can be drawn off and used again. When one 20′ trench is filled, the contractor skips 20′, then digs another 20′ section, not immediately adjacent to the first. Eventually, an intermediate connecting trench is dug and filled. Each section of the concrete wall is keyed into the adjoining one to further reduce the possibility of water seepage. Despite the wall, some seepage is expected, but the engineers feel it will not be significant — certainly no more than can be handled by ordinary sump pumps. As excavation proceeds, tie-back rods are inserted through the wall, and post-tensioned into bedrock (see diagram); these are kept tensioned until excavation is complete and concrete floor slabs can provide interior bracing.



The section of the foundation within the bathtub walls will house six below-grade levels of the Trade Center. Extending beyond the confines of the twin towers, the basements will provide room for parking, for tenant storage, and for mechanical equipment. The actual excavation will involve difficulties, for the site is now laced by three subway lines, telephone cables, sewers, and electric conduits. All these will have to be moved to the periphery of the site.



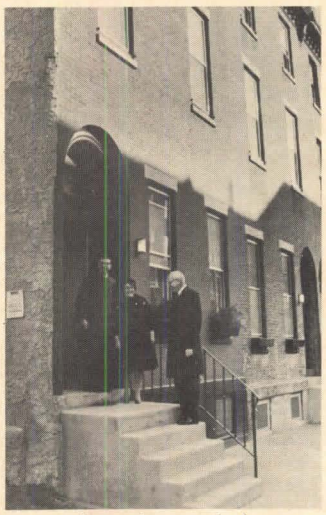
Architects on the project are Minoru Yamasaki & Associates, with Emery Roth & Sons, associated architects.

THE NOBLE EXPERIMENT

Photo: SK&F Laboratories

PHILADELPHIA, PA. Vacant, decaying, the house above stood neglected, like the kid with dandruff in the TV commercials. Several years ago, the Philadelphia Housing Authority set up what it called a Used House Rehabilitation Program, which almost immediately ran into legal problems that were resolved only a year or so ago. The courts ruled that those trying to keep the Authority from aiding "used houses" were not actually interested parties, and the program started moving again. The Authority gained authorization to rehabilitate 1000 houses. Its machinery, however, was rusty. To speed up the program, it decided to find developers who would relieve the staff of the burden of seeking out houses and renovating them. These developers would find a house either vacant and dilapidated, or just dilapidated, and bring the Authority a proposal for its rejuvenation. Once given approval, the developer would buy the house, refurbish it, and sell it to the Authority. Since the time the new program was started in December 1965, some 350 dwelling units have been completed and occupied.

Photo: SK&F Laboratories



But the Authority found that the economics of the program made it feasible to rehabilitate only single-family houses. Although able to rehabilitate about 50 single-family houses a month under the new arrangement, the Authority gained virtually no multiple-family units — that is, not until last summer.

In late June 1966, the pharmaceutical firm of Smith Kline & French, whose laboratories are in Philadelphia's Spring Garden area, agreed to cooperate with the Authority. Long worried about housing and social conditions in its section of town, Smith Kline & French had seen no way of improving the neighborhood other than to employ a social worker, which they did. Now, however, the laboratories are helping developers Hertzfeld & Horowitz Associates finance purchase of multiple-dwelling units by paying as much as 40% of the interest charges. The first renovated house, with three, three-bedroom apartments, opened in early January; since then, about one per week has become available. Hertzfeld & Horowitz plan to tackle 70. The renovation work is total: First, a house is gutted, then rebuilt from inside. New plaster goes on walls and ceilings; floors are surfaced with tile; new windows, doors, and storm sashes are put in place; a gas heating system is installed; new electric wiring, copper tubing, kitchen and bath fixtures, new roof, new step rails, and a house with three clean apartments instead of seven crowded, decaying ones is ready for occupancy. The Authority is renting the units for $65 per month. Priority is given to families living in crowded houses in the neighborhood and the Authority claims that many families move less than a block.

One thousand homes may not be a lot, but more important is that Philadelphia has a rehabilitation program going that makes low-cost housing available without uprooting persons and neighborhoods.

OBITUARY

Missing on a flight from Puerto Rico to St. Thomas in the Virgin Islands in January were Mr. and Mrs. Stephen Currier, philanthropists, whose combined private fortunes were a major source of support for programs involving civil rights and urban problems. Last year, they donated more than $750,000 to organizations that often were not aware of the source of the gifts, since the Curriers almost always gave money anonymously. Under a provision of their wills, funds will continue

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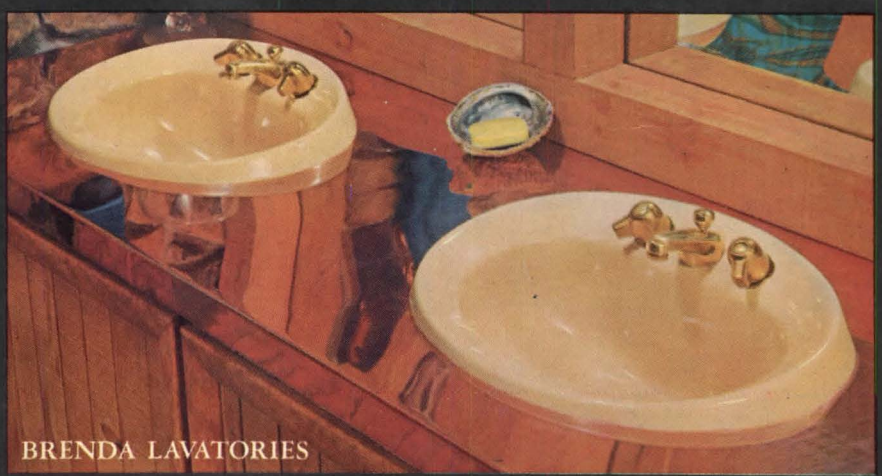

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to support the Taconic Foundation, founded by the Curriers in 1958, and its subsidiary groups, including Urban America, Inc. As publisher of the *Architectural Forum* since 1965, and in its other ventures, Urban America has helped stimulate professional thought on urban problems.

UNDERGROUND POLICE FACILITIES WIN NEW YORK CITY COMPETITION

Photo: Louis Checkman

NEW YORK, N.Y. Architects Kelly & Gruzen have started an underground movement. Moving will be 110 police horses from their erstwhile home, the now-demolished 95th Street Armory, into below-ground stables in Central Park. The Kelly & Gruzen design for the stables, a police station, and two equestrian exercise and display rings, won first prize in a closed contest sponsored by the Parks Department with the financial aid of Stephen Currier (see Obituary, p. 62).

Now housed in dilapidated, crowded, low-ceilinged buildings that were designed by Calvert Vaux and are located in Central Park adjacent to the new site, New York's 22nd Police Precinct has long wanted new quarters, but decisions on where to put them and who would design the facilities held up the project.

New York has as much architectural talent as it has deplorable architecture — partly because so little of the talent is used by the city. Last year, however, the Parks Department invited five New York City firms to submit designs to the competition. Entries from the offices of Kelly & Gruzen, Whittlesey, Conklin & Rossant, Edward Larabee Barnes, Philip Johnson, and Marcel Breuer were judged by a jury composed of Deputy Police Commissioner Katz, Parks Commissioner Hoving, landscape architect Paul Friedberg, and architects Paul Rudolph, William Breger, Lewis Davis, I.M. Pei, Peter Blake, and Arthur Rosenblatt.

Kelly & Gruzen's winning design shows a 3-acre orchard of flowering crab-apple trees, planted in the 3′ of earth covering the roof of the underground stables (with 110 stalls for police horses and 220 private stalls). Directly to the west of this orchard will be an outdoor riding ring, circled by a 30′ high mound of earth. Beneath the outdoor ring and its spectator seats will be a similar indoor ring and seating. To the north of the orchard will be the 22nd Precinct Station, constructed of the same granite stonework as the walls of the 86th Street transverse on which it fronts. Its sloping roof will be covered with earth and planted with grass. A bridge across the transverse roadway will connect the site with the reservoir to the north. According to the architects, the below-grade building and roof plantings will preserve existing parkland, with the only loss of existing park being the 5% of the site needed for access roads. Also belowground will be parking for 80 cars and room for other supporting facilities. Anticipated cost of the project: $7,500,000.

Runners-up in the competition were Whittlesey, Conklin & Rossant.

CUTTING FILE DRAWERS DOWN TO SIZE

HARTFORD, CONN. A miniature approach to the architect's big problem of information storage and retrieval has produced a compact solution — microfilm cards that will compress thousands of pages of manufacturers' literature into inches of space in a small card file.

If it is successfully implemented, the system promises to be one of the most significant advances in the push to make an ever-increasing flood of product information readily available to architects. It was developed by a new company, Commander Publishing Co., Inc., which has just completed a year's pilot study during which sample card files and reader-printers were tested in several architectural offices with generally favorable response.

The small sheets of microfilm, called microfiche cards (recently standardized by the Federal Government for reproduction of their information documents), will accommodate up to 60 pages of a manufacturer's literature on one card (approximately 4″ x 6″). Black-and-white will be standard, but color is also available.

If plans proceed on schedule, the first working card files, called decks, will go into the 300 largest architectural offices next October. There will be no charge to the architect, and a simple viewer (magnification about 21x) will also be supplied at no cost, at least initially. In the future, more offices may be added to the priority list, and the service will eventually be available to smaller firms for a yearly fee ranging somewhere between $75 and $200.

Two indexes list file contents: one enters products by manufacturer, and the other uses the newly adopted Uniform System for specifications and data filing. A great advantage will be currency: cards and indexes are to be updated every 60 days, and a complete new index, together with revised cards (where necessary), will be sent to users. Monthly revisions may be instituted at a later date, but however frequent interim updating may be, the entire deck will be updated and replaced annually.

It is estimated that the first deck will cover 300 manufacturers and contain some 15,000 pages of data; future plans project 2000 to 3000 manufacturers with a total page count of 200,000. This compares with an estimated 1400 manufacturers and 18,000 pages in *Sweet's Catalog*, or 1000 manufacturers and 500 pages in the AIA's now defunct *Building Products Register*.

Drawbacks of the system seem to be that side-by-side comparisons of different manufacturers' products cannot be made on the viewer; and available hardware does not offer the kind of automated retrieval that could add greatly to the convenience of using the file. Also, the viewers to be supplied by Commander will not have a printer. Since hard copy print-outs are usually necessary, the burden of making this investment will fall on the architect.

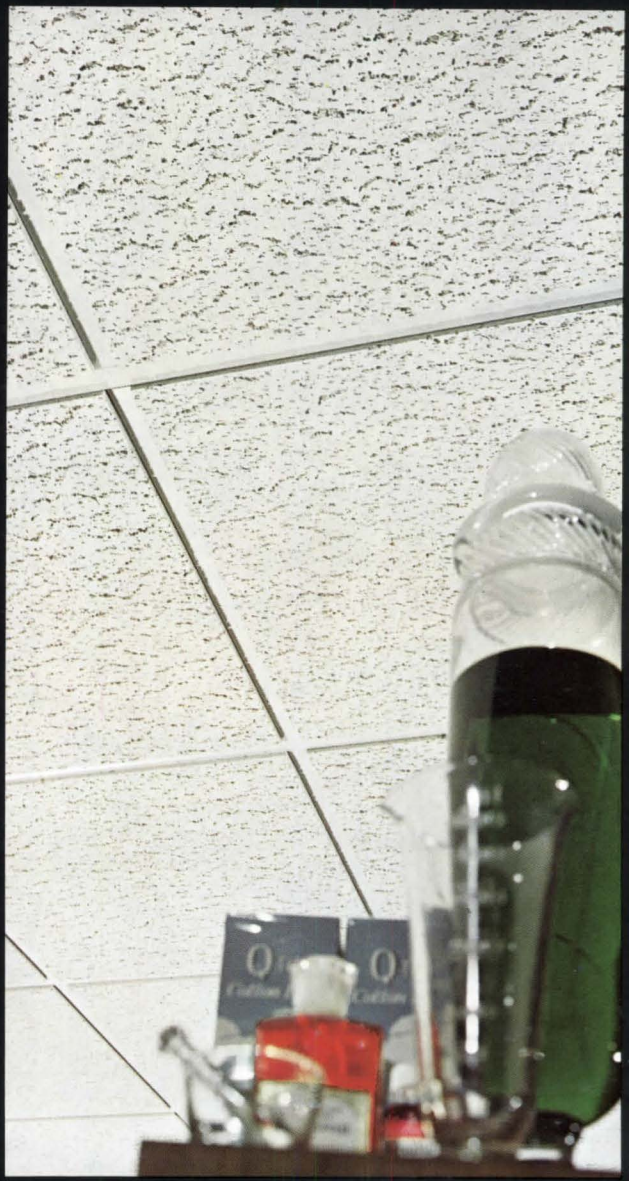
The usefulness of the catalog will, of course, depend greatly on the number and diversity of manufacturers included. Prospects for thorough coverage seem good, since the price per card — and, therefore (at 60 pages per card), the price per page — is very attractive to manufacturers. Should the manufacturer require more than one card, the cost of each additional card drops considerably. So more manufacturers should be able to afford to put more data at the disposal of designers, specifications writers, and draftsmen.

WASHINGTON/FINANCIAL NEWS

By E. E. HALMOS, JR.

What the Budget Means for Architects — Most seasoned Washington observers are well aware that the annual budget and economic messages delivered by the President are nearly meaningless excerises in bookkeeping statistics — except for one thing: the indication they give as to the direc-

2 suggestions for architects who think ceiling seams are unsightly:



Hide them.

With the bold, textured ceiling tile whose sharp, square edges are meticulously arranged and designed to create a remarkably monolithic appearance. The seams virtually disappear. This is Armstrong Santaglio* Travertone™. It's noncombustible, fire retardant, and acoustical. Available in 12″ x 12″ x ¾″ tile, with self-leveling tongue-and-groove joints, you can suspend it mechanically or cement it to any firm, flat, dry surface. *U.S. Patent D-206,119.

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CEILING SYSTEMS BY
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tion of Administration intent in future legislation.

The fact is that budget totals — this year you can take your choice of a figure anywhere between $135 billion to $170 billion, depending on which of three budgeting methods you like to follow — are such a vast jumble of carry-overs from previous years, new authorizations and appropriations, shiftings and borrowings from one roll to another, that they are impossible to total or convert in any meaningful way.

Actually, if Congress were to appropriate not a single penny this session, Government agencies would still have something like $122 billion to spend in the coming year by virtue of previous appropriations, "obligational authority" (a sort of blank check to permit Federal agencies to carry on continuing programs even though money has not been actually appropriated, granted in previous years.

Thus, the biggest nugget of news in the budget and other messages wasn't the total of Government spending for construction purposes (which, at about $8 billion, was about normal) but that no deep cuts were called for or indicated, except in highway building.

Despite the indefinite nature of the war in the Far East, the prospect of one of the biggest deficits in history, and other matters, the President's message indicated there would be no major attempt to knock any of the Government props from under the construction economy. Programs involving $1,300,000,000 worth of work for the Corps of Engineers; $319,600,000 for the Bureau of Reclamation (though down about $7 million); $1,600,000,000 in military construction; $5,300,000,000 for the National Aeronautics and Space Administration; $206 million for the General Services Administration (up $20 million); and others will go right along. The Bureau of Commercial Fisheries will get its $1,400,000 for construction of a pilot plant to make fish flour; Housing and Urban Development is to get $250 million for the Model Cities Program and $750 million in obligation authority for contracts; huge sums are ticketed for the Health-Education-Welfare Department for hospital and educational institution construction.

All of this, of course, is provisional on approval by Congress. But there is little doubt that, after some token attempts at pruning the budget, the lawmakers will undoubtedly go along.

Architects and others concerned with the construction industry can therefore assume, that, after all the hints of cutbacks, there will, in fact, be very few: The Administration is either afraid that drastic cutting could upset the economic balance, or feels that talk has succeeded in slowing things down enough already to obviate any further paring of construction spending.

That still leaves one big area of concern: the strong likelihood that the Federal Government will continue to pressure private industry to hold down its construction commitments, and put a lot of hold-down pressure on price and wage escalation.

States May Become Larger Clients — The enormous size of the annual Federal budget, and the current indications that it has become almost unmanageable by either the President or Congress, is the real spark behind recent Congressional moves to return a share of Federal tax collections to the states, with very few strings attached.

The proposal, which stands a good chance of enactment during the current session, is based on the belief that states and local governments can handle money with better effect, and less bureaucratic problems, than can the Federal Government; and that much of the personnel, paperwork, and other problems that eat up funds can at least be shifted out of the Federal area.

If such a bill were passed, it would of course force an entirely new set of conditions on architects, engineers, and others seeking work: They would be dealing with state (not Federal) personnel and regulations.

Contractors Name Architect Liability — Having run into a hornet's nest of objections from contractors (and from some engineers), the AIA, in mid-January, made a reasonably graceful retreat from "hold harmless" provisions in proposed revisions of its "General Conditions of the Contract for Construction" (specifically, Sec. 4.18.3 of Document A-201); see IT'S THE LAW, JANUARY 1967 P/A.

Contractors complained loudly that, as originally worded, the subsection would have had the effect of forcing to "hold harmless" the architect for practically anything except a major defect in drawings.

Not so, said the AIA. In the face of adamant opposition from such groups as the sizeable (7900 member) Associated General Contractors, however, the wording was changed. As now approved by all sides, the revised Section 4.18.3 reads:

"The obligations of the contractor under this paragraph . . . shall not extend to the liability of the Architect, his agents or employees arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or (2) the giving or failure to give directions or instructions . . . provided such giving or failure to give is the primary cause of the injury or damage."

With that concession, AGC withdrew its instructions to its own members, who had been asked to urge local architects' groups to revise or ignore the original provision.

Fine Arts Commission at Work — Not at all concerned with national politics and economics, the City of Washington went its own merry way in matters of architecture:

The Fine Arts Commission unexpectedly approved, without any dissent, a huge parking garage (partly underground); and the design by Minoru Yamasaki of three curvilinear office buildings for the Defense Department, to be built on Bowling Field, across the Potomac from National Airport (the buildings are reminiscent of the now partially built Watergate apartment complex). It also approved a new fountain sculpture alongside the Smithsonian Museum of History and Technology.

Equally unexpectedly, the commission rejected Marcel Breuer's modified design for a memorial to the late Franklin D. Roosevelt, near the Tidal Basin, with little explanation except that Breuer's "lying down" granite walls were not on a "human scale" (see page 53).

In a related move, President Johnson appointed just-defeated Illinois Senator Paul H. Douglas to chair a 15-member "National Commission on Codes, Zoning, Taxation and Development," which is to make a "penetrating review" of zoning, housing, and building codes and recommend solutions for problems it finds.

Financial — As noted above, biggest news for architects in the budget message wasn't the totals called for, but the indication that the Administration wants no substantial cuts in Government construction work.

☐ Certainly of equal importance were the first tangible efforts to ease the money markets — headed by bank announcements of reductions in interest rates on major loans. Homebuilders professed to be noting some relaxation, too, and looked hopefully for a revival (though a long way from boom years) in housing construction.

☐ Encouraging, too, was some evidence that pressure on construction costs was slackening: The Bureau of Public Roads' quarterly index (for the last quarter of 1966) showed a drop of 2.5% (to an index of 112.8), after hitting three successive all-time high points during the first three quarters of the year.

☐ The sick housing sector seemed also to be showing some signs of revival: In December, the rate of starts was set at 1,100,000 units, compared to 1,007,000 in November, but still well below the 1,800,000 rate of the previous year.

☐ Although about a dozen bills are now in the Congressional hoppers on the subject of exempting business areas from the loss of 7% investment credit, some businesses may still be able to take some credit against income taxes in returns now due. Investments in 1966, up to $20,000, are still eligible, if the businessman takes 7% and applies it against taxes due for the year.

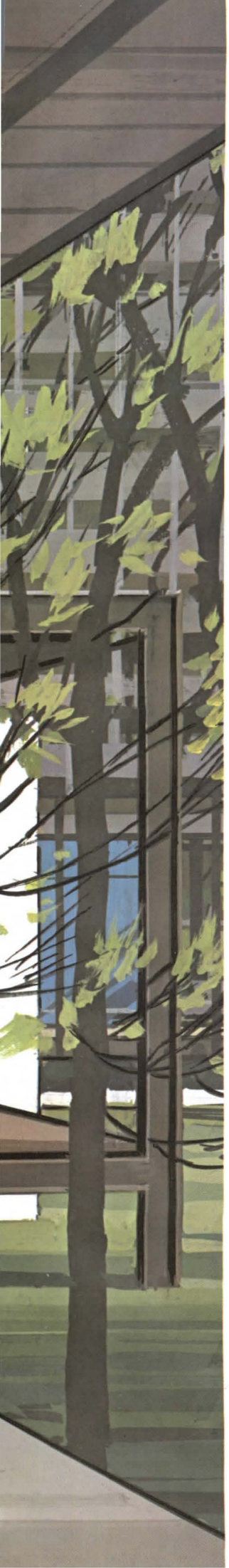
☐ State and local governments remain among the biggest sources of work for architects. Survey by the Census Bureau indicates these units spent $19,400,000,000 within the 12 months ending with September. That's an increase of about $2,200,000,000 over the previous year.

NEXT MONTH IN P/A

A one-subject issue of P/A. The subject? The earth. Forming it, conserving it, terracing it, using it creatively to enhance man's environment.

For the April issue, P/A's editors have put in the same massive research and long months of thought that produced "The Great Space," "Toward the Third Millennium," and other one-subject issues that have been made permanent references in the libraries of many professionals. Added to this will be the opinions and experiences of a number of prominent practitioners, including Lawrence Halprin, Garrett Eckbo, Richard P. Dober, Malcolm B. Wells, Dan Kiley, William Conklin, Paul Rudolph, Philip Johnson, Hugh Hardy, Paolo Soleri, and William Morgan, author of "Earth Forms in Architecture."

Well, we've always said we would move the earth for our readers, and now we really have. To get your April P/A and eleven more required-reading issues, fill out the circulation card at the back of this issue and send it in today.



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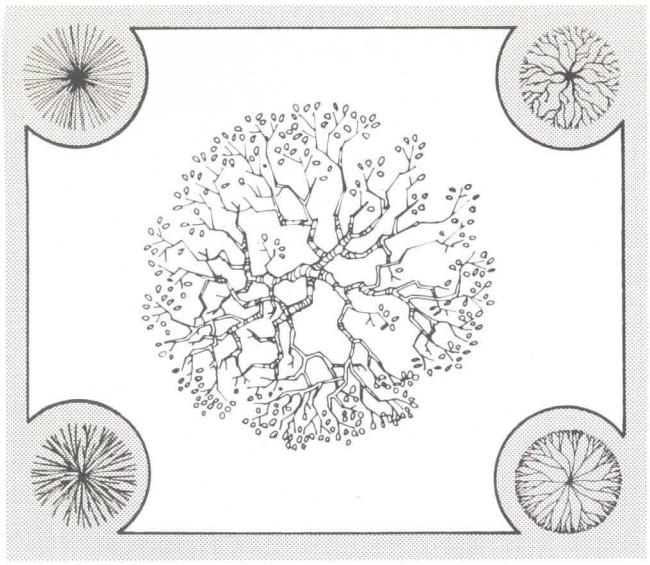

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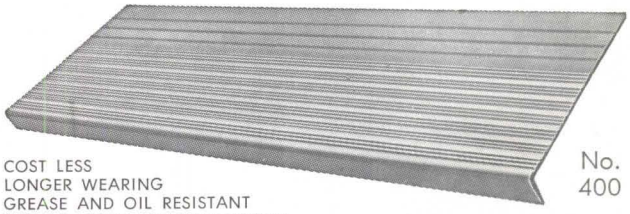

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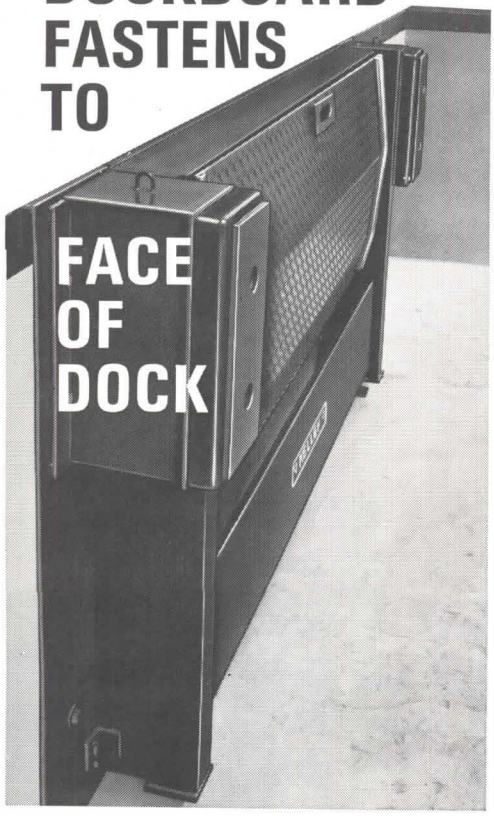

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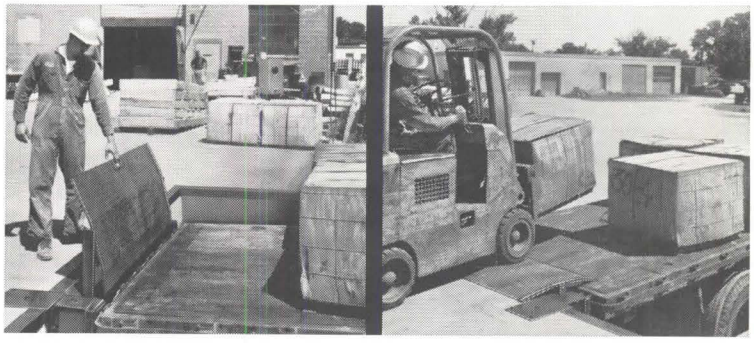

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PRODUCTS

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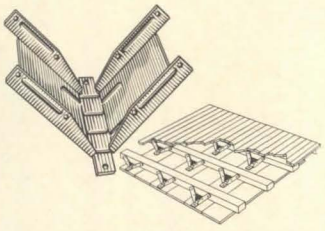
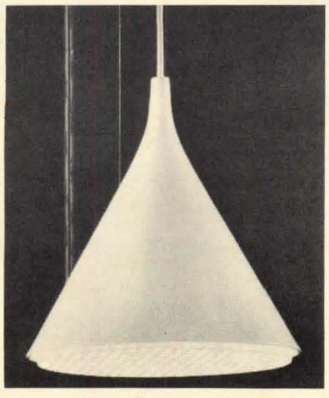
Circle 100, Readers' Service Card

Liquid roofing. Silicone rubber roofing material, now available after four years of developmental studies, is said to outperform similar roofing systems with other types of plastic bases. Its weathering characteristics have been found excellent under extreme temperature conditions and in damp, rainy climates, reports G.E. The material is applied with a roller, like paint, and solidifies to a lightweight elastic rubber membrane that is said to stay permanently flexible with a life expectancy of about 30 years. The two-coat cover (total average thickness of 22 mils) has minimal shrinkage, since curing is by chemical reaction rather than solvent evaporation. "Breathing" and adhesion characteristics, plus low water absorption, protect the silicone coating against cracking, blistering, and peeling. Roofing can be used over concrete decks, regardless of slope, and over exterior plywood decks with slopes of ¼″ per foot or more. Available in 10 standard colors, including white, gray, and bright yellow. General Electric, Silicone Products Dept., Waterford, N.Y. 12188.
Circle 101, Readers' Service Card

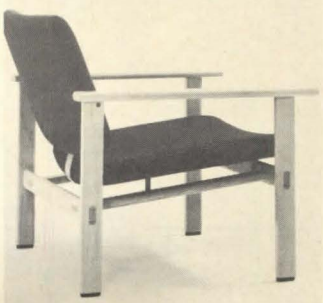


On the level. Anyone, professional or amateur, who has ever struggled with the problems of rehabilitating an old building should be interested in a new floor-leveling device developed by the manufacturer for a New York City urban rehabilitation project. The V-formed device (22-gage steel) is nailed to 2x3 sleepers or screeds every 36″. The sleepers are then placed 24″ apart on top of the existing floor. The angle of the V's are adjusted to accommodate the degree of sag, and nailed to the existing floor. Then the new flooring is laid on top. The Floor/Level/Support carries a live load of 40 psf, and manufacturer reports that the system can be installed more economically than other floor leveling systems under study. It may also be used as a plenum support. Timber Engineering Co., 1619 Massachusetts Ave. NW, Washington, D.C. 20036.
Circle 102, Readers' Service Card

FURNISHINGS



Form of Reflector. This versatile hanging lamp (AID award winner) features a spun aluminum reflector (14″ high by 11½″ dia), finished in baked satin white enamel inside and outside. White circular plastic grid louver made up of ½″-dia cells provide 45° shielding. Louver is held in place by a snap-in plastic flange. Lamp comes either with 15′ approved white hanging cord and plug, or with 6′ cord, canopy, and fittings for outlet box mounting. Nessen Lamps Inc., 317 E. 34 St., New York, N.Y. 10016.
Circle 103, Readers' Service Card



New and old. Fritz Hansen presents four new groups of furniture designed by Arne Jacobsen and Hans J. Wegner. Jacobsen has unveiled a huge, futuristic — and comfortable — oxhide lounge chair on an aluminum swivel base; it has a matching ottoman; both upholstered in leather, fabric, or vinelle. Another Jacobsen chair is of natural beech with interlocking joints, combining with-grain and cross-grain surfaces. Its tilting chair back adjusts by a leather thong that fastens under the seat. Both chair and matching circular coffee table with artificial slate top can be stained teak or walnut. To his 1943 "Chinese" chair, which has been reintroduced, Hans Wegner adds a table in rosewood, walnut, or cherrywood (like the chair); it can be used in either dining or conference rooms. Staff designers have developed an ashwood chair, sofa, and table group, which also includes a lounge chair with adjustable back and seat, and ottoman. Fritz Hansen, Inc., 305 E. 63 St., New York, N.Y. 10021.
Circle 104, Readers' Service Card

Contract Fabrics. Included in J.H. Thorp's spring line of fabrics are two heavy casements useful in contract installations. "Lakeland," a soft cotton criss-cross waffle weave, comes in beige or natural. The "Gander" casement, of rayon, cotton, and linen, has an uneven horizontal white weft on a cream warp. Both casements are 50″ wide. An upholstery, "Antiqua Texture," has the look of hand-woven raw silk with contrasting warp threads; actually, it is rayon, linen, cotton, and acetate. Colors are copper, blue, green, yellow, olive, beige, and natural. Also featured is an imported line of cut, striated velvets and velours, J.H. Thorp & Co., Inc., 171 E. 56 St., New York, N.Y. 10022.
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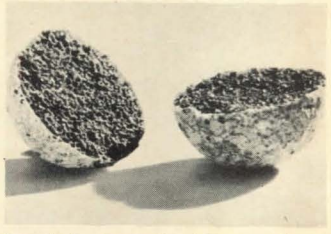
INSULATION



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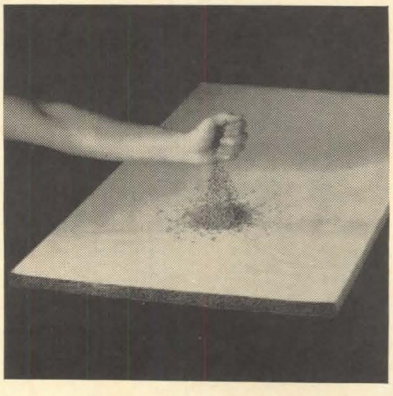

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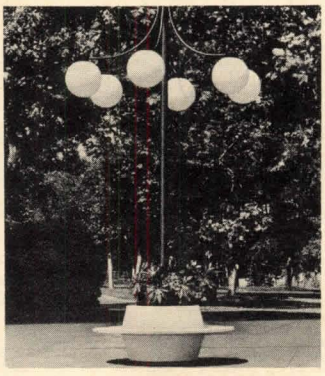
of inorganic roof insulation boards. The small glass particles, about 1/16" dia, contain numerous glass-enclosed cells of insulating air (see magnification in photo above) that protect against moisture penetration; but air passages between the particles allow material to "breathe," thus preventing the wrinkling and buckling of roof felts caused by vapor pressure build-up, claims manufacturer. "Celramic-board" is fabricated in 48" x 24" x 1"-thick sheets covered with a specially treated paper. The bituminous binder, compatible with either pitch or asphalt, is said to allow all materials in the roofing system to expand and contract at the same rate. Manufacturer reports that insulation boards are easily cut and are suitable for most decks. Typical "U" value is .25 for a 4" concrete deck without ceiling using 1" Celramic-board. Pittsburgh Corning Corp., One Gateway Center, Pittsburgh 22, Pa.

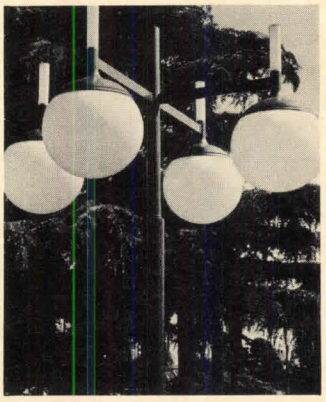
Circle 107, Readers' Service Card

Correction. Because of a printer's error Pittsburgh Corning's Celramic-Board advertisement in the February issue of P/A was printed as a negative. The advertiser had this comment: "We really aren't going psychedelic. The strange look of Pittsburgh Corning's new product ad last month came from a printing mix-up — not LSD." You can see it as it should be on pages 68–69.

LIGHTING



The lighting sphere. Outdoor lighting fixtures, somehow pleasantly reminiscent of earlier days, lend a unifying element to multibuilding projects, streets, and malls. The one-piece, no-seam globes are formed from a specially developed acrylic with a chemical additive that eliminates discoloration, says manufacturer. Six-globe unit (at top) incorporates an integral glass fiber bench planter; available with opal diffuser for 300w incandescent lamps, or



with clear diffuser for 250w lamps. Four-lamp fixture has 24" dia globes topped by illuminated cylinders; available for either 400w mercury vapor or 500w incandescent lamps. Aluminum poles are offered in a variety of finishes. Architectural Area Lighting Co., 6100 S. Wilmington Ave., Los Angeles, Calif. 90001.

Circle 108, Readers' Service Card

SPECIAL EQUIPMENT

Maps à go go. Illuminated routing maps, a standard feature in the Paris Metro for many years, are now being manufactured and installed in this country. When the button indicating a particular destination is pushed, the map lights up the route by which it can be reached. It stays lighted 30 seconds, using color coding and selective lighting to indicate the observer's location, his destination, and the route. Signs are suitable not only for rapid transit systems, but may also be installed at trade shows and fairgrounds. Devco Engineering Inc., Caldwell Post Office, Fairfield, N.J. 07006.

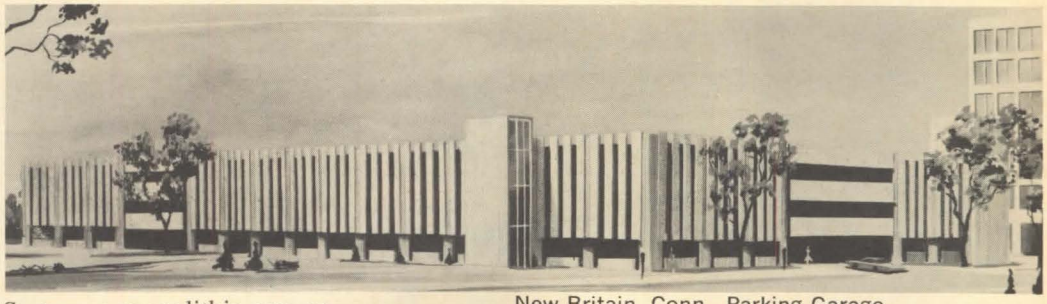
Circle 109, Readers' Service Card

THE PRESCON MEMO NEWS

THE PRESCON CORP.: 502 CORPUS CHRISTI STATE NATIONAL BUILDING — CORPUS CHRISTI, TEXAS 78401

PARKING GARAGE

58′ SPAN WITH POST-TENSIONED 23″ TUBE SLAB



New Britain, Conn., Parking Garage.

Cost of this five level parking facility 304′ x 174′, including two large rental areas, added restroom facilities, mechanical, electrical, traffic control, and landscaping was $6.20 per sq. ft. The structure uses Prescon positive end anchorage tendons for post-tensioning prestressed concrete and the Tube Slab System, a monolithic one or two-way concrete slab using uniformly spaced large diameter hollow paper or metallic tubes to create voids in the concrete.

Designed by A. J. Macchi, Engineers, Hartford, Connecticut, it provides for one-way directional traffic with one spiral movement upward, one downward, and a level portion at the center common to both movements. The 58′ spans use 20-wire Prescon tendons stressed to 165 kips. Where the slab is 174′ (3 spans), 16-wire tendons were stressed to 133 kips. Tie tendons in bridging members transverse to tubes and tendons were placed at ⅓ span points.

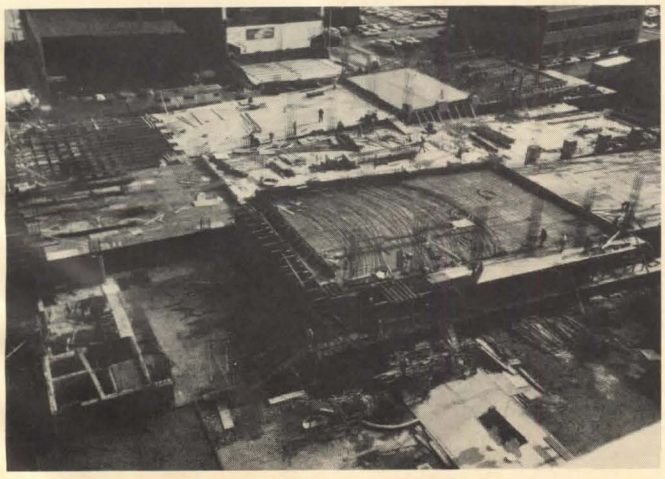
The floor slabs are 23″ deep with 18″ round metal tube voids at 22¾″ on center positioned approximately at mid-depth of the slab. This forms a 4¾″ rib between voids and reduces dead load to 142 psf. With a 10′ floor to floor height this gives 8′ 1″ clear headroom. Temperature steel is used at the top and bottom of the slab. Tubes were omitted at the periphery to form solid edge beams.

Three hundred piles were used in the foundation. The exterior columns are 1′ x 4′, and interior columns are 4′ x 3′. Double columns were used at expansion joints. In level areas the slab forms were sloped a maximum of 3″ for drainage. Basement walls and pile caps used 3000 psi concrete; columns, slabs, and beams used 4000 psi concrete.

Two parking rows plus a 22′ wide traffic aisle is provided at every level. Parking is at 60° to the traffic direction. Column-free areas facilitate self parking. Monthly patrons have separate access to parking space in the basement level.

Architectural treatment consisted of exposed aggregate precast concrete panels 3⅝″ thick for the facade. The exterior columns and stair towers concrete has a board marked finish.

This parking garage, scheduled to open in March 1967, was built for the City of New Britain, Connecticut. A. J. Macchi invented the Tube Slab System used in this project. Angelo Tomasso Inc., New Britain, Connecticut, is the general contractor.



Tendons have been uncoiled on slab forms in foreground; in upper right, part of the concrete placement has been completed with additional concrete being pumped into place.

Pumping of concrete to form the slab. Temperature steel and tubes can be seen in place. Tendons are positioned in ribs between the tubes.

PARKING GARAGE BROCHURE AVAILABLE. Colorful 12-page brochure pictures and describes several different parking structures, plus listing 87 other parking garages using the Prescon System. Write for your free copy today.

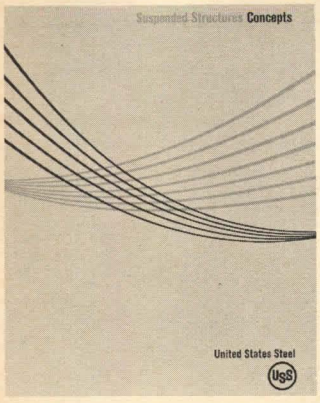
THE PRESCON CORPORATION

General Offices: 502 Corpus Christi State National Building
Telephone: 512-882-6571, Corpus Christi, Texas 78401

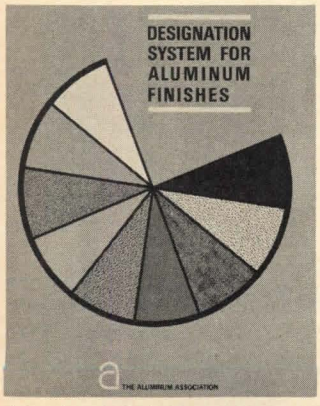
 B 67

MFRS' DATA

CONSTRUCTION

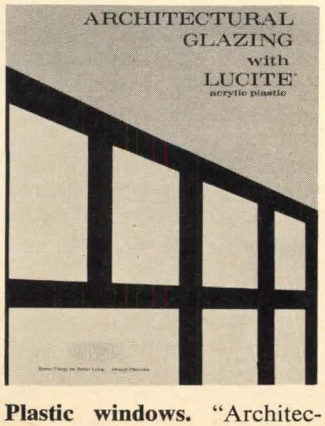


Designing with cables. Steel cables are no longer the exclusive design domain of bridge engineers; they receive increasingly enthusiastic attention from designers of buildings. "Suspended Structures Concepts," written for U.S. Steel by H. Seymour Howard, Jr., Professor of Architecture at Pratt Institute, discusses in its first section the theory and common design problems to be expected in building suspended structures. The second section gives case histories of stadiums, airport terminals, pavilions, etc. The final section shows proposed projects. The book is well written and illustrated — a compact guide to the world of suspended cable buildings. 37 pages. United States Steel Corp., Room 9974, 525 William Penn Place, Pittsburgh, Pa. 15230.



Aluminum finishing. New editions of two booklets discuss paints and finishes for aluminum. "Color and Quality Standards for Painted Aluminum Sheet" contains samples of 75 colors adopted by the Aluminum Assn. for factory painted sheet. Number coding provides a standard system for specifications. 8 pages. "Designation Systems for Aluminum Finishes" details the system for specifying finishes and coatings. Mechanical and chemical finishes plus anodic and other coatings are covered. 8 pages. The Aluminum Assn., 420 Lexington Ave., New York, N.Y. 10017.
Circle 200, Readers' Service Card

Patterned glass. Figured and wired glass for residential and commercial-institutional structures is discussed in a catalog featuring a channel-shaped glass. "Profilite" is 12″ wide with 1⅝″ legs. The glass is available wired or unwired in 8′, 10′, 12′, or 14′ lengths. It is said to have high load-bearing properties especially suited for glazing walls and roofs in exposed positions. Joints are sealed with mastic, thus eliminating the need for supporting cross members. Photos of glass patterns, physical-properties tables, and light transmission data illustrate Catalog No. 67. 20 pages. Mississippi Glass Co., 88 Angelica St., St. Louis, Mo. 63147.
Circle 201, Readers' Service Card



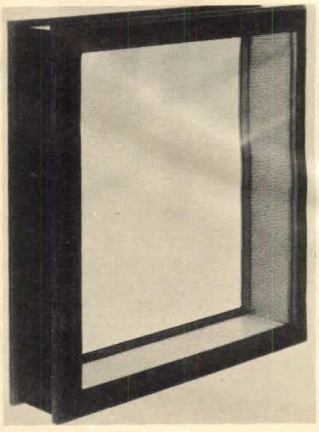
Plastic windows. "Architectural Glazing With 'Lucite' Acrylic Plastic" presents the advantages of "Lucite" sheet for light control, insulation, weight, color, and workability. The brochure also describes installation procedures, care and cleaning, design tables based on wind loads, and standard design details. 8 pages. Du Pont Co., Room 2420, Nemours Bldg., Wilmington, Del. 19898.
Circle 202, Readers' Service Card

The "fire" down below. Snow melting and heating cable products include fiber or wire mesh heating mats for installation within asphalt or concrete slabs; fiber mesh heat mats for concrete floors in buildings; and soil heating cable for athletic fields. Also included are automatic switches and thermostats. Data tables, photos. 8 pages. The Singer Co., Climate Control Div., 62 Columbus St., Auburn, N.Y. 13021.
Circle 203, Readers' Service Card

Concrete decks. Catalog of prestressed precast concrete slabs (4″ to 12″ thick) includes load tables, typical spans, and instructions for use on steel frame, concrete frame, and wall-bearing construction. The slabs have hollow-core cells for underfloor electrical distribution and for heating, air-conditioning, and ventilating ducts. Text, drawings, specifications. 8 pages. The Flexicore Co., Inc., P.O. Box 825, Dayton, Ohio 45401.
Circle 204, Readers' Service Card

DOORS/WINDOWS

Period pieces. Door and drawer hardware is available in several styles of bygone days — "Country French" and "Early American," for example. Pulls, hinges, and roses are made from wrought iron; knobs are available in wrought iron, porcelain, or crystal. Catalog gives prices, photos, and dimensions. 12 pages. Peabody Distributing Co., Belwith International Ltd., 1119 E. 63 St., Los Angeles, Calif. 90001.
Circle 205, Readers' Service Card



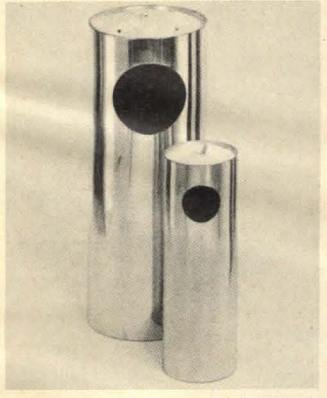
Factory-sealed windows. Double-glazed, hermetically-sealed windows dampen sound in critical areas such as airports, motels, and band rooms. "Acousta/Glaze" windows or window wall systems provide sound control ranging from STC 40 to STC 60 by varying glass thickness and air space. Maximum vibration-, noise-, and thermal-insulation are achieved by the use of zipper-gasketing, according to manufacturer. Folder describes properties, gives sound-transmission graph, and shows typical installation details. 4 pages. Sitelines, Inc., 1957 Long Beach Ave., Los Angeles, Calif. 90011.
Circle 206, Readers' Service Card

Open and shut. Door lock charts give function, descriptions of operation, and drawings. Brochure illustrates knob and rose styles with dimensions and materials, and manufacturer's recently introduced maximum security locks and keys. 16 pages.

Sargent & Co., 100 Sargent Dr., New Haven, Conn. 06509.
Circle 207, Readers' Service Card

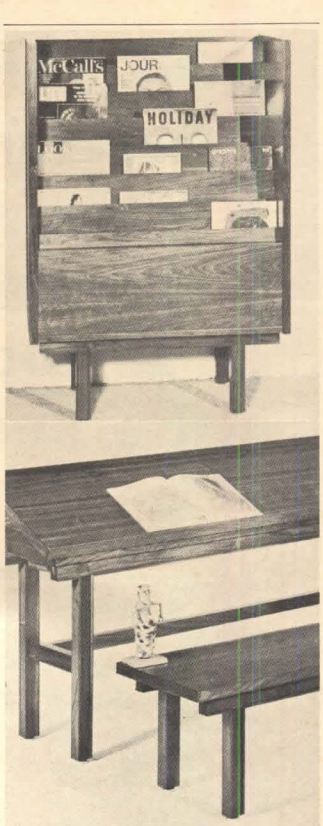
FURNISHINGS

Institutional Furniture. A 65-page catalogue from Fixtures Mfg. Corp. illustrates large collection of institutional furniture: chairs, table bases, table tops, bar stools, coat racks, lounges, accessories. Of special off-beat interest are legless tables supported by chair attachment. Photos illustrate every piece, and specifications include dimensions, weight, colors, and materials available, and optional features. Fixtures Mfg. Corp., 1641 Crystal, Kansas City, Mo. 64126.
Circle 208, Readers' Service Card



Office Receptacles. Habitat's extensive collection includes elegant cylindrical sand urns, water urns, ashtrays, waste receptacles, and umbrella stands and racks. All units are made of Trexiloy, an aluminum alloy with fine surface finishing characteristics and high resistance to corrosion. Finishes are polished or satin chrome — matte black and matte white are available for some umbrella stands and sand and water urns — and brass, bronze, and gunmetal satins on contract orders. Well-designed series of black and

white catalogues give sizes, finishes, and photo of each unit. Habitat Inc., 341 E. 62 St., New York, N.Y. 10021.
Circle 209, Readers' Service Card



Library Furniture. Robert Donovan designed these squared-off, hefty walnut pieces (burn-, scuff-, and stain-resistant) of Metwood library furniture, which include round and rectangular tables, bookshelves, card catalogues, desks, and a magazine rack, atlas case, dictionary stand, and occasional bench. Loose-leaf catalogue has 20 full-page photos; backs of photos give dimensional data and optionals. Standard Furniture Co., Herkimer, N.Y.
Circle 210, Readers' Service Card

Clouds on the ceiling. Though surface-mounted, wrap-around Plexiglas acrylic diffusers ("Clouds") in a translucent matte-white finish show no metal fixtures. Held in place by a concealed spring catch, the diffuser swings open, attached to the fixture by a channel hinge, to facilitate cleaning and relamping. Available in sizes up to 51" square, in 9 styles, these fixtures are said to give an even wash of shadow-free light. Brochure includes product photos, specifications, illumination diagrams, and co-

It might do the job at first. But gradually there's a loss of insulation efficiency in low-cost, water-susceptible insulation. Heating bills and cooling costs go up, and up, and up.

Here's what happens. The bargain insulation gets water-logged and loses its insulation value. Vapor barriers aren't enough. Movement of a building will split them, allowing moisture-laden air to penetrate the insulation. Moisture forms through condensation, reducing insulation efficiency. What to do?

Specify STYROFOAM® brand extruded foam. It's the finest, most modern insulation you can buy. Never loses its effectiveness. Always stays dry. Requires no vapor barrier. Doesn't rot, mold or deteriorate. Flame retardant. Lightweight and easy to install.

As for application, you can use the Miller System; apply paneling or decorative wallboard directly on it; use as a base for wet plaster; or as a perimeter insulation for foundations and slabs.

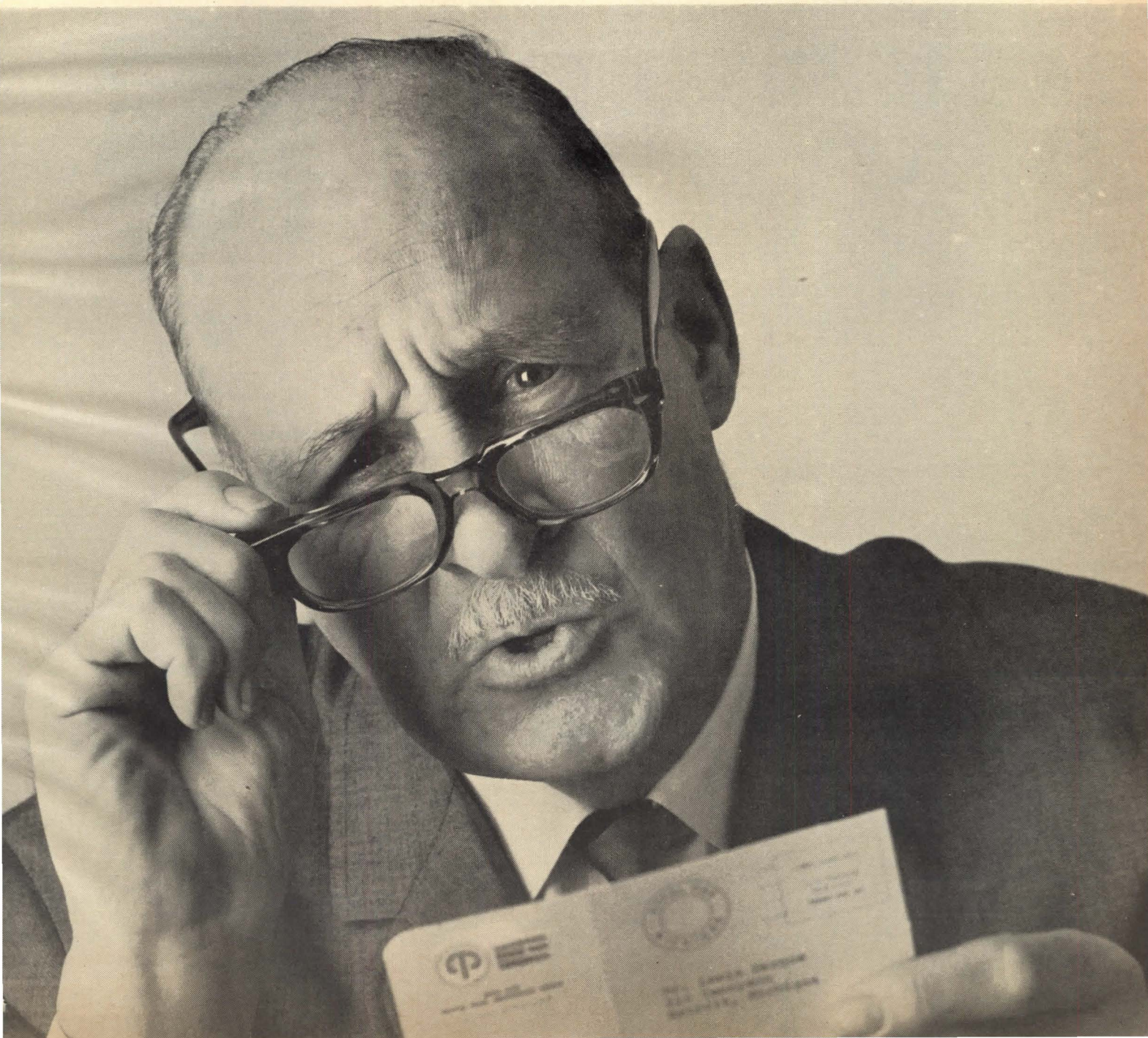
The next time why not specify STYROFOAM brand insulation . . . one of a family of rigid foam insulations offered by Dow. For more information, write to The Dow Chemical Company, Construction Materials Sales, Dept. 71300, Midland, Michigan 48640.

DOW

No one will know you installed bargain insulation.

(until the owner heats up)

On Readers' Service Card, Circle No. 338



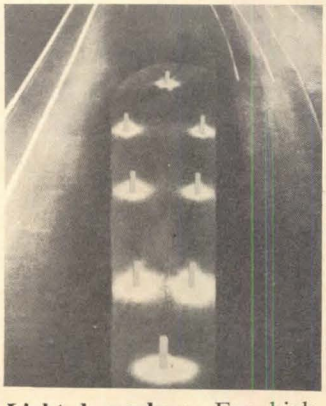
efficient charts. Peerless Electric Co., 576 Folsom St., San Francisco, Calif.
Circle 211, Readers' Service Card

INSULATION

Thermal protection. Brochure describes granular fill and sheet polystyrene for insulating concrete decks and masonry walls. Sketches illustrate typical applications, and tables recommend thicknesses to meet various insulating conditions. Booklet G-279; 8 pages. Zonolite Div., W. R. Grace & Co., 135 LaSalle St., Chicago, Ill. 60603.
Circle 212, Readers' Service Card

SPECIAL EQUIPMENT

On the bunsen burner scene. Sinks, cabinets, countertops, plumbing and electrical fixtures, and other laboratory components are cataloged with photos, drawings, dimensions, and other pertinent data. 90 pages. Hamilton Mfg. Co., Two Rivers, Wis. 54241.
Circle 213, Readers' Service Card



Lighted markers. For highways, drive-in theaters, or other traffic areas, two lighting units serve to mark, direct, or warn automobiles. One is a flexible plastic tube for safety islands or roadside markings. The other is a small (8″ dia) disc set in the pave-

ment, and designed to withstand the wear and tear of traffic. Brochure describes properties of lights, and suggests applications. The Strong Electric Corp., 624 City Park Ave., Toledo, Ohio 43601.
Circle 214, Readers' Service Card

Mechanical helper. Dumbwaiters and accessories are specified and described in brochure covering six models. Capacity and size charts, photos, simple installation plan drawings. 8 pages. Energy Elevator Co., 47th and Chestnut Sts., Philadelphia, Pa. 19139.
Circle 215, Readers' Service Card

Ladies/Gentlemen. Washroom accessories of trim, simple design are illustrated in full-color photos and drawings. Units may have woodgrain face panels or be fabricated entirely of stainless steel. Items cataloged include soap dispensers, paper-towel dispensers, recessed cabinets, mirrors, grab bars, and special purpose washroom and janitorial accessories. 34 pages. Accessory Specialties, Inc., 42-14 Astoria Blvd., Long Island City, N.Y.
Circle 216, Readers' Service Card

Moving water. Packaged fountain assemblies need only be plugged into the "nearest electrical outlet." Lightweight glass-fiber pool (18″ to 12′ dia.) is fitted with spray head (several water patterns available), recirculating pump, lights, and other necessary accessories. Custom work available for larger installations. Packages without pool (only spray head, pump, etc.) also available for designer-planned fountains. Drawings, prices, and equipment information. 120 pages. Roman Fountains Inc., 7251 N. Varna Ave., North Hollywood, Calif.
Circle 217, Readers' Service Card

PROGRESSIVE ARCHITECTURE
NEWS REPORT

REINHOLD PUBLISHING CORPORATION
A subsidiary of Chapman-Reinhold, Inc.
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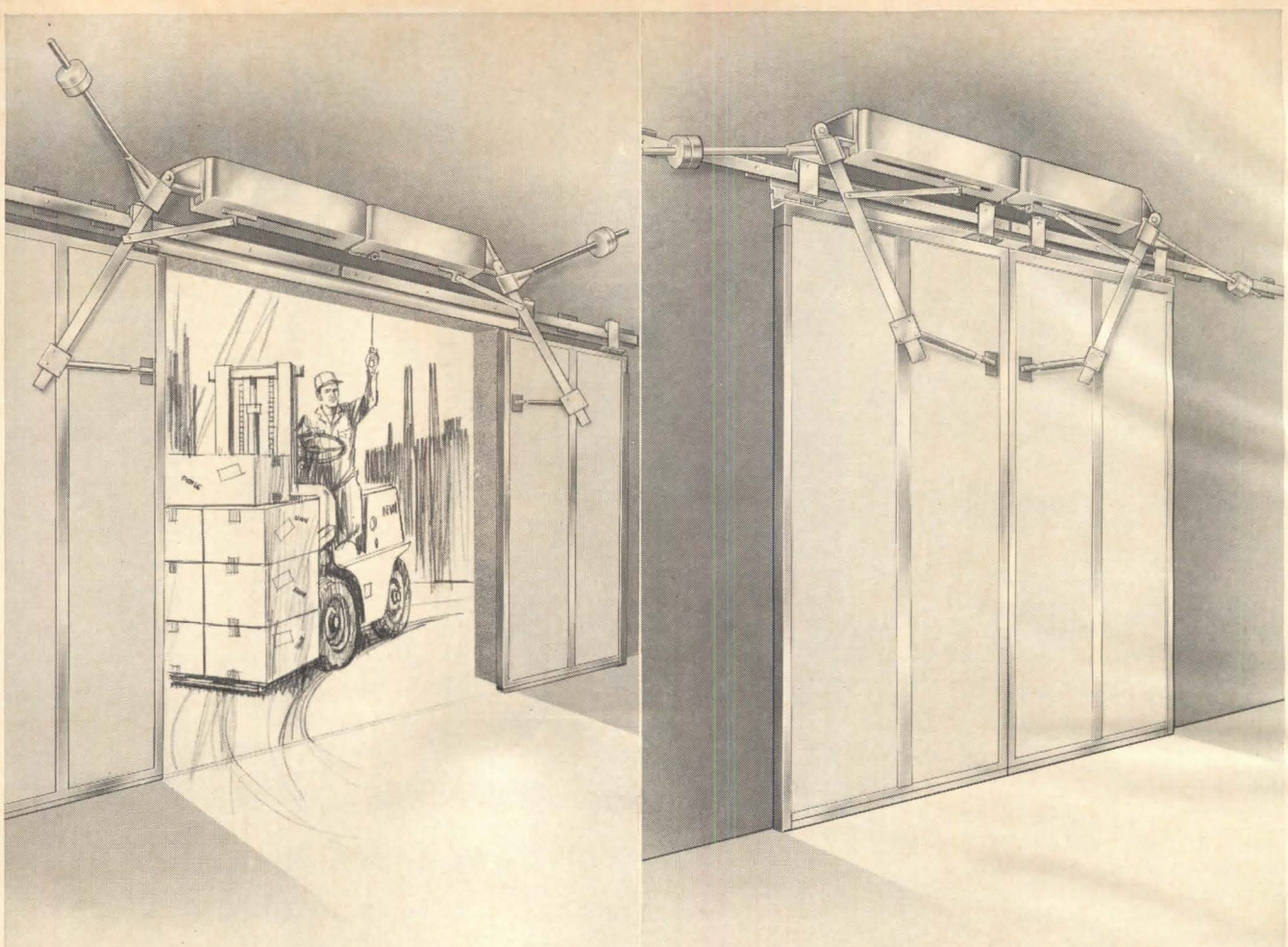

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Automatic Fire Door does Double Duty

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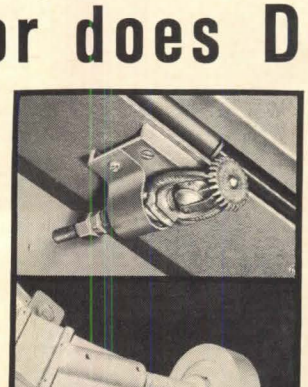
24-hour emergency closing is assured by a fail-safe mechanism that meets both U.L. and Factory Mutual inspection test requirements. Write for Specification Sheet M79-IND. Or look for us in the Yellow Pages under "Door Operating Devices". Stanley Door Operating Equipment, Division of The Stanley Works, New Britain, Connecticut.



Emergency closing is initiated by simple fusible nozzle or other fire or smoke detection device. Opening is completely sealed, but manual operation remains possible.

Operator does not have to be disconnected in case of fire. Built-in counterweight closes automatically at any phase of cycle. Eliminates fusible links or spring-loaded devices.

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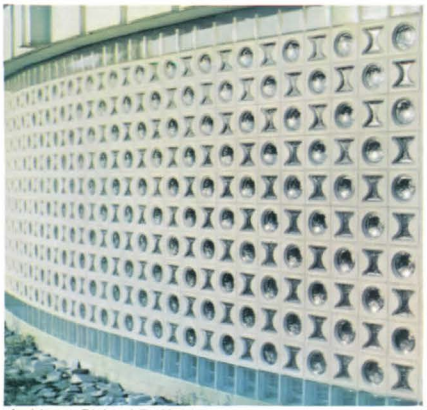
Intaglio all-glass wall units helped create this dramatic mood at the shrine of Our Lady of Fatima in Youngstown, N. Y.

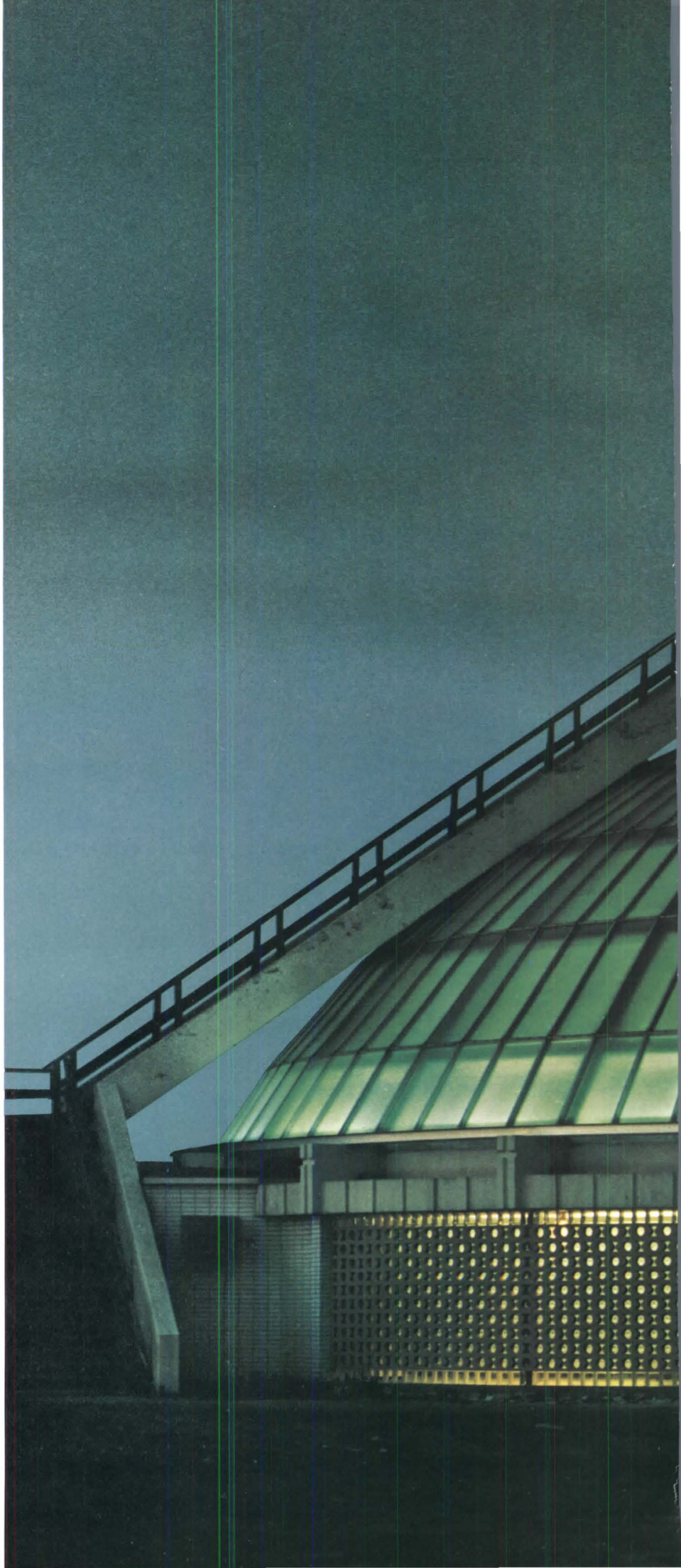
The architect chose Intaglio because it provides a dimensional screen-wall built in a curve to complement the character of the structure, yet maintains the openness of the all-glass dome. It also combines good insulating properties with the visual drama of a grill.

PC Intaglio is available in four patterns with glass and masonry-like surfaces. For information on Intaglio, PC Sculptured Glass Modules (or Argus®, Vue®, Decora® or Essex® glass blocks), write: Pittsburgh Corning Corp., Dept. PA-37G, One Gateway Center, Pittsburgh, Pa. 15222.

PITTSBURGH PC® CORNING



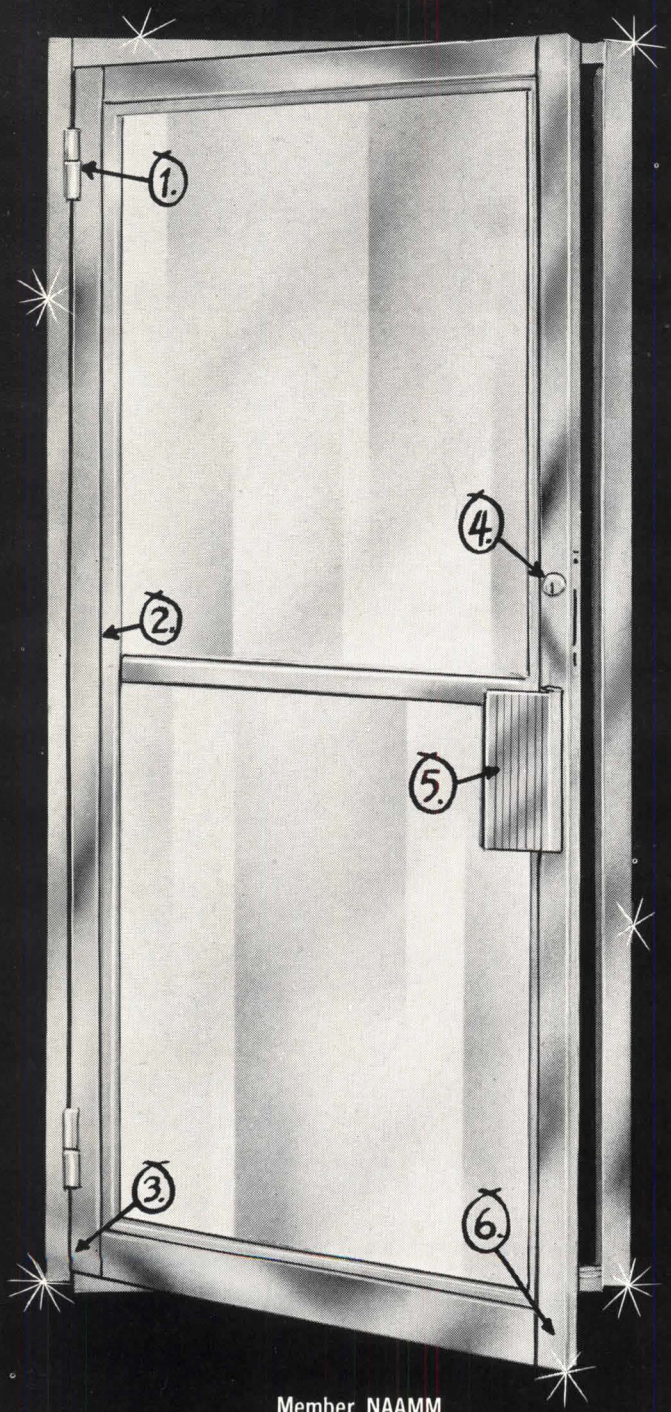
Architect: Richard B. Maides



Printed in U.S.A.

The Patented Adjustable Butt Hinge

is just one of six solid reasons why Natcor says "install it...forget it".



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(Significant in design, flexibility and a lifetime of trouble-free operation.)

Natcor offers a complete line of 5 door types and 4 basic framing systems in Clear, Anodized, Kalcolor and Duranodic finishes — with a custom styled look for greater visibility and handsome appearance. Quality materials and advanced engineering principles add six solid reasons why a Natcor entrance is a lasting entrance. Install it . . . Forget it!

1. Patented, adjustable Butt Hinge — Ball Bearing with frame reinforcement for extra endurance.

2. Snap-In Vinyl Glazing Bead — Just one member to snap in during glazing of door — saves labor.

3. Quality Extrusions — Door Stiles and Rails of fully extruded aluminum, ⅛" thickness throughout, as specified by architects.

4. Maximum Security Lock — Extra Safe — with 1⅜" throw, case hardened steel bolt and weather-stripped face plate for pairs of doors.

5. "Sure-Grip" Pull Handle — Broad selection of contemporary styled stock, interchangeable — Push-Pull Hardware.

6. Reinforced Corner Construction — Heavy, concealed reinforcement brackets are firmly bolted to door stiles. Tri-clad welding of each joint after bolting results in complete rigidity.

For full information on Natcor's complete line of doors and entrances, see our catalog in Sweets, or write —

Natcor

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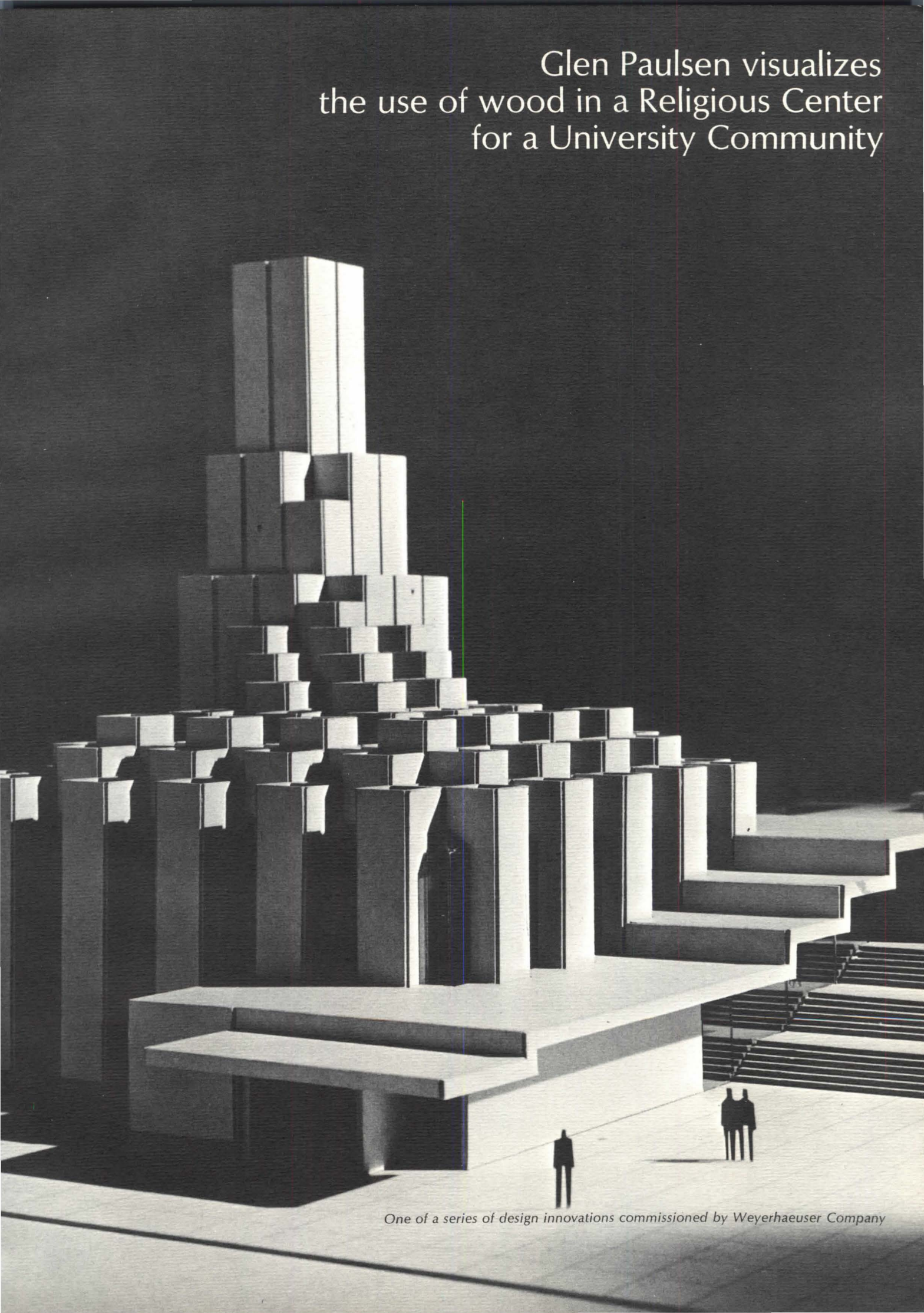
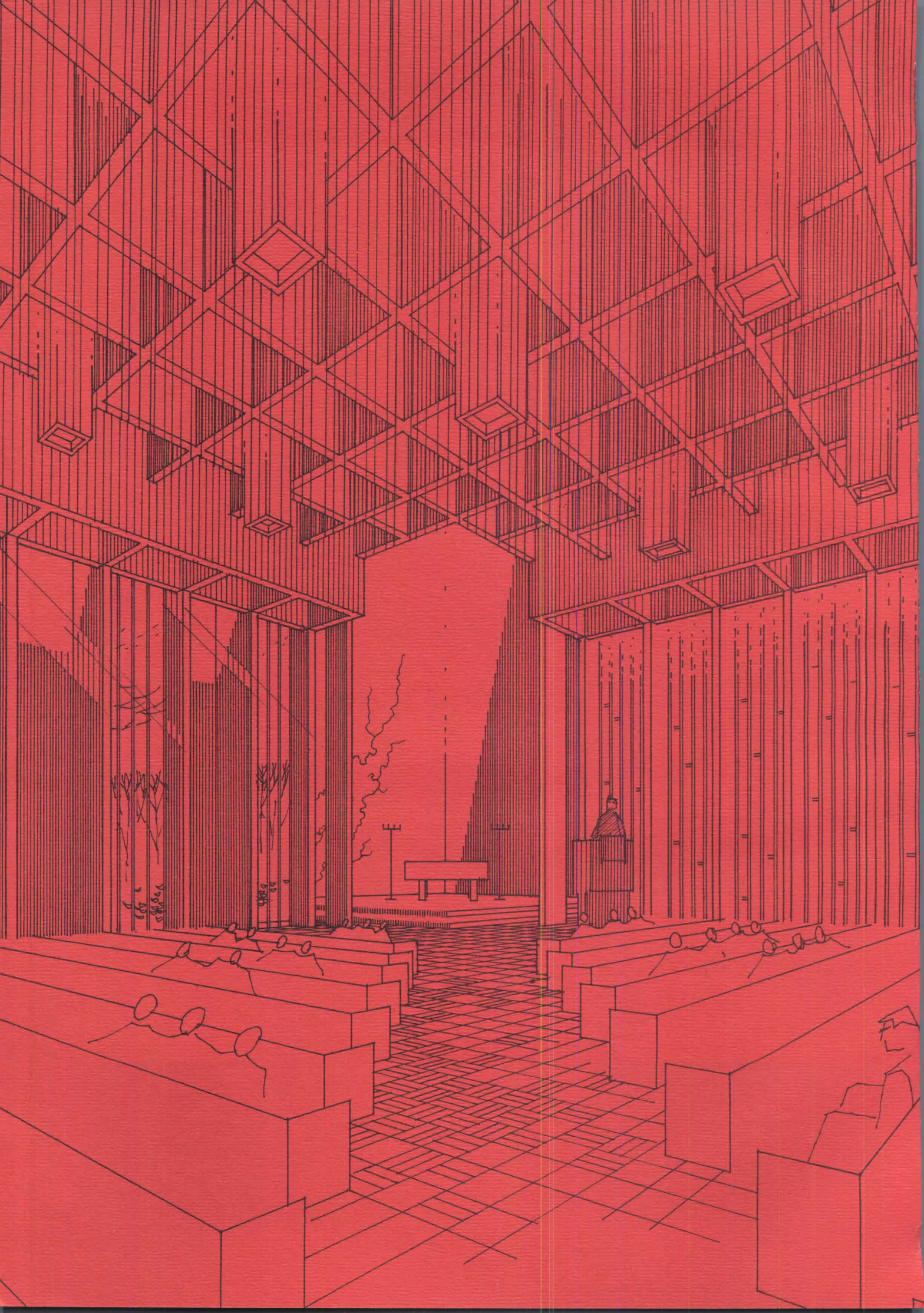
◀ On Readers' Service Card, Circle No. 377 On Readers' Service Card, Circle No. 308 ▶

Glen Paulsen visualizes the use of wood in a Religious Center for a University Community



One of a series of design innovations commissioned by Weyerhaeuser Company



Weyerhaeuser has commissioned a number of leading architectural firms to create design innovations which highlight the potential of wood in public and commercial buildings. This original design by Glen Paulsen, AIA, Glen Paulsen & Associates, Inc., Bloomfield Hills, Michigan, is the ninth in the series.

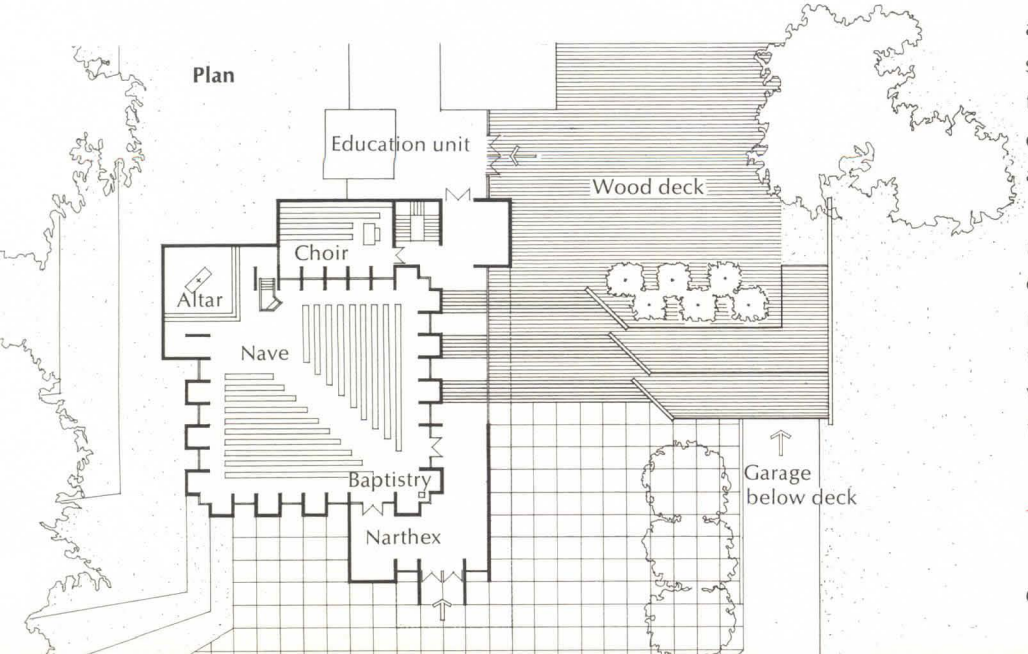
"A Religious Center for a University Community."

The development of a church complex with housing for married foreign students is proposed for a narrow ravine site close to a university campus. The church will serve the local community and requires adequate automobile parking.

The picturesque site called for a design involving the least possible disturbance of natural terrain and avoiding costly foundation work and retaining walls. Our concept envisions a cluster of small wooden buildings supported on point footings placed on the existing slopes. These are connected by wooden decks spanning the ravine at various levels to provide outdoor communal space. Beneath the lower decks, adjacent to the church, will be covered parking.

The design of the church utilizes a system of shop-fabricated, box-like components 6′ square, of different lengths, bolted together. These members, constructed of wood framing and plywood sheathing, provide the structural system for both supporting walls and roof. An unlimited variety of possibilities can be achieved in creating interior space, form, texture and lighting. The exterior will have a weathered finish on vertical cedar siding—glued to 30′ lengths. The interior is plywood painted white with decorative battens. Ceiling surfaces are pre-finished, hardwood plywood.

Only wood provided the flexibility required to solve the many conditions of this project in practical terms. Maximum architectural unity is achieved through the use of a single material without sacrificing a rich variety of forms, color and detail.



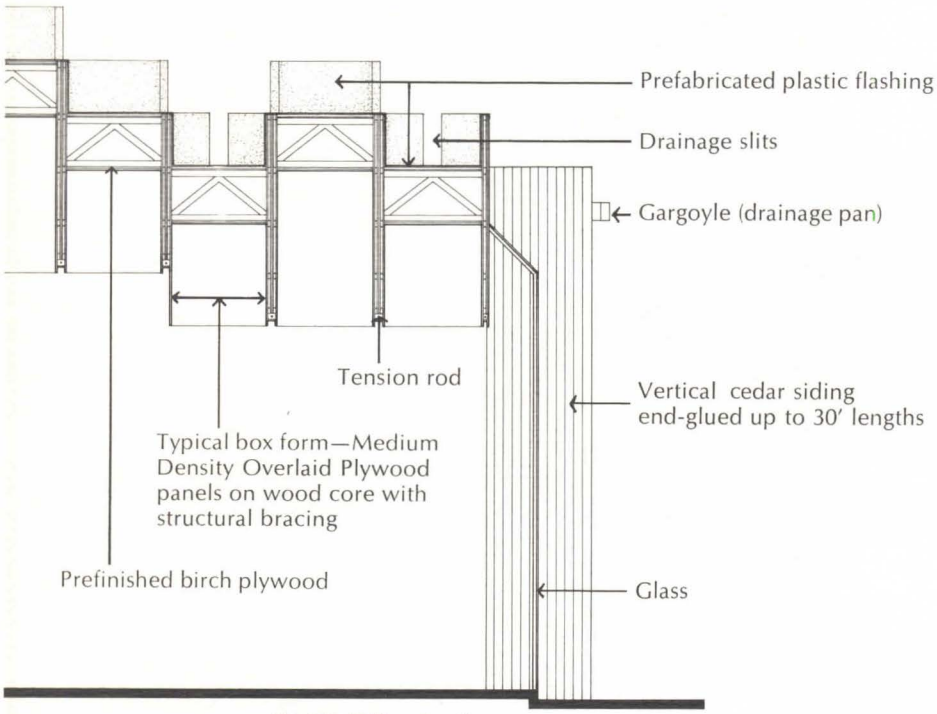
Site Perspective

A. Student entrance
B. Married students' housing
(vinyl/aluminum overlaid plywood)
C. Education unit
(vinyl/aluminum overlaid plywood)
D. Church
E. Public entrance
F. Entrance to garage
under deck
G. Wooden decks 2″ x 6″
cedar decking
H. Single students' housing
(vinyl/aluminum overlaid plywood)

Glen Paulsen & Associates, Inc.

On Reader's Service Card, Circle No. 308

"Only wood provided the flexibility required to solve the many conditions of this project in practical terms."

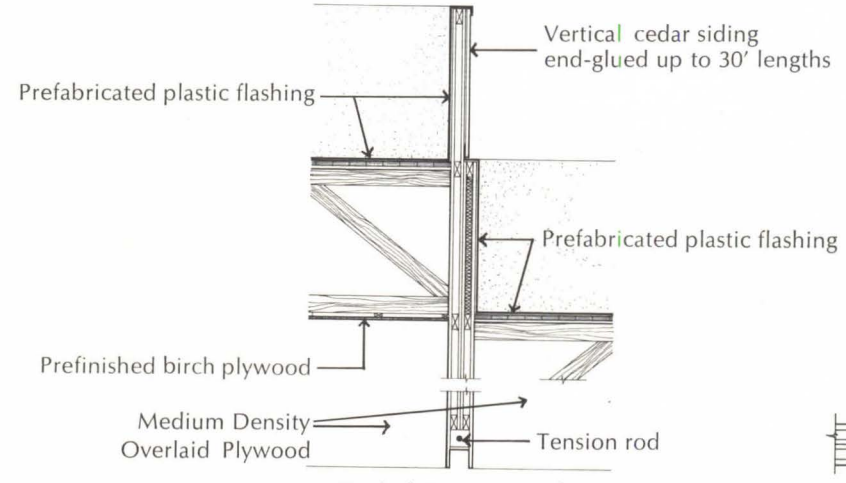


Part Building Section

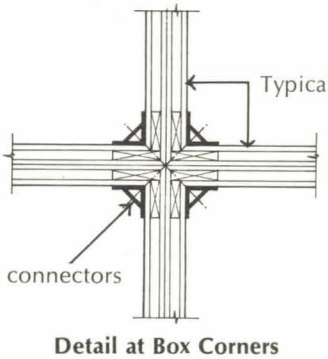
Wood, indeed, was the practical selection for the complexities of this design. The problems of terrain, design concept and ultimate utility were best answered by wood.

As an implement to all design effort, the Weyerhaeuser Architectural Services Program is available at all times to provide ready access to the most comprehensive body of technical data from a single source in the wood products industry. Information regarding Weyerhaeuser Architectural Wood Products and details concerning the program can be obtained from your Weyerhaeuser Architectural Representative. Or write Weyerhaeuser Company, Box B-2534, Tacoma, Washington 98401.

Weyerhaeuser

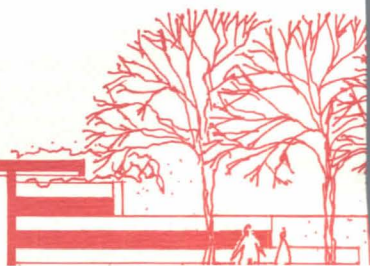


Typical Box Connection



Detail at Box Corners

Section



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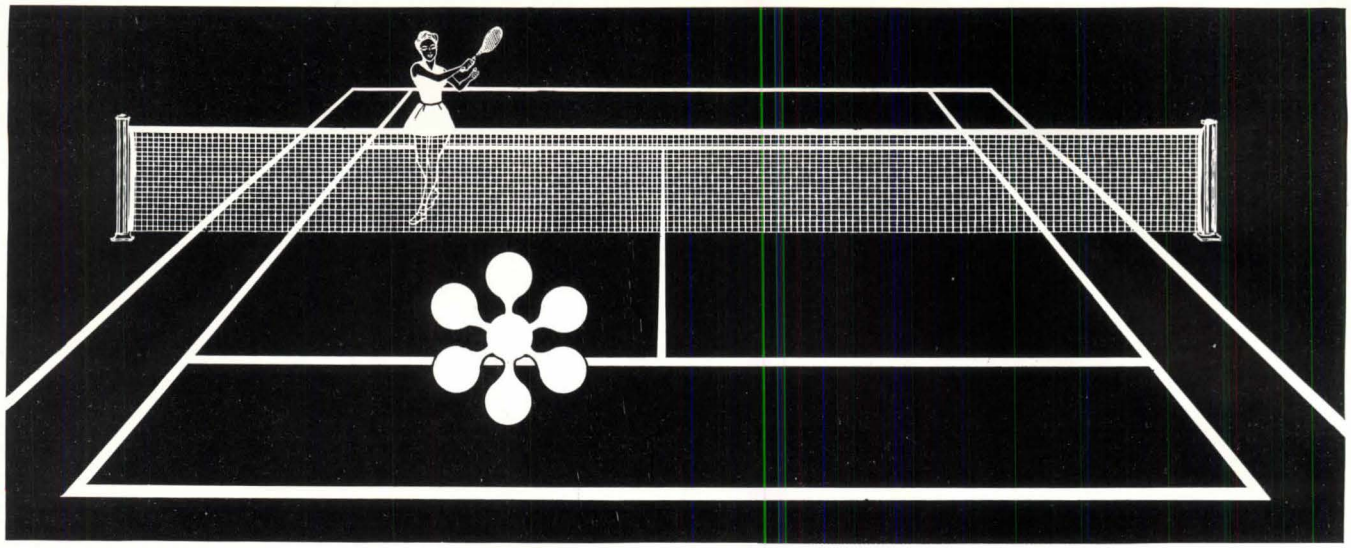

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Architect: Jacobs and Matthews, A.I.A., Gainesville, Georgia

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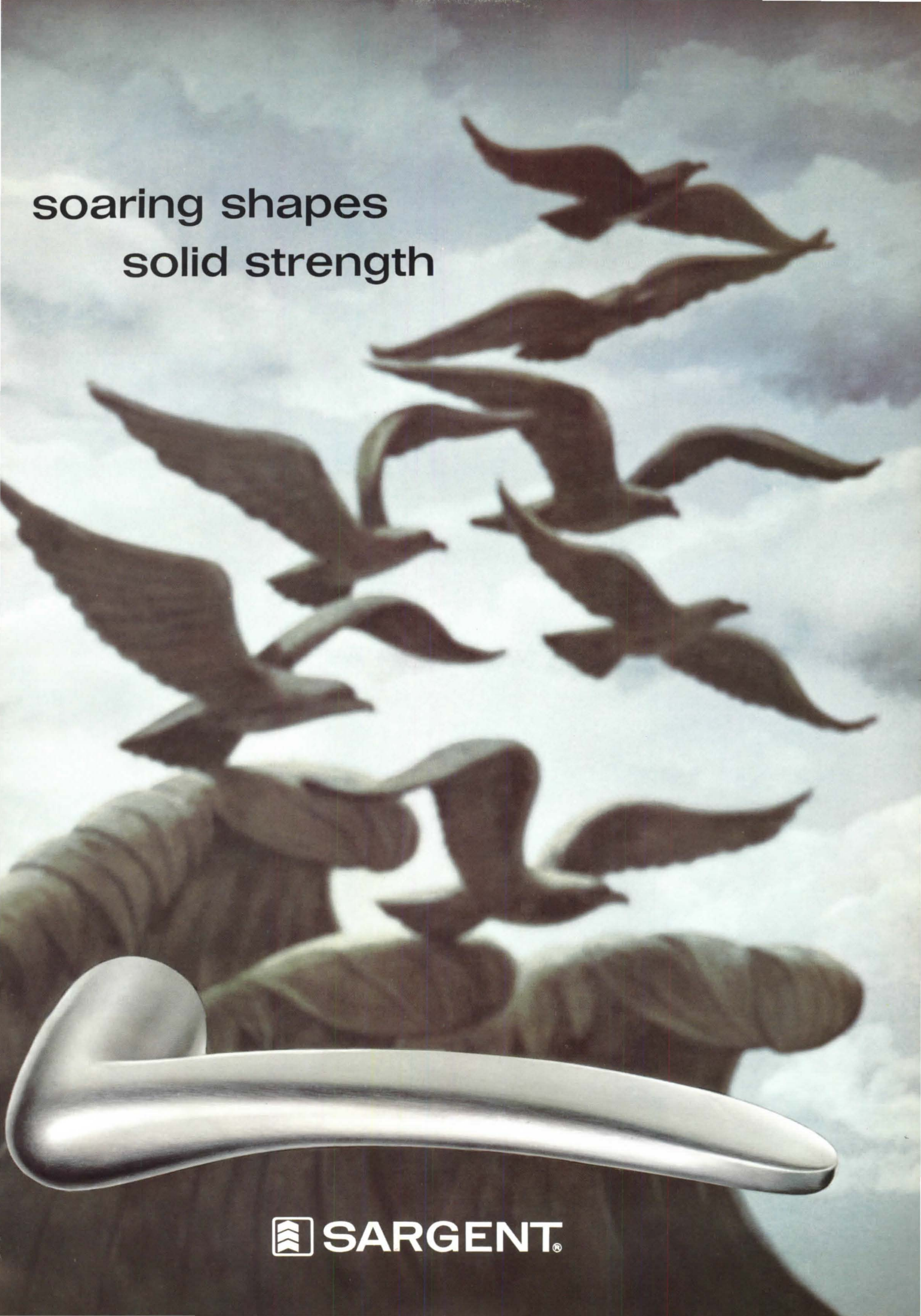
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Northwind

Full-blown in design with fast, modern, air-foil lines. The Northwind gives a directional flow to a door or corridor . . . a sweeping lever softly contoured for a natural, palm-fitting feel. Lever length is 4⅝".* Shown here in stainless steel.

Oceanspray

Stark, spare design, bold from a sturdy shank to snub, truncated end. Gently rounded lever edges, straight lines, give the Oceanspray a simplicity in hardware format. Lever length 4".* Here in dull bronze.

Levers are cast or forged in rich brass, bronze, aluminum and stainless steel, and each is available in a wide range of finishes, some of which are shown here. Projections range from 2⅜" to 3". All levers are available with 2" rose or Sargent rose-less trim.

Viking

As solidly Nordic as its name and just as advanced in design as Scandinavian sculpture. Thick shank for strength . . . a thin sweep of handle for grace and easy grasp. Lever length 4⅜".* Shown in oil rubbed brass.

Seaswept

Hefty, massive — a solid handful in a lever with grace in the Seaswept's slowly gathering mass from muscled shank to its abrupt rounded end. Lever length 4⅜".* Shown in polished brass.

Seawing

Here's the dynamic flight of the seabird captured in this lever's wing-like symmetry. Smooth flowing lines and rounded edges accent the motion designed right into this distinctive Sargent lever. 4⁷⁄₁₆".* Seen here in dull chrome.

Seabreeze

This lever takes the same Sargent swept-concept and changes plane. Result: a strong, flat shape and bold mass with clean, simple lever lines that give flight to any door, invite the touch. An exact 4"* of lever handle. Seen here in polished bronze.

Northcoast

Sleek looks in a lever that's purely lyric. And the Northcoast is functional right down to the sculptured design of this lever's return. Sargent created this lever as a startling objet d'art. 4¹³⁄₃₂"* long. Here in aluminum.

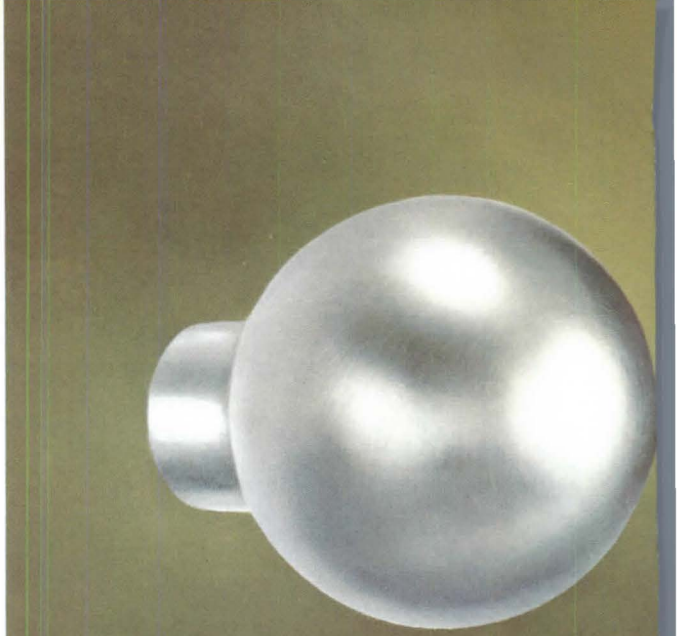
*All lever lengths given are from center of spindle to end of lever.

The same sculptured, classic feel of levers is carried to the new Sargent knobs cast in brass, bronze and aluminum. Choose from a wide variety of finishes, some of which are shown here. Available also with square or round roses — or with Sargent exclusive rose-less trim.

Zeus

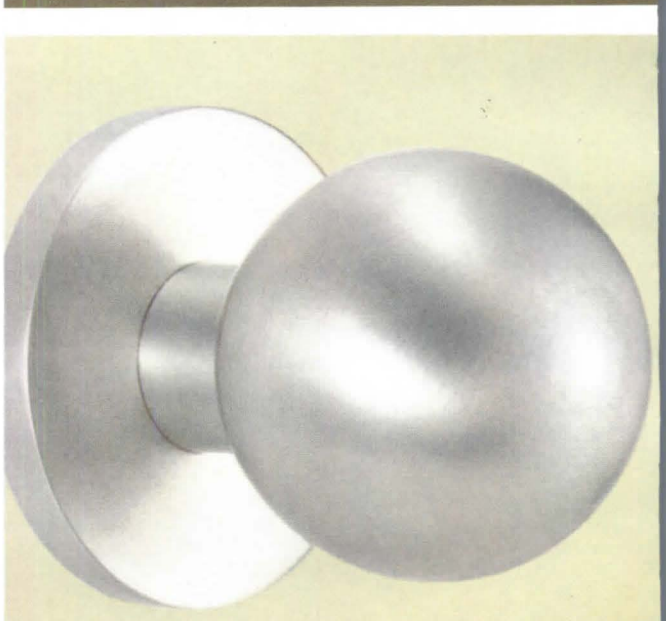
A gentle concavity of the drum knob accented against this trim vertical escutcheon. Sargent design, balance, beauty at work. Escutcheon length 7⅛". Knob diameter 2¼". Also available in 2⅛" diameter. Shown in brushed bronze.

LEVERS:
This vertical escutcheon also available with any Sargent lever.



Jove

A sphere that states itself boldly, simply with a strong thrust matched by its solid grip. 2" knob diameter also available. Here as exclusive Sargent rose-less trim, in dull chrome.



Athena

Geometry in metal, complemented by the exacting perimeter of its matching rose. 2" knob with 2⅜" round rose, or square 2 13/16" rose. Larger knob (2¾") also available. Shown here in aluminum.

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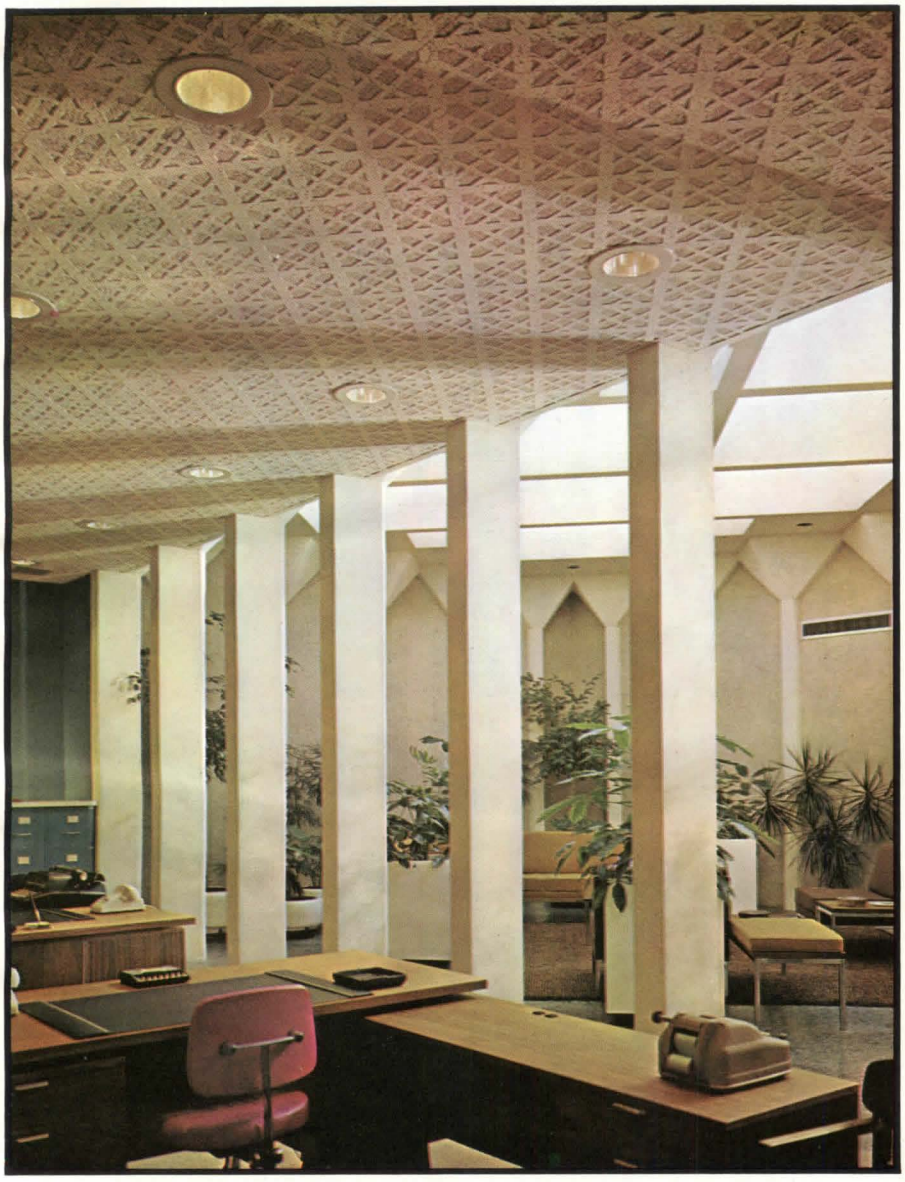
"THE INTERIOR OF THE PANTHEON" BY GIOVANNI PAOLO PANINI, NATIONAL GALLERY OF ART, WASHINGTON, D. C., SAMUEL H. KRESS COLLECTION.

Beauty that endures

Ceiling of the Pantheon, A. D. 120—124,
reign of the Emperor Hadrian.

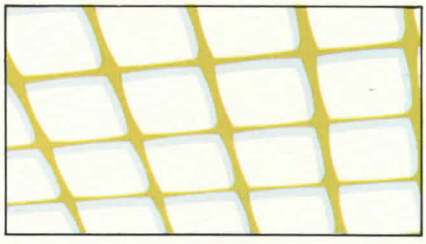


Design for Enduring Beauty with Conwed® Ceiling Products

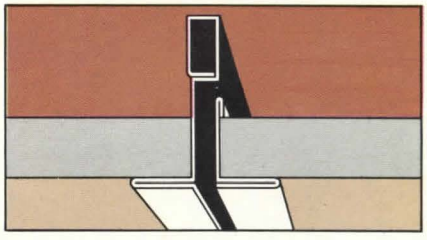
The dome of the Pantheon is a classic example of a ceiling that combines several functions. The 28-foot diameter opening in the crown achieves both lighting and ventilation with integrated beauty.

Today, a designer using *Conwed* ceiling products can accomplish a multitude of objectives . . . sound control, fire protection, air distribution, lighting . . . and can do so at no sacrifice of the original design intent.

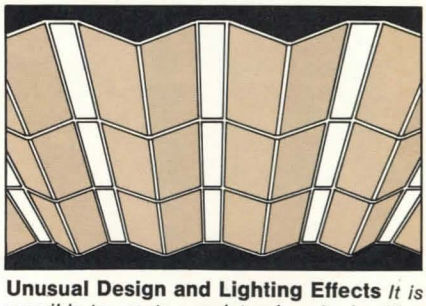
Consider the Crounce Corporation Office Building, Paducah, Ky., shown above. Here, architects Lee, Potter, Smith & Associates, have selected *Lo-Tone*® mineral Trafalgar design tile from the *Conwed* product line. They have blended ceiling design with proper lighting . . . and with the desired acoustical properties for this particular application.



Dimensional Depth in Lighting *The* Conwed *Modulux system is dramatic. It's designed to reduce room noise, while the double panel lighting diffusers hide dust—cut maintenance costs. Ideal for entire ceilings or bays.*



Efficient Air Distribution Conwed *Ventilating Grid is the newest of the* Conwed *ventilating systems. It features a continuous ventilating channel that is unobtrusive and conceals light leaks from above. It is compatible with standard suspended ceiling dimensions.*



Unusual Design and Lighting Effects *It is possible to create a variety of vaulted ceiling designs with the new* Conwed *Co-planer suspension grid, lighting fixtures, and Lo-Tone ceiling board.*

Information Please *See our Sweet's File AIA 39-B. Complete product application information and samples are available from your Lo-Tone and* Conwed *products representative or acoustical contractor. To get your next job rolling . . . just give us a call.*

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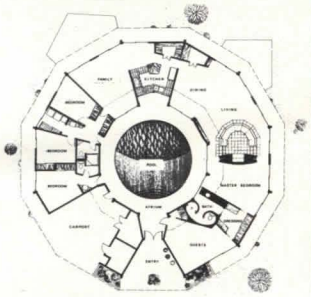
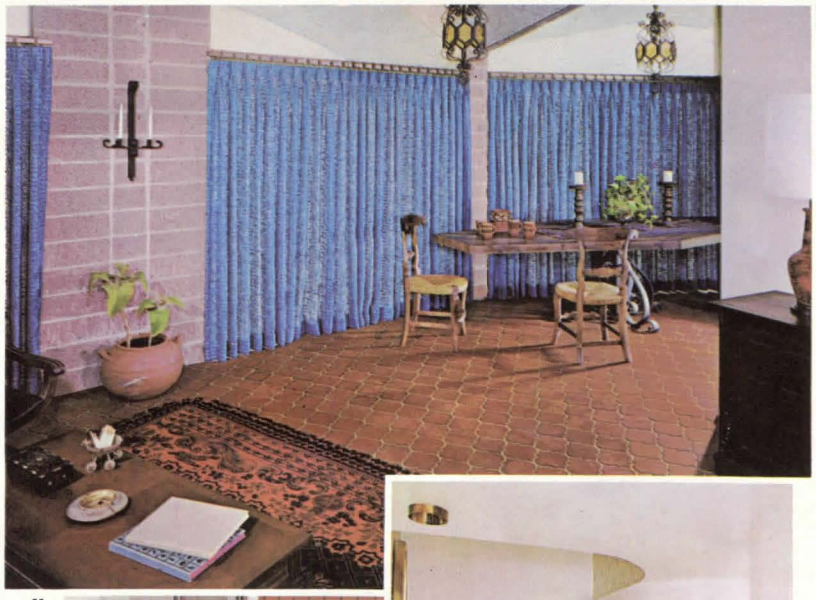
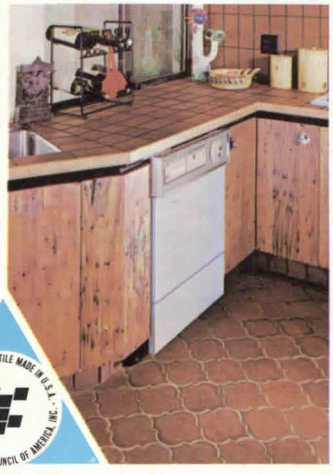
Dearborn is also the manufacturer of **Tru-Site** non-glare glass and variant forms of glass for industry and architecture.

Ceramic tile lends carefree warmth to an unusual circular home by John Nyberg.







Located in Pasadena, California, this circular home has an atrium as its focal point. All rooms of the masonry and tile structure open off the atrium with its circular pool.

Designed by the firm of Nyberg and Bissner as Mr. Nyberg's home, ceramic tile is used both decoratively and functionally. Quarry tile floors are found in the living room dining, area, kitchen and den. It is also used for kitchen counter tops and back splashes.

Scored glazed tile is used for bathroom counter tops and walls including a unique circular treatment of the walls of the master bath.

In keeping with the contemporary Spanish feeling sought for, extensive use of tile is made throughout other areas of this five bedroom home. Tile contractor for the home was C&D Tile Company of San Gabriel.

If you're looking for a material with limitless possibilities in combined decorative and functional use, look for ceramic tile made in the U.S.A. and Quality Certified by the Tile Council of America. The triangular seal at right is your assurance of glazed wall tile, ceramic mosaic tile and quarry tile that is tested to meet the most rigid government specifications. For more information about Certified Quality Tile, a material that can be used with confidence indoors and out, write: Tile Council of America, Inc., 800 Second Avenue, New York, N.Y. 10017. Or, see the current Sweets Architectural File.

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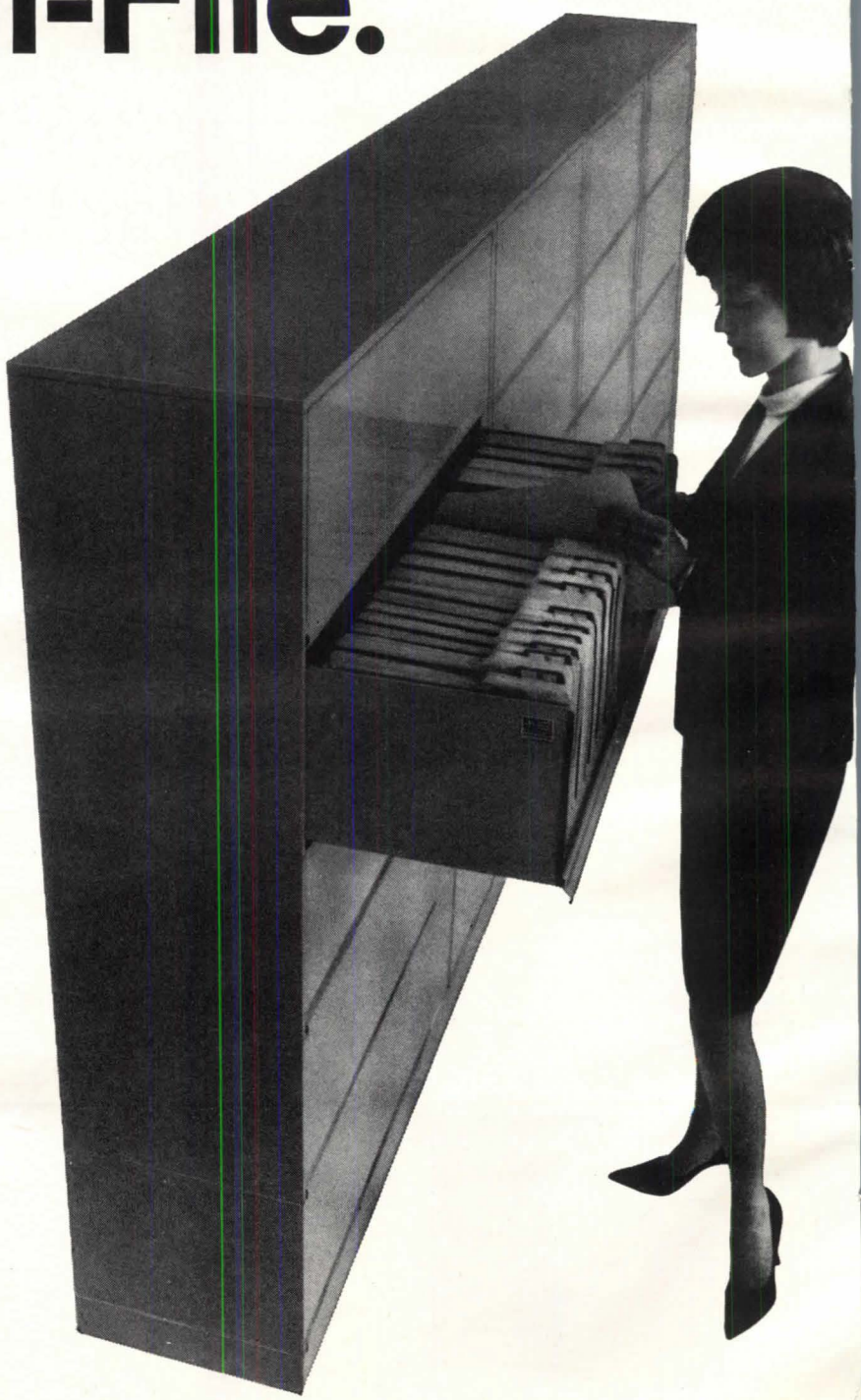

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Why? Because it has a revolutionary hinge suspension system. This exclusive hinge eliminates the space-wasting suspension channels.

The Modi-File is highly versatile. Order it in two, three, four or five drawer units, letter or legal size. Or make your own multiples of filing units, storage units and posting shelf in any arrangement by adding to the basic two-drawer desk height model.

It handles letter and legal size filing, cards and hanging-type file folders. Accommodates top tab or side tab guides. Use one alongside a desk as a side cabinet. Stacked they serve as space dividers. Place them in corridors, areas that were not previously usable for standard filing cabinets.

Everything about our Modi-File is made the way office furniture ought to be. Furniture that *looks beautiful* and works beautifully—a solid investment for the management who pays for it.

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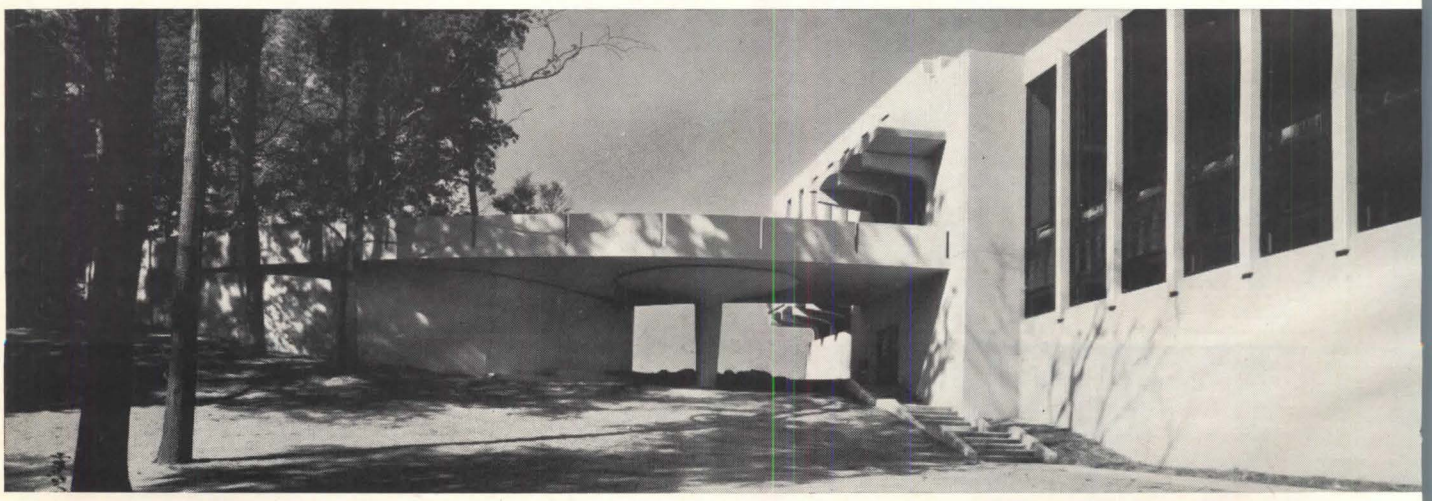
Twelve Concrete Techniques Work Together in This New College Building

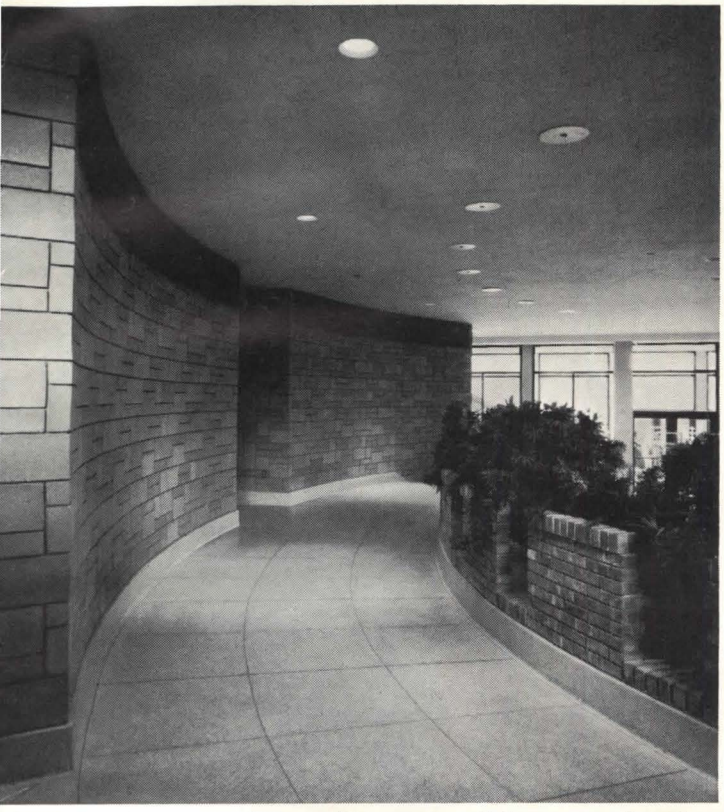
The main entrance to the beautiful new concrete structure. (1) A system of concrete walks encircles the building. Some of them have exposed aggregate surfaces.



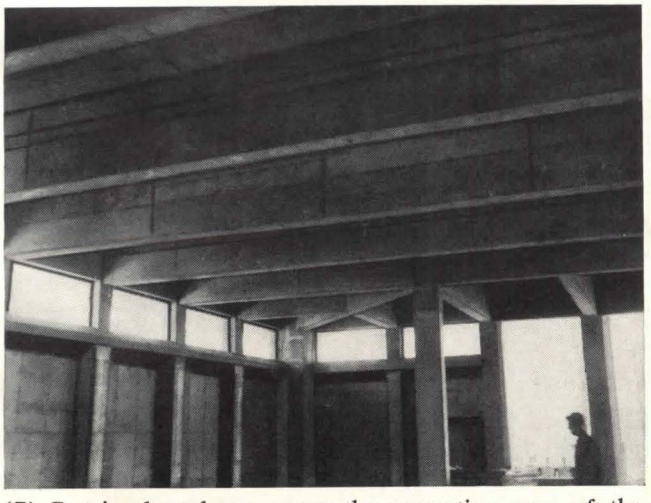
(2) Cast-in-place, post-tensioned entrance bridge takes advantage of the terrain. Bridge was cast integrally with the giant mushroom base. (3) Precast columns are used throughout the structure providing both interior and exterior architectural effects. Spandrel at top of building is also made of precast units.

• The new Center Campus Building of Fairfield University blends a wide variety of concrete techniques to produce a design of unusual interest. It shows how cast-in-place concrete combined with precast concrete can so easily conform to an architect's ideas. He is almost unlimited in his freedom of design.

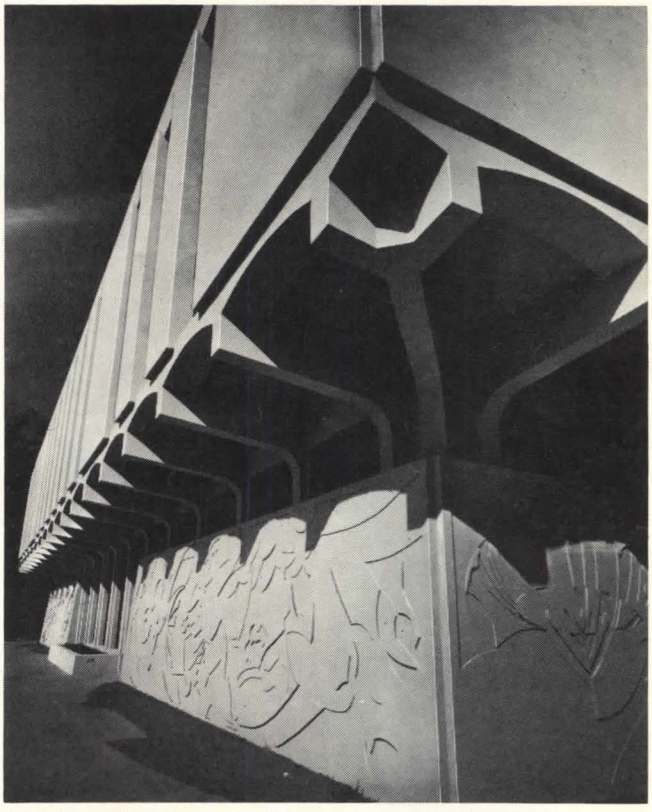
Lehigh Cement was used in the ready mixed concrete for both precast and cast-in-place concrete. Precasting of wall panels, columns and miscellaneous units was done on the job site by The E & F Construction Company. With such a wide variety of construction techniques, uniform dependable quality of the ready mix was of vital importance. Coupled with the skill and ingenuity of the contractor, it permitted the rendering of a most unusual and interesting new structure. Lehigh Portland Cement Company, Allentown, Pa.



(4) Terrazzo floors add a note of luxury to interiors. (5) Concrete block walls with special exposed surfaces provide decorative effects throughout the structure. (6) Concrete block units are also used in partition walls throughout the building.



(7) Cast-in-place beams over the recreation area of the building are post-tensioned.



(8) West facade of building features sculptured, cast-in-place exterior walls. (9) Precast panels are used for walls above first floor levels.

(Concrete applications not shown in photos.) (10) Precast roof deck units. (11) Precast concrete fireplace chimney units. (12) Bushhammered texture on lower level exterior wall on east facade.

Owner:
Fairfield University, Fairfield, Conn.

Architect:
J. G. Phelan & Associates, Bridgeport, Conn./Robert H. Mutrux, Associate in charge

Contractor:
The E & F Construction Company, Bridgeport, Conn.

R/M:
Silliman Company, Bridgeport, Conn.

Concrete Block:
Milford Concrete Products, Inc., Milford, Conn.

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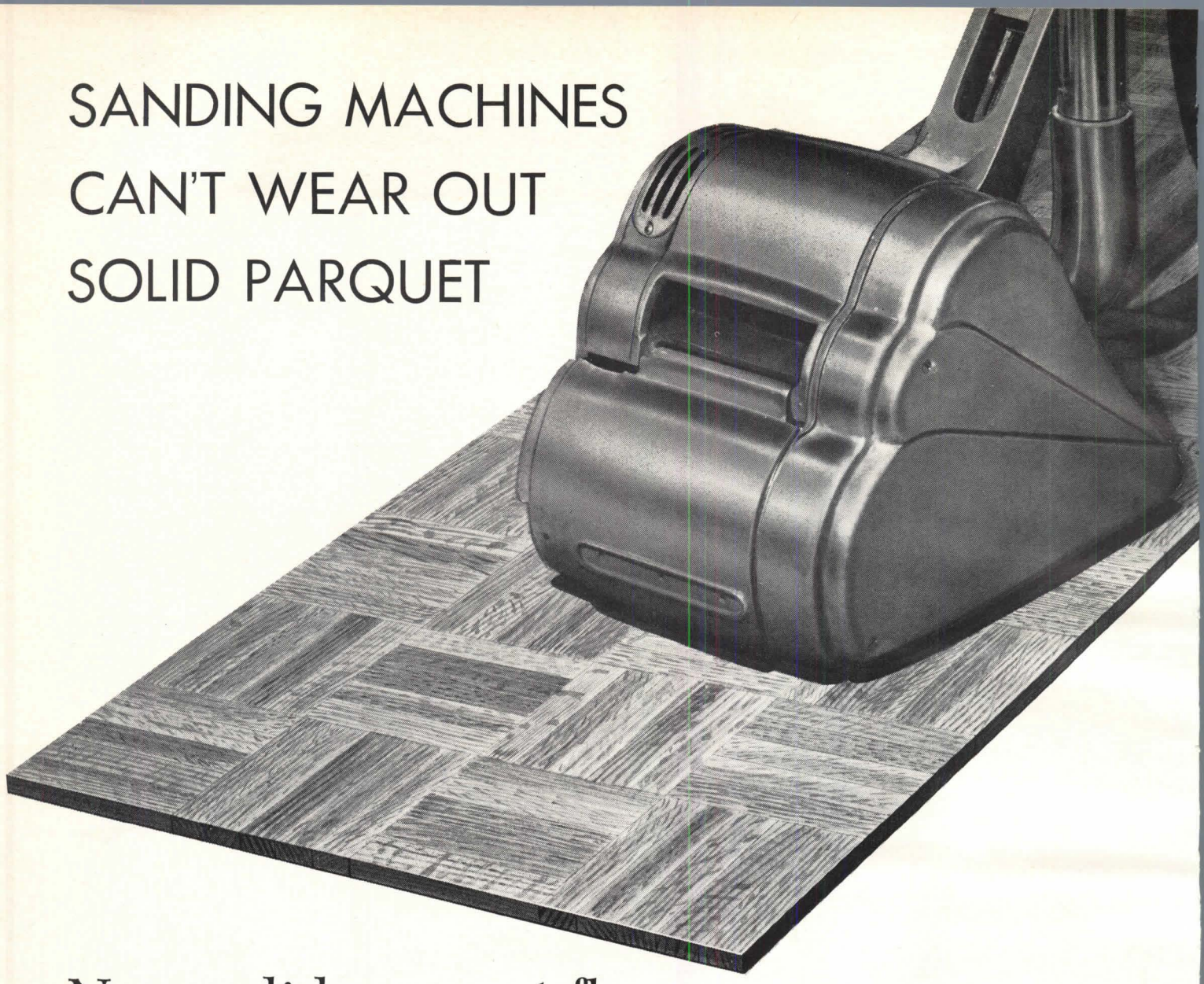

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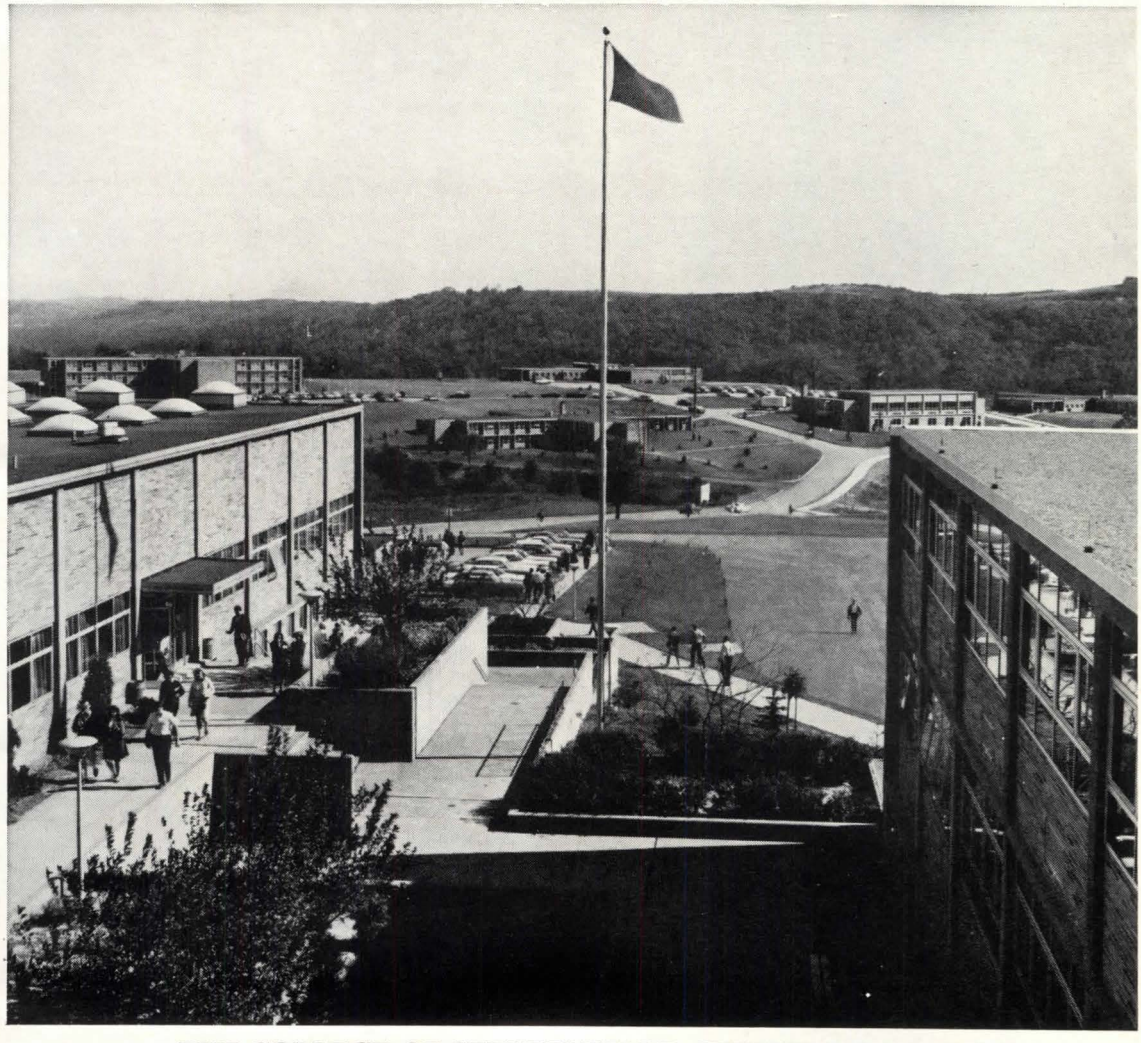
• **FLORIDA PRESBYTERIAN COLLEGE, ST. PETERSBURG, FLORIDA.** Enrollment: 811. Campus: 281 acres; 50 buildings. Cost: $11,000,000. Opened: 1960. Architects and engineers: Connell, Pierce, Garland & Friedman; Perkins & Will; Harvard & Jolly. • **THE COLLEGE OF STEUBENVILLE, STEUBENVILLE, OHIO.** Enrollment: 1,100. New campus: 50 acres, nine existing buildings (future will total 16). Cost of existing buildings: $5,000,000. Construction began: 1960. Architect: Joseph F. Bontempo. Engineer: Michael Baker, Jr.



THE COLLEGE OF STEUBENVILLE, STEUBENVILLE, OHIO

FOR EASY EXPANSION, REASONABLE COST

for the campus's entire heating system is only six to eight hours *per year.*

The colleges chose All-Electric design for other important considerations as well. Such as quality of study environment.

At Florida Presbyterian all buildings are air-conditioned to provide students and faculty with maximum environmental comfort throughout the year. At Steubenville all buildings incorporate provisions for future air-conditioning. In both cases, indications are that air-conditioning is considerably more economical with All-Electric design.

Another consideration was extra space. Because electric heating requires no bulky equipment, campus buildings gain extra space that can be used for classrooms, offices and dormitory rooms. (At Steubenville the space originally reserved for a boiler room is now the college book store.)

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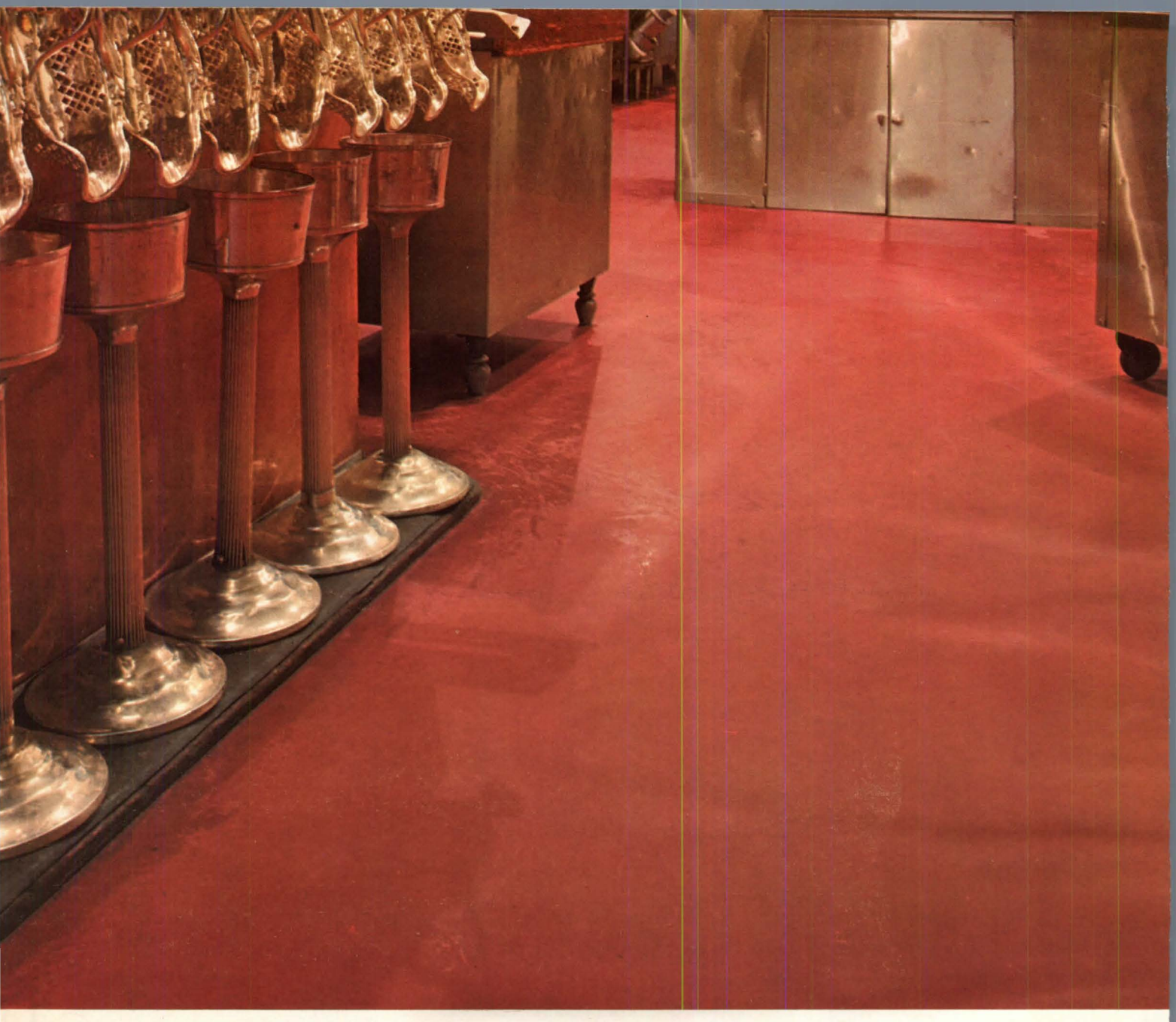

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"The architectural and landscape professions, nationally, are in a state of professional and architectural turmoil. There is some recognition that they have not been primarily involved in public urban development and planning programs for many years, while other groups have been busy capturing responsible roles. The low status of architects in large-scale development enterprise, the ascendancy of other professions in architectural space programming, and competition for influence in engineering and industrial execution aspects are other recognized pressures. Most thinking architects and educators are seriously worried about the architect's inherent lack of preparedness for designing in today's urbanistic and scientific milieu."

DAVID A. CRANE

EDITORIAL

Some of the present trends in design were attacked rather severely by several P/A readers. Judging by the unusually heavy response to this year's results of the P/A Annual Design Awards Program as published in our VIEWS column, many practitioners are disturbed by the approach taken by a group of designers, and by the jury that premiated their designs. Most of the criticism revolved around two points: These designs have no "value," and the jurors' comments were not "serious."

Since P/A neither selects the winning projects nor originates comments about their importance, it is not for me to justify or defend the jurors' selections and accompanying remarks. It should be remembered, however, that, over the past few years, different juries, composed of jurors who live in different parts of the country and often have different backgrounds, interests, and design philosophies, have been recognizing and honoring rather consistently a design trend that so many find objectionable.

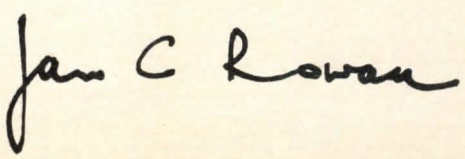
Admittedly, the purpose of our Design Awards Program is to "give recognition to good design in the period of design development." But another purpose, not stated but surely implicit, is to find out what the current design trends are. As I stated on this page previously, in an age of no universally accepted standards, and hence no academy, "good design" is any design that excells within a set of its own criteria. It may not be "good" for you, or for me, but it is good in the sense that it skillfully carries out its intended purpose. And when there are enough people who think alike and produce work that is similar in approach, we have a design trend that merits recognition. Because you or I may not like a particular philosophy, or because the trend may be contrary to what you or I believe in and do ourselves, it does not mean that a design approach significant enough to preoccupy a considerable segment of the profession can be ignored and forgotten.

That "the trend" exists there is no doubt. It also has many manifestations, and no terminology has been evolved to discuss the symptoms. One can be flippant, as this year's jury was, and talk about "zips and zaps," or a little more serious and discourse about "in and out" architecture, or even attempt an academic lingo and use expressions like "dynamic modulation of volumes by consciously casualistic fragmentation" (I just coined this), or you can use any other phrases that suit your temperament. The point is that what is of interest is not the language but the work being talked about.

If you were really disturbed by all the zips and zaps, here is something that might disturb you even more. On my recent visit to Vancouver, I noticed the following one-day design problem being given to students at the University of British Columbia. Entitled "An Experiment in Telemobility and the Ultimate Random," the program reads:

> *Premise:* Candy came from Los Angeles. Metap came from San Francisco. They came together in Flin Flon Manitoba. They did not marry. They will have progeny.
> *Objective:* By Conceptual Innovation, Evolve an Environmental Envelope for, and Examine the Space Morphology which could Accommodate for the Changing Interaction of Candy (coloured tangerine flake streamlined) Baby and her Metaphysical (Psychedelic Lollipop) Mate.
> *Communication:* Shall be in Non-Verbal Media.
> *Scale:* $\frac{\text{Magic Number}}{387 + 1} = 1'\text{-}0''$
> Group Presentation and Review shall Maximize Interaction.

I have not seen the results of this problem. Whatever they were, some people over there took a day off from taking themselves so terribly seriously. ■



URBAN SCHOOL DESIGN

COMING TO TERMS WITH BUREAUCRACY

The architect, in accepting a civic commission, accepts with it, as client, the bureaucracy that we as a society have chosen to make our design decisions. Bureaucratic influence has seldom been described as well as in David A. Crane's recent report, *Planning and Design in New York: A Study of Problems and Processes of its Physical Environment.* The excerpts from the report that follow will provide the general context for the presentation of two urban schools.

Public and Private Postures on Architecture

"Ugliness is never deliberately chosen; it happens where people do not care. We can assume that most people do care, that aesthetic feeling is not the exclusive privilege of a cultivated few. We can even give the benefit of doubt to the thousands of corporation executives, public officials, designers, and individual citizens responsible for New York's present architectural chaos, to the extent of assuming they individually tried to balance civic design values with the concerns of profit, regulations, creative ego, or other self-interest.

"But the lack of architectural excellence in depth, the widespread dreariness of design, and the crushingly inhumane over-all environment cannot be so easily excused away . . ."

Significance of Good Design

"The question of why New York has not been able to place design values on an important communal level can be examined on two fronts: obstacles to good design in the framework of governmental activities, and the unpreparedness of the private sector for civic design achievement . . ."

Public Obstacles to Good Design

"No other city government is so heavily engaged directly and indirectly in design and building, and with so little commensurate effect on over-all quality. . . ."

"Traditionally, American political and cultural philosophy have left matters of aesthetics to free enterprise, individual conscience, and the private virtuosity of architectural heroes. There is little faith in New York's architectural bureaucracy, either with respect to its creative potentials or its sensitivity to private rights.

"Attitudes of this sort among citizens and design professions are as responsible as anything else for the circumstances of New York's design apparatus. There is design by codes and regulations rather than by designers teamed with administrators having power to make design judgements. There are giant public construction bureaucracies in which the low status of the creative designer relative to engineers and maintenance experts reflects the legitimacy of 'practical' concerns and the illegitimacy of art in government. . . .

"Within the public building agencies, many suffer from problems of organization, civil service, and constraint of tradition, all adding up to 'bureaucracy.' . . . Design innovation in the face of customs and habits of maintenance labor force becomes very rare. Even the objectives of the facility-using agencies seem to take a back seat to janitorial concerns. The much greater funds and staff in maintenance as against new facilities very effectively determine agency postures.

"Generally speaking, the logistical problems of construction contracts, financial control of building functions, and technical engineering aspects of new facilities construction are far more important in quality and bureaucratic status than architectural or landscape design functions. . . .

" 'In-shop' design at a specific architectural level (prevalent in the Office of School Buildings, Public Works and Parks) can be very much more expensive than design by private offices. . . . A recent survey in his agency taken by Eugene Hult, Executive Director, Office of School Buildings, shows that design costs 'in-shop' are approximately 60 per cent higher than for outside services. . . . The head of the agency, in each case, was indicated as the final decision-maker. Opinions on architects of the sponsoring or facility-using agency are sought. In the case of the Office of School Buildings, an unpaid panel of three architects and two engineers, nominated annually by the professional societies, advises the Executive Director on all selections.

"The rather telling series of responses neatly side-steps the basic questions so frequently raised on objectivity and of emphasis on creative design talent. The bureaucrat conveniently evades the notion that a personal, sometimes political, judgment by someone is inevitable. . . .

"The architectural societies are no help in setting forth a more effective selection procedure. The only three things they hold in common are: the need for better fees, ineffectiveness of present selection procedures, and the need to spread work around more continuously among all society members. . . .

"Even if architectural selection procedures favored the recruitment of outstanding designers, few firms emphasizing design ability could afford to devote much of their practice to New York City government commissions. As one influential leader in the local chapter of the AIA put it, 'The present City fee schedules are perhaps adequate for a routine solution to a routine program of requirements . . . where the architect has much previous experience in the building type and will follow the line of least resistance. . . . For anyone else, the fees are totally inadequate.' Thus, careful analysis of alternative solutions in the initial programming and preliminary design phases does not occur, except at the architect's expense. . . .

"Contract terms obligate but do not compensate the architect for the usual amount of time spent in securing multiple approvals, or in revision of work made necessary by bureaucratic indecision or conflict. Since those who want public commissions are reluctant to litigate, such inequities remain unchallenged."

The Positive Side of the Public Sector

"A number of public officials in the City are genuinely concerned with many of the difficulties of design processes enumerated here. Among these, outstanding leadership in improving the situation has come from Eugene Hult, Office of School Buildings."

The accuracy of the above report was confirmed by our interviews and research. However, there is one factor not sufficiently stressed in the above excerpts—that of the dedicated official and architect who engage the bureaucracy and sometimes prove victorious. The following two schools, we believe, are evidence of such efforts. They need not be the last.

THE F.D.R. SCHOOL

FRANKLIN DELANO ROOSEVELT HIGH SCHOOL, *Brooklyn, N.Y.* ***Architects:*** *Raymond & Rado; Edmund H. H. Caddy Jr., Project Architect; Howard L. Bonington, Project Manager.* ***Site:*** *Rectangular parcel in a densely populated low- to middle-income urban area. Surrounding housing primarily two-story brick and frame contiguous structures. The school is bordered on one side by the backyards of adjacent housing and on the other by an extensive graveyard.* ***Program:*** *Requirements supplied by the Board of Education of the City of New York for an academic high school with a maximum capacity of 4000 students. Security against vandalism was a major consideration.* ***Structural System:*** *Classroom building, reinforced concrete. Mass-use structures (auditorium, music building, cafeteria, kitchen, and gymnasium), steel frame with long-span joists.* ***Mechanical System:*** *Classrooms, finned tube steel and cast iron convectors, with individual room supply and exhaust by unit ventilators. Mass-use buildings: central heating and ventilating with ducted supply and returns.* ***Major Materials:*** *Brick exposed aggregate, precast concrete; aluminum sash.* ***Cost:*** *$7,300,000, excluding furnishings and equipment; $24 per square foot.* ***Consultants:*** *Paul Weidlinger, Structural Engineer; V. L. Falotico & Associates, Mechanical Engineer; John R. Tregenza, Charles Middeleer, Landscape Architects; Michael J. Kodaras, Acoustical Consultant; Howard L. Post Associates, Inc., Food Service.* ***Photography:*** *see p. 242.*

The Solid Solution

"There is too much style in contemporary architecture, in its waves of fashionable design, rather than a concentration on solid solution," comments project architect Edmund H. H. Caddy, Jr. "The objective in designing a school is to concentrate on a solid solution."

People Throw Rocks At Our Buildings

"Designing schools in New York City is like designing an embassy in a hostile environment," say the architects. The Raymond & Rado office took into consideration many of the same logistic factors in the design of this school as they did in their design of the U.S. Embassy in Jakarta, Indonesia.

"It takes a good arm to get a stone to the glass; we design our buildings under siege," Caddy said regretfully. The millions of dollars spent by the City government on vandalism every year makes them think of building forts. To Caddy, this is an unfortunate situation, since he feels that the buildings a city government provides for its people are a reflection of its attitude toward those people. "The last resort is a fort," he says. "Our school is not a last-resort solution. You have to believe that people want good design," he continues. "I doubt that anyone ever considered that if you gave the kids something good that they would act accordingly."

The Client

To Caddy, fulfilling basically the unexciting specifics of a client's program and the creation of a solution within these specifics is the essential of good architecture. "Perhaps," he comments, "it is possible to give the client something far in excess of his program. We must realize his intent, even though he does not at first have a full realization of its implications himself—

that is, good architecture."

The original proposal of the Board of Education was the traditional urban solution of placing one building at the end of the site with the remainder of the area black-top. Raymond & Rado countered this with an argument of economy. They pointed out that it was expensive to pile a structure on top of the long spans required by the auditorium, gymnasium, and other mass-use areas. They proposed instead a campus solution with emphasis on circulation.

The Board accepted this alternative and the school now sits on an attractively landscaped plot enclosing an interior court. The design gives the students full benefit of the court and the "campus" as they circulate between classrooms.

It was a highly successful solution. During a number of class changes, including lunch period, no congestion or crowding among the school's 3000 students was observed. In fact, one was hardly aware that such an extensive migration had occurred.

All color in the building is in permanent materials. Blocks of color in the hallways are of glazed block and tile. Classrooms with individual color schemes have the color in their furniture and equipment. Stair towers are color-coded. The painter was required to supply only varying shades of gray.

Hallways have full ceiling heights of about 10 ft, giving a feeling of spaciousness unusual in schools. This was accomplished by keeping ductwork and mechanical equipment out of the corridors.

The library is attractively designed, and furnished with provisions for conference or seminar rooms by means of folding doors, which, the librarian and principal report, were highly successful. Auditorium and gym spaces are attractive and receive full and constant use.

The auditorium was located near the school entrance for community use. This section of the building can be isolated from the rest of the school by a mesh screen.

Guidance rooms and administrative offices are isolated from main school traffic patterns by having their own corridor.

There is no place where a student can hide. Students, faculty, and staff are always visible. There are glass panels in guidance rooms to provide visibility from the hall. There is full visibility even in the shower rooms.

The central court was designed to be a pleasant passageway between classroom wings of the building, but, unfortunately, is presently locked to prevent student use.

How Does It Work? Comments of the Principal

The school principal, Dr. Irvin Sulo Hecht, and his administrative staff and teachers are selected and assigned to school buildings after the school has been planned. Since they may be transferred, retire, or change positions, they do not constitute the permanent users of the facilities.

It is therefore not feasible to plan a building tailored to the individual needs, administrative techniques, or teaching methods of any one group or individual. Requirements for the school are determined by the Department of Research and Development of the Board of Education. It is this department's responsibility to write the school program. Both Eugene Hult and August Gold have expressed concern over the lack of information the users of a new school receive concerning the use of facilities.

The comments expressed here are those of an individual user. He is an experienced educator and knowledgeable occupant. His opinions are predicated upon his preferences and working techniques, which may or may not be at variance with the original school program worked out between the architects and the Board of Education:

"It is a beautiful building. The general layout and separation of functions is very satisfying but . . . the office suite is poorly planned. The guidance spaces do not have adequate waiting areas. A central waiting room would have been more satisfactory. On parents' night, we had to move the guidance counselors to classrooms to function properly.

"The office spaces are poorly ventilated. [When Caddy checked this complaint concerning these interior rooms, he found that the custodian had not activated the system.]. . . . There is inadequate screening against the sun in the perimeter administrative offices. And the administrative offices should not have been isolated in a separate corridor.

"A principal is there to see and be seen. He should not occupy an ivory tower; he should be in the heart of things. The guidance suite should have been placed against the interior glass facade. It does not need the isolation it has been given. During the school year, every student undergoes counseling.

"The inner court is beautiful but much too noisy. We have used it for art classes to sketch nature. The students had to whisper so as not to disturb the adjacent classroom occupants. [At present, the doors to the interior court are locked.]

"The dean's suite should not have had glass windows.

"It is a pity you cannot see the building from the street; it is such a beautiful building."

In discussing complaints of the school users, Caddy said, "Many of the things they complain about were done for other purposes they never mention. They think of three or four windowless spaces rather than the 3000 or 4000 students that shift classes every 45 minutes."

Vandalism

Despite the great familiarity of the Raymond & Rado office with vandalism, the school has nevertheless suffered damage. It is vulnerable because of its campus planning and the easy accessibility of the adjacent graveyard.

The graveyard itself has been vandalized and offers no protection for the school elevation facing it. From this vantage point, vandals can throw rocks at the school without being seen from the street.

Broken windows in New York City schools cost the Board of Education millions of dollars. School custodians, who pay for these repairs out of their budgets, tend to wait until a sizable number of windows have been damaged. This may be advantageous to a custodian financially, but, where students are concerned, it seems a questionable safety practice. In addition, it mars the appearance of the school.

The principal reports thousands of dollars' worth of damage by vandals to date, mostly in broken windows. Last year, on Halloween night alone, damage from vandalism amounted to more than $2000.

Dr. Hecht, who feels that these acts of vandalism are not student-instigated, has organized a junior FDR brigade, complete with membership cards and badges, to help protect the school when it is not in session. This seems an excellent idea, but it is questionable that this type of vandalism can be stopped by the sharp eyes but underdeveloped muscles of these junior lookouts. From the principal's description, most of the damage is probably caused by the lunatic fringe of city residents.

This is an integrated school. About 30 per cent of the students are Negroes, who commute using public transportation. Just prior to the school's opening, a sound-

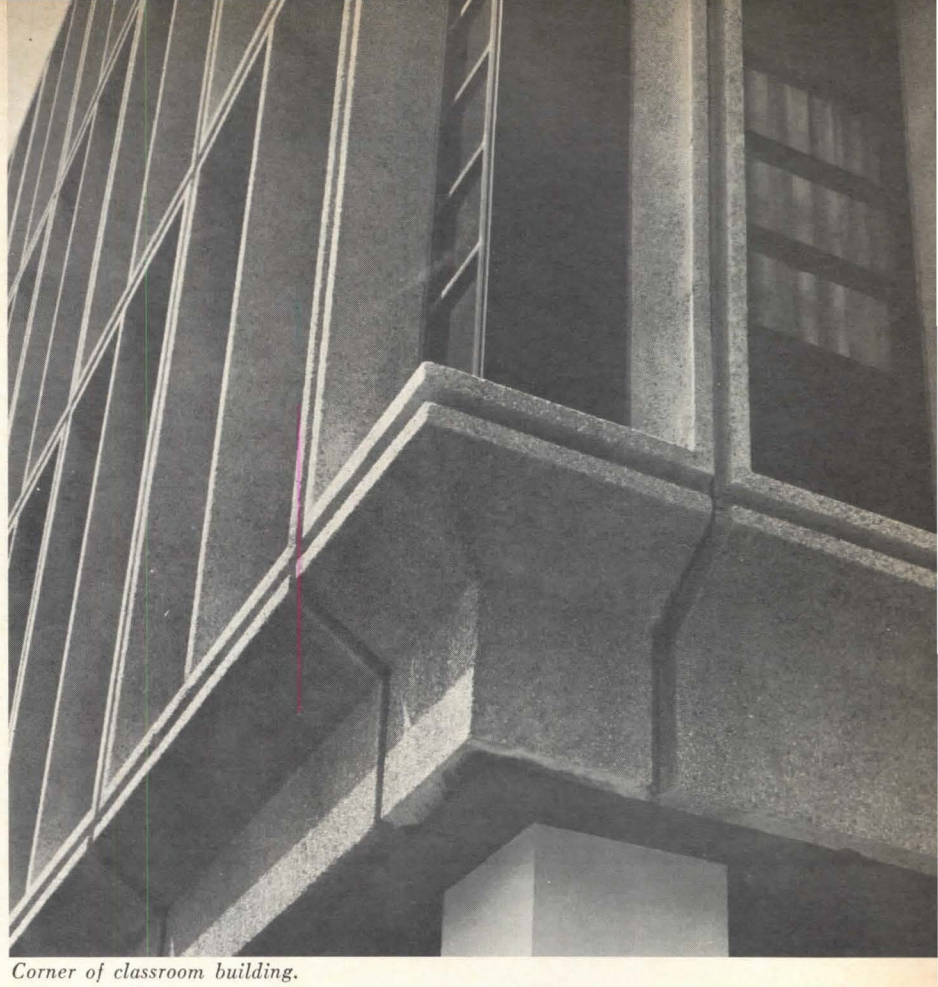
truck cruised the area inciting local residents to riot against the dangerous influx of Negro children so hellishly bent on education. When the school opened, these students were greeted by a 6-ft sign painted on the school wall, "Niggers Go Home." (The fact that no reports have reached the principal of commuting students being attacked while passing through the neighborhood would seem to indicate outside agitation.)

When the architectural history of our times is written, which must describe our need to design schools that resemble forts or beleaguered embassies, a special chapter must surely be devoted to the student heroes who manned them.

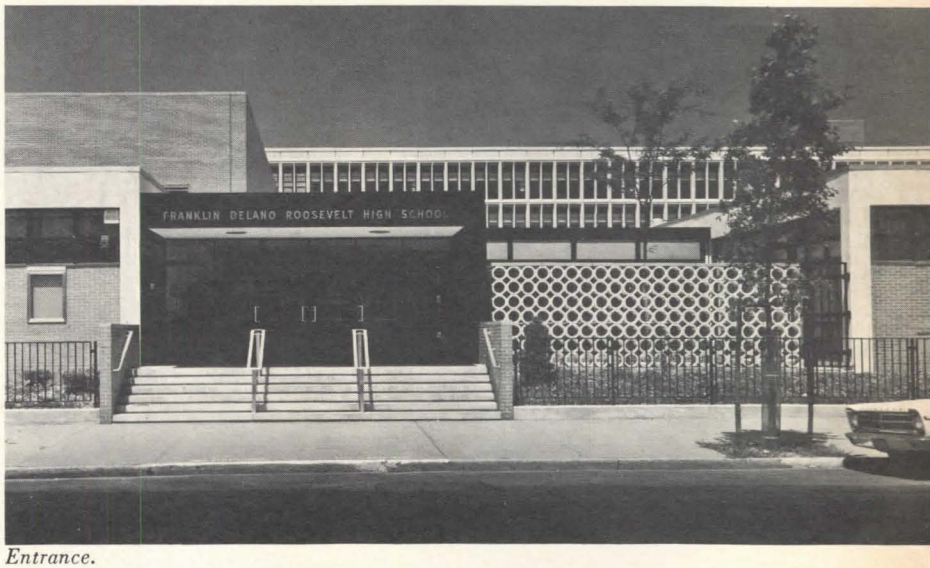
Interestingly, means to combat vandalism have benefited local residents: Lights that were installed to illuminate the grounds at night also serve to help residents whose backyards are adjacent to protect themselves from prowlers; homeowners have therefore asked the principal to leave these lights on as late as possible.

While most of the damage has come from the outside, there are also internal problems. Mirrors and soap dispensers have been removed from the boys' toilet rooms. And it was reported that some detonating genius has discovered that a giant firecracker placed against a window at the column reveal constituted a very satisfactory means of making a grand explosion, as well as blowing out the window. Toilet partitions were marked with suitable bathroom poetry and the usual national and racial disparagements, only slightly more juvenile than those appearing in some of our better restaurants.

The school has, however, become a prideful part of the community. There are many more requests to enroll than can possibly be accommodated. The teachers, staff, and students questioned were unanimous in their approval of the facilities.

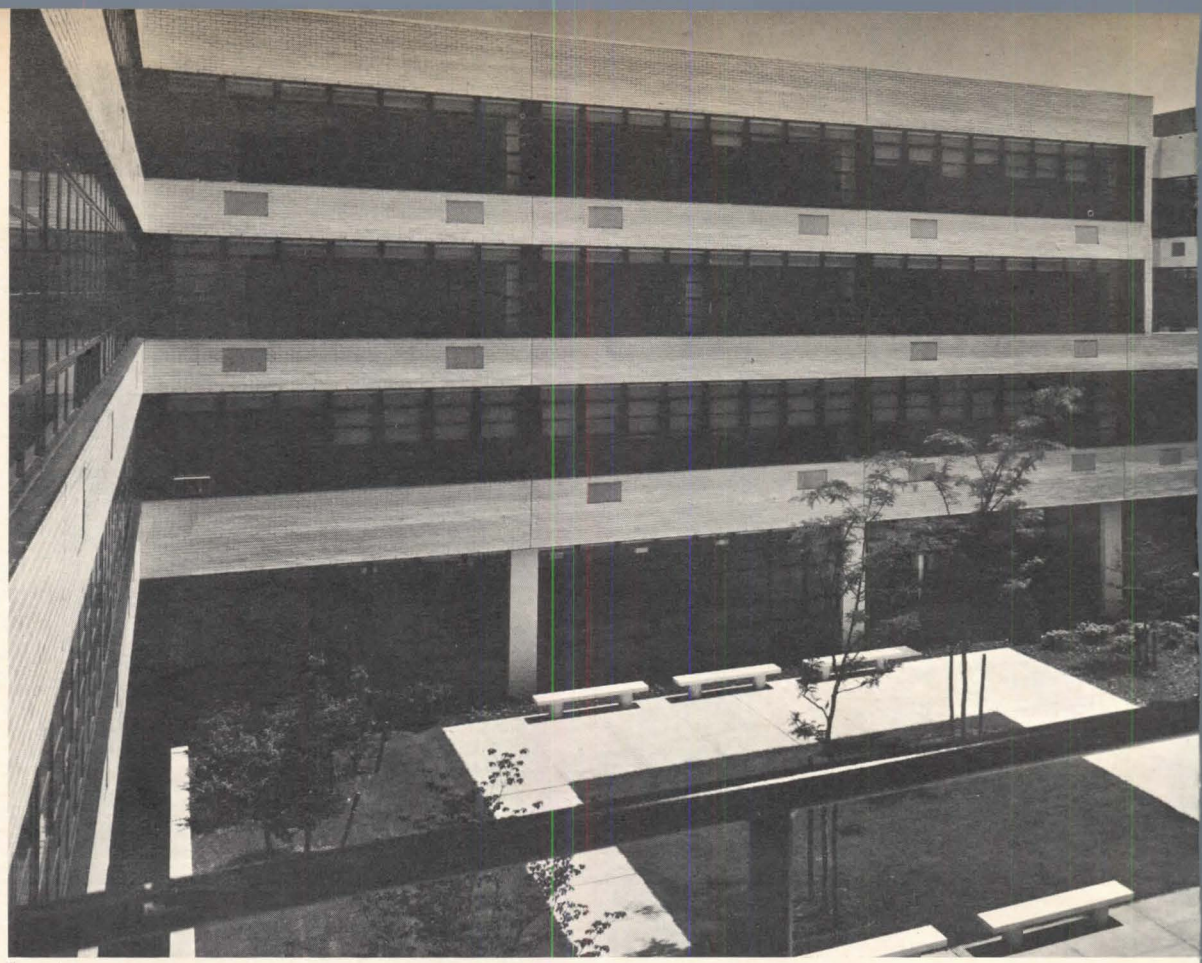


Corner of classroom building.



Entrance.

Classroom building.



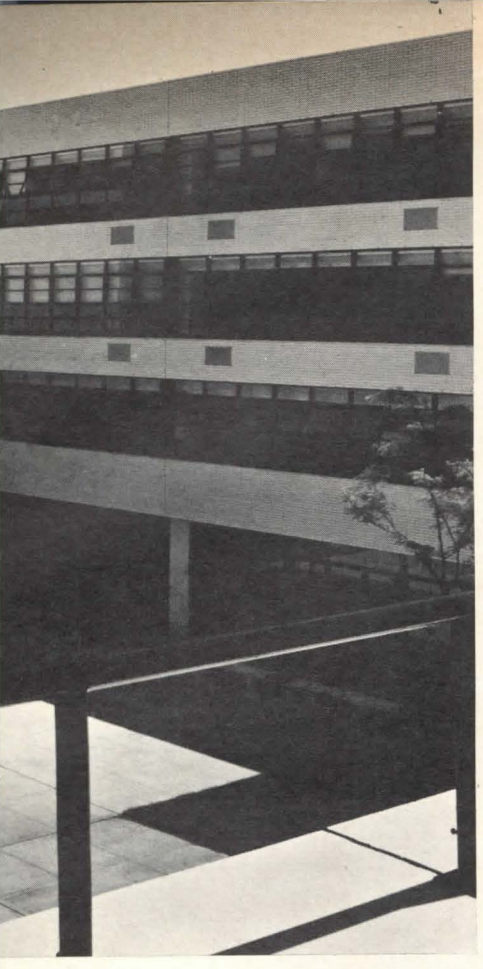
Interior court.

Entrance corridor.

Auditorium.

Cafeteria.

Corridor.



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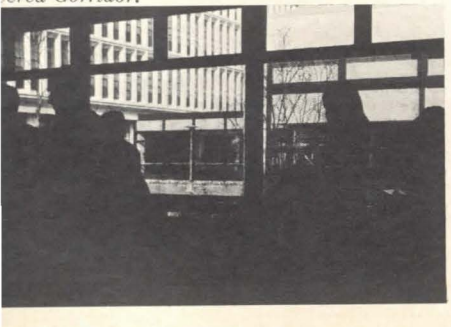


The Bureaucracy as Client: Comments of the Architect of the F.D.R. School

The various bureaus that make up the Board of Education constitute the largest administrative department in the New York City governmental system. That they engender a bureaucracy that architects often find difficult to deal with was pointed out in David Crane's report prefacing this article.

The educators who write the programs for the Department of Research and Planning generally have very limited contact with the architect. (Architects are instructed to work with the Bureau of Construction of the Board of Education.) "It would be much better if we could work with the program writers and the actual users of the building, as we would with a private client," points out Edmund Caddy. In this particular instance, there was so little contact between architect and users, reported the Rado office, that the architect was not even invited to the dedication ceremony.

"The architect must evolve a technique for working with a bureaucracy of this magnitude," comments Caddy. "He must conserve his energy for the most crucial engagements. The end result, the building, cannot possibly be successful if the architect fights every single real or imagined threat to his design by the bureaucracy, because he will then lose spirit and not be able to resist when it is most important to do so."

On the other side of the coin, the Rado office feels that the architects and engineers of the Bureau of Design and Construction have built so many schools that they supply a valuable practical knowledge available to the architect. As Rado puts it, "They have a technical viewpoint and are thoroughly familiar with the problems of vandalproofing."

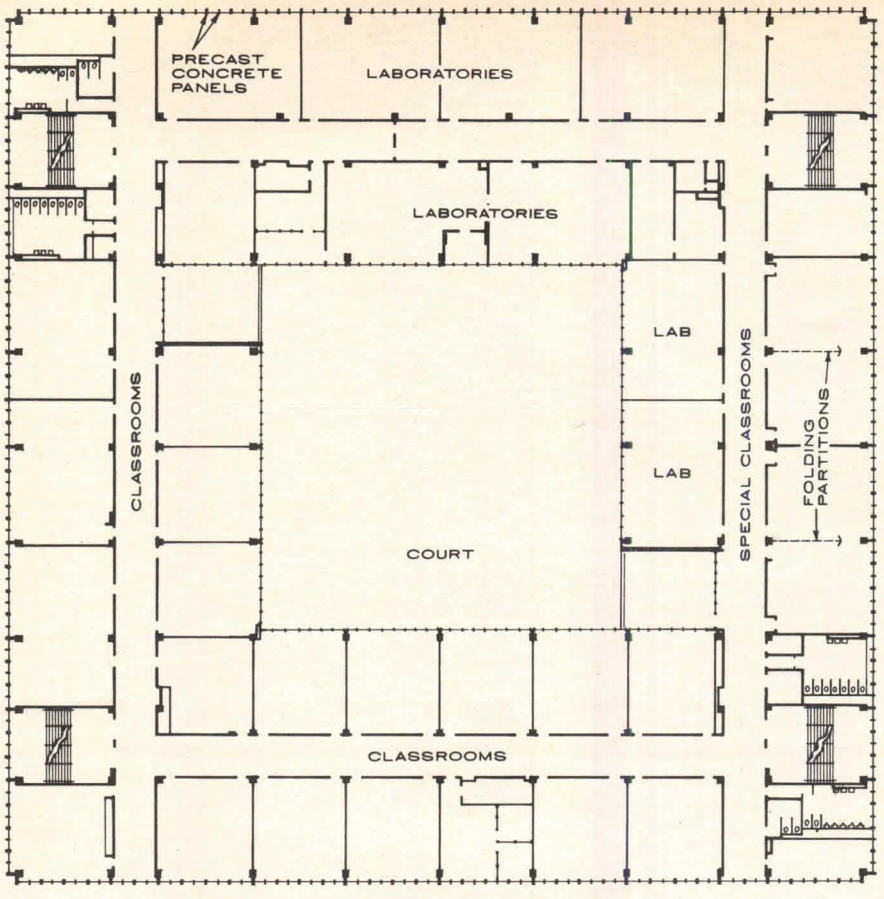
Most architects agree that the fee schedule is very low. "If all goes according to plan," is a typical comment, "you can design a school without losing money." However, the nature of creative planning seldom involves working to a preconceived program, and despite the best intentions of both the Board and the architect, the nature of bureaucracy is to resist change. "The low fee actually punishes the architect who wishes to do something better," concludes Caddy.

The problem of providing a school with furnishings is the function of another bureau, and is not under the control of the architect. Even though Raymond & Rado were not paid to do so, Caddy went to the Bureau of Supply of the Board of Education. "What are you doing here? We never see an architect here," was their startled reaction.

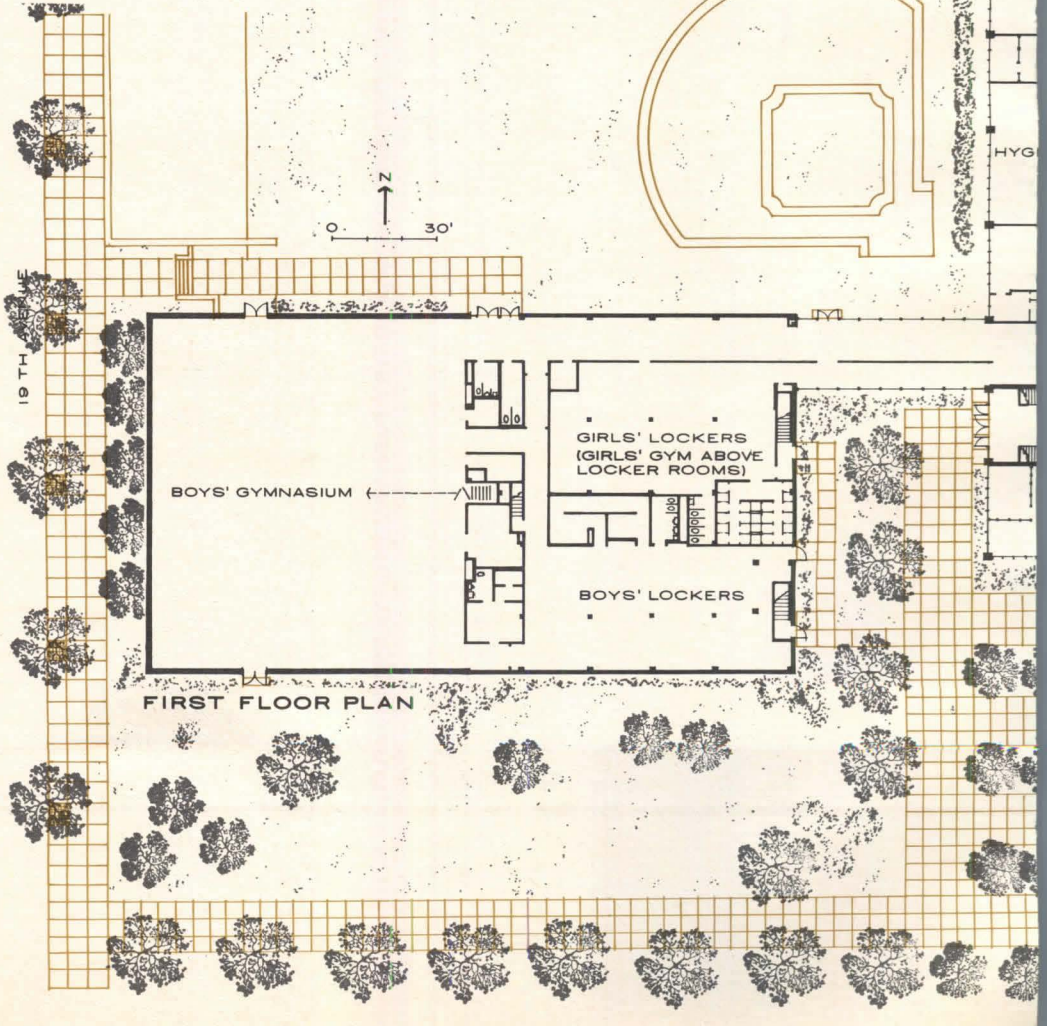
Everyone, including Eugene Hult, agrees that the architect should have more construction supervision. "The architect can supervise on his own to safeguard his design but without recompense and without authority," said Caddy. "Supervision is only anticipating problems that may develop, and because the architect knows the intention he can be of real assistance to the contractor. He must supervise to protect his own design."

The contractor was highly praised by both Rado and Caddy. "He did a workman-like job." The Caristo Construction Company, which builds a large number of schools, is extremely well organized. It stages construction professionally and has enough men to swing them into the job when they are needed. "We had shop drawings promptly after letting the contract," said Rado.

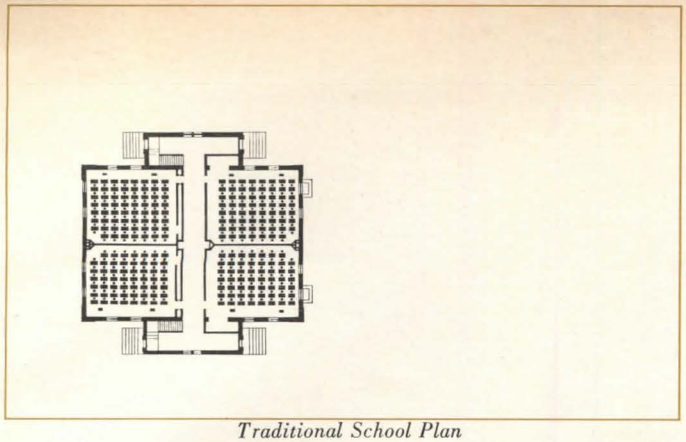
"This is the first school we have ever done for the Board of Education of the City of New York. We had heard from other architects that the Board is a completely unfeeling client. Some very good architects do not feel that they can move in school construction. Be that as it may, the real reason for bad schools is bad architects," concluded Caddy.



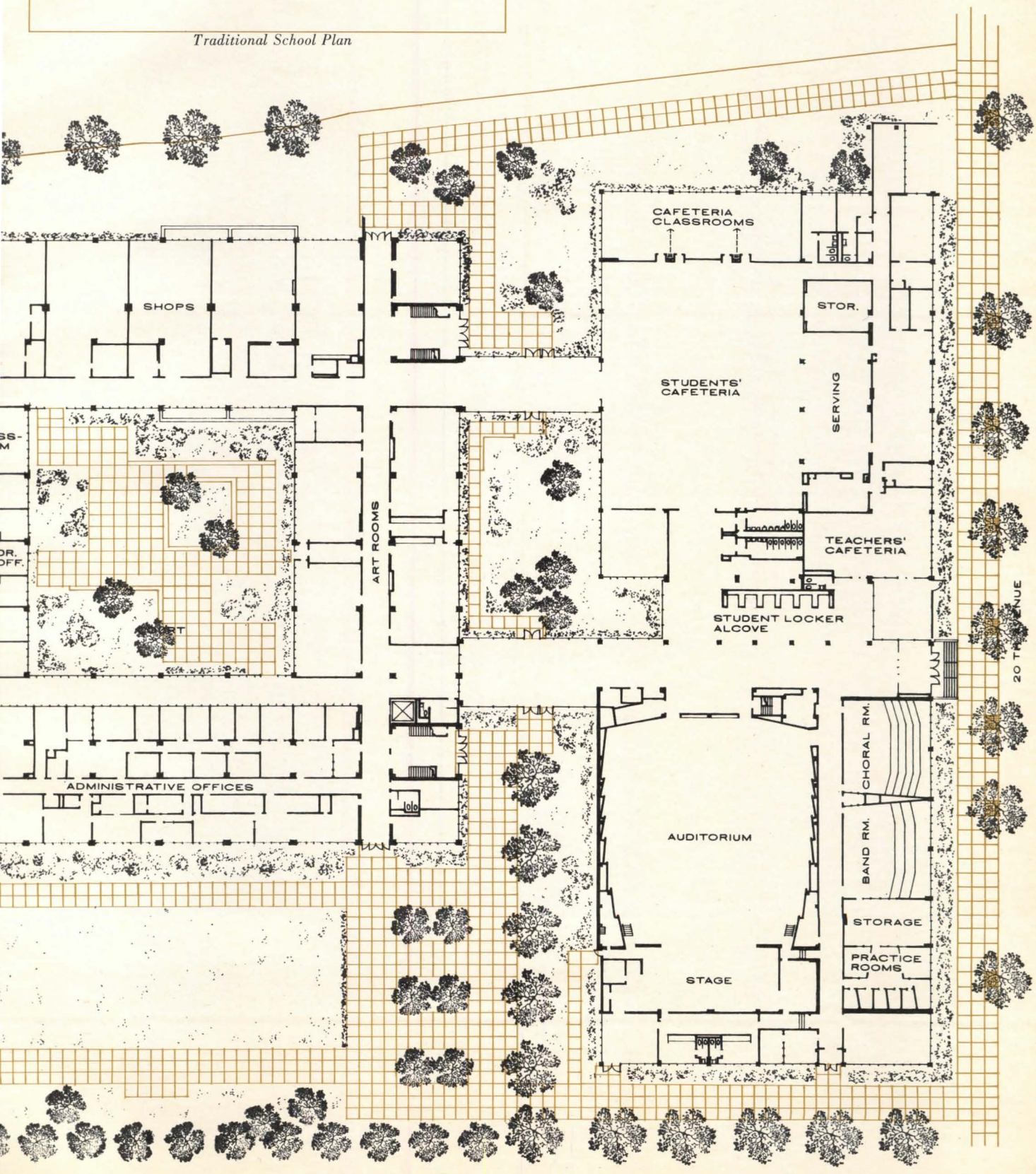
THIRD FLOOR PLAN



FIRST FLOOR PLAN



Traditional School Plan



P.S. 45

PUBLIC SCHOOL NUMBER 45, *Brooklyn, N.Y.* ***Architects:*** *Morris Ketchum, Jr. & Associates. Herbert Riemer, Partner-in-charge.* ***Site:*** *Gently sloping site in a low-income neighborhood in Brooklyn, N.Y. Surrounding structures are three- and four-story tenements, including some neighborhood stores.* ***Program:*** *Designated an experimental or pilot school, the design tests a number of innovations. Pupil capacity: 1671 students. There are 10 experimental classrooms, 36 modified standard classrooms, 4 kindergarten rooms, 3 remedial rooms, 1 health conservation room, 2 rooms for children with retarded mental development, and an observation room for 40 observers. Facilities also include an experimental auditorium, library, gymnasium, communications center with provision for future T.V. installation and adjacent audio-visual room, administrative offices, an experimental kitchen serving frozen foods, with an adjacent lunch/play room, a school aids room, and an office for visiting specialists. Controlled urban environment was a principal objective. All windows except those facing the play yard next to the school face the enclosed court. This arrangement controls street vandalism. School interior court provides covered play and line-up space for use in bad weather.* ***Structural System:*** *Concrete frame with two-way long span reinforced concrete floor slab, upturned and downturned edge beams, 3000 psi controlled concrete.* ***Mechanical System:*** *Steam with fin tube radiators; auditorium and other large spaces use warm air.* ***Major Materials:*** *Exterior: exposed aggregate concrete courtyard columns, exposed concrete, glazed brick infill, aluminum screening, built-up roofing, aluminum sash. Interior: Painted concrete block and glazed block walls, rubbed and painted concrete ceilings, acoustical tile in corridors.* ***Cost:*** *$3,100,000; $21.92 per square foot.* ***Consultants:*** *Ames & Selnick, Structural Engineers; Slocum & Fuller, Mechanical Engineers; Robert Zion & Harold Breen, Landscape Consultants; Ben Schlanger, Auditorium Consultant.* ***Photography:*** *see p. 242.*

The Ketchum office stated that, to realize their design objectives, they concentrated budget funds on areas of primary educational significance and minimized costs in areas of lesser educational import. This observer was hard put to define a school area without educational significance or to locate any part of the school that bore the marks of extreme economy.

The nature of school budgets does not allow for frills. The difference between luxury and poverty in school design is the architects' design capabilities. These were not stinted on in P.S. 45. In this writer's opinion, the school is extremely well considered both in function and detail.

Open galleries connect the two schools and expand the means of horizontal circulation. The enclosing screening, the architects claim, does not exceed the cost of wire-mesh guards for a standard school. The exterior, covered play court, made possible by setting the school on columns, creates ground space for line-up in bad weather. Planting is inside raised curbs, which act as seating. The planting bed in front of the lunch playroom windows functions as screening. Street noises are blocked from the classrooms by the windowless exterior walls, and the exterior closed corridors and open galleries serve as sound baffles.

Classrooms for the first through sixth grades are confined to the second and third floors, separating them from general school functions but allowing convenient access to communal use areas.

Kindergarten units on the first floor are adjacent and directly accessible to the walled and screened kindergarten playground, which is furnished with an abundance of play objects that are in continual use.

The teaching roof over the gymnasium and auditorium is used by the bordering classrooms, which have direct access to it. This outdoor extension of the teaching space has a deck of asphalt paving, minimizing reflected heat. A simple pattern

creates definition and orients its users. The roof will also provide a convenient kindergarten area, should an expanded enrollment make this necessary.

The 10 experimental classrooms are planned for *flexibility*. Two of these can be combined into one large instructional space for team- or group-teaching, or they can be divided individually into small teaching units by means of modular steel partitions, either teacher- or student-operated. The rooms open onto a corridor work area, with sinks and movable trucks holding various kinds of materials and equipment stored under laminated plastic top counters. Traffic patterns were controlled so that corridors are used only by students who have been assigned to the classrooms in a given section of a given floor. Major traffic is directed around these areas. The corridor also permits the joining of the five experimental classrooms. The observation room, which accommodates 40 observers, is adjacent to an experimental classroom.

Modified standard classrooms have walls covered from the 4-in. vinyl base with 4′ x 7′ panels of self-sealing, vinyl-covered tackboard, chalkboard, and pegboard. Adjustable shelves can be mounted on the pegboard. Chalkboards have adjustable chalk rails. Hang rods in clothing alcoves are adjustable. Except for the fixed sink unit, cabinets are movable.

The kitchen, which serves frozen food lunches at a rate of about 25 a minute, is equipped with warming ovens and storage.

Visual education facilities include a communications center, with TV rack and antenna for future TV installation, and an adjacent audio-visual room. Classrooms are equipped with TV and covenient outlets and opaque shaders for visual education. A school-aids room has been provided for the 12 or more assistants who, among other duties, supervise lunchroom activities, thus freeing the teachers from these chores.

The *workshop theater is available* to the school and community for a wide variety of uses. The Educational Facilities Laboratories of the Ford Foundation provided a special grant to underwrite the additional cost of architectural time needed to explore and develop new approaches.

Space is divisible to allow its use simultaneously as two large instructional rooms, or as a single multipurpose space.

The auditorium is a stepped floor type with no raised stage platform. The first 5 rows of seats are movable and at floor level; the 13 rows back of them are stepped for sight-lines.

The stage consists of four raised, stepped platforms that can be locked together or used in various combinations. Movable seats and stage platform can be grouped for varied theater functions. The stage platform can serve as a chair platform for theater-in-the-round.

Acoustic treatment includes plastic-faced acoustical block walls, with rear ceiling of auditorium of acoustic material. Sound reflection is provided by three large rectangular wood panels and a grid — two panels being located at the sides of the room, the other over the front of the platform space. Stepped aisles and circulation space at the rear of auditorium are carpeted.

Movable wall, recessed to either side of the stage area, acts as rear stage curtain. Back of the partition are two pairs of variable-width tormentors, and at the rear of the space is a movable cyclorama. When in place, it forms a 7-ft enclosed aisle leading from stage left to stage right.

Flexible lighting for the platform area is incorporated in the suspended overhead acoustical grid.

Vandalism

Glass breakage is a major problem in all New York City schools. In this particular neighborhood, the problem is extreme. Consequently, all windows face the enclosed, interior court.

Despite the careful consideration given this problem by the architects, they did not anticipate the ingenuity of neighborhood youths. Local marksmen are apparently able to gain access to the yard adjacent to the kindergarten classrooms and throw rocks through the chain link fence — a feat demanding considerable skill. This, unfortunately, makes it necessary for the principal to cover these windows with a mesh screen, which tends to eliminate the pleasant integration of kindergarten classroom and play area so carefully designed by the architects.

Workmanship

In places, the workmanship of P.S. 45 leaves something to be desired. Of its 28 exposed aggregate concrete columns, only one — the architect-approved prototype — is of satisfactory workmanship. The remainder are an excellent advertisement for the use of another material.

The classroom structures seem to be supported on strangely framed beams, which are in reality "structural" ductwork, as the access doors at their sides attest. This gratuitous "architecture" was contributed by the contractor in order to cover some mechanical equipment that somehow missed being placed in the structure as the architect had indicated. Actually, the slabs are supported by sensibly designed, concealed upturn beams at its edges.

The Principal

Principal Norman Beckenstein requested assignment to this district, which, he says, is comparable to an average Harlem school environment. His evaluation is not purely academic. Beckenstein has spent 23 years of his life in Brooklyn's Brownsville section, which, in its slum sections, has often been compared to Harlem. Beckenstein believes that the educational challenge of our time is in such neighborhoods, and sees P.S. 45 as a finely designed instrument to meet this challenge.

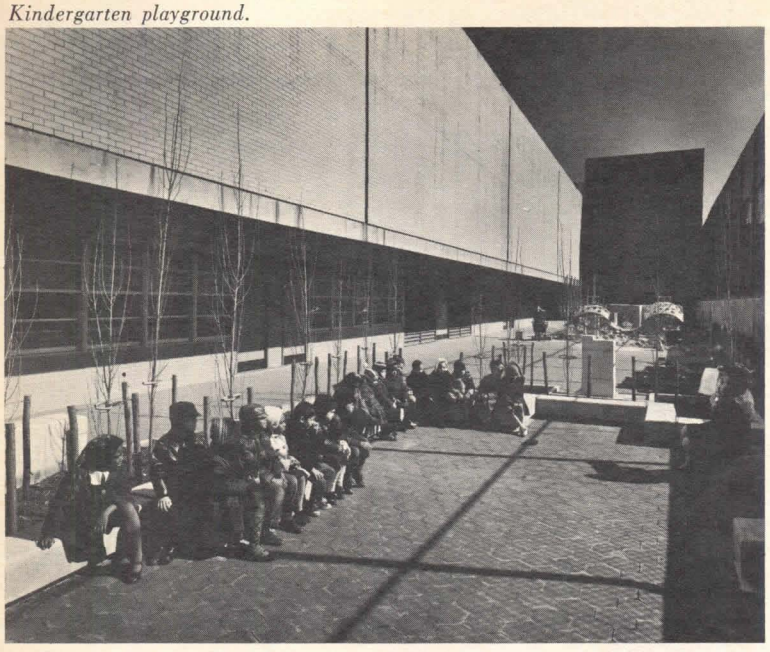
The present enrollment of just over 1600 is predominantly Negro, with about 15 per cent of the students of Spanish-speaking extraction, and a total of five Caucasian pupils.

The physical environment has had a psychological effect on the children, claims Beckenstein. Since the school opened, the amount of vandalism has steadily decreased. He cited the case of a student project, a wall map of South America, which had been stolen from a corridor wall. Students and teachers stayed late after school to make a new one. Beckenstein feels that one of the most important contributions of the school's design is its ability to isolate retarded and emotionally disturbed children for special treatment. Segregating these children from the regular student body has tended to stabilize and reduce disciplinary problems.

The school is a source of pride to the neighborhood, as is indicated by active participation of the local PTA. The group has an office next to the school administrative offices, and involves itself diligently in providing assistance with school problems. Beckenstein points out that the PTA's cooperation is immediate in emergency situations.

There is a refreshing atmosphere at P.S. 45. One has the feeling of people performing a difficult task, but with the satisfaction of accomplishment. The teachers are mostly very young and con-

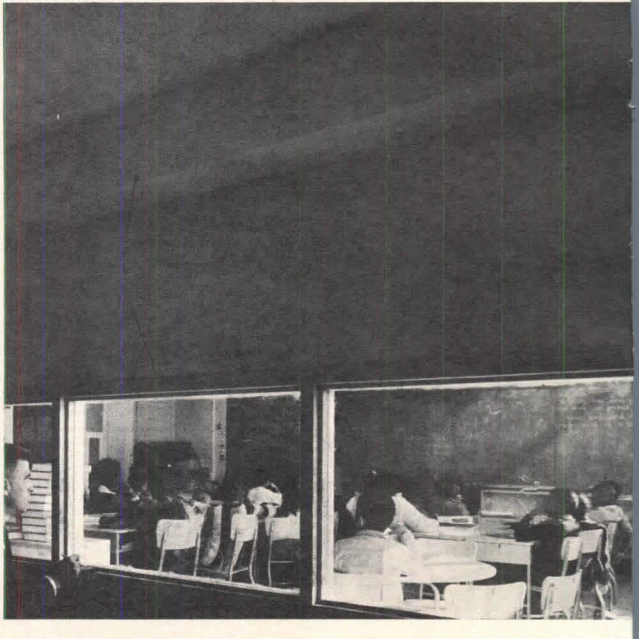
Kindergarten playground.



Experimental classroom.

Frozen-food kitchen.

Observation room.



Corridor extension of teaching space.

Auditorium.

en gallery.

aching roof.

trol the students through empathy rather than any strict sort of disciplinarianism. The sternness that is the last resort of harassed teachers of the underprivileged seems totally lacking. No one who has visited P.S. 45 could possibly deny that the effort expended by the Board of Education, the architects, and the users has been unrewarded.

The Bureaucracy As Client: Comments of the Architect of P.S. 45

"We made a policy decision in the office concerning P.S. 45 and we followed it," says Herbert Riemer. "We pulled out all the stops and did the best we could, even though we knew that we would be limited by the usual standard procedures.

"We did not think that things done before were necessarily the right answers for the needs of the neighborhood or the needs of the youngsters who will attend these facilities. Most of the jobs done in an office are such that you don't even have the opportunity, due to budgetary limitations, to make important design decisions. We decided that it would not be like this with P.S. 45. We would sit down and see what could be done.

"We started the job based on requirements given us by the Board of Education. We reviewed our problems with John B. King, who was then the Executive Deputy Superintendent of the Board of Education. We also met with the Bureau of Design at the Board of Education. We told them that we would like to introduce some new features we had worked out, realizing that these particular innovations had not been attempted before in New York. We started with a let's-see-what-we-can-do-about-it attitude. We came in with a budget that was higher than their budget, which was based upon a standard program. They agreed with us that the project was not properly related to the budget. The budget was adjusted within the limitations of their capital budget.

"Then the pedagogues came back and we had about three or four meetings. 'I've never seen my classroom this way' . . . 'I've never seen my auditorium used this way,' and so it went. About this time, new kitchen ideas were incorporated into this project. We had discussions with the kitchen experts. The Board approved this, saying, 'Let's give it a try here.' The project was therefore designated by Dr. King as a pilot experimental school.

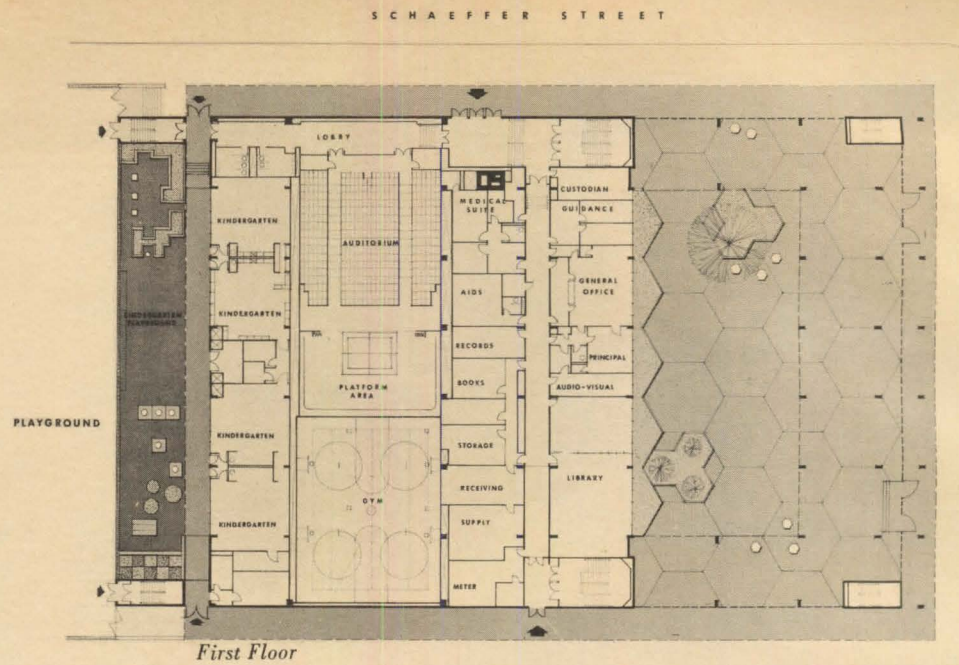
Construction

"Sometimes you have a hard-boiled contractor," continues Riemer, "who builds any type of municipal project. He builds schools, housing projects, any kind of public building.

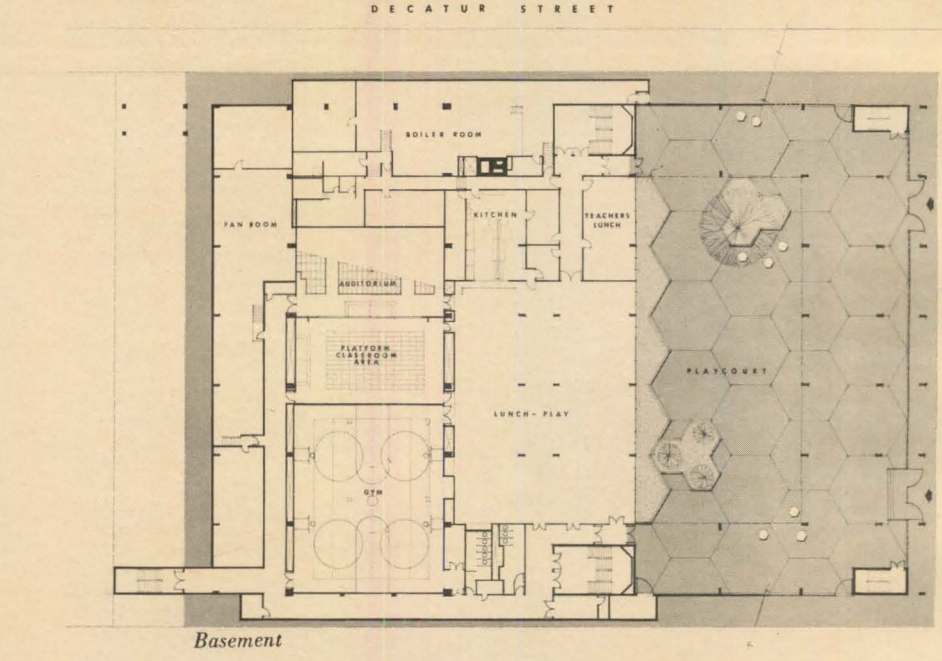
"From the contractor's point of view, he is bidding in a type of competitive market that is geared only to this type of public agency construction. He avoids large, private projects that involve more exposure to the public and that are unidentifiable with a corporation or corporate image. Such projects are generally negotiated with the contractor. So, with a school or housing project, you may get minimum-quality construction.

"There seems to be a national standard — shared by most cities — that accepts average workmanship and average buildings. Sometimes, the architect doesn't know his own child.

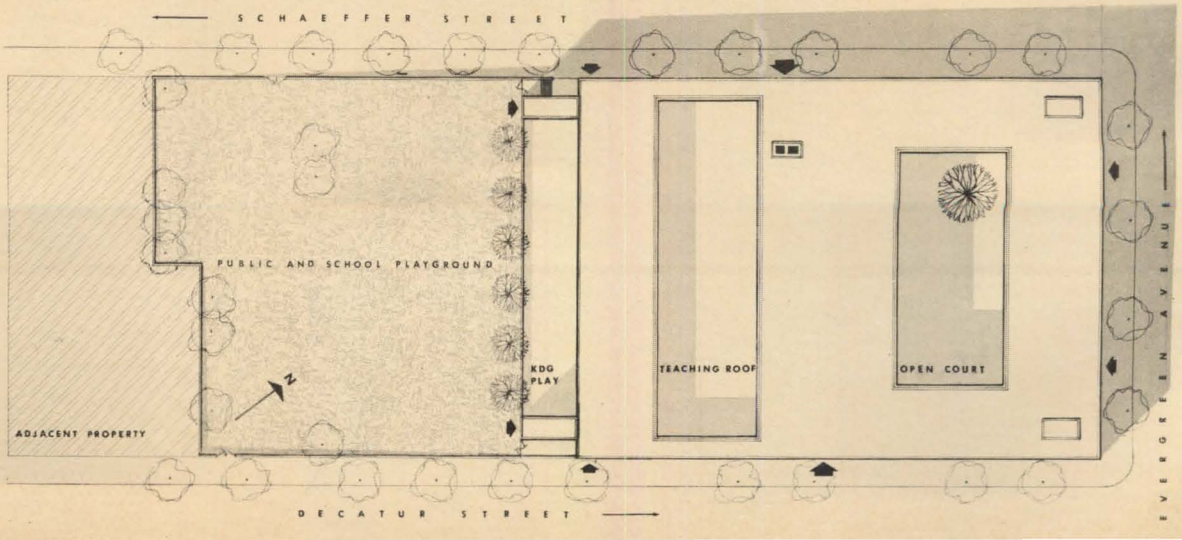
"It's an unusual thing to see buildings grow that you had something to do with. This might seem a strange analogy, but it's like watching a child grow. You just watch it and then all of a sudden it's a living human being. You look at the building, and it comes alive and blood starts running through it. Its life-blood is actually supplied by the performance of the contractor — whatever the architect or client may do."

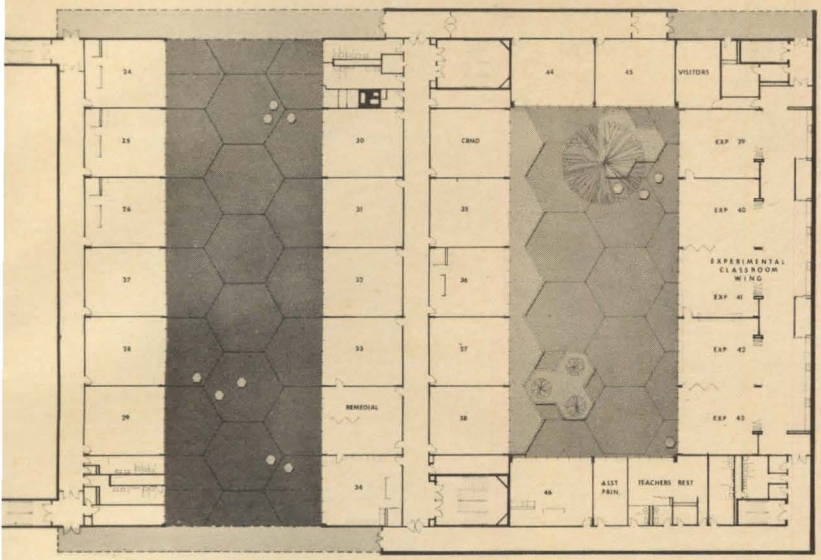


First Floor



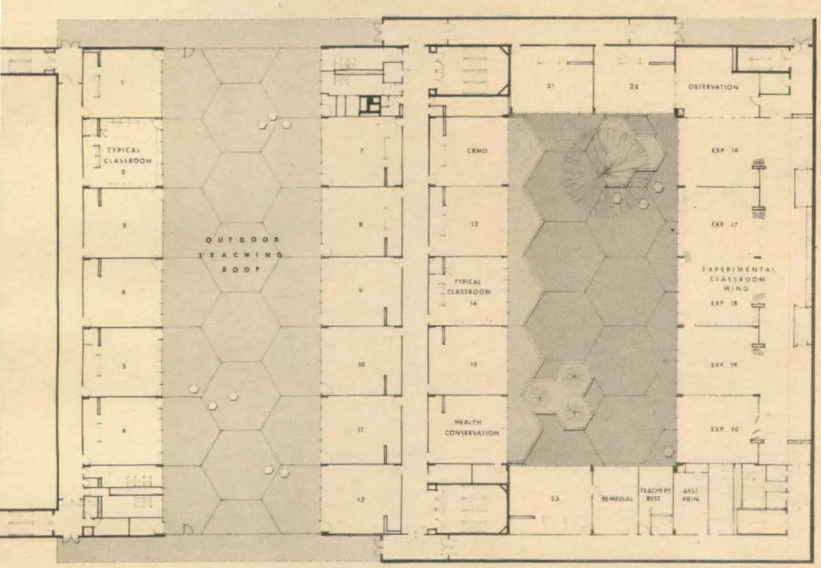
Basement





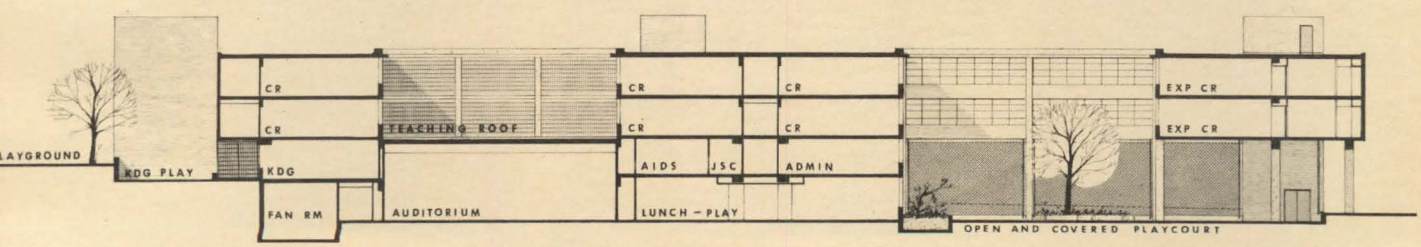
Third Floor

GRADES 4, 5 AND 6

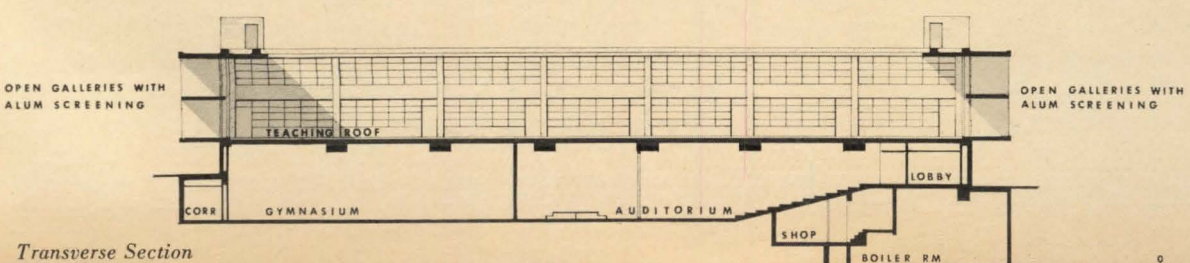


Second Floor

GRADES 1, 2 AND 3



Longitudinal Section



Transverse Section

0 10 20 30 40 50

THE BUREAUCRAT'S POINT OF VIEW

There is general feeling among architects that criticism of the Board of Education's policies or procedures will prejudice their appointment to future school commissions. The situation is not without humor. One is reminded of the classic comment, "The food was terrible . . . and such small portions."

However, the opinions expressed here are those in which several informants were in agreement, and therefore might be worthy of consideration.

One of the most difficult and controversial problems concerns the budget director. He is a key figure and can disapprove a previously approved item. Many architects feel that there is no recourse from his absolute authority — an opinion shared, incidentally, by some members of the Board of Education. Architects believe that the Board will not adequately protest budget decisions because the Board needs the budget director's good will in their own allotments.

Many architects voiced the complaint that there seems to be no balancing of concern over cost and value. They maintained that an item that makes a design more pleasant will be eliminated even if it costs only $10 more.

One Board official who is highly respected by architects commented, "Budget people are difficult to deal with; they sometimes even try to trim allotted money. It would be better to work under a stated lump sum arrangement. They are engineers," he continues, "and think in terms of what is good for their kids and what they experienced when they went to school in making their decisions."

The architects contacted agreed with the statement in Crane's report that to do other than a stock school plan was highly unprofitable. They also expressed a reluctance to press payment of outstanding claims for fear of prejudicing themselves with the Board on any future work.

The peculiar status of the custodian in school building makes him an influential and hardly impartial arbiter of architectural design. Since reduction in school operational expenses profit him directly, he cannot be expected to be in sympathy with architectural solutions other than those embodied in the traditional antiseptic institution. One of the most serious drawbacks to the architect is his lack of construction supervision authority — a limitation, incidentally, to which Board members are sympathetic (see Eugene Hult's comments, which follow). One official in the Department of School Planning expressed his frustration at not being able to exercise control in the field over designs originating in the Board of Education itself. As he put it, "They build as they wish, or as they've done before. If the builder has built one, he thinks they are all alike."

An architect summed up the general attitude: "Sometimes you have a dyed-in-the-wool contractor who goes through all of the city contracts. He goes through schools, housing projects, he'll do any kind of public building and he is a guy, a gritty guy, strictly out for what he can get. You know — the normal type of guy."

The foregoing problems are recognized by architects and some members of the bureaucracy. However, as one architect commented, "The schools did get built and they couldn't have been done without the Board."

The following interviews with two men of the bureaucracy should show that the architects are not going it alone. They have help.

Merging Educational Needs With Architectural Program

August Gold, Director of School Planning and Research, is one of the principal men responsible for welding pedagogic needs to architectural program.

He occupies a unique position: He is an educator who occupied the position of assistant principal prior to his working for the Department of School Planning.

To Gold, there seem to be no heroes and no villains, only a job to be done. One has the impression he enjoys that job immensely.

He describes himself as a liaison man between the educator and the architect. "To begin with, we had to prove that we were concerned," he said. "Educators had given up trying to get what they needed. They had resigned themselves to using old rooms and tried to adjust to what they were given. I had to say to the teachers and those concerned with school planning, 'Dream.' Of course, the edges of the dream are pared."

Gold proved his concern by saving money on the one hand and making improvements on the other. It was a two-pronged attack, for which he went back to school and took an active interest in the study of architecture.

"We must find what is cooking in the curriculum," he says. "Things are changing so fast and we must keep up." He researches individual areas of school facilities and plans means of getting Federal money for research.

All new buildings are designed with the idea that computers will be used as teaching aids. Rooms and spaces are allotted and electrical lines are run in for the day that the school system can afford them. He has done the same thing with television. "Such a concept does not involve facilities; it involves thinking in terms of flexibility." When told that television would cost too much, he answered, "It costs peanuts." He went to the manufacturers and enlisted their assistance in devising an economic method to provide for both viewing and photographing and had the system installed in schools. "Now all we need are the cameras," he says. When told he cannot have a room he desires because of the expense, he devises a scheme for multiple use and gets it at no extra cost.

Unlike most purchasing agents and architects, Gold has the welcoming mat out for manufacturers' representatives. He listens, questions them, and tries to put them to work solving his problems. And, more often than not, he is successful.

Air conditioning is presently one of his major concerns. "How can other areas of the country air condition their schools for so little money?" he asks. "It is because, with us, air conditioning is an afterthought. If we conceived of it at the very beginning, it would not have to be that expensive, calculated on the basis of unit costs."

Demountable walls were a revelation to Gold. He saw them at a teachers' convention and began to investigate immediately. "Why not plan with them?" he asks, and does so. "Schools we design today are outdated in four years. Maybe the answer to school design is a gigantic loft," he mused.

You have to pick your architect and work with him, says Gold. Some things around New York that are now fairly standard were devised by him, working in collaboration with architects. "Our next designs will reflect things we learned on P.S. 45."

Gold does not mind taking chances. "Start a ball rolling down a hill and you start an avalanche," he says. "But then, I am almost eligible for retirement."

Schools As System for Teaching

"As of today, people seem pleased with our results; what they think tomorrow is another question," says Eugene Hult, who sits in the hot seat of administration — the damned-if-you-do and damned-if-you-don't and I'll-be-damned-if-I-hesitate position.

This is the man whom David Crane, in his report, credits with making hard-working efforts to improve the bureaucracy.

Hult, who is Executive Director of the Office of School Buildings, characterizes school buildings as systems for teaching. "It used to take five years to get a building done and now it takes three, and that is too long," he notes. "Today, it takes three or four weeks to get decisions implemented; before, it took months. If we could mesh departments, it would take three or four days."

To the architects' complaints that they would like to do their own supervision, he answers so would he. He elaborates, "The designer should be able to see his own design complete," but adds, "I inherited 180 men in the bureau who have to have something to do." His own men, he points out, do not supervise their own designs.

As mentioned in the Crane report, a survey by Hult proved it was much cheaper to have schools designed by outside architects. Hult would like to have new schools designed by private architects, and use his bureau in the alteration and modernization of existing schools, which, he says, is the bureau's most efficient function.

The newest educational innovation to affect school design is the concept of the school within a school — instead of one school of 1800, for example, three schools of 600 pupils. He believes that the educational philosophy is the most important factor in school design. The reason for separating the pedagogic department from Hult's Department of Design and Construction is the fear that Hult would "put pressure" on the pedagogues. One has the feeling that he would. Hult knows this is a danger and believes it is best for both parties that such a separation exists.

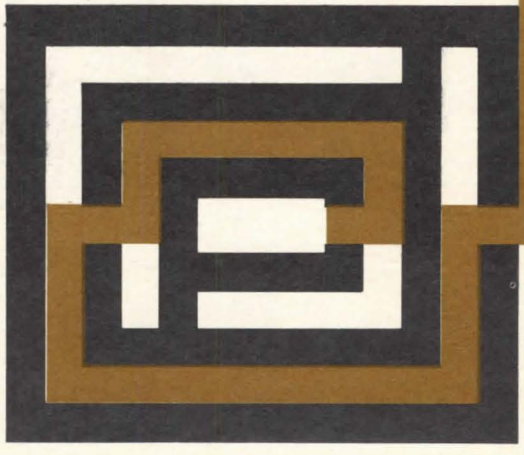
His function is to exercise quality control, and he does so both with the designs of his own department and those of outside architects. He allows very few changes on jobs once they are started. "This," he says, "is a policy of mine."

On the other hand, he feels that rigidity restricts the designer and that the designer should under no circumstances be handcuffed. "Give them the square foot requirements and that is all."

To the architects' complaint that the users of buildings often do not know how to use them, Hult blames the universities for not instructing teachers in the use of new facilities. "In a few years, the teachers' colleges will train them to use our schools educationally. There will be a shift in the character of our teachers."

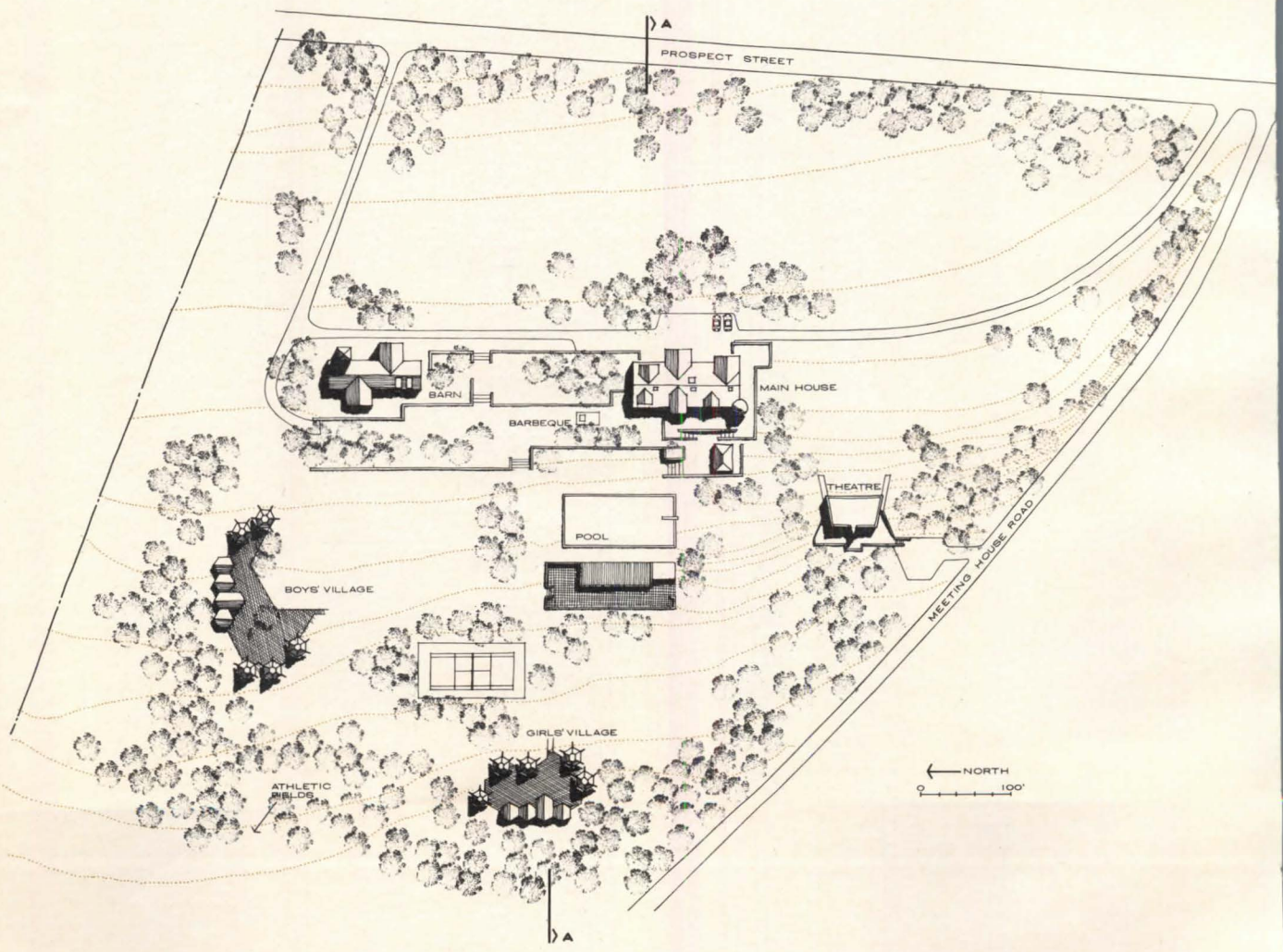
How are the architects chosen? Names are filed and reviewed once a year. There are 168 architects with, say, 15 projects to be awarded. Hult says there is probably a hard core of 25 to 30 who can be commissioned. The smallest school represents a cost of $2,500,000; projects costing $12,000,000 to $14,000,000 limit the size of the architectural office capable of handling them.

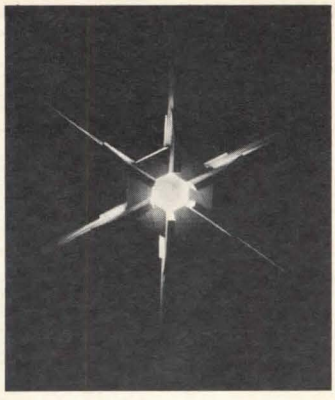
"We have guidelines," said Hult. One of them is that an architect must have worked five years by himself or with a major firm. "We don't want a man who is working on his kitchen table."

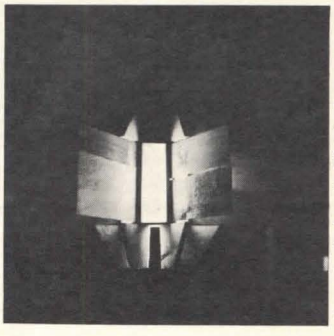


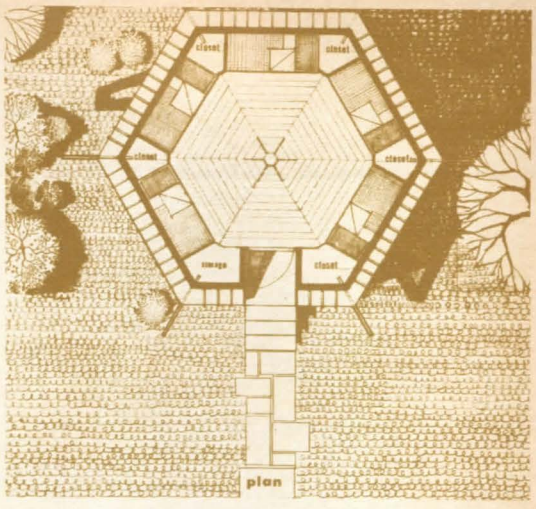
Arts Work-Shop In the Woods

Camp facilities built on contoured site present cohesive design solution in a gradually additive scheme.









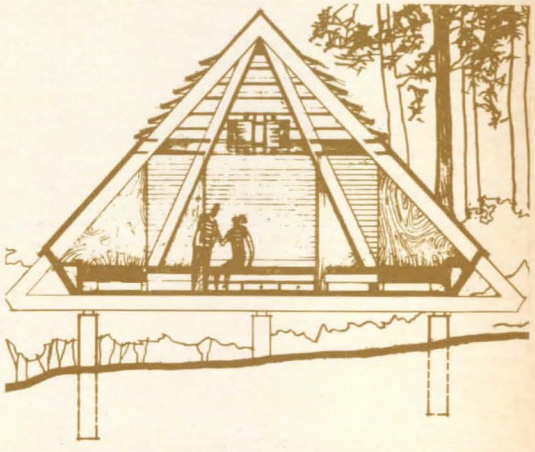


Photo (and above): Claude Samton

INDIAN HILL WORKSHOP IN THE ARTS, *Stockbridge, Massachusetts.* ***Architects:*** *Samton Associates; Claude Samton and Peter Samton in charge of design.* ***Program:*** *Living accommodations, theater, art studio for summer camp of 125 adolescents.* ***Site:*** *15 acres of terraced and landscaped property; formerly a summer estate.* ***Cost:*** *Long houses, $6000 each; teepees, $1200 each ($800, excluding interior furnishings, finishes, and fixtures); theater, $25,000; art studio, $8000.* ***Structural System:*** *Long houses: Standard 2 x 10 floor joists supported on concrete sonovoid piers, 2 x 6 roof joists supported by stud walls and resting on built-up 2 x 6 beam at center of gable. Teepees: radial 2 x 10 joists, supported on six concrete sonovoid piers, cantilever out to pick up six 2 x 8 framing members, which in turn are joined by a hexagonal fitting at the apex. Theater: floor and roof supported on four concrete block piers; floor beams are 2 x 12's bolted together; roof beams built up of triangular plywood sections form an upper frame for proscenium; roof is ¾" plywood, covered by three-ply felt roofing paper and asphalt roll roofing. Art Studio: roof joists, supported by concrete block, cantilever out over stud wall storage units and wood mullions to support wood roof sundeck.* ***Materials:*** *spruce and pine, indigenous to region; concrete block, manufactured locally.* ***Photography,*** *except as noted: Clemens Kalischer.*

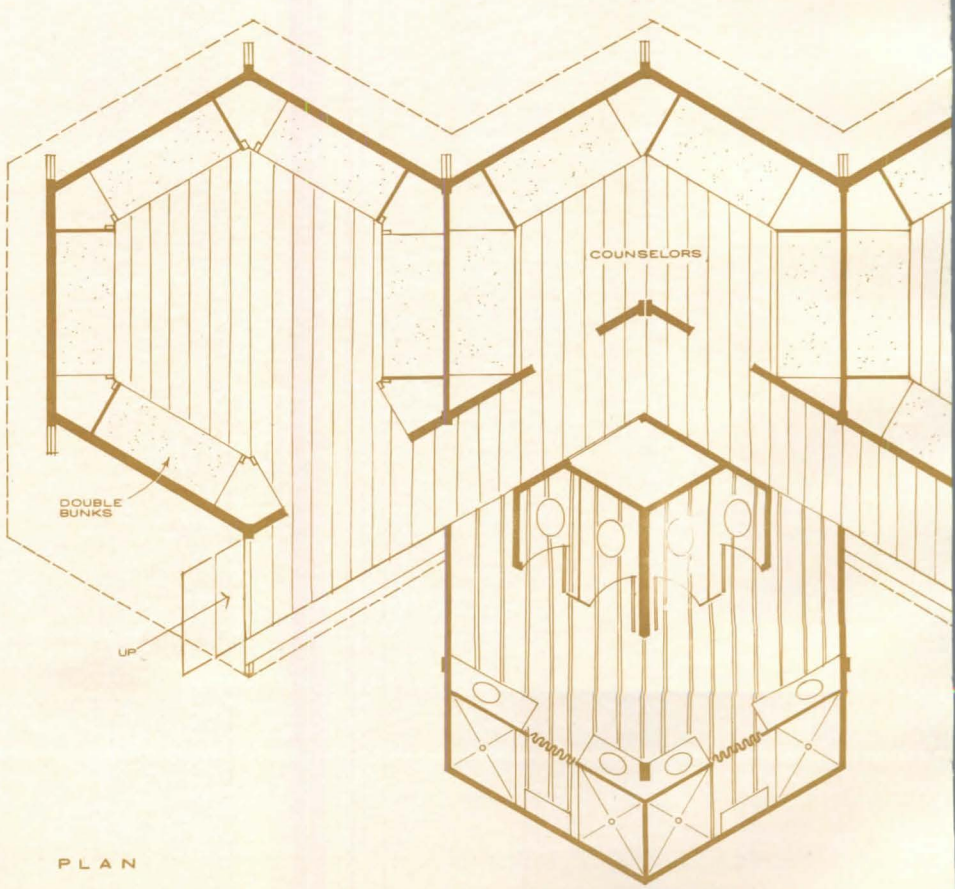
TEEPEES: *Individual structures, based on hexagonal plan to create a small-group feeling, are composed of radial 2 x 10 structural joists supported on six concrete sonovoid piers. The joists cantilever out to pick up six 2 x 8 members, which are joined at the apex by a hexagonal fitting. Plexiglas windows at apex admit light. Additional illumination is supplied by lighting fixtures specially designed by Claude Samton (above) and are suspended from ceilings of all living units.*

"We do not think an Indian Hill summer is best for everyone," assert camp directors Mordecai and Irma Bauman, who have established this workshop in the arts for adolescents, "but for many teenagers who have outgrown the programs of conventional camps, Indian Hill offers a new and significant experience." Although the camp sponsors a busy sports program that includes tennis, horseback

riding, and volleyball, it is the intensive program in dance, drama, music, and art, taught by a group of accomplished teacher-artists, which distinguishes it from its counterparts. The youngest campers, of junior high school age, receive a general introductory course aimed primarily at inspiring them with an appreciation and enjoyment of the arts. The older campers, on the other hand, who are selected on the basis of a demonstrated interest and ability in the arts, participate in a more concentrated program whereby they "major" in one of the areas.

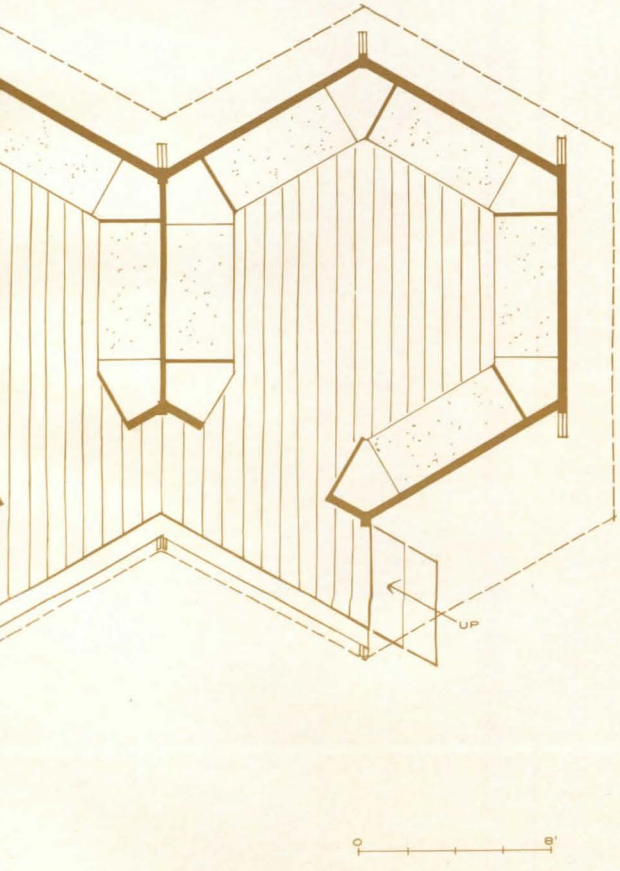
Situated on the former estate of Norman Davis, Ambassador-at-Large during FDR's administration, the camp is advantageously ensconced in the heart of the Berkshire summer cultural preserve, which includes Tanglewood, Jacob's Pillow, and the Adams Theater. The site itself is a magnificently terraced and landscaped slope, at the top of which sprawls the large rustic Davis home and barn: At the time the estate was purchased in 1952, it was used for living, dining, and workshop facilities.

In the process of expanding camp facilities, the directors first added a swimming pool, athletic fields, and tennis courts, then had Samton Associates design additional living units (1961–1962), the theater (1964), and an art studio (1965–66). Since the new living quarters house only



PLAN

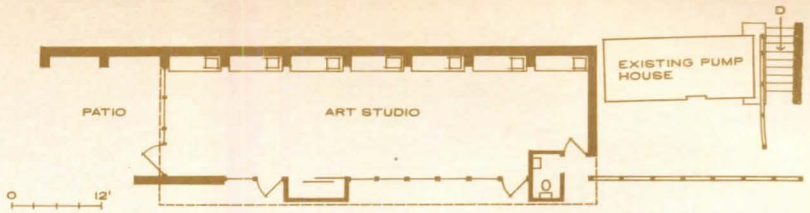
LONG HOUSE UNITS: *Also based on hexagon plan, these linked units use standard 2 x 10 floor joists supported on concrete sonovoid piers. The 2 x 4 stud walls support 2 x 6 roof joists, which follow the pattern of the hexagon and rest on a built-up 2 x 6 beam at center of gable.*



about 90 of the 125 campers, older girls still live in the Davis house, together with women faculty members; older boys and male faculty members live in the renovated barn above the dance workshop. The main house still provides dining facilities and music practice rooms. Eventually, however, more living units will be added to the existing ones, and music practice sheds will be constructed in the woods.

The new living units are in the form of two separate "villages" (one for boys and one for girls) at the base of the slope. "Villages" consist of wooden hexagonal teepees clustered around long houses of linked hexagonal units. The youngest campers and their counselors are in these long units, which also contain the washrooms for each "village." Older campers sleep in the individual teepees. The hexagon was decided upon as the basic geometrical unit of the design scheme in an effort to depart from the barrack plan typically found in camps. The architects felt that the arrangement of the beds in a circular scheme would enhance the sense of group relatedness.

Midway between the "villages" and the main house and barn are situated the theater and the art studio, which are easily accessible to all members of the camp community. The theater is set into a gentle slope, so that its stage opens out onto an ascending grade where the audience sits.



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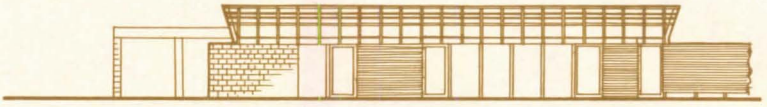
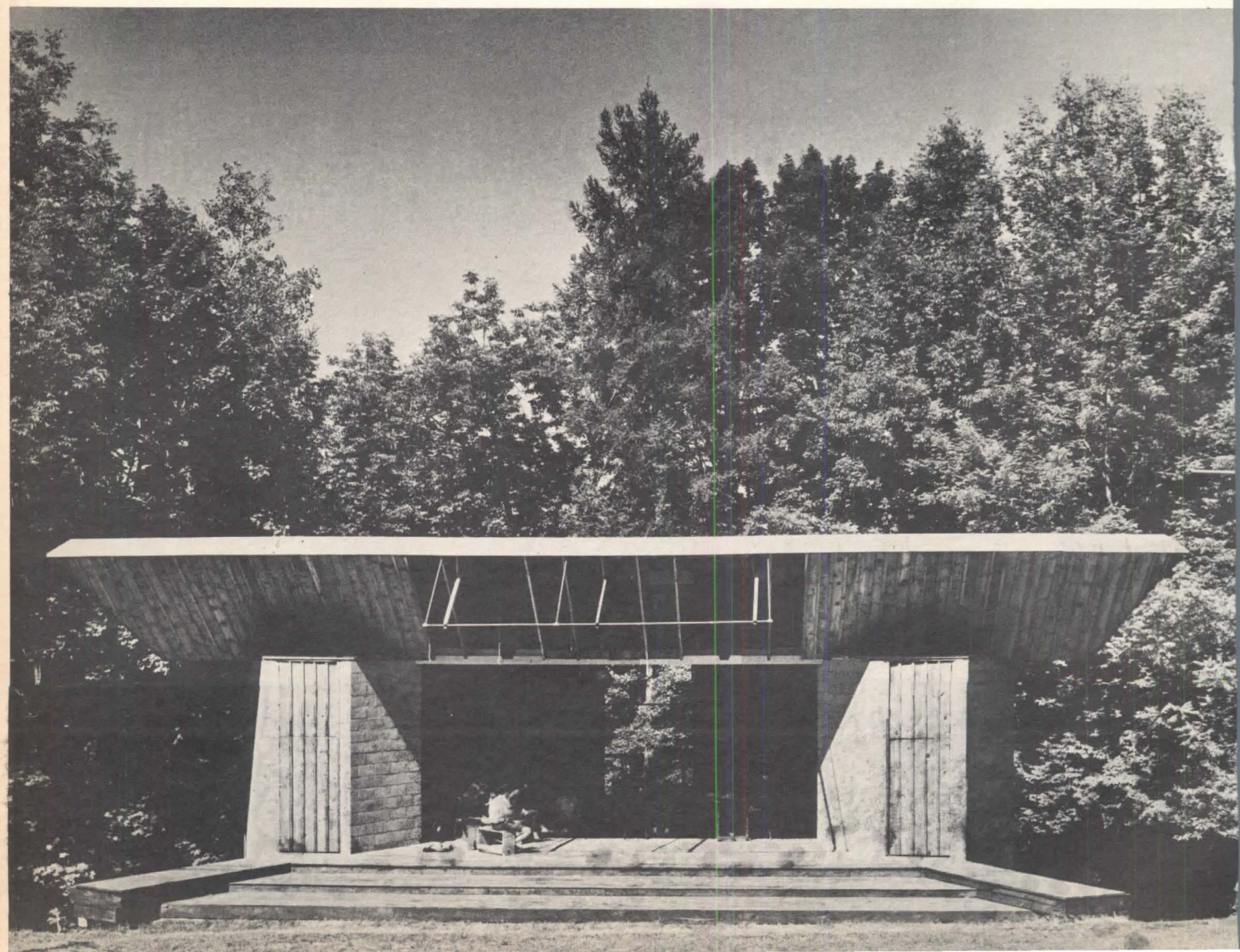


FRONT ELEVATION

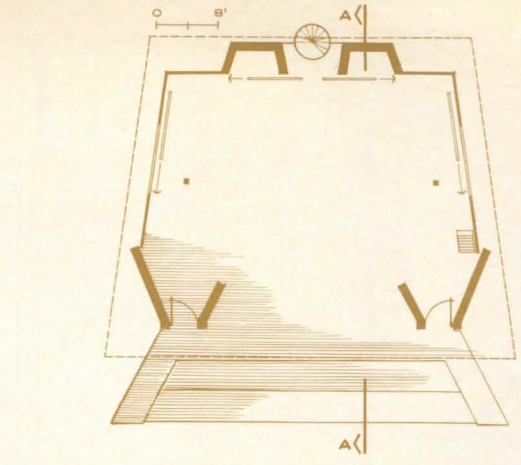
ART STUDIO: *The 2 x 10 roof joists supported on concrete block retaining wall set into hillside (facing page, top) cantilever out over stud wall storage units and wood mullions of old double hung windows to support the wood roof that is also a sun deck.*

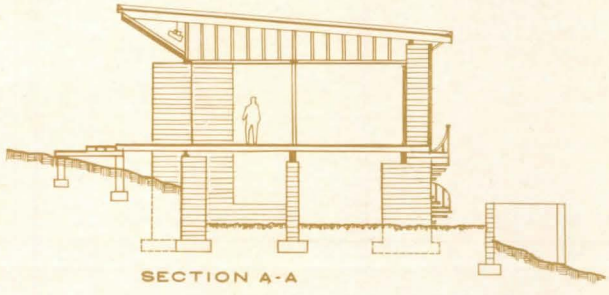


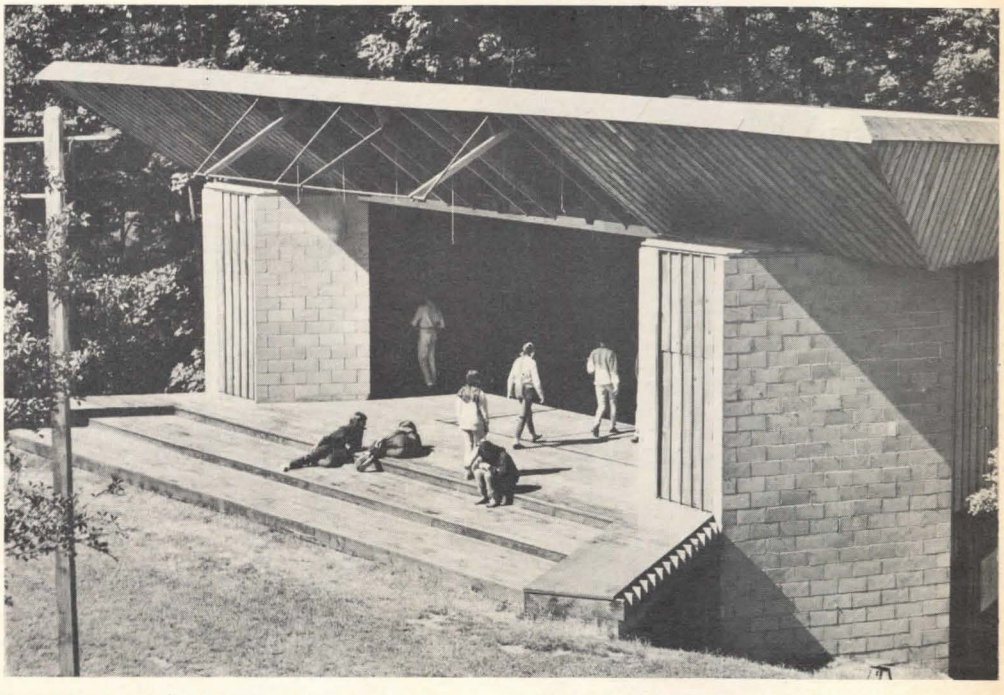
The workshop, which is underneath the stage has access to the downhill part of the slope via sliding panel doors.

On an adjoining plateau is the swimming pool. Its sun deck, overlooking the tennis courts and villages below, is actually the roof of the art studio, a long, narrow room fitted neatly into an existing contour. Although one side of it is a solid concrete retaining wall, the studio receives optimal lighting from its glazed outer wall.

The positioning of the studio, as well as that of the theater and the "villages," typifies the architects' desire to take best advantage of the site without changing contours or landscaping. Even the choice of materials in the buildings — indigenous pine and spruce, gray-tan concrete block — helps retain the natural character of the setting, and proves to be economical at the same time. Most importantly, the architects have achieved a commendable, over-all cohesiveness with a scheme that allows a certain amount of segregation according to program, age group, and sex, and at the same time centralizes the most commonly used facilities and recreation area. All aspects of the design — hexagon, "villages," over-all planning — reflect the sense of community desirable in this workshop in the arts.







THE THEATER *(facing page, bottom, and this page): This simple, open theater with outdoor seating incorporates up-to-date lighting and storage facilities so that students may benefit from their experience of staging a production. Floor and roof are supported on four great concrete block piers (which also provide stronge space). Floor beams are 2 x 12's bolted together and roof beams are built up of triangular plywood sections forming an upper frame for the proscenium. A slender light tower of 2 x 10 stock lumber carries large spotlights.*

REVOLUTION II

Ninety-nine years ago, the first students of architecture in the United States had just enrolled in the first American school of architecture.

Today, everything is vastly more complicated than it was a hundred years ago. Whether architectural education is adequate, or even relevant, to the critical needs of today and tomorrow is a question that has been heavy in the air for the past few years. In more rarified form, of course, the question has been weighing on leading educators for the past decade.

For the last few years, however, it has become increasingly apparent that architectural education is in a state of turmoil. Within the past three years, no fewer than 23 men have moved into the top position, as chairman or dean, of their own or another architectural school. No fewer than 81 per cent of the schools are planning or have instituted "significant changes" in their curricula, according to Robert Geddes, new (1965) dean of the architecture school at Princeton University and project chairman of the AIA's $100,000 Education Research Project. Of the 61 accredited schools, 30 have switched or are switching to a six-year program, reports Richard Whitaker, Jr., the AIA's new (1965) Director of Education. Architectural education, then, is involved in activities ranging from the merely remedial to the utterly drastic. There is a whole new Establishment, not fully entrenched, sometimes not yet long enough in power to have seen its ideas in action or to have energized a new opposition. There is a whole new generation of students learning that questions are more important than answers, that process is more important than product, that the architect is more than a form-giver, that architecture is more than a series of individual monuments. What now exists primarily as a revolution in the schools could well become a revolution in the profession.

Where there is activity and change, there is bound to be controversy. P/A asked various educators what they felt was the most controversial subject being debated by architectural educators today. Everyone, it seems, has a different answer. "Science" or "programming" or "curriculum" or "architectural expression," say some; the architect's role and responsibility, say others. Still others see the primary controversy as one of definition — the nature and purpose of architecture, of urban design, of environmental design. There are arguments about whether to educate students more in basic principles or train them more in techniques, and arguments about whether to become a generalist or a specialist. Edward Romieniec, new (1963) chairman at Texas A & M, considers the

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main question to be "educational process: Is the student being educated or trained?"

To Gregory Ain, new (1963) head of the department of architecture at Penn State, the key problem is:

"Whether to base our professional education upon the imagined public relations needs of an ailing profession, or upon the real needs of an ailing community."

To Lawrence Anderson, new (1965) dean of MIT's School of Architecture and Planning, the major controversy is:

"Whether to respond primarily to the possibility of creating spaces to enhance occupancy or to seek motivation chiefly in exploiting the new means (a more rational and sophisticated industrialized process)."

The major controversy for Joseph Passonneau, dean of the school of architecture at Washington University (St. Louis) is:

"The argument between rationality and meaning — whatever that is. (At the highest level there is meaning in architecture, although by definition it can't be verbalized. What most architectural meaning means is that the building is meant to hit the architectural journals. God save us!)"

Charles Moore, new (1965) head of the department of architecture at Yale, sees the central issue as:

"The possibility of the development of a theory of design into which research and intellectual efforts can feed. Other hotly debated issues, such as whether the computer is good or evil, are merely parts of the major issue — perhaps not as important as they seem."

And, according to Tim Vreeland, new (1965) chairman of the department at the University of New Mexico:

"There is no controversy if you discount the spurious controversy of traditionalists and humanists, who fear something valuable is being lost in adopting a direct rational and scientific approach to environmental design."

Changing Objectives

The variety of opinion concerning the controversies of the day is probably related to the variety of opinion concerning the architect himself, his role and his function. There are a multitude of definitions. The AIA Education Research Project (headed by Robert Geddes and Bernard Spring) has set itself the task (among others) of obtaining perhaps 1000 statements of what the architect should be able to do. By asking architects, clients, and even students, they hope to set up a basic set of goals toward which any and all educational goals can be directed and against which they must then be evaluated.

Among educators alone, there is a substantial range of views. At one end, there is the simple dictionary definition: An architect is "one who designs and oversees the construction of buildings."

For others, the client's concerns are just the beginning. Paul Schweikher, head of the department of architecture at Carnegie Institute of Technology, is only one who points to the architect's "responsibility to the community as well as to the client." The architect must "anticipate, in his design," says Schweikher, "what that project may do to the whole area of which it becomes a part." Murlin R. Hodgell, new (1964) director of the University of Nebraska's school of architecture, speaks of the need for "intelligent concern for the interrelationships between the areas of the architect's responsibilities and the totality of his developing community."

John Wade, new (1963) head of the recently formed professional course in architecture at Tuskegee, comments:

"We believe strongly in an activist approach, in searching out problems and attempting to solve them. The architect cannot wait for the client to act."

There are various other active roles proposed:

As an independent force between the client and the society:

"The architect exists today, or should exist," says John Lawrence, dean (1960) of Tulane University's School of Architecture, "to invent and define new functions and styles of urban life in revolutionary change. He may be the last or almost the last to be able to act with a vital and convincing morality. Someone has expressed it this way: 'The architect is the only one who can stand between his client's ego and society.' I think this says it very well."

As a participant in the political decision-making process:

"The architect should and must participate in policy-making decisions at the local, state and/or national levels in order to establish a sympathetic climate for the reception of his contributions,"

notes Emil Fischer, new (1964) dean of the College of Architecture and Design at Kansas State.

As a mature and involved citizen:

"The architect, who may once have seen himself standing slightly apart from society," says Charles Moore, "is now wrapped up in some of its central problems. A curious aspect of the outlook required of the architect, now as in the past, is the unembarrassed juxtaposition of concern for the closely finite, like doorknobs, with concern for the most general concepts, like the extent and importance of the public realm in a democratic society."

As a professional person operating on any of a number of levels: According to a statement from the Boston Architectural Center, written by Dean Arcangelo Cascieri and new (1965) Chairman of the Education Committee, Sanford R. Greenfield, an architect should be able to do the following, along with his other, more traditional roles:

"(1) Participate in the making of decisions affecting the physical environment as part of the prevailing power structure as elected legislators or government functionaries on local, regional, and national levels; (2) participate in the creation and development of forms as a member of an industrial organization, not as an outside consultant, by being familiar with the methods of production, materials and processes of development, merchandising, distribution, and management; (3) formulate and participate in the development of research to discover new areas of knowledge that tell us about the behavior of the users of all buildings before and after interaction with the new environment; and (4) find prestige and status in positions other than self-employment as a practitioner in such varied areas as government, industry, commerce, and education."

And, says Lawrence Anderson of MIT, "Our profession should have room for a few who only think."

Essentially, say many educators, the architect is a creator of environment. According to Romaldo Giurgola, new (1966) chairman of the division of architecture at Columbia, the architect's function "is to translate manifestations of life into form." The architect expresses the highest values of his society, or the lowest, according to one's outlook. His concern is the environment, making it "beautiful" or "viable" or "harmonious" or "wholesome" or "invigorating" or "efficient" or "ordered," again according to one's outlook.

There is at least lip service given to the idea of the architect as only one among many involved in creating and changing the physical environment, and while his exact position on "the team" is not clear — as catalyst, coordinator, col-

REVOLUTION I

league, or leader — many feel that he can no longer claim to be the only person responsible. Although the Architect-as-God is dead, the Fountainhead Syndrome lingers on.

New Specialization

To cope with the changing role and function of the architect, and to equip the student for his professional role, the majority of schools are making substantial changes in their programs. "The philosophy was formerly to develop a few high-quality designers," points out Dr. J. Ingraham Clark, new (1964) director of the school of architecture at Ohio State University about his school. Now this has changed, and the aim is "to develop the many talents needed by the profession." Sidney Katz, chairman of the Board of Trustees, National Institute of Architectural Education (formerly the Beaux Arts Institute of Design), would agree: "It's a mistake to train everyone as a designer, when only 10 per cent have the talent for it."

There is broad, new recognition that not everyone can be a great designer. Where previously there was no alternative for students without design talent, there are now many possibilities. As the Boston Architectural Center defines it, one new function of an architect is to "provide specialized services, and not necessarily comprehensive architectural skills, based on his own particular and unique aptitudes, skills, and interests that lie within the many facets of the profession."

Specialization, of course, has been possible for some time at the graduate level: There are master's programs in urban design, school or hospital planning, environmental design, in housing and community design in developing countries, in construction, in restoration and preservation of historic buildings, in tropical architecture, in architectural engineering, and in architectural psychology. The number of programs can be expected to grow as graduate work in architecture increasingly comes of age; and, as the number of programs grows, the number of fields of specialization will grow, too.

New graduate specialties on the horizon are an M. Arch. in Resource Planning and in Systems Technology (now in the planning stage at Virginia Polytechnic Institute), and Yale's two-year M. Arch., being contemplated for 1967, as yet not named but "probably an M. Arch. in Urban Design or Housing, or Criticism or Theory, or what have you." Harvard's proposed Program in Advanced Environmental Studies, an interdepartmental program, will start off with the creation of four endowed professorships — a natural scientist, a programmer, a designer, and a social scientist — representing the core from which Harvard intends to build "a post-professional program more relevant to the problems of modern urbanization than any curricula now existing."

Berkeley's entirely new program, as of the fall of 1966, has an M.Arch., with no fewer than four branches — in environmental control, structure and production, design theories and methods, and social and economic factors in architectural and urban design. Berkeley also offers a variety of routes to this degree: four years in their new undergraduate program, receiving an A.B. in Environmental Design, one to one-and-a-third years with a B.Arch. from elsewhere; or three-and-a-third years with a nonarchitectural B.A.

An M.S. in Environmental Design is being offered at the new Environmental Design Center of the University of Wisconsin (Madison), which opened in the fall of 1965 "to initiate interdisciplinary instruction and research" for graduate students who will ultimately participate in the various design professions.

Specialization is growing apace at the undergraduate level, too. Various schools have dual options for structural and design work — among them Clemson, University of Idaho, University of Illinois, and University of Oregon. A fifth-year specialization in architecture or city planning is offered at Illinois Institute of Technology.

Multiple options are offered at a growing number of schools. Montana State has a minor in structures, community planning, or art. Iowa State offers concentration, after the second year, in structures, urban planning, art, and construction technology. According to Raymond Reed, new (1964) head of the architecture department:

"The student who chooses to concentrate in structures will receive more instruction in structures than does the typical undergraduate civil engineer. If he chooses to concentrate in urban planning, he will receive more instruction in planning than if he were enrolled in a typical undergraduate or graduate planning program. If he choses to concentrate in the field of art, he receives art instruction in depth comparable to a fine arts program. If he chooses to concentrate in the field of construction technology, the student will have qualifications in excess of any known architectural program."

The University of Nebraska, too, has a system of multiple options. "For many years," reads a 1966 report on the newly revised undergraduate programs at Nebraska, "the school has pursued an undergraduate program in architecture giving almost exclusive emphasis to the building design aspect of the office practice phase of the architectural profession. Without in any way depreciating the continuing importance of such studies," the architectural faculty decided that, following a common core of studies during the freshman year, students would henceforth have the option of six routes to their baccalaureate. Five of these options will lead to the B.Arch. degree "and to possible eventual registration as a professional architect. Most of these programs, however, will also recognize the growing number of alternatives to conventional registration and office practice within the concept of architectural professionalism." The new options are the following: (1) Architectural Design, a continuation of the established design program, but limited to those "who have demonstrated genuine talent for design"; (2) Landscape Design, not to produce men who are fully qualified in that profession, but rather to develop architects "with increased awareness and understanding of the problems and possibilities of landscape architecture and site planning; (3) Urban Design, intended primarily to give a head start to architects who expect to go on to graduate study in planning; (4) Architectural Administration, to give special training in accounting, personnel, business management, law, estimating, and specifications writing, as well as in architectural subjects, thus providing unique qualifications for future practice as specialist, or principals of firms; and (5) Architectural Science, to produce not only creative specialists in structural, mechanical, or interior design, but also "a cadre of architectural scientists who will be capable of taking the lead in development of badly needed architectural research programs." (The sixth possibility is a new program in

Construction Science, a four-year B.S. degree. Each of the B.Arch. options is five-years.)

VPI is another school with multiple options: Students in the upper division (fifth and sixth years) have available alternate programs in planning, design, and systems technology. Under its new (1964) dean, Charles Burchard, the school of architecture at VPI has embarked on a revitalization program that extends into almost every phase of architectural education.

There are other undergraduate specializations being contemplated elsewhere. Kent State, in Ohio, is looking toward a curriculum in building construction and systems architecture. Miami University, also in Ohio, is hoping to develop structural and mechanical engineering as an option to design in the architectural degree. Washington State reports that it intends to develop additional options, such as mechanical equipment, structures, specifications, programming, construction, and primary and secondary teaching. LSU reports tentative plans to include curricula in building construction, architectural administration, and systems architecture. Minnesota expects to initiate "a broad program in design as related to industrialization and mass-production techniques."

An interesting proposal from the Boston Architectural Center suggests a curriculum consisting of a three-year Foundation Course, a five-year program with specialized options, and a full seven-year course for a more complete general architectural education. (At present, the course takes seven years, with instruction given only at night.) The first three years will "introduce the student to the various facets of architecture." If he does not continue his education, he has at least "experienced the special character of our profession, and hopefully will understand some of our objectives." If the student does continue, he embarks upon an additional four years, leading to a certificate.

From Five to Six Years

A substantial pre-architecture program is growing — a four-year B.F.A., B.S., or B.A. in Architecture, Pre-Architecture, Art and Design, Architectural Studies, or Environmental Design is followed by a two-year program for the first professional degree, either B. Arch. or M. Arch. Among those that now have this program are the University of California at Berkeley, Carnegie Tech, Columbia, Notre Dame, RPI, Washington University (St. Louis), MIT, New Mexico, Tuskegee, and the University of Texas. Others are anticipating it — among them Clemson University and Rhode Island School of Design. Clemson's program, due in 1967, will require an internship year between pre-architecture and the professional degree, although a student's draft status may preclude this. Among those questioned by P/A, no fewer than 24 schools indicate that they are contemplating an increase in the length of the course of study — some planning it within the next few years, some discussing it without definite plans.

Harlan E. McClure, dean of the school of architecture at Clemson, sees many advantages in the new 4 + 2 curriculum over the previous five-year program. The new program permits an expansion in studies of humanities and social sciences during the pre-architectural sequence, and permits greater time for the increased technological and professional aspects of the architectural curriculum. The six-year program will facilitate the transfer into architecture of students from other disciplines, and will permit students who have completed the preliminary four-year program to undertake parallel graduate study in city planning, landscape architecture, or building technology. Those who do not continue beyond the four years would still have enough architectural training to be of value in the profession.

The lengthening course is by no means unanimously approved. Some are cautious, even skeptical. "The important point is what we are trying to teach a student to *do*, not the name of the course or the amount of time," says Bernard Spring, of the AIA's research project. "Pasting on another course or two" is wrong, he believes. A longer course of study is not necessarily a better one.

"The greatest danger," says Charles Moore, "is that architectural educators will suppose that quantitative changes can rectify their qualitative errors. If we can't teach anything in five years, I don't see why a six-year curriculum will improve matters, unless the six years are different from the five being replaced."

Some educators also feel that any increase in the course of study should include an increase in the time required for practical experience. Some are concerned that the architect will become overly scholarly, and less accustomed to what must be essentially an activist role. Yet the course of study is undeniably longer, and where it has not already been lengthened, there is pressure or debate about doing so.

New Courses, New Emphases

The immediate pressure to lengthen the course of study is to include more material, new experiences, new tools. The past few years have seen many schools adding or strengthening their offerings in urban design, social sciences, humanities, programming, computer technology, structural design, environmental technology, and theory of architecture. Several schools report that rendering, surveying, and freehand drawing have been dropped. An increasing number of interdisciplinary courses are being offered, some first-year courses rather than upper-class collaboratives or seminars. (Michael Brill reports from Pratt that the first-year "Form of the City" course in forces that shape cities has met only with violent reactions. The "establishment" within the faculty feels it is not concerned with architecture as they have always envisioned it; however, the students and faculty members directly involved feel it is the most exciting course in the school.)

The emphasis in schools across the country is increasingly on architecture as a total planning process, on integration of subject matter and a breaking down of barriers between different aspects; on liberalization of the curriculum, with subjects such as psychology and sociology being introduced; on research as an essential foundation for architectural decisions; and on decision-making techniques as basic intellectual tools.

Revolution in Teaching

Ways of teaching are changing, too. Only two years have passed since Ben Thompson, writing in the *AIA Journal*, argued that architectural education is "not even up to the normal high-school level" in such areas as team teaching and audio-visual techniques. Although architectural education has been slow to see the applicability of these techniques to its own educational content, many schools are getting on the bandwagon. "Nationwide, there is a growing interest in the problem of methodology in architectural education," maintains Henry Kamphoefner, recent president of the ACSA. "We may well be on the thresh-

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old of a revolution in teaching methods." He refers specifically to "computers and rationalistic techniques of analysis" as replacing some of the more subjective approaches of the past. Unquestionably, though, the revolution in teaching methods is more extensive than even these broad areas.

One of the most revolutionary systems has recently been introduced at VPI: "We are experimental. We are looking for ways to provide an education which will enable our graduates to identify need, and to conceptualize new models. We are abandoning the studio system in design education in an effort to achieve these objectives, and extending and intensifying our lecture curriculum in order to provide a stronger grasp of the intellectual and physical realities." Design studies at VPI will be conducted in experimental laboratories, these studies to parallel a seminar-workshop sequence. Dean Burchard describes the system: "A teaching team in design laboratories instead of a studio master — working through an entire range of environmental scales in two-year cycles, with lecture curriculum material from *all* years presented in *each* level or division by faculty teams for discussion of their material in a way appropriate to the level of learning of the division." (The curriculum has been restructured into two divisions: a lower division comprising first and second years, and a second division comprising third and fourth years. After this, the student has the option of a terminal fifth-year program or entering the third division for a fifth and sixth year.) The present lecture curriculum of five years will be compressed into three, much of it eliminated or treated in the seminar sessions of the design laboratories.

A number of other schools are experimenting with team-teaching. Rice University covers its "triad" of Design, Technology, and Management in a single course called Architecture. The triad is part of all levels, from first through sixth year. Each level has a professor of architecture directing the integrated program and coordinating the staff specialists: There are specialists in structures, mechanical and electrical engineering, office management, and design, as well as consultants in programming, interior design, acoustics, industrialization, and related fields. Within the integrated program, students have possibilities of developing their own specialized interests. But through team-teaching, states William Caudill, director of the school, "the Triad *really* is an education structure which helps the faculty provide a 'balanced diet.'"

David Scott, new (1966) chairman of the department of architecture at Washington State, reports that they are team-teaching two courses: "Orientation and an all-university course in what we might call architectural appreciation or environmental appreciation." Hampton Institute reports that most of its classes are team-taught. Henry Kamphoefner reports that his own school, North Carolina State, is attempting an experiment in team-teaching this year: The entire second-year class in the School of Design, including students of architecture, landscape architecture and product design, will be directed by two teams of three instructors, one from each discipline. And Bruno Leon new (1964) dean of the school of architecture at the University of Detroit, foresees, in the next five to ten years, the "complete dissolution of the old studio teaching methods through the introduction of 'teams' that include sociologists, political scientists, psychologists, urban economists, and architects. The 'teacher-architect' will cease to be critical, as previously known, and become the broader 'social scientist-architect,' 'technologist-architect,' and the like. In other words, the narrow architect of our decorative styles will no longer be relevant in the schools, in the profession, or as an example for teaching methods."

Team-teaching, however, is only one of a variety of new approaches. Dean McClure of Clemson reports that the school is structured in "a unique vertical studio system." Ralph Rapson, head of the school of architecture at the University of Minnesota, reports a similar technique: "Currently, we are employing a 'vertical' system of instruction in our design sequence rather than the more traditional, horizontal, year-by-year stratification. Under this 'pyramid' arrangement, we have a number of 'teams,' each composed of approximately 20 students at all levels of design and under the immediate direction of one faculty man. Usually, there will be some three teams in a studio, each semiautonomous, but generally working simultaneously on a relative or group effort. In our pyramid system, older and more advanced students are working together at their respective capability and talent, with the advanced men assuming leadership."

Catching Up on Techniques

The need to transmit certain kinds of information in the most direct and efficient manner is leading schools to explore the uses of TV and other equipment widely used in education today. Rice University, currently programming its own art and architecture facility, has received a grant from EFL for its investigations. Its commitment to EFL is for a report not only covering the situation at Rice, but also advising other schools on their building programs in architecture. At the latest word, Robert Sobel, on the Rice faculty, reports that they are making a serious study of the possibilities of TV as an aid in the teaching of architecture; other techniques will undoubtedly also be evaluated.

José Luis Sert, dean of the Graduate School of Design at Harvard, reveals that an audio-visual laboratory, now being planned, will allow students and faculty to experiment with visual aids such as filmstrips, photography, and closed-circuit TV in the analysis of space relationships, as well as forms, light, color, sound, and movement.

On another front, Robert Dietz, dean (1962) of the College of Architecture and Urban Planning at the University of Washington (Seattle) reports plans for "sophisticated retrieval systems" — specifically, more microfilm and tape — in the new library for the several departments of the college.

At California State Polytechnic, George Hasslein, head of the department of architecture and architectural engineering, reports, "We are presently meddling with teaching machines — a very fine and inexpensive way to get factual information across."

David Scott of Washington State suggests a further possibility: "There is a tremendous need for sharing teaching aids and sharing information. Let me give you an example: There is a great deal of good information on the subject, say, of acoustics. And I think that there is a good man in a person such as Bob Newman. He, or we, or the acoustical materials society, or somebody, should cause it to be possible for Bob Newman to make up a series of television tape lectures so that everybody could benefit from his experience and fine teaching ability. The other faculty members at Washington State could utilize their time not in teaching special subjects such as this, but teaching the acoustical information in a design or synthesis course. Also, it would be possible for the students to review these tapes on an as-needed, as-desired basis."

The application of this idea on many

levels and in many subjects is particularly intriguing. Such projects, which thus far are mainly in the hypothetical stage, can be expected to receive continuing attention during the coming decade.

Scott continues:

"The most significant changes that should come in the next few years are in the area of teaching in a three-dimensional, dynamic way. In the past, we have established teaching methods, ways of expressing ourselves, in the two-dimensional and static way. What we need is a more dynamic, three-dimensional way of approaching these kinds of problems. The computer is going to be a very useful tool for doing this kind of thing. The light pencil is a significant development, as well as variations of combinations of the light pen and the computer. A number of other devices can be used, but hopefully we will be able to capitalize on some of the learning devices that have been developed for the more high-demand, educational areas."

At Drexel Institute of Technology, according to new (1965) head of the department of architecture, Joe Jordan, the new approach to basic design means that students "work exclusively in three-dimensional design."

The "Real" World

Another educational technique of growing importance is the attempt to involve the student in situations that are more "real" — i.e., that approximate the actual working conditions of the professional. On the one hand, this is leading to a proliferation of laboratories. Carnegie Tech looks forward to a design laboratory that is "an extrapolation and interpolation of Neal Mitchell at Harvard and Billington at Princeton." At Kansas State, Henry Wright is developing elaborate new techniques for teaching Environmental Technology through the direct involvement of students in challenging investigations of these problems.

In Harvard's immediate future are a new laboratory in Computers and Computer Graphics, already in pilot form, and a Workshop in Comprehensive Design, *now in "embryo" form, which* will consist of "extensive mock-up facilities, audio-visual equipment, and other resources to permit students to experiment with design with a freedom and precision never before possible." Harvard already has its unusual Technology Workshop under Neal Mitchell (see FEBRUARY 1967 P/A), and one of the few low-velocity wind tunnels.

At the Urbana campus of the University of Illinois, a model-testing lab in graduate structures is a recent development, as are the structural, lighting, and acoustical laboratories at the University of Detroit.

"Reality" on the social level, too, is increasingly sought. The usual attempt at most schools has involved the selection of a site or building type with local meaning; students then go out to make explorations, and the "client" may come into the school at various stages of the project. New approaches now seek a closer involvement.

John Lawrence, dean of the school of architecture at Tulane, comments:

"We are much more concerned with intervention in public affairs and local and regional decisions (or lack thereof) than formerly. A number of 'position papers' on crucial issues in the city have been published. We try to have the school's views sought on important issues and to have these views respected by the business community and politicians."

Bruno Leon states a view held by many educators:

"Insistence upon student development of the program through contact with the people, agencies, site, and all other parameters involved in the existing problems."

MIT, Yale, and Kentucky are launching a joint series of projects in Appalachia, in an attempt to get students intimately involved in the full range of problems in an actual community of this type. Chet Sprague of MIT speaks of the need for students to experience a totally different system of values from their own; also, the need for architectural education to be immediate and actual, to counteract a tendency toward the academic as schooling gets longer. On this particular series of projects in Kentucky, students will work on location in summertime, putting up, with community help, the buildings designed by the students following their earlier investigations. The scope of the work has grown from several community buildings (already built) to a full study of housing and relocation. John Hill, member of the architectural faculty at the University of Kentucky, is seeking to include Vista psychologists and sociologists on a teamwork basis with the students.

Washington University (St. Louis) operates an Urban Renewal Design Center (organized recently by the School of Architecture) for graduate students in urban design. Under its director, Roger Montgomery, the URDC functions energetically in four areas — as a research center, as a consulting service, as a source of extensive data, and as an educational mission in providing "real" situations for classroom study.

An End to Spoon-Feeding

That there is less spoon-feeding of students in the schools is reflected, for instance, in the intention at Berkeley to let students elect many of their courses. "Students have a better idea than most of the profession of how to put together a professional program," says Gerald McCue, new (1966) chairman. Students at Berkeley are encouraged to take courses in departments throughout the university, with a view that these are usually better outside the department than can now be offered within. Tim Vreeland of New Mexico agrees with this view:

"Basically, I see the role of this department as that of a bridge between many related branches of knowledge. We encourage our students to range well outside of the department's offerings, and our function is to instill in them the ability to synthesize this information in order to produce higher levels of organization of the environment."

The B. Arch. program at Washington University (St. Louis) includes three alternative programs of advanced electives, with each student required to complete a minimum of 12 units in one of three areas — the arts, the natural sciences, or the social sciences.

Students are increasingly encouraged to develop their individual interests and capacities. Curriculum branches offer this possibility, of course, and there are other techniques. John Lawrence of Tulane reports that his department is considering whether a "film or exhibition or project other than building design" might better fulfill thesis requirements for some.

At Notre Dame, Frank Montana reports that the most significant change in recent years is a new design freedom that permits a student "to advance at his own individual pace without regard for the semester sequence."

Tulane has experimented successfully with assigning a full half-year's work in design at the beginning of the term, with students working on several projects at the same time.

A growing number of schools seek to put students "where the action is." According to some observers, the University of Illinois' new branch at Chicago Circle will probably overshadow the down-state architectural department. Cornell's New York City program, a one-semester interlude from the hinterland, has concluded its third successful year with a move to larger quarters and a renewed sense of its value to students. VPI has a one-

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semester program in Urban Studies in Washington. Minnesota has found it "highly rewarding" to send some 20 students abroad, under the direct supervision and direction of a faculty member; the students take a full work load for credit. The University of Illinois has just initiated a similar program, according to Jack Swing, new (1966) chairman of the architecture department at Urbana; 30 fourth-year students will spend a semester at a chateau in France, with ample time for architecture junkets in Europe. Rice has a summer exchange program with Guadalajara University in Mexico.

Methodology of the Future

What is the future of educational methodology? Tim Vreeland speaks for many when he reviews the changes in the department at New Mexico:

"Fundamentally, we are now attempting to teach in structured lecture and seminar courses those subjects which previously had been left to the hit-or-miss process of drafting-room instruction. Since architectural education is too important to be left to the amateur of the drafting room, the serious and well-prepared teacher now takes over. Board-to-board criticism and the final all-out smasheroo jury is in disrepute as a teaching tool."

According to Donlyn Lyndon, at the time new (1964) head of the department at Oregon, and now chairman-designate at MIT:

"It seems that coming years will involve a greater interest in specific programming and more precise definitions of the problems and a responsible evaluation of performance, the use of limited and clear projects designed to be instructive about specified subject matter rather than designed to let a student make a drawing of a building. Hopefully, there will be more use of model-building and simulation procedures and a greater demand for the use of supporting research."

Lawrence Anderson, dean at MIT, believes that architectural education

"faces revolutionary change whose nature is not clearly foreseeable. The distinctive feature of our education remains architectural design. But the Renaissance notion that capability in this is acquired as a personal intuitive skill by individual trial and error under the guidance of a master or masters may not stand up under future requirements. We may be forced to invent quicker and more reliable ways to do it."

Yet teaching involves more than technique. "Good teachers," says Lawrence Anderson, "develop superior methods. The other teachers are, we hope, part of our turnover factor." And Donald Mochon, acting dean of RPI, like many educators, feels that

"dedication on the part of the faculty is what seems to be most important. Like everyone else, we are paying a lot of attention to the new educational media, but an architect-teacher who cares about students is the essential element."

From Bill Lacy, new (1965) dean of the school of architecture at the University of Tennessee, "Faculty-student ratios are not relevant. More important is who teaches the course and how it is taught." And from George Hasslein, of California State Polytechnic:

"No revolutionary change in teaching methods has ever been made to this date. Teaching is an art whereby one person transfers his skill, knowledge, and experience to another. This is done in infinite and many personal ways. Architectural teachers should appreciate that they are educators first. It appears that the learning process doesn't seem to occupy architectural educators to a sufficient extent."

Good teachers are always a rarity, as any dean or student can testify, and the indications are that they may become scarcer in proportion to the over-all need. In terms of numbers, the situation is critical already. In terms of competence, the lack of qualified people may seriously handicap some of the forward-looking programs; one school, for instance, was to have devoted its fifth-year design class exclusively to the application of industrialized techniques to construction, but was forced to delay the program because it had only part-time faculty members.

There are differences of opinion as to the skills required of a teacher. Most agree, at least in some sense, with Giurgola: "The sense of craft in architecture can only be transmitted to the student by a teacher who has been personally involved in the craft itself." No fewer than 24 schools report that 100 per cent of their teachers are practicing professionals; at other schools, the percentage of those in active practice ranges from 50 per cent to 90 per cent. Yet many of those who combine practice with teaching have only limited contact with the ideas and projects that are relevant for students today. On the requirements of a teacher, Joseph Passonneau has expressed the view that it is possible for a good architect to be an anti-intellectual, but not for a good architectural educator. The two areas do not overlap. The "good" architect may be a "bad" teacher. But, adds Passonneau, the good teacher who is not a good architect is a rare exception.

Bertram Berenson, new (1965) director of the division of architecture at Hampton Institute, comments:

"There are few, indeed, of the most important scholars, critics, designers, who teach and are willing to commit themselves to the questions about what architecture is in the spectrum of action and ideas; who also have the capacity, insight, and intellect to concern themselves with students as people and with the educational process as a series of fragmented episodes of which the teacher is the cohesive force. I suggest that there are few; and, in turn, I further suggest that there is a desperate need for more; lastly, I wish I were one of them."

It is necessary for teachers to be accepted as the equal of practitioners, say a number of educators; it is necessary for the profession to recognize the vital importance of education. "The profession has to accept this responsibility," says Dick Whitaker. "It's part of being a profession." The responsibility involves more, however, than an individual's spending two afternoons a week teaching; a much more comprehensive involvement is necessary.

One crucial problem is money. American colleges generally pay teachers low salaries and rely on the fact that some will teach no matter how low the financial compensations. Rightfully, we insist that our teachers be dedicated; then, unfairly, we use this to avoid paying reasonable salaries. The situation is no different in architecture. The upgrading of architectural education may depend on whether or not there is enough money to pay those who at present "cannot afford" to teach. Even the supposedly "wealthy" schools are concerned about this problem; the current fund-raising at Harvard's Graduate School of Design mentions that faculty salaries at GSD are 20 per cent less than the Harvard average and "must be brought up to standard if quality is to be maintained."

The Enrollment Crisis

According to the ACSA, some 18,600 students of architecture were enrolled in the United States (at undergraduate level) during the year 1965–66. (Another 1150 were doing graduate work.) Of the 18,600 candidates for baccalaureate degrees, however, only 2171 were expected to receive their degrees during that school year.

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Is there a need for more architects than are presently being educated? Educators firmly believe so. In P/A's poll of deans and department heads, 37 out of 41 responding to this question answered affirmatively, but with certain reservations; only 4 were noncommittal or negative.

Charles Burchard of VPI judges that five to ten times the present number of architects is needed. "Unfortunately," he adds, "we should have them within the next five years, and this is not possible."

"If architects would recognize the need," says Robert Dietz of the University of Washington (Seattle), "industry, government, and the profession could absorb 20,000 to 30,000 beyond what is presently available." He worries that the profession will throttle itself, though, and fewer architects will be required than today, if present restrictions placed on the profession — among them, that experience can only be gained in an architect's office — are allowed to continue.

The need is not simply for more architects: The need, instead, is for better architects, say some educators, or for more architects "who can see," or are responsible, or are involved in the truly relevant questions.

Tim Vreeland, of New Mexico, suggests that, "If trained as environmental 'trouble-shooters,' architects would make their own jobs and there would be no foreseeable limit as to how many could be used." And Bruno Leon, of the University of Detroit, believes there is an immediate need for more people "who can make relevant decisions in our environment. I do not think that most students being trained today are needed, because their training is inimical to the needed solutions."

According to DeVon Carlson of Colorado, however, the absorption of a greater number of architects "implies a more effective program directed toward public understanding of the profession than is presently being conducted by the profession's practitioners or teachers."

Even among those who see the unqualified need for more architects, there is no unanimity about increasing their own enrollments. On the contrary, many have plans for keeping enrollment fairly steady, and of those who are planning increases, only several will be making increases of sizeable consequence (among them, VPI to 1000 in 5 years and 2000 in 10; California State Poly to 1000, perhaps to 2000 with proposed "environmental" programs; Boston Architectural Center, double or triple from its present 325; Iowa State, from 460 to 720 within the next three years; the University of Washington (Seattle), from 360 in 1966 to 640 by 1974). Several other schools are planning quite large increases in the service given by the architectural department to students in other departments — among them Cincinnati, Princeton, Utah.

The lack of facilities is an immense problem in all higher education, and in architecture it has meant that an estimated minimum of 1200 qualified applicants were turned away last year. (Shortage of faculty undoubtedly contributes to this number, as well as a school's desire simply to remain at its present size.)

There *are* new buildings, to be sure — Yale's comes immediately to mind; and there are others at Boston Architectural Center, University of California at Berkeley, University of Arizona, and Princeton. In the programming or preliminary stages are facilities at Arizona State, University of Illinois (Chicago), University of Idaho, Iowa State, Montana, Rice, Utah, and LSU. Harvard Graduate School of Design's current fund-raising for an ambitious $10,705,000 includes $6 million endowment for a new facility to replace its two existing buildings. Other schools mention that they are hoping for new facilities. But even with these hopes and plans, some of the new facilities will be no more than expanded quarters for enrollments that will remain essentially constant. Increased enrollments will come essentially from new schools.

Growth of New Schools

The 1960's have seen, and will continue to see, an amazing increase in the number of schools. In 1966, the NAAB listed 61 schools as accredited — the number in 1955 was 46; in 1945, only 28. (The ACSA includes another 13 schools that are not accredited, and there are an additional 7 schools neither accredited nor in ACSA.)

Several schools have come of age only within the past few years. California State Polytechnic, which previously offered a four-year B.S. in architectural engineering, now has added a five-year B.Arch. degree. Tuskegee Institute established a full professional curriculum in 1964, although architectural drafting had been offered since the 1930's. Hampton Institute, until 1965, was "technical, subprofessional and quantitative — all less than optimum, all in the process of change," says Bertram Berenson. Ohio University reached full professional status in 1960, although architectural subjects had been taught there since 1937. Cooper Union changed from a "certificate course" to a B.Arch. program in 1961, the same year that City College of New York opened a department of architecture and graphics in its newly organized School of Engineering and Architecture. (Until 1961, it had been the School of Technology, offering a few courses in architectural design and working drawings. In 1966, the graphics section was abandoned, leaving architecture as a full-fledged department.) The department at Washington State began granting degrees in architecture only in 1963, although they have given degrees in architectural engineering since 1917.

Completely new schools are also burgeoning. The AIA has given assistance to several new schools — Ball State University at Muncie, Indiana, now in its first year; University of Tennessee, now in its second year; and University of Maryland, now looking for a dean and expecting to open in the fall of '68.

Other schools soon to open include UCLA, which will probably begin admitting architectural students this fall (in an unusual arrangement, the senior class will be admitted first, with a new lower class added in each of the following years); and University of Wisconsin at Milwaukee expects to admit students in '68.

In the feasibility stage of study are a school at the University of Connecticut, and another at North Carolina; in the earliest preliminary stages is a plan for a regional New England school (there is at present no state-supported school in the six New England states). Reports from the State University of New York indicate that the question of a new school of architecture is under advisement; Buffalo and Stonybrook, L.I., have each been suggested as a location.

The Attrition Scandal

Will the new schools be able to increase the supply of architects in the numbers now deemed necessary? Increased numbers of graduates, of course, could also be obtained by another method — by keeping in school more of those who are admitted. According to educators, the dropout and transfer rate from architecture is nothing short of "scandalous." For those

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schools who could supply statistics, the following attrition rates were reported to P/A:

% of entering students who do not graduate in architecture	*number of schools*
0–20%	4
21–40	11
41–60	14
61–80	21
81–90	4

This excessively high attrition rate can only partially be attributed to the necessity in many state schools of taking everyone who applies and then weeding out many of them after a year or two. Why is the attrition rate so high, and what can be done about it?

Lawrence Anderson of MIT expressed a point cited by many other educators:

"Dedication to architecture requires special motivations, perhaps more subtle than those in law, medicine, and engineering. Many bright people who are exposed just don't get it."

"Selection of the entering students is not the problem," according to Charles Moore of Yale. "It's rather the architectural school characteristic of driving nuts the ones who are admitted, which causes them to go off to a sanitarium instead of graduating ceremonies." Burchard of VPI tends toward this view: "Selection is less at fault than teaching methods, which leave the student confused as to the behavior expected of him as an architect." Victor Christ-Janer, who teaches at Columbia, has expressed it as teacher failure rather than student failure. "I pass them on the first day; from then on, any failure is mine."

Perhaps the inexperience of young students is a major factor in their failure; many enter the professional course in architecture directly from high school. With this in mind, some educators feel that the answer to the high rate of attrition lies in attending junior college beforehand, or three years of college before entering the professional course, or a full liberal-arts degree. John Williams, chairman of the department of architecture at the University of Arkansas, believes that their proposed two-year pre-professional program would allow selection, after two years, to be based on considerably more information than at present. (In general, the six-year program that is developing throughout the country, whether in its 4 + 2 arrangement, or 2 + 4, will allow schools to be far more selective regarding those who go on to professional training.) Boston Architectural Center, which maintains an "open door" policy on admissions (no university credentials required), nevertheless holds that if students are employed in fields allied to architecture prior to admission or within the first year's enrollment, the attrition rate would decrease greatly. BAC faces unusual problems in the staying power of its students; the course is at present five years long, given only at night, and 80 per cent have dropped out by the end of the third year. Cornell's answer to better selection, says Burnham Kelly, is to interview all prospective students, concerning "understanding and motivation."

More knowledgeable career counseling in high school could be effective in improving the selection by students and schools alike, suggests Carlson of the University of Colorado:

"Many students come to us with either no knowledge of what architecture really is or with very unrealistic images of the architect and architecture."

Tim Vreeland of New Mexico is optimistic on this score:

"The situation will improve as soon as it becomes well established that the study of architecture is demanding, serious, and challenging, and we begin to draw the first-rate students who are now going into other, at present more challenging, branches of learning."

Can selection be aided by testing? The aptitude test (ASAT) administered by the Educational Testing Service in Princeton has been disappointing. Some observers feel the test is almost completely unreliable in predicting potentially successful architects. Is the test to blame, or is it perhaps impossible to predict success in an educational system so varied and so full of subjective factors, among students and teachers alike. Some educators, such as Berenson of Hampton Institute, are looking toward the work being done at the Institute for Personality Assessment and Research in Berkeley for a more reliable and objective method of measuring the likely success of students.

Bruno Leon, who chaired the committee on creativity for the ACSA for several years, believes that attitude and involvement are more critical than some high test scores, although, in his opinion, these are not to be negated entirely. One other factor, he adds, should be considered relative to attrition rate:

"Many students are lost to the profession simply because the 'design bias' of most curricula, registration laws, and professional societies inhibits the training of specialists in management, environmental technologies, structures, or the like."

Other Problems of Selection

The selection problem has other dimensions. As tuition necessarily goes up, and as the length of the course increases from five to six years for the first professional degree (also, as graduate work becomes more common), the problem of financial aid for students will become more acute. Unless architecture is to regress, and again become a profession primarily for wealthy gentlemen, funds will have to be found for able students who cannot manage by themselves. The AIA's annual scholarship fund ranges from $45,000 to $50,000, and is not expected to increase significantly in the immediate future.

A new system, whereby a local architect sponsors a student during the school year, is being tried at Tennessee, with the main intent of providing personal contact and the not unimportant benefit of providing financial assistance. The architect gives $500, of which $225 is used for tuition and fees, the remainder for travel, journals, books, and drafting equipment. The student is urged to visit the office, and the architect is invited to visit the school. Bill Lacy reports that the program has worked well during its first year of 14 sponsorships (the school chooses the student recipients), and it is planned to extend invitations next year to manufacturing firms in addition to architects.

Attention to minority groups is also in order. The War on Poverty has been cynically described as the war of the middle class against the lower class, with odds favoring the victory of the middle class. Many young architects have protested the design or redesign of an environment that ends up as a place where only middle-class values can survive. Perhaps this is the result of a not infrequent tendency among architects to think that their own values are universal; or perhaps it is due to the lack of dialogue between professionals of widely different racial and economic backgrounds. In any case, there is concern that some minority groups have not been adequately represented in the profession. In the New York area, the AIA's Committee on Equal Opportunity

(representing "a professional response to the democratic ideal") has been working to identify Negro and Puerto Rican students as likely candidates for architectural training — providing them with information about the profession and about their preparation for it, encouraging them to choose architecture as a career, and giving them financial assistance. Now in its third year, the committee has given 27 grants-in-aid, totalling $11,000, to 17 students.

Women, too, are seriously underrepresented in the profession, making up only 4 per cent of the student body, and 3 per cent of the licensed professionals. As the traditional forms of professional practice broaden, more women can expect to find an appropriate place in the profession.

Student Preparation

Among educators questioned by P/A, the general consensus is that students compare favorably with those of a decade ago. Students are more informed (at least about nonarchitectural matters), more inquiring about almost everything, professional and nonprofessional, and more mature.

These are students who no longer can accept easy answers, no longer can believe in absolutes, and who question their system of education along with everything else. They need a sense of involvement in what they define as the meaningful issues of the day, and they want a feeling of participation in the decisions concerning their own education. At several schools in the past few years, there has been student dissent of such intensity that it can only be called a revolution. (It *is* called that, by everyone except the several administrations.) One school even had a repeat revolution the following year. Another school, as we understand it, had an uprising when the students thought they should have been told that the school had recently lost its accreditation. The administration thought not; it was *their* problem, they maintained, and they would solve it in the way they thought best.

Not all students are aroused. According to Paul Schweikher:

"Few students have faith in work, still fewer select architecture for itself; to the majority it is simply another way of making money: The quicker the study part of it is over for them, the better. We are not as pessimistic as this sounds. The challenge is changing the attitude."

According to many educators, students arrive at architectural school with many gaps in their education. Raymond Reed of Iowa State describes the situation as he sees it:

"Initially, students entering college are ill-informed and ill-prepared to *think*. I believe this can be traced to a spectator type of education that somehow discourages personal involvement. However, when challenged to think for themselves after a painful trauma or reorientation from self to sensitivity, a reasonable number are sufficiently strong to explore in depth the challenges of architecture. It is these few students to whom we entrust the future of architecture."

Students do not simply suffer from inadequate preparation in the English language, although this is mentioned as their outstanding liability. According to their deans and department heads, entering students have an inadequate training in mathematics, history, art and design, psychology, and the realities of American urban and political life. More important, though, than what they know or do not know are charges that their ability to think, to see, and to communicate — in visual and verbal terms — are frequently not developed beyond primitive levels.

Prior Office Experience

Educators find that entering students have only the barest understanding — and inaccurate at that — of the architectural profession. P/A asked educators whether they thought it advisable for a student to have architectural experience before architectural school. The replies:

No	27
Not necessary	5
Yes, but not required	6
Can be helpful, depending	10
Makes no difference	2

Those who see a negative value in prior office experience feel that it tends to "ram mediocrity down the student's throat," to make the student too preoccupied with practical problems and unable to think in broad conceptual terms, or tends to restrict the imagination. "Any experience that would allow the student to mature before entering architectural school is advisable. Our best students are those who have not come directly from high school to the university," states Bill Lacy. And Lawrence Anderson, who believes office experience might well be advisable, asks, "But could you place about 5000 candidates with no professional training in architectural offices every year?"

Office experience during the academic career is, however, a different matter. Two schools (Cincinnati and Detroit) work under the cooperative method, incorporating office experience into the school year for several months at a time; two others (Drexel and BAC) operate at present only at night, giving their students the mixture of academic and office experience on a day-to-day basis. Columbia runs a night program that allows students to work in the day, requiring daytime attendance only during the final year; Cooper Union also has an evening program.

There are other situations: Tennessee requires one term of office experience in the fourth year. Many schools require some summer experience (Tulane and Iowa State require two summers), and at least one school, Notre Dame, considers summer employment as possible exemption from a class in working drawings.

Paraprofessionals

"It seems absurd," comments Charles Moore, "that all the low-paid draftsmen in every office should be people who have been carefully trained to be principals, magnificent designers, junior Frank Lloyd Wrights." Does the profession need people who have some architectural training, but who are not fully qualified as licensed architects (in the sense in which we now think of that term)? P/A questioned deans and department heads:

Yes	47
No	1

When the 47 deans or department heads were questioned further, however, only 7 said that they have such a program in their own schools (although 8 others are considering one); 21 believe the job belongs elsewhere (in technical institutes, vocational schools, junior colleges, etc.).

"One of the best general educations for almost everyone would be similar to our four-year program (Bachelor of Arts, major in Architecture)," says Ralph Rapson of Minnesota. Perhaps this is the way to get the public more enlightened and more concerned with their physical environment, he adds.

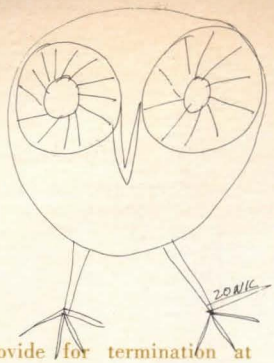
Boston Architectural Center reports that the education of para-professionals is "an important part of our program. We hope to reinforce this aspect of education as well as those areas which produce licensed architects."

Ohio University, too, takes this view:

"We plan a four-year degree program and two-year certificate at the Branch College Campus locations to train individuals not as professionals, but as technicians highly useful to the profession."

And Burchard, of VPI, reports:

"We are going to so interrelate our several curricula that not only can one change direc-



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tion but also provide for termination at various levels depending upon motivation and capacity. This is most important."

Raymond Reed of Iowa State is also concerned with this problem, and points to changes in his department:

"There is a vast need in our profession for someone who is less than professional. More receptive minds are required. The concept of five or more painful years of collegiate study should not be a prerequisite for a chief draftsman. The objective of utilizing all available talents at the highest level possible of their potential will be initiated as a major challenge during the next two-year program of changes within our department."

DeVon Carlson, dean of the school at Colorado, feels that architectural schools should very definitely be involved in any such educational program:

"Changes in architectural practice give indication, but to date no definite proof, that there is a place for the subprofessional in the profession. To date, we do not provide any program for the architectural technician, or whatever he might be termed. We are studying this situation and certainly feel that, if such training is necessary, the architectural schools should be related either directly or indirectly to it."

The school of architecture at Nebraska has just instituted a new curriculum in Construction Science (B.S.) for those "who will spend their careers in close association with architects and engineers," but who will need an education that "differs sharply" from either of those two groups. These students will receive some limited exposure to the design processes, plus work in construction, structures, cost estimating, and shop drawings, coupled with special work in accounting, business and personnel administration, network programming, critical path method, marketing, and other subjects.

According to a report from the Nebraska school, approximately 25 universities now have degree programs in construction technology or management, and employment demand far exceeds that supply of graduates. One of the more recent programs of this kind is the one at the University of Washington (Seattle) in the College of Architecture and Urban Planning. The program is a four-year B.S. in Building Technology and Administration; its objective is to develop graduates capable of filling positions "in various management, business, and technical fields within the five basic areas of the building industry: i.e., development, design, construction, supporting industries, and government." An indication of the opposition view on this subject can be gleaned from a recent committee report from the ACSA. There is "no guarantee that such graduates would confine themselves to teamwork," says the report; the C students could end up working for them, the B students could end up teaching, and the A students — well, there's always the Peace Corps. (This is a variation of the old saw that has the A students becoming teachers, while the B students end up working for the C students.) Unquestionably, a new type of person in the profession is needed, for the best functioning both of the profession and the schools. It is only a matter of time before attitudes will change to accept this completely, and educational and licensing procedures adapt accordingly.

Continuing Education

Just as the profession will have increasingly more people who receive *less* than the full professional course, so it will increasingly have more people who receive *more* education.

We asked educators if they think areas exist — architectural or other — in which students are insufficiently trained upon graduation. Many gave specific answers: broad planning, office management and practice, economics and financing of building, humanities, social conditions, programming, materials, construction techniques. Some took a more general and sweeping approach. As Charles Moore expresses it:

"Yes, thinking. Architectural curricula, without exception to my knowledge, are so incredibly loose and fuzzy that they place no premium nor any emphasis on the development of the capacity to cope with and to seek to solve problems."

Burchard of VPI would agree:

"Design training, for the most part, provides architects with only a facile approach and we are not equipped to participate in the decision-making processes as they affect environment. We design what we are asked to design. We have little real grasp of the physical and intellectual tools which are available today."

Lawrence Anderson also points to inadequacies:

"Too many B.Arch. graduates are warped and narrow technicians, lacking a grasp both of the realities of contemporary life and of our cultural heritage."

And Bruno A. Leon suggests a further lack of awareness:

"Students, on the whole, are undertrained in knowing what their professional problem truly is and how to operate within our materialistic world to solve those problems in humane terms."

But, increasingly, there is the idea that architectural schools cannot turn out a finished product. As BAC states it:

"All students are insufficiently trained upon graduation. The education of the architect is a continuing process."

The need for some form of continuing education is frequently mentioned — usually for continuing education at two points: during the period between graduation and registration exams, and at a time (or times) later during the professional career. (Full-time graduate work, of course, is a separate question.) The NIAE, which is turning its primary attention to continuing education and the needs of the "preprofessional," launched a pilot program of design studies in 1966 for those just out of school. A number of schools offer regular educational programs to alumni and local architects, some in the form of refresher courses, some in the form of short courses sponsored cooperatively with the AIA chapter. The most formalized is Berkeley's program in environmental design, established in 1966 as an entire division within the extension service of the University of California. Other schools are investigating the possibilities of continuing education; Pennsylvania and Drexel are planning a program whereby the two will cooperate jointly with the Philadelphia chapter of the AIA. But understanding the realities and possibilities of a rapidly changing world is probably a more serious problem for the average practitioner than either he or the schools have yet realized. Lawrence Anderson of MIT brings up this point:

"Architectural firms are less able to sponsor their staff members for study leaves than are large industrial corporations. This is a big subject, deserving more extended discussion. I believe we see many architects, including good ones, who are frozen by their initial educational formation and are unable to adapt to a new world."

Harvard will soon be taking the first step along these lines with its proposed program of Fellowships in Advanced Environmental Studies. Each year, up to 10 specially selected persons will return to school for individual study and research. The idea of professionals in midcareer returning to the stimulus and discipline of university life on a full-time basis is a new idea in architectural education, although

it has proven of unquestioned value in other professions (notably journalism and international affairs).

The Future

There are numerous other questions concerning architectural education that have meaning for the profession. Research in architecture is only beginning to come of age, and the existence of a growing body of serious basic research can be expected to have a profound effect on the profession. Much of this new research will probably take place in the schools, or in research institutes affiliated with schools.

Graduate study is only in its infancy, too, compared to other fields of study. The next few years will see new departments established, and new strength developing in existing departments. (In a sense, all of architectural education will be coming of age, as schools attain independence from fine arts, liberal arts, or engineering, and look towards an ultimate and "ideal" arrangement with planning, landscape architecture, and other environmental studies.)

A workable internship program is desperately needed, and attempts are being made now to rethink the defunct Architect-in-Training program.

Changes are due in registration procedures, too, so as to bring these into conformity with the new ideas in the profession. The new emphasis on specialization, as seen in the schools, and the new de-emphasis on design as a purely personal expression, will have to be recognized in the licensing examinations. The suggestion has already been made that parts of the exam (design, site planning, and history) properly belong in the schools, and should be given to the student directly at the close of his formal education.

There will be a new communication between the schools and the profession. There is already a new interchange of ideas among the schools themselves — ACSA meetings and unofficial gatherings of educators are increasingly devoted to discussions of specific programs, so that educators can learn from each other.

Several schools have surveyed a number of others in an attempt to find out what is being tried and how new procedures could help them with their own problems. The schools are still highly competitive, especially where faculty is concerned, but the revitalization that is apparent in so many schools acts as a stimulant throughout the system.

The excitement in the schools is apparent to the profession as a whole. (It should be recalled that, at many schools, the faculty *is* the profession, and any such labelling to imply two camps will seem arbitrary. At other schools, there is a clear-cut declaration of independence, as for instance, when one educator calls for an end to

"the myth that the architect makes all relevant decisions in the environment, that other forces in our society such as tax structures, a greed-oriented monetary structure, social and political problems and philosophical questions have nothing to do with architecture, and that it is sufficient for an architect to have 'design talent' to be a professional, that no revision in the presently held relation of architecture to industrialization is satisfactory and that the relation of the architect to builder to client need not be changed."

The Geddes-Spring research for the AIA is bringing a new interaction between educators and practitioners, and a new belief in the vital importance of educational questions to the profession.

Educators have expressed serious concern about the future of the profession. D. Kenneth Sargent, dean of the school of architecture at Syracuse, states:

"The greatest danger is that of limiting architecture to environmental design, which is dominated by the aesthetic concept of environment and thus not complete. Personnel must be prepared to cope with all the elements of tomorrow's practice, which includes the scientific, the social, and the aesthetic. We must accept specialization as a reality and the design team as inevitable. If we fail to recognize all the elements of practice, the design of buildings will pass from the hands of the profession to the engineering profession and industry."

Sidney Katz of NIAE, speaking as a practitioner and as a professor at Pratt for 25 years, makes this point:

"Architects either have to recognize industry or face extinction. The future will be mainly industrialized building. This won't kill architecture; architecture isn't alive today, when only 5 per cent of buildings have an architect connected with them."

And T. J. Pritchard, head of the architecture department at University of Idaho, touches a key point when he states that the profession itself must so conduct itself "that its services will be indispensable."

As more practitioners return to school for midcareer training (and the profession for the first time is recognizing its inadequacies, says Dick Whitaker), the sense that practitioners and educators share a common purpose will be strengthened. The ACSA and AIA now have several joint committees (the AIA committee on education, for instance, now has official ACSA representation, not just educators), and a new committee on primary and secondary education is currently being set up.

There is less misunderstanding between school and practice than at any other time, says Dick Whitaker. There are still some educators, he says, who believe that the profession is a "crass monster," but they do a disservice to the profession: Architecture has to be a business as well as a profession. And there are some students who lean toward dissent, he continues, but this is primarily an expression against any institution, and the profession is, after all, an institution. Richard Wheeler, head (1962) of the department of architecture at Cincinnati, feels that the danger most to be guarded against is:

"A schism between the educational institutions and the profession. Most recently, we have seen both aspects of the profession, education and practice, join in attempting to define the problems with which the profession is now faced and will be faced in the future. I hope that this joint activity will continue in the future and that the role of the educational institutions be fully understood by the profession, supported in every way possible and that the educational institutions also be mindful of the present problems of the practice, and then attempt to offer solutions to the problems as they will be faced in the future by the students."

Conclusion

This review can only be an interim report. Within the next few years, architectural education will undoubtedly still be undergoing major changes. The report of the AIA Education Research Project, in particular, can be expected to start a whole new re-examination in the profession and the schools. Many new ideas and programs will be tried, evaluated, modified.

There are few certainties. One is that the schools will pursue a variety of paths to excellence, as they start from different points and ride in different vehicles. Another is that eminence in architectural education is no longer in possession of the Ivy League ("or equal") schools — if ever it was exclusively lodged there. And, finally, that whatever the initial impetus for change, whether from the profession or the schools, the profession is in for considerable change. While the changes may not come about as fast as some may wish, the pace will have quickened because of the revolution in the schools.

(For a list of schools responding to P/A survey on architectural education, see p. 242.)

If, formerly, less was more, now, Nothing Is All. If, today, we see a tendency toward nonarchitecture and antiarchitecture, we also can see a move toward minimal interiors.

This direction takes two forms: one is physical, the other aesthetic. What the physical aspect of minimal interiors is is self-evident: dimensional miniaturization and elimination of nonessentials. The most obvious example is the miniaturized personnel cabin of the space capsule — a subject that may not seem so unrelated if one considers the imminence of long-term space travel and its implications. There is also some stripped-to-essentials furniture that indicates this general tenor (next pages).

The aesthetic character of minimal interiors is, appropriately, less apparent. First, the minimal interior is not merely underfurnished, nor empty and "cold." It is, instead, complete, comfortable, and cool. A refinement, a distillation of the most avant-garde academic movements of the 40's and 50's, the minimal aesthetic is now a clearly discernible direction.

It is expressed in the work of several architects, notably Benjamin Baldwin (p. 154). Paul Lester Wiener with Ala Damaz, and in the latest New York offices of Skidmore, Owings & Merrill. It is also seen in the work designers Nicos Zographos *(these pages)* and Ward Bennett.

In contrast to the multilayered, fulsome approach to interior design — our overstuffed elegance, our betapestried and becrewelled affluent salons — minimal interiors are stripped, clean, and pure. The Bauhaus, which ostensibly eliminated ornamentation, actually only simplified it; they restricted ornamentation to structural

Minimal Interiors

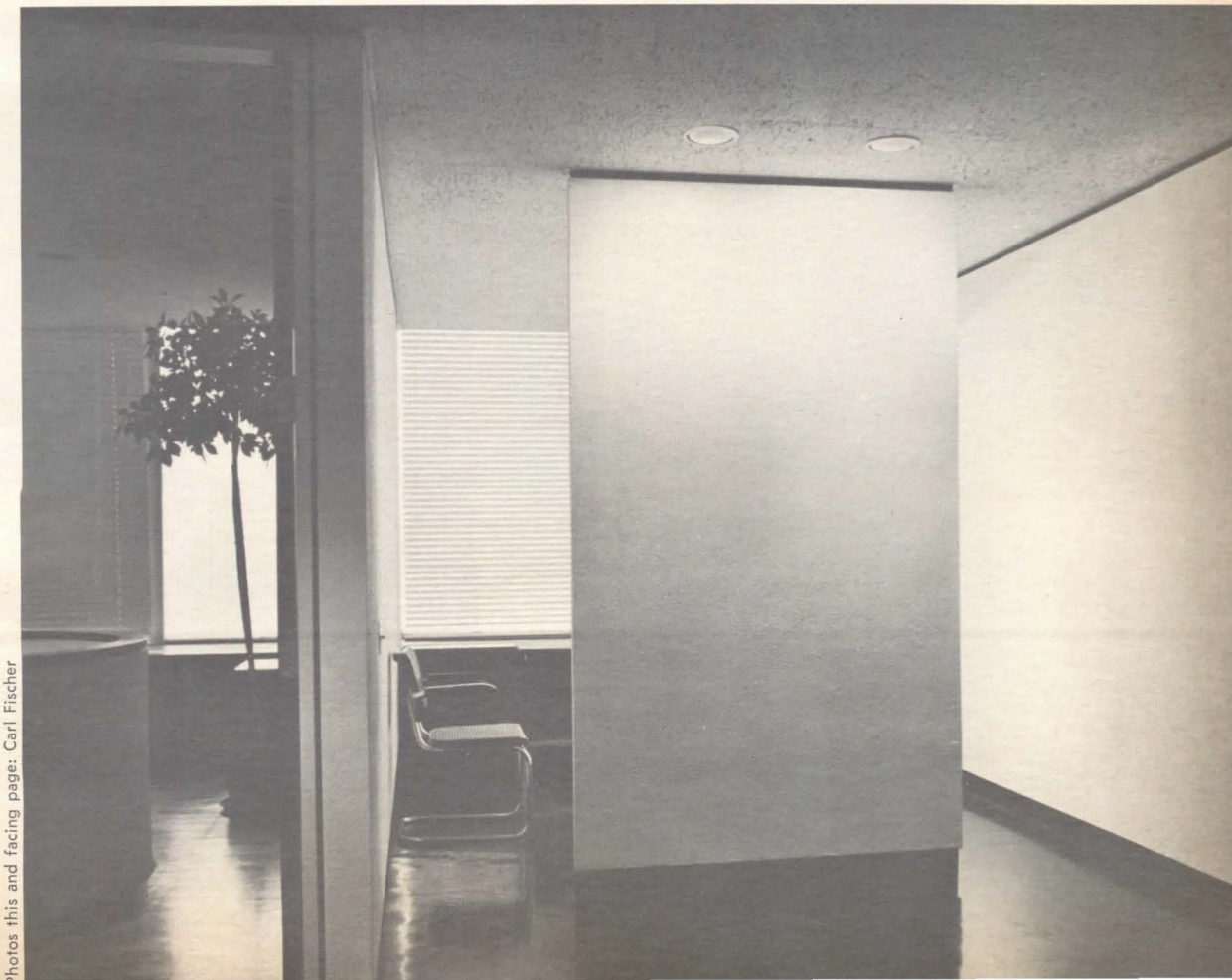
articulation. Theirs was jointy decorating.

Today's development eliminates ornamentation even of this kind, strips nonessentials, minimizes or eliminates everything that might possibly be considered extraneous. It is neither brutal nor diagonally hip, but usually elegant. The aim is to focus on what is most rewarding and most variable — on portable, changeable objects such as plants, paintings, art objects, form, and (at last) *people*.

Minimal interiors therefore eliminate reveals, moldings, and elements with duplicate functions. They exhibit broad expanses of plain surfaces (including bare, glossy floors), flush, frameless openings, and a restricted use of materials (usually "monumental" ones such as stone, metal, and leather). They depend on meticulous detailing, combined with a seemingly contradictory "invisibility" of elements. These coordinates produce a sparse, elemental look and museum-like placement of objects in space.

The contrast between minimal and fulsome interiors has an analogy in culinary traditions: The one presents a richly sauced casserole mixture; the other presents a sautéed chop with vegetable garnish, adjacent but separate, not in sauce but perched pristinely, almost above the plate, as if on pilotis.

Acceptance of this approach axiomatically depends on the personal requirements of the client-user. Zographos' offices *(these pages)* were basically designed for George Lois, the admittedly compulsive, disciplinedly pure art director of the successful advertising agency of which he is a partner — Papert, Koenig, Lois, Inc. Benjamin Baldwin's most minimal works seem to have been for his own personal use.



Photos this and facing page: Carl Fischer

In the Papert, Koenig, Lois office design, on which C. J. Koulbanis, Architects, were associates, Zographos has retained some of the ornamentation of structural articulation, but he has distilled and refined to an almost surreal essence.

One design element that contributes materially to his effect is the use of venetian blinds without overdraperies. Of course, not using draperies in an office can be a matter of management hierarchy rather than aesthetic choice. But the difference is obvious: One is underfurnished; the other is a complete design. In the Papert, Koenig, Lois design, even the most luxurious executive offices have no overlay of so-called elegance.

Zographos explains that the building-standard, narrow slat venetian blinds were used alone "because we did not feel the need for anything additional; they are enough; they do the job. This was an aesthetic consideration as well as a functional one. It could be done, of course, because it was done for an unusual client who is very pure in his thinking about design. And he didn't like draperies. It is a direct solution of a problem — no style, no fashion are involved in it, no personal or "prestige" consideration, which are "misinterpreted prestige."

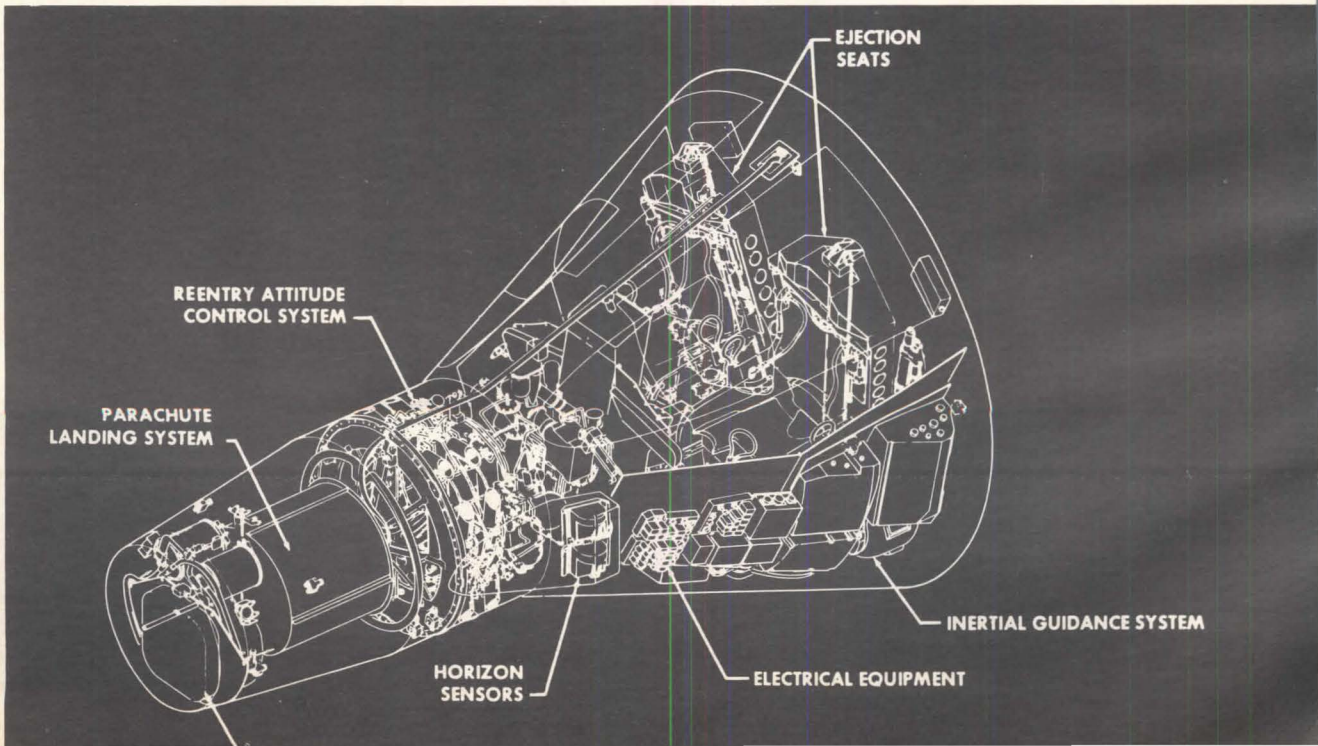
"On the other hand," Zographos concludes, "this design is romantic in its way: It is a throw-back to the early days of the Bauhaus, but brought up to date."

A lack of draperies might be expected in an office design; Benjamin Baldwin, however, has used venetian blinds alone in his own apartment. (He explains why on page 154.) This residential design is one of the strongest witnesses for the new movement — and one of the handsomest.

Several expressions of the minimal approach are somewhat revolutionary: Kenneth Isaac's "Living Structure" *(facing page)* aims at minimizing furniture in the home or office in a radical way.

What has brought about this approach? One related interest is the current desire for open space as opposed to secret gar-

The aluminum-walled cabin section of the Gemini space capsule is described by the Government as providing "adequate space for the two-man crew plus instrumentation and life-support equipment." Less than 10 ft at its largest exterior diameter, the conical section of the cabin holds the two contoured exterior ejection seats that were determined — one assumes by extensive research — to be as minimal accommodations as possible.



dens, which is part of the Bürolandschaft system of office planning (see pp. 201–203, SEPTEMBER 1964 P/A). In addition, the functionalist goal of exposing all elements, and the goal of immaterialization, which led to air curtains and transparent furniture, are also related.

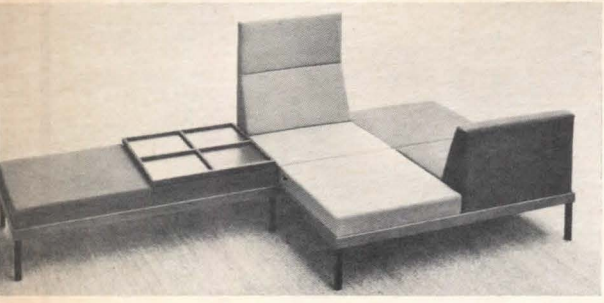
In terms of minimizing actual spaces and facilities, there must be minimal human requirements beyond which man could not survive — or fit. "Some of the parameters for minimal physical requirements are established and some are not," explains human factors design consultant Archie Kaplan. "Human factors design analysis shows that office sizes have gotten smaller and that furniture has gotten smaller; yet, as we know, men are getting bigger. People are very adaptable animals," Kaplan continues, "in spite of and because of the kinesthetic arrangement of the human body. And there are factors beyond just the size of the person as given by the anthropometric data; there is also the cultural factor, which Edward Hall, for one, explores in *The Hidden Dimension.* There might be other hidden dimensions besides that of culture: muscular development and control, isolation, variation, temperature, light, and how man has evolved. These aesthetic, psychological factors are the human factors that have not been really explored."

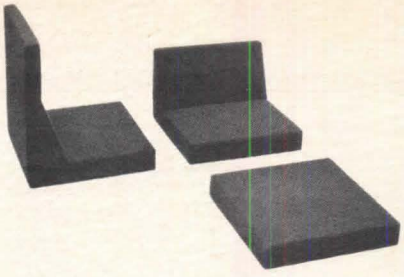
The minimal approach may be a personal expression more suited to certain discriminating temperaments than to the average man. Yet, as the population increases, and there are correspondingly fewer materials to go around, some new means of furnishing and finishing may have to be found. And it may happen that this direction will prove to be a major force in adapting men for the minimal human engineering standards and for the minimal availability of traditional materials. It may also produce the missing link in the chain that the modern movement envisioned — a democratic style that would produce handsome environments evenly, across-the-board, in all building types. — CRS

Photo: George Cserna

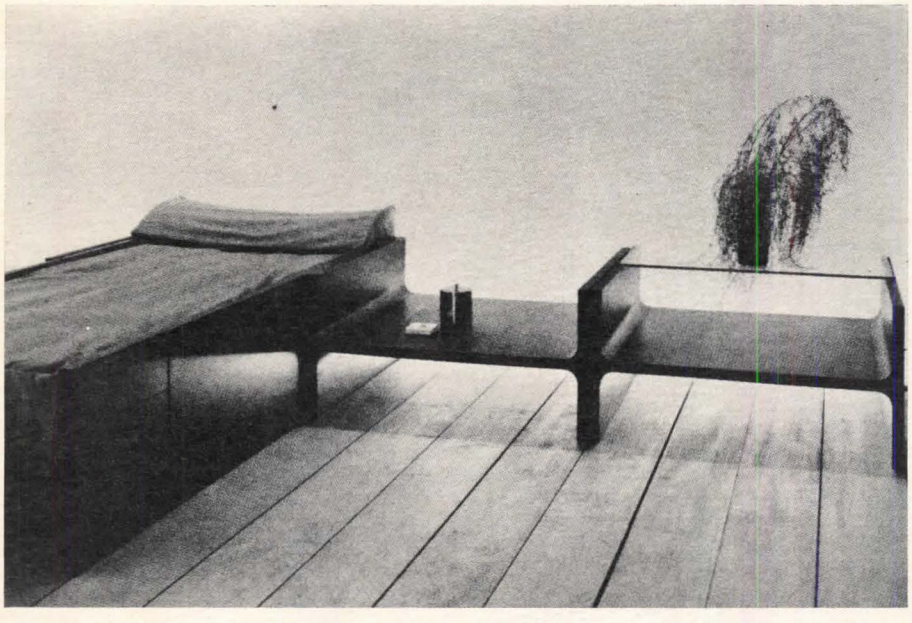
Architect Kenneth Isaacs takes a drastic, revolutionary approach toward minimizing furniture and comes up with a "Living Structure," which could well become the furniture field's equivalent of the prefab trailer home. Envisioned by Isaacs as "liberating man for mobility — both physically and economically — in order to allow him to participate deeply in today's world," the Living Structure is a free-standing wood frame with adjustable pallets and air mattresses. No other flat surface space is thought necessary in an office or home. Pallets can be moved about the frame from side to side and from level to level to arrange for desk or dining space, for a pitlike conversation area, or for sleeping (even double decker). Pallets are therefore multipurpose, nonspecific-use items. The obviating of other furniture (except for chairs, which everyone still seems to find necessary) and the mobility of the unit make this system and its companion reading-chair cage as minimal as normal daily living requires.

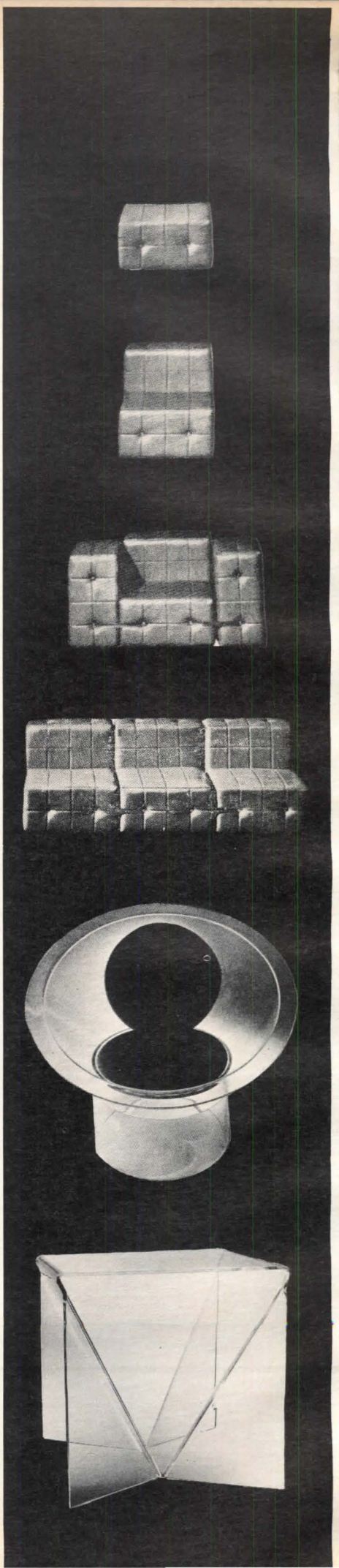
Isaacs admits that no statistical research or questionnaires preceded the design of the Living Structure, "just studentry and observation." Yet older people, surprisingly, have been interested in it in large numbers, because of the energetic activity it permits in rearranging life and in individual development, and, as Isaacs puts it, "a chance to have more perception of the world."

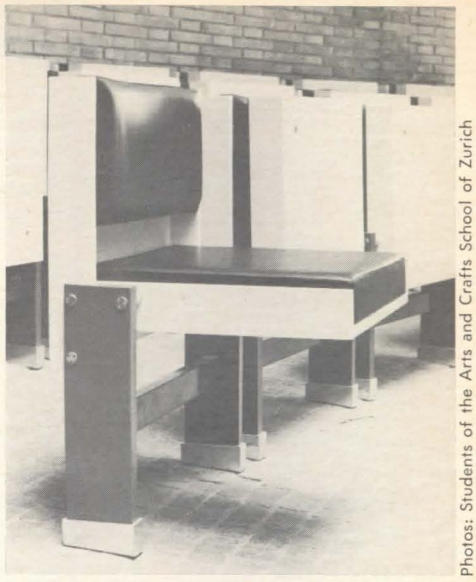


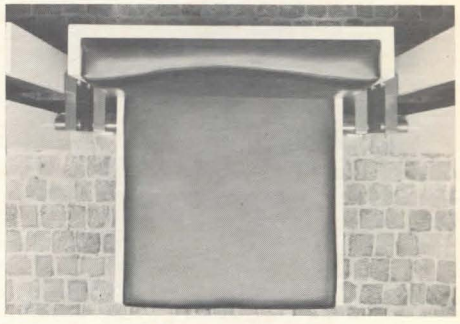


A related tendency in furniture design emphasizes economical construction based on multiple-use components either stacked or ganged, and a minimum of framing. Such modular furniture has been around for some time, but extreme versions of it now appear. In particular, the system of cushion bricks (right) from Germany by Horst Stoltze-Export is composed exclusively of vinyl-covered foam cushions (24"x24"x12") that can be connected by button-straps to form armchairs, sofas, or beds. Nanna and Jørgen Ditzel's similar system of 1961 (above) and Jaap Penraat's of 1958 (facing page, far left) are forerunners. France's J. A. Motte concentrated on modular framing units in 1962: H-shaped ebony stools can be used also as tables or ganged to form a bed frame (below). Transparent plastic furniture by Verner Panton (right, next to bottom) and by Neal Small (right, bottom) is influenced by the desire for immaterialization.

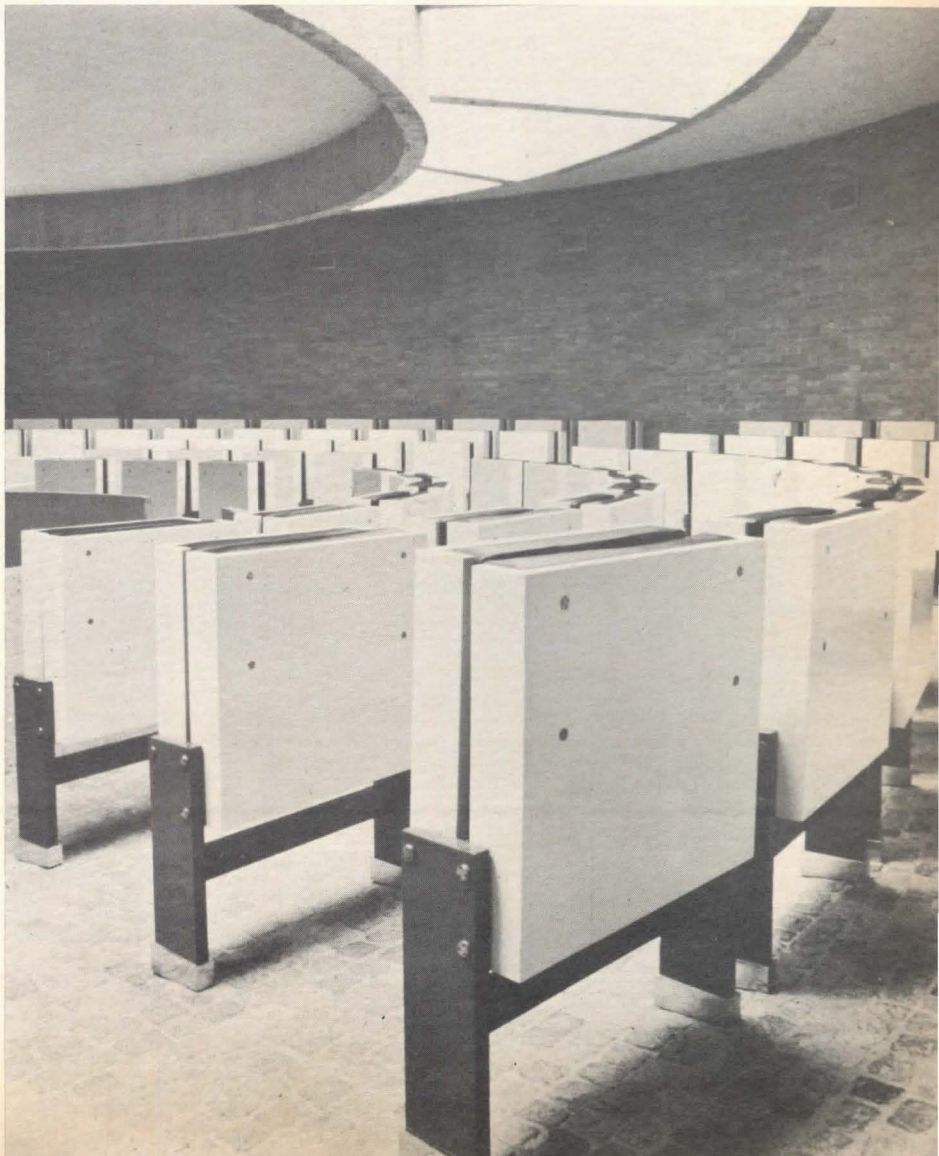




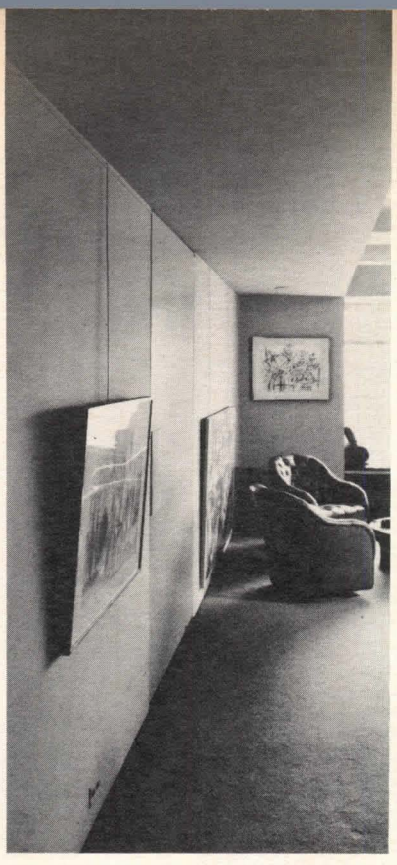


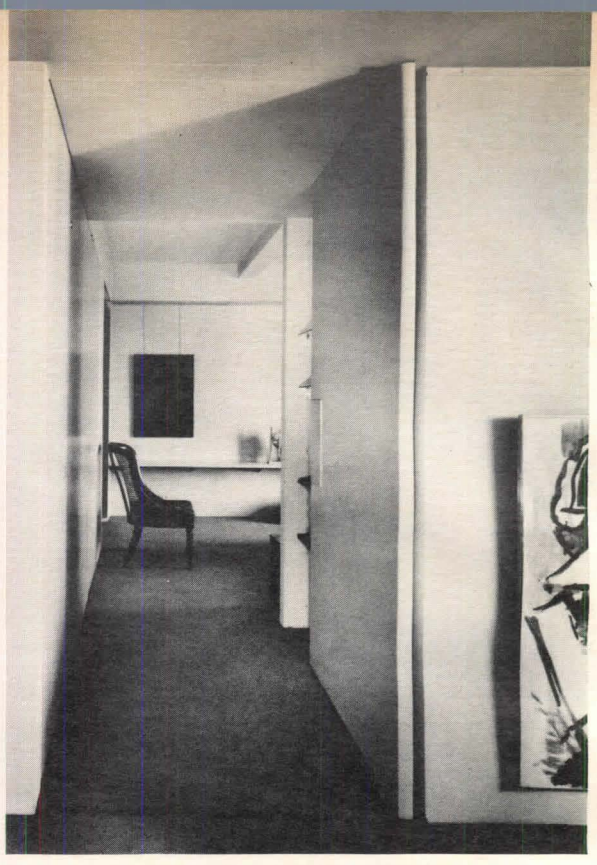


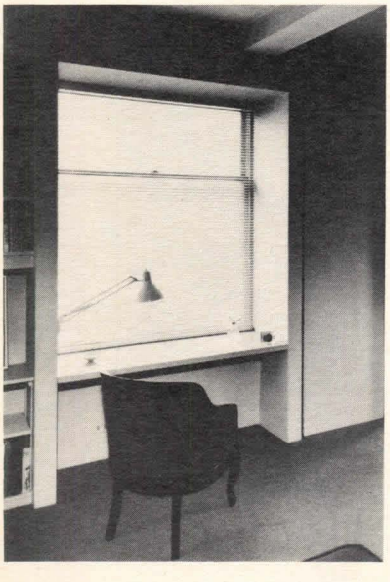
Photos: Students of the Arts and Crafts School of Zurich



Italian architect Giancarlo DeCarlo has produced what is surely the most aesthetically economical fold-up chair for the lecture hall of his Students' Residence in Urbino. "The chair itself is a pure, square form in this round space," he says. "I am not usually searching for a pure shape, but in this case I was afraid about an empty chair which states strongly that man is missing. An empty theater or conference room is terribly dead. When you fold this chair, the form of the seats is abstract; there is no feeling that it is waiting for a man." A deep red-enameled steel structure with a brushed chrome sabot is attached by brass screws to a white-plastic painted wood frame with black-vinyl upholstery.







Underpublicized leader and pacesetter of American interior designers is Benjamin Baldwin. Not to be confused with pacesetting decorator William Baldwin, Ben Baldwin is an architect who, after an early partnership with his brother-in-law Harry Weese, now specializes in interior design. Working virtually on his own, the soft-spoken designer is almost Oriental in his purity and connoisseur's discrimination. He is also reticent about theorizing on his aesthetic processes.

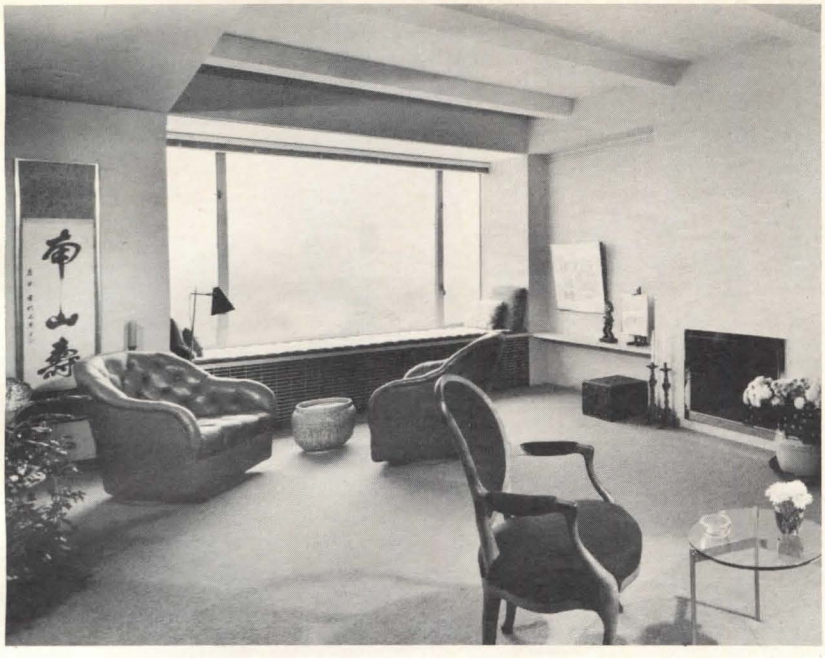
"It is hard to explain that," he says. "It is something that one just does instinctively without really knowing exactly why one is doing it."

In his own minimal apartment, the interplay of rectangular voids in the envelope with paintings on the walls is the strong yet subtle design force in the space. As examples of the stripping of ornamentation, broad, ceiling-height doors pivot back against storage cores like unnoticed walls; planes meet without reveals; nearly invisible, narrow slatted venetian blinds serve as the only window coverings; the sofa is a frameless, built-in nook, carpeted and filled with loose pillows; the window has a roll-out beach pad that makes the ledge into a lookout, lolling place; below it, heating and cooling elements and hi-fi equipment are concealed by a stark subway grating. The alignment of the linear elements is meticulous.

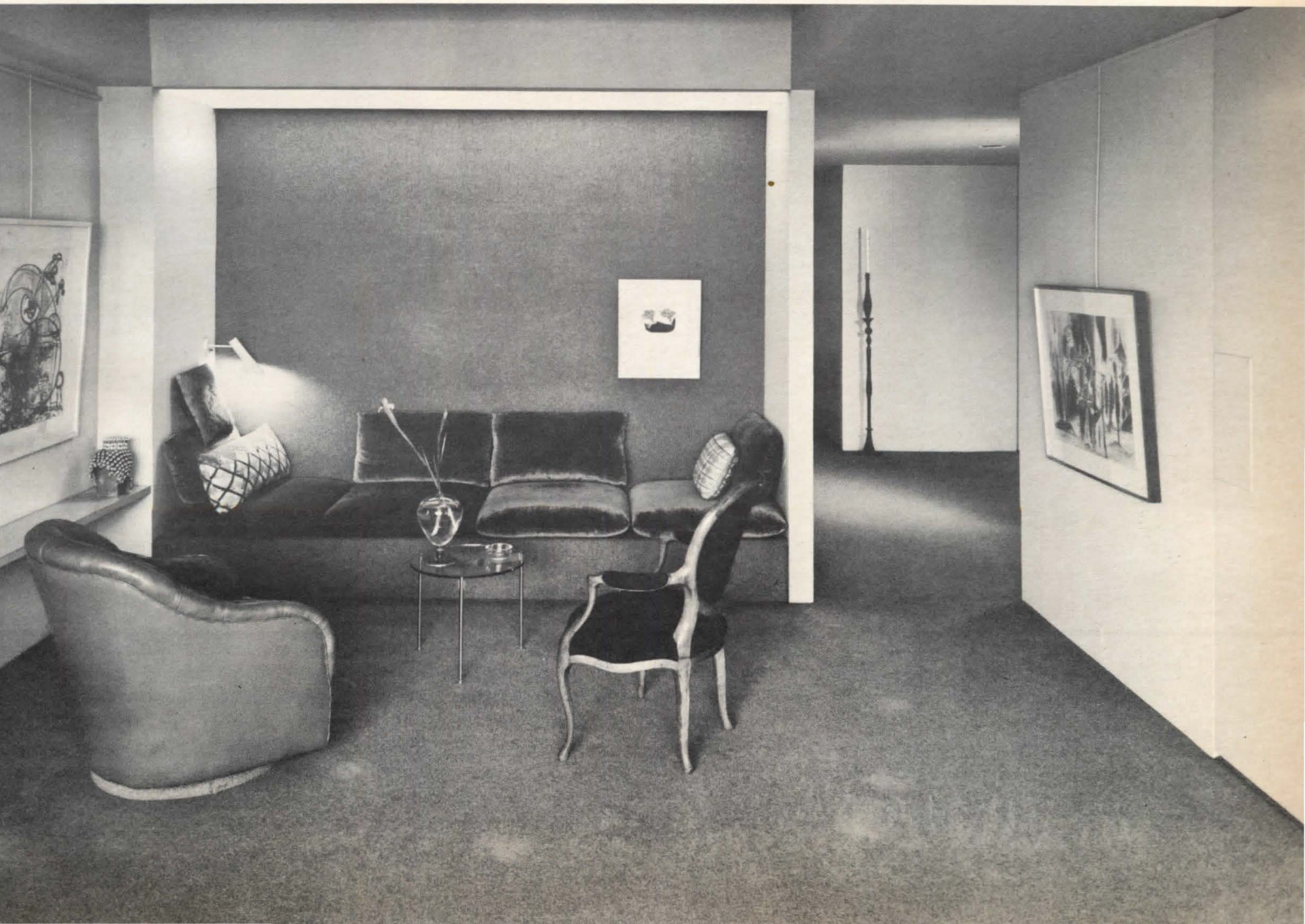
Asked about the unusual use of undraped blinds in a residence, Baldwin replied, "Well, it was done in Williamsburg; Jefferson at Monticello did it marvelously." Asked about the simple desk-dressing table built into the window (left) of his guest room, he replied, "After all, the Japanese go to the extreme of having no furniture." But Baldwin makes it comfortable — sparse, yet rich and elegant.

"I feel that interiors are architectural things and that anything added to the feeling about space should be played down as much as possible. To me, furniture is the least important part of an interior, and I always feel the less of it I have to add to a space itself, the better off it is."

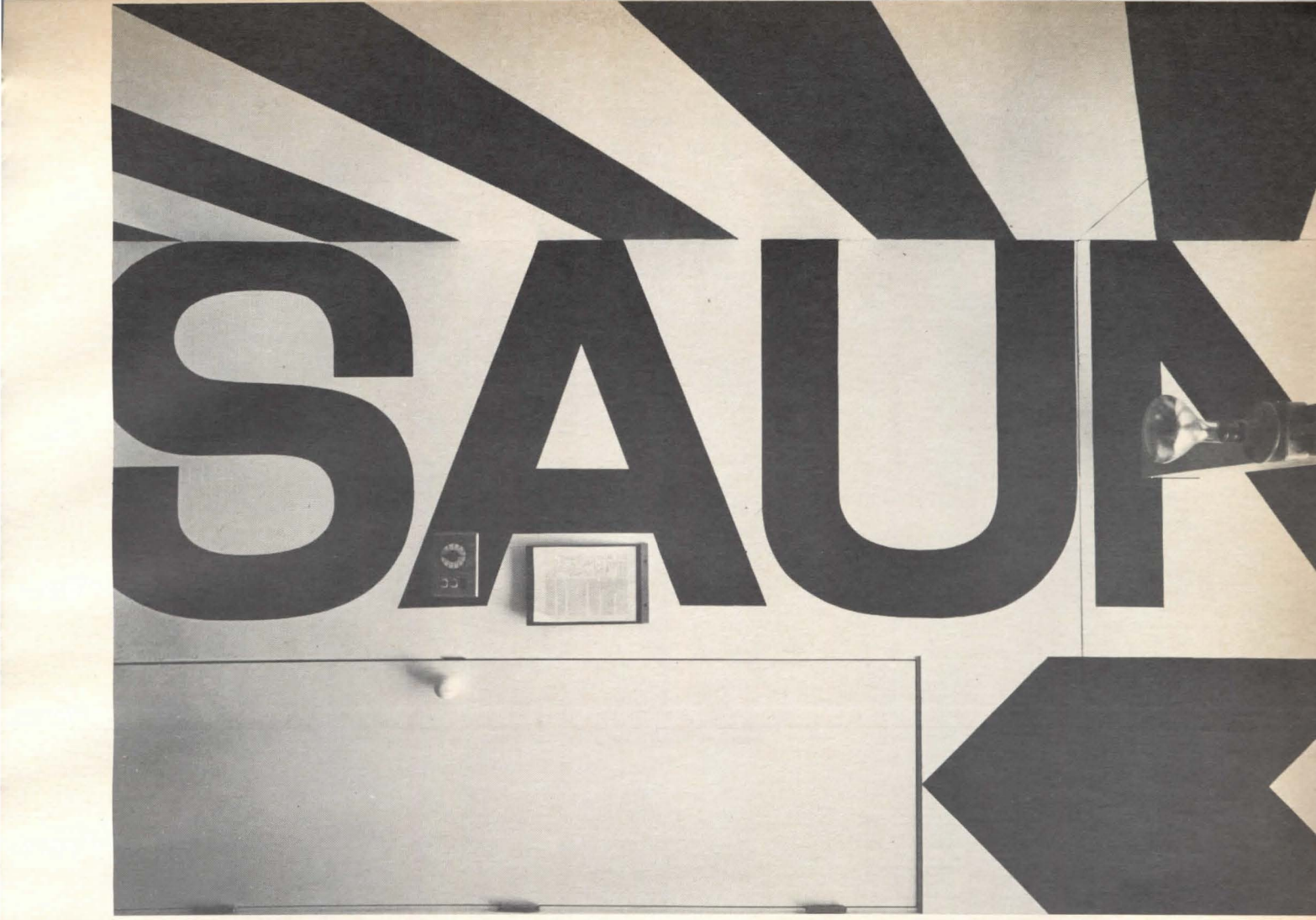
"My work in interior design is my expression of opposition to the chaotic world man creates," he writes. "It is a constant search for the calm tranquility one finds in nature. I walk a great deal — in the city and in the country — and I look at everything. I have observed that trees are most beautiful in winter when they are bare, that single flowers are most perfect, that white flowers have the most fragrance. In nature I find a sense of order, logical and lyrical, which I would like my work to express."

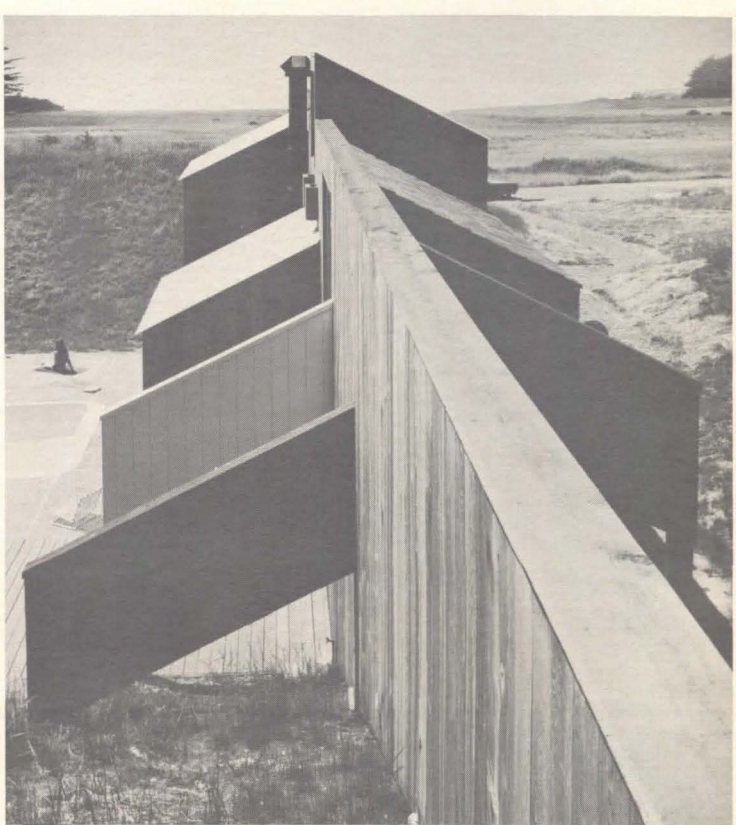


Photos this and facing page: Louis Reens



bathhouse





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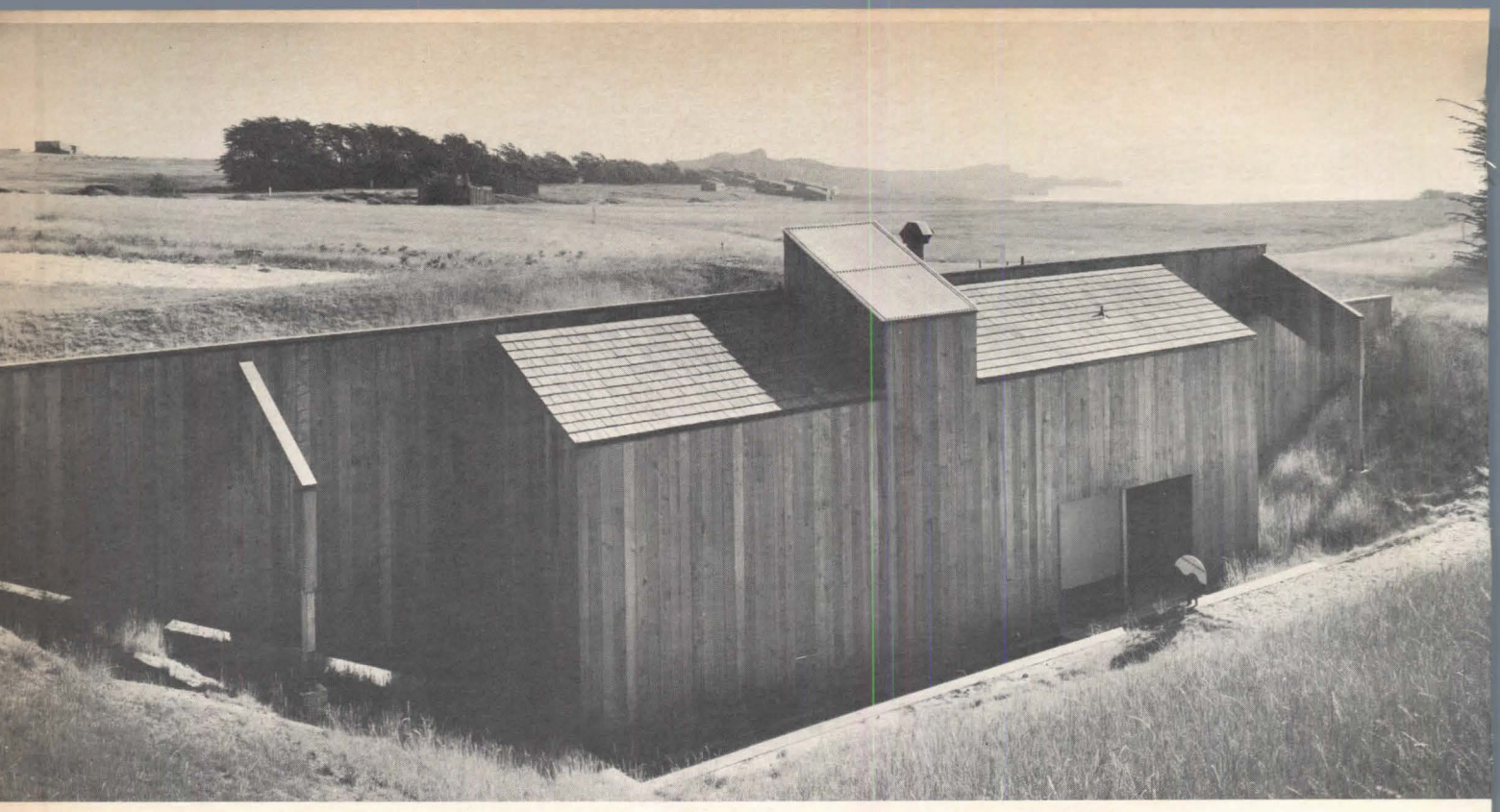
"Make it happy, kid"



Three days before graphic designer Barbara Stauffacher set out for Europe, she arrived at the Sea Ranch resort development, Sonoma County, California, with pots of purple, red, black, and blue paint, two sign painters, and a tentative scheme. Her assignment was to dress up the resort community's bathhouse, which, due to cutbacks in the budget, had shrunk to disappointing dimensions. Since the time the original design won a Citation in the Thirteenth Annual P/A Design Awards Program (see JANUARY and MAY 1966 P/A), Charles Moore and Bill Turnbull, the architects, have had to make numerous revisions: They shrank the pool, eliminated the anti-grotto (a protected swimming hole), and ingeniously turned one of the loadbearing walls of the bathhouse into a buttressed member to simplify the foundations and reduce the cost. According to Moore, even the lockers shrank — from full-size compartments, to parcel-post mailboxes, down to letter-size boxes, which was "all they finally could afford."

In order to infuse the project with some of its original zest, Al Boeke, the developer's vice-president of planning, suggested Mrs. Stauffacher do an interior paint job.

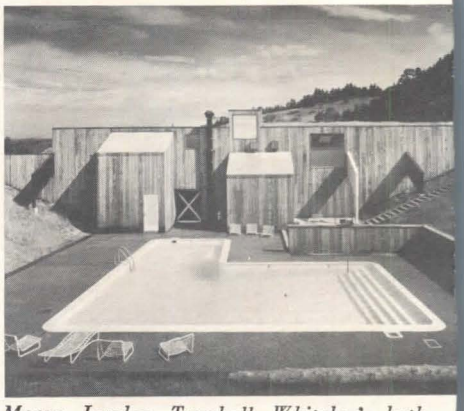
"Much of the design," says Mrs. Stauffacher, "was done on the spot, since there are so many angles and views that could not be calculated beforehand. I said 'Do this here and that there' and drew a lot of lines on the walls with charcoal and string, and they painted in the colors I wanted. Whenever I'd ask Mattie Silvia (Sea Ranch's builder) if it was getting to be too much, he'd say, '*No kid, make it happy.*' "

The graphics grew out of the architectural forms and out of Mrs. Stauffacher's own vocabulary of signs: Arrows lead into each side of the building, up the stairs; stripes progress around corners. The motifs make the rooms appear bigger and visually reinforce the beams, roof angles, and multiple levels that were lost when the rooms were all white. They also accentuate the sense of movement throughout the building and the round-about circulation paths that Moore staged "to make the bathers more aware of their bodies and more aware of moving in relation to each other." In both men and women's sections, the bathers move from the darker levels below to light areas above.

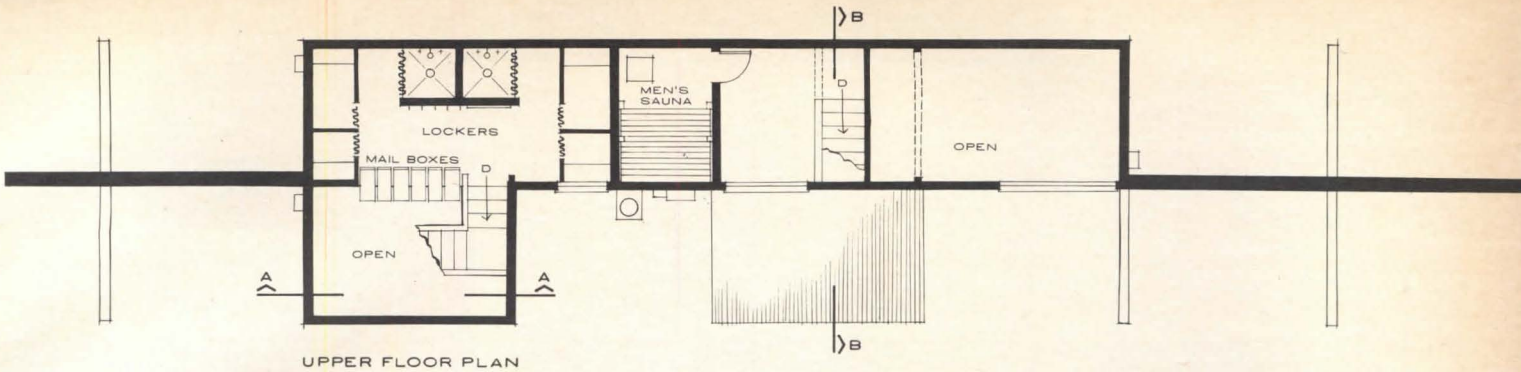
"It's a bit like a three-dimensional internal sculpture house that you can walk into," explains Mrs. Stauffacher, "and it's a bit of a shocker: The exterior is all wood and shingles. The inside is a kinesthetic world of shapes and color."

What could have been a pinched and disappointing project turned out to be a lively graphic and architectural success. Moore, who lived at Sea Ranch last summer and is delighted with the graphics, says the bathhouse is a social success. In spite of the fact that the development is nowhere near complete, the sauna is full most summer afternoons.

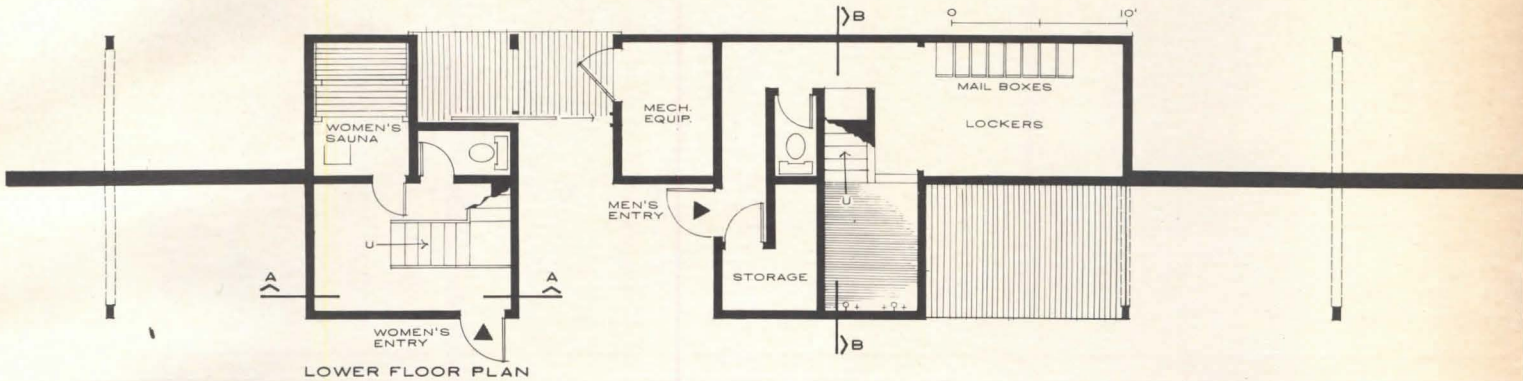
"Many thanks," says Mrs. Stauffacher, "must be accorded Charles and Bill, who trusted me enough to let me paint all over their buildings." In spite of Michelangelo's four-year stint on the Sistine Chapel, and Stauffacher's three days at Sea Ranch, graphics still come hard to most modern architects.



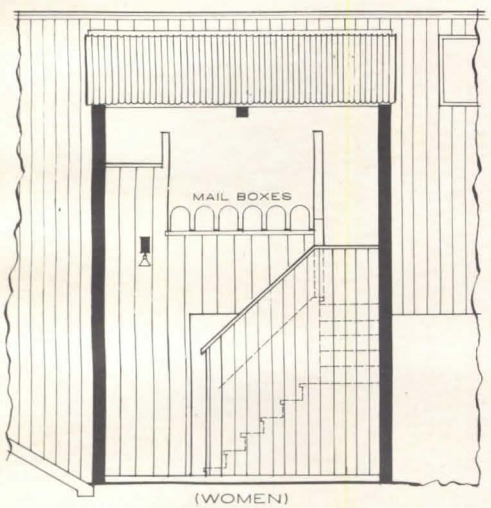
Moore, Lyndon, Turnbull, Whitaker's bathhouse for Sea Ranch, California. Above: south elevation and pool.



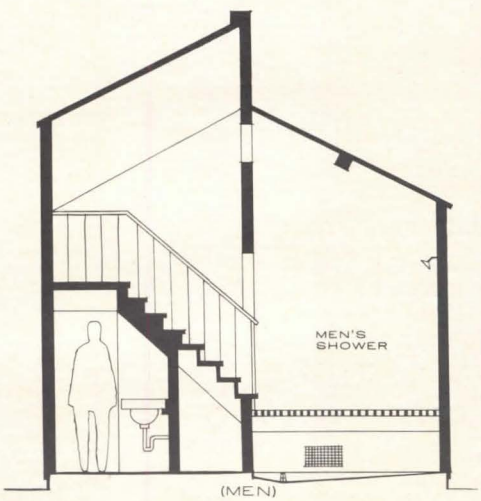
UPPER FLOOR PLAN



LOWER FLOOR PLAN



SECTION A-A



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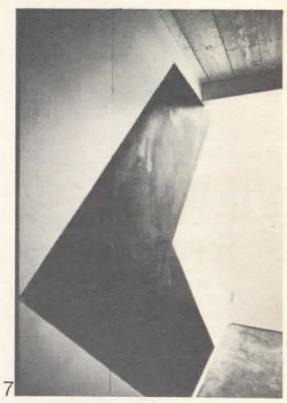

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Stauffacher Graphics. Women's section: ***(1)*** *staircase;* ***(2)*** *second floor;* ***(3)*** *basin behind steps;* ***(4)*** *north wall. Men's section:* ***(5–6)*** *ceiling;* ***(7)*** *entry.*

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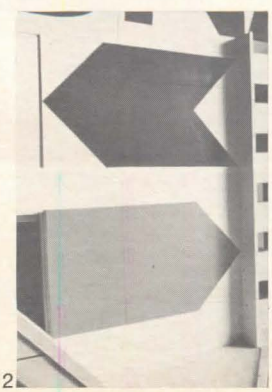

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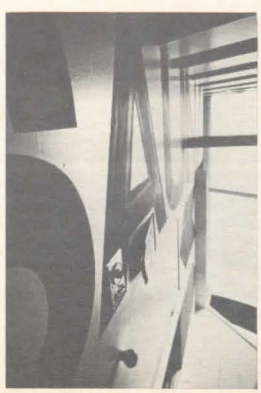

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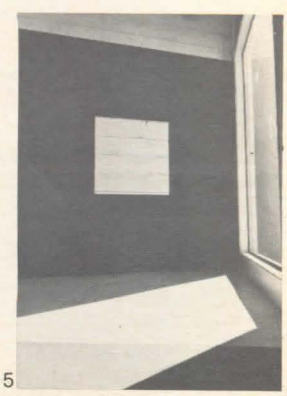

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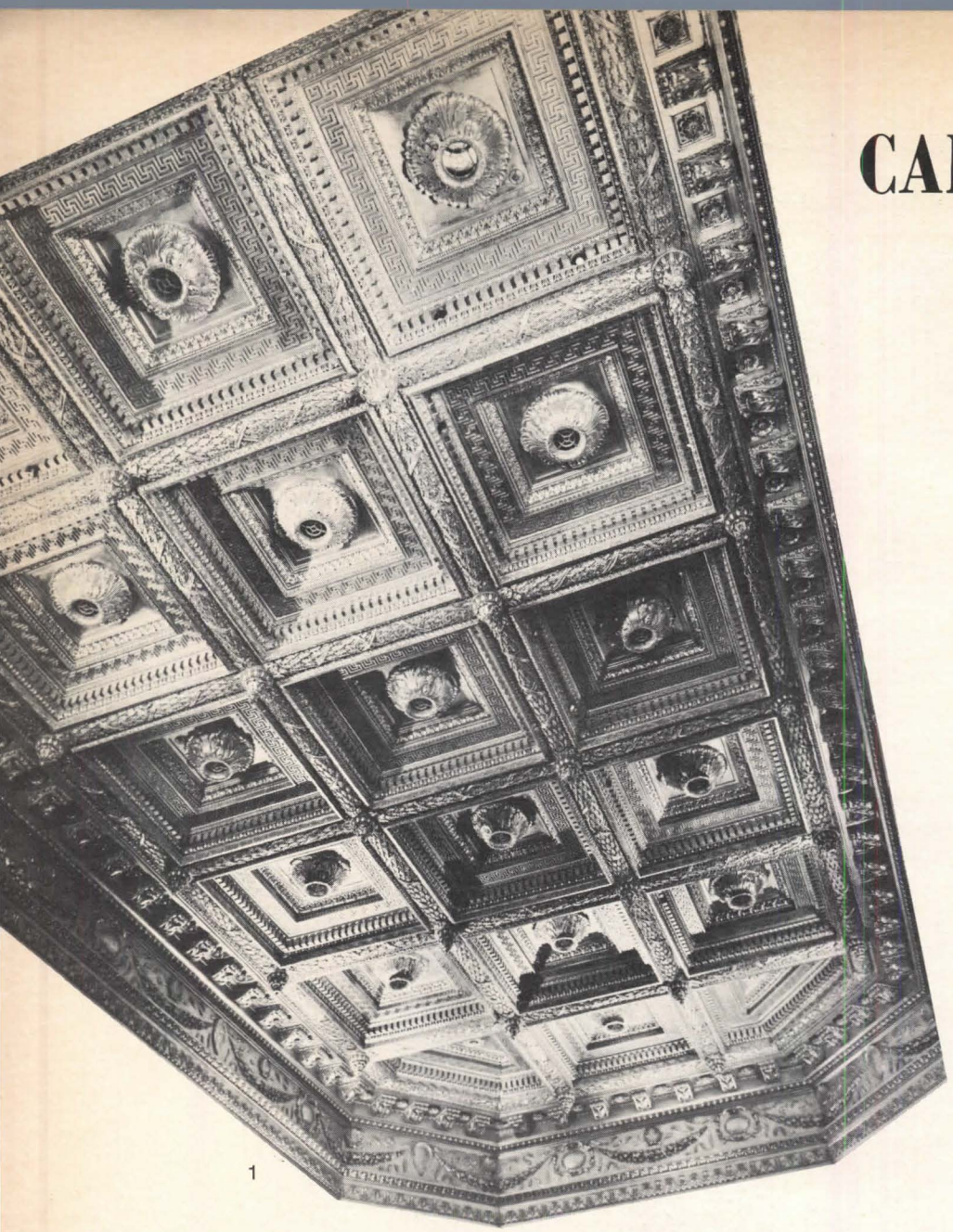
Red and black stripes jag across men's locker room (below); blue stripes on west wall of women's section (facing page, above) echo roof shape upstairs then run downstairs, around corner (facing page, below) and up again. Green and white curving pattern occupies north wall upstairs.

Locker room of men's section.

Women's lockers (above); staircase (below).



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CAN WE AFFORD TO DISCARD ORNAMENTAL PLASTER?

In the name of economy, contemporary building systems have almost eliminated the handcrafts. As a result, the historic skill of plaster casting lies fallow. Yet, quixotically, these craftsman possess the potential of reducing some operations by almost half their present cost, using skills that have not changed for centuries.

Despite the extreme versatility of lathing and the talent of the lathers, there are operations that cannot be duplicated in this medium. As there are said to be terminal forms in architecture, there also seem to be terminal techniques in building. Plaster casting, like brick, is one of these.

The development of modern lathing and various supplementary devices and accessories comprise the components with which a number of basic, efficient, and economic building systems can be constructed. They are almost unlimited in their capabilities for individual variation.

Designers seem so enamored of these techniques that they try to force them into forms for which they are not suited. The duplication of the seemingly old-fashioned multiple-use mold is one of these. In this age of the jet, we tend to forget that the train is still the most efficient means of transportation for some journeys. It depends on what ground we want to cover.

Ornamental Plaster

A second look at ornamental plaster by the old-timers, and a first look by new designers, who think of it as an archaic word in an architectural history book, might furnish some profitable insights.

Plaster is not necessarily ornamental. The classic cultures made excellent use of both lime and gypsum structurally, and the Maya of pre-Colombian Central America based a sophisticated structural technology and ornamental system on lime and plaster concrete.

In the recent past, designers and builders have somehow forgotten that plaster is as fluid as cement and much easier to handle. Of all masonry, plaster is probably the most versatile. It can perform some tasks much better than any other material, and is much cheaper. Plaster, by expanding as it hardens, gives excellent mold reproduction, is easily and quickly worked, and produces a finish that the classic Japanese designers were content merely to wax and leave as is.

(1) Board Room Ceiling, Metropolitan Life Insurance Company, New York City. (Photo: Courtesy, Metropolitan Life Insurance Company)
(2) Ceiling at Irving Trust Company, New York City. Architects: Eggers & Higgins.
(3) Plastered ceiling and balcony, Metropolitan Opera House. Architects: Harrison &

Plaster can imitate almost any material, and does. In its recent history, it became fireproof bamboo in New York's "Trader Vic's" and imitation travertine at the Savoy Plaza Hotel, as well as any number of other ersatz objects.

Its formal capabilities are limited only by the designer's presumption and imitative capacity. It is not limited by the plasterer's skills, for these are limitless, perpetuated and perfected as they have been for centuries.

It should not be forgotten that any material that has such a great possibility for imitation also has unlimited creative formal possibilities in itself. In those periods of architectural history in which designers have appreciated plaster as a medium, it has produced magnificent ornamentation and fine sculpture, excellent concrete, and matchless wall covering often covered by frescoes, many of which have lasted for centuries. In a room, plaster becomes an architectural element rather than decoration. It offers the designer a means of controlling ornament.

The Gelatin or Flexible Mold

We might mention one small facet of plaster technology whose possibilities seem to have been completely ignored — and these, surprisingly enough, even by modern artists who, in recent years, have not ignored anything; who, in fact, often seem driven to discover things they can ignore. This is the possibility of manipulation of the gelatin mold. Its capabilities in producing variation through tension, compression, and torque of the mold are considerable. In one instance, a caster was able to achieve 132 variations of a baluster at almost no additional cost. It is difficult to conceive of any other building material capable of matching this performance.

The Plasterers

The plasterers are divided into two trade categories: plain and ornamental. This is a distinction having nothing to do with their physiognomy. (We have been given this assurance by Andrew Berger of the Operative Plasterers and Cement Masons International Association, Local 60, affiliated with the A.F.L. Building Trades Council.) The division is the product of a jurisdictional dispute in earlier days. Plain plasterers run plaster and ornamental plasterers cast it. This is not a difference in skill but in specialization.

Moldings can be run on the job, but it is quicker and cheaper to cast them and bring them to the job when needed. These "minor masterpieces," as Berger calls them, can be installed in a matter of minutes.

Plasterers have felt let down by the lathers, in that the latter have not joined forces with them on many occasions when their combined strength might have been useful. They have made wage concessions to help keep plastering alive. "It is not a question of whether we can do it cheaper; it is a question of whether we do it at all," said one caster.

It is always unfortunate to see a battalion of skilled artisans shrinking to a cadre. In this instance, it is more unfortunate than in most cases, since the need for casters in building seems to be returning. The one factor that Americans, in our tradition of hard-headedness and practicality, claim to be unexcelled in — that of cost — is the one that may infuse new life into this skilled trade. Some problems can best be solved by precast plaster, just as precast concrete is best suited to solving certain other problems.

Coffered ceilings, and many decorative forms that used to be done in ornamental plaster, have all but disappeared from contemporary building. Yet, emergent in today's design, there are similar sculptural forms that can be created efficiently and economically, if we think in terms of wedding plain and ornamental plastering, thus taking advantage of the low cost of casting as a means of providing the overall dividend of potentially unique designs.

The tremendous versatility of lath and plaster leads those skilled in its use to think only in those terms for all applications. In a great number of uses, lathing cannot be excelled. However, like the distinction between precast and cast-in-place concrete, there are some designs that can best be solved by the casting of ornamental plaster.

The lament of the old-time plasterers that architects do not know anything about architecture any more is true where classic decoration is concerned. They ask scornfully, "What modern architect can draw and detail a fluted Corinthian column?" What architect is familiar with classic decoration, which plasterers learned as basic parts of their trade?

This attitude, which, on the surface, appears so blatantly out of step with modern architecture and machine building, is, in essence, correct. However, it is not the classic orders that are in question, but that, in a return to ornamentation that seems to be taking place in architecture, we have forgotten some of the techniques of its fabrication. Historically, an essential medium for providing ornament has been plaster. In throwing out the orders, we are risking the chance of throwing out the skills that made them possible. Must we throw out the baby with the bathwater?

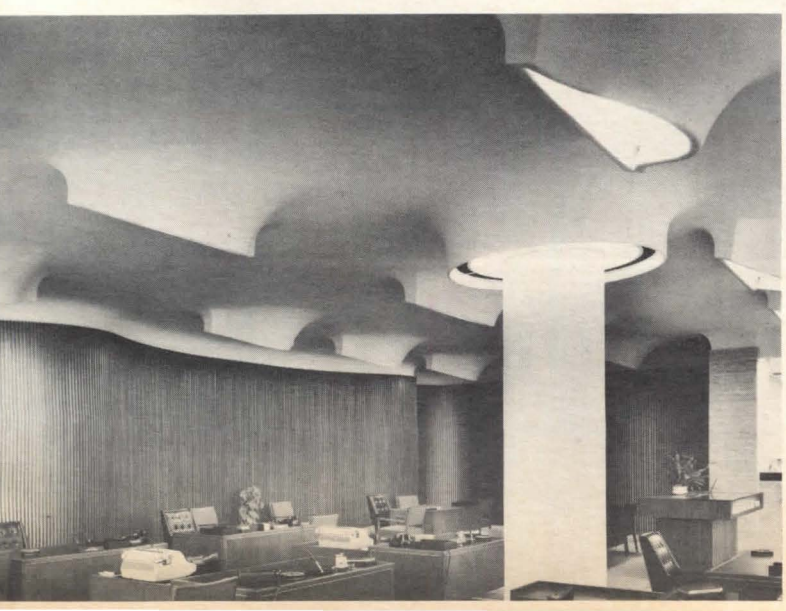

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Photo: Louis Melancon

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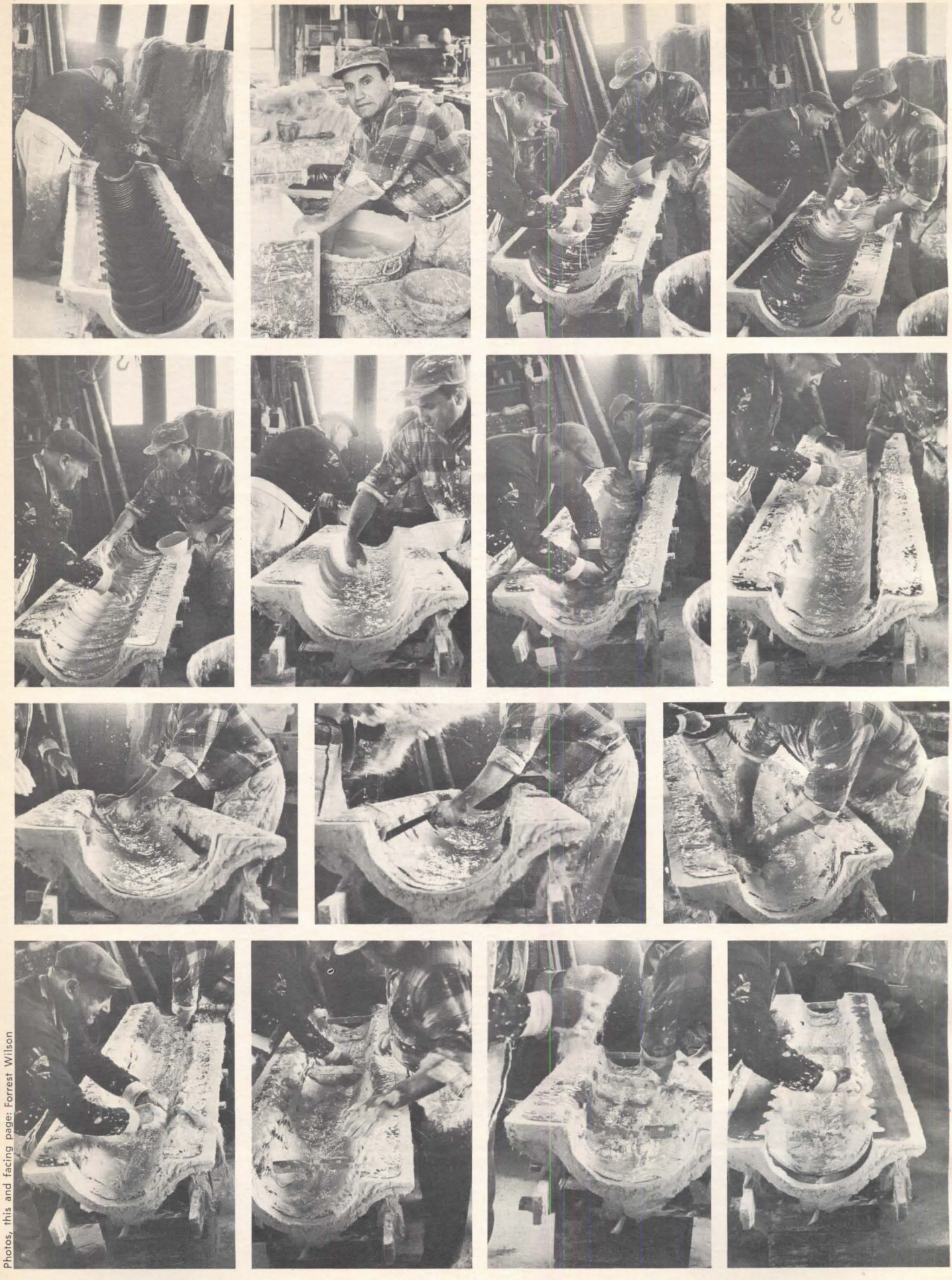
Photo: Forrest Wilson



Photos, this and facing page: Forrest Wilson



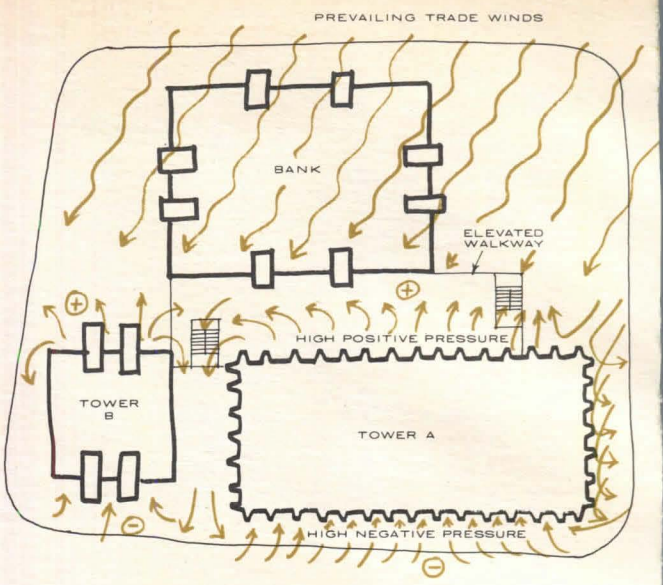

Plaster Casting Sequence

The gelatin mold rests in its back-up plaster cast. It is first painted with a lubricating material to facilitate the removal of the finished plaster cast. Plaster is mixed here by Peter Gugliotta and flicked into the mold by the casters. When the surface has been built up to about 1½ to 2 in., hemp or sisel is applied to the wet plaster for reinforcing. Metal channels are then secured to the cast with fiber, which serves as reinforcing and prevents warpage. The finished cast is lifted from the mold when it indicates by its warmth that it has begun to set. Were the plaster to remain in the mold until it had completely set, the heat would melt the delicate gelatin mold edges. The casting cycle shown here involved about 20 minutes.

In very hot weather, ice is sometimes put in the water to retard the set of the plaster. It is possible to use retarders in the plaster that will also prevent it from setting rapidly, keeping it plastic for as long as one-and-a-half hours. However, unless plasterers are involved in special projects, most prefer to work to the normal setting time of 8 to 10 minutes.

"The cost of a good ornament goes to the lather," comments Mario Catani, the master plaster caster. "The plastering contractor is in charge, and two or three general contractors do 75 to 80 per cent of the jobs. Contractors don't have enough faith to believe in us; they forget that competition is the client's pocketbook."

Mario Catani, the master plaster caster, holds the funnel used to pour the hot gelatin over the master mold.



(1) Designers put model of Honolulu plaza through wind-tunnel tests to establish pattern of air currents.

With Wind Tunnels, Design Is a Breeze

Testing multistory offices in model form enabled designers to avoid uncomfortable air flow through building lobbies at a Honolulu plaza.

By Sydney H. Brisker, vice-president, Victor Gruen Associates.

In downtown Honolulu, the cooling northerly trade winds move at 15–18 mph toward the ocean along the south shore. Until the postwar building boom, only the natural terrain and a few low-rise buildings diverted them, and even these had little noticeable effect. But with the addition of high-rise buildings along the southwest side of the mountains, the city soon discovered that nature's air-conditioning system began to play unpleasant little tricks around the doorways, windows, and walkways of the higher structures.

The tall buildings created pressure fields that produced large vortices, turbulence, and strong air flows around and through the buildings. Lobbies became wind tunnels, and pedestrians met sudden gusts of wind at street corners.

A recently built high-rise hotel in Waikiki was designed with the entire lobby open to the oceanfront — a delightful idea that is quite traditional in the tropics. Unfortunately, every time the street door was opened, the lobby was exposed to a galelike wind, making it not the pleasant, cool lanai it was supposed to be. Although the later installation of revolving doors at the street entrance alleviated the problem, the question remained unanswered as to why a gentle wind behaves erratically when it meets a high-rise building. Many theories were advanced, but none could be conclusively backed up with experimental data.

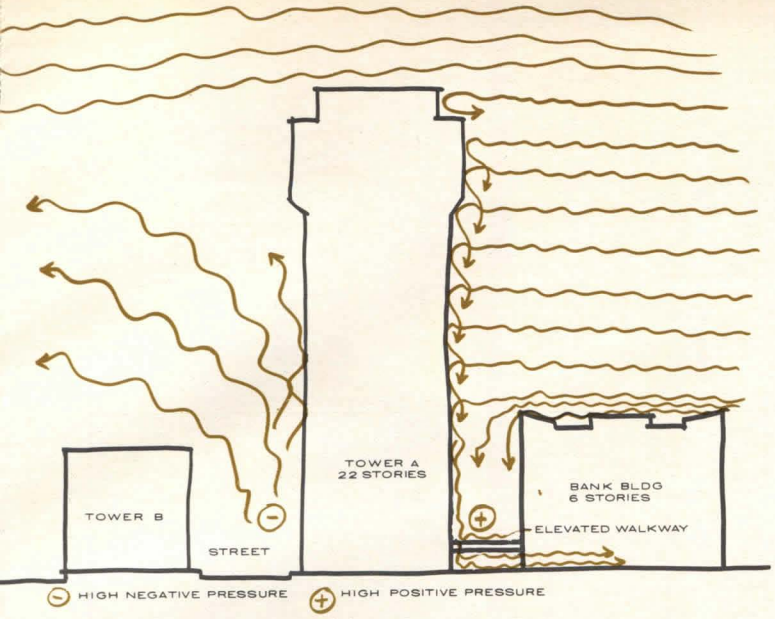
The Shape of the Plaza

Financial Plaza is one of the first commercial condominiums in the United States. Designed by Leo S. Wou and Victor Gruen Associates, it consists of three structures: a 22-story building (Tower A), a 12-story building (Tower B), and a 6-story bank building. These towers rise from a landscaped block over basement parking. The arrangement, shape, and size of each structure was determined by factors singular to this project.

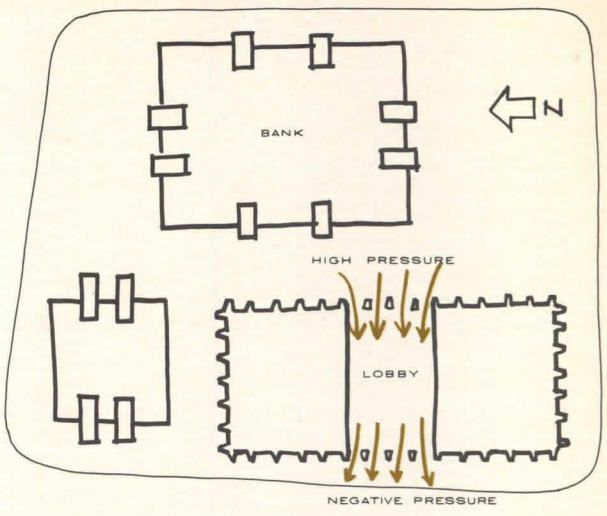
The architects and the owners were aware that this urban complex, occupying a full block in downtown Honolulu, would be affected by the trade winds coming from the northeast down the slopes of the Koolau Mountain range. Like Mark Twain's remark about the weather, there was much conversation, but no one knew what to do about it.

So, before starting construction, a model was tested in a wind tunnel to determine the air behavior around the plaza. A $\frac{3}{32}$ in. to 1 ft model of the whole complex, including streets and surrounding buildings, was tested at the Guggenheim Aeronautical Laboratories at the California Institute of Technology (GALCIT).

The lab instrumented the model with 113 small orifices connected to a bank of manometer tubes for recording the air pressures at the face of the buildings. Fourteen orifices were located on the bank building, 20 on the small office building (Tower B), and the other 79 on the large office building (Tower A). Six additional pressure taps were located in the lobby of Tower A to determine the flow velocity through the lobby. In addition, 8-in.-long wool tuft strips taped to the surfaces of the model showed where the air flowed.



(2) Upflow on leeward face of tower meets vortices from Tower B, and creates erratic flow at street.



(3) High pressure on windward side, and negative pressure on leeward side generates air flow through building lobby.

How Will It Behave?

The model was placed in the tunnel with the bank building facing upstream so that the east-west axis corresponded to the flow direction in the tunnel. The model could be rotated to the left and to the right of the line of flow for a total of 45°, or from −15° to +30° — the range of the prevailing winds in Honolulu.

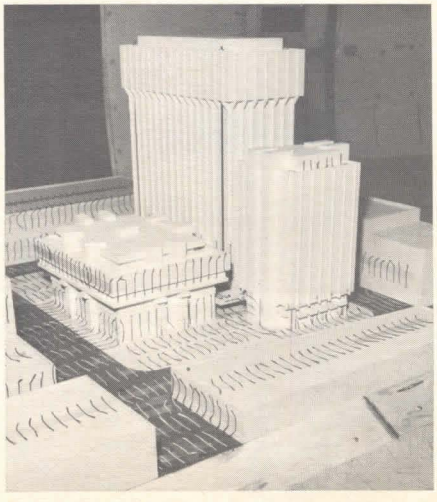
Twelve test runs were made: the first two for photographing the behavior of the wool tufts as the air moved across the model; the remaining runs were pressure tests with the wool tufts removed; two tests at each angle (−15°, 0°, +15°, and +30°), one with the doors of Tower A lobby closed and the other with them open.

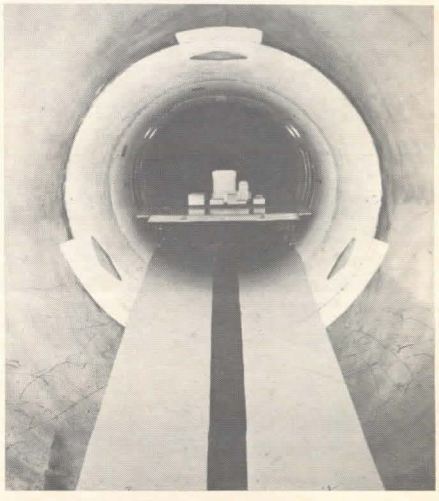
In order to simulate full-scale conditions and to obtain accurate data, the tunnel was operated at a higher velocity than the expected wind conditions.

What the Wool Tufts Indicated

• **Bank building:** On the north side, a reverse flow at street level due to a vortex, or small whirlwind action, developed at the east face of Tower B **(1).** It also developed at the northwest corner. The walkway between Tower A and the bank received a reverse flow due to vortices coming off the taller of the two structures. The flow was observed to be straight along the walkway as it neared Tower B, then downward along the staircase between Tower A and Tower B. This was to be expected, as the pressure data shows positive pressures on the east (windward) side of the bank and negative pressures on the west and north sides, causing an induced flow along the walkway to vent to these negative pressure areas. Vortices were also formed at the east and north faces of the bank building.

• **Tower B:** The flow seemed to be fairly turbulent at street level all around Tower B, which was also to be expected in view





Wool tufts taped to model indicate directions of air flow in wind tunnel.

of its location with respect to prevailing winds and the other structures. Both the bank and Tower A, with their sharp corners, generated vortices that were carried downstream in the vicinity of Tower B. The vortex on the north side of the bank building also produced a downflow at the north door of Tower B. This was due to wind deflected down the east face of Tower B, and was not caused by the vortex from the bank building.

• **Tower A:** A large vortex coming off the east face of the building reversed the flow in the open plaza, southeast of Tower A **(1)**. Also, turbulence occurred in this area due to vortices shedding from the sharp corners of the bank and Tower A. Flow was downward at the southeast corner of the building and up at the southwest corner **(2)**. As in the area of Tower B, the flow became highly erratic at street level on the west side of Tower A, where there was a strong upflow along the face.

• **Lobbies:** Instruments in the lobby of Tower A measured airflow velocity with the doors open **(3)**, and calculations indicate that strong airflow occurs between the positive pressure on the plaza side and the negative pressure on the street side.

Similar but reduced velocities are assumed to be possible in the ground-floor spaces of the bank building and Tower B. However, these spaces were not tested, since the lobbies of these two buildings were not completely open from one side to the other as in Tower A, and no cross flow would be encountered.

Revolving Doors Close the Tunnel

The tests showed that, as the wind blows around and across a tall building, it creates a negative pressure on the leeward side, and by a vortex action may induce a wind current up the face of the building. The wind then swirls outward to join the upper stream of air passing across the top. The pressure difference created across the building will cause an induced flow around the corners of the building and through open lobbies.

In the lobby of Tower A, 15-mph winds can be expected to create a wind tunnel effect when lobby doors are open on opposite sides of the building. To reduce this flow, revolving doors will be installed on the west (low-pressure) side. With these revolving doors, it will be possible for the plaza entrance to remain open almost all the time.

Wind Whistles Through M I T Tower

An independent researcher looks at the reasons for fierce winds that prohibit full use of an open lobby in Cambridge.

By Michael O'Hare, who is completing degrees in both architecture and engineering at Harvard.

Wind forces are automatically allowed for by structural engineers, but architects do not always realize that wind flowing around and through a building can severely handicap its use. This happened at the Massachusetts Institute of Technology, in the 277-ft-high Earth Sciences Building (p. 156, MARCH 1965 P/A) **(1)**, which is pierced at ground level by a 21½-ft-high arcade that seems to house a small cyclone. Air velocities much higher than the ambient wind speed develop in the arcade, and even on calm days a constant zephyr blows through it.

The tower stands in the center of one of MIT's larger spaces, surrounded by a ring of buildings open to the south, toward the Charles River, and to the north, at the end of a long, seven-story building **(2)**. With or without the tower, the courtyard would experience higher air velocities than the smaller spaces on the rest of the campus.

In winter, the localized wind increase in the entryway of the tower made it difficult for pedestrians to walk or open entry doors, and repeatedly damaged the door hardware. To offset this, MIT erected a temporary plywood wall to completely close off one end of the 70-ft-wide by 21½-ft-high opening. Although it solved the problem, the wall violated the parti of the building to such an extent that it seems worthwhile to examine the reasons that made it necessary.

With the advice of Professor Richard Kronauer, James Mitchell, and George Weatherly, and in collaboration with Paul McCoy, the writer studied a model of the tower in the Harvard University wind tunnel to determine the cause of the unexpected local winds in the arcade.

Why Air Flows Faster

Basically, wind speeds up around a building because the flow of air interrupted by the building has to join the air flowing at each side of it. These larger streams must move faster to move a larger volume of air through a smaller area in a given time **(3)**.

At the MIT tower, some of the air obstructed by the lower part of the building is diverted around the building, and some through the arcade. The increased velocity through the arcade occurs at the top and at the two sides of the opening, where it reportedly reaches twice the velocity of the surrounding air. If the building were deep in the direction of wind flow, it would create sufficient friction to slow down the increased wind in the entry; the tower, however, is relatively shallow, and there is little resistance to the draft.

These theories were tested in a wind tunnel with a model fitted with pressure taps — small holes in the model's surface connected to manometers — to study the pressure distribution over the surface of the building **(6)**. The model was subjected to several wind velocities and two angles of wind flow (head on and at 10°). From the recorded pressures, maps of the building walls were drawn showing isobars (lines of equal pressure). However, before discussing these, the relationship between the model and the real building requires some explanation.

Two Types of Flow

Just as we cannot expect a model beam one-tenth the size of its original to fail at one-tenth the load that the original will carry, we cannot expect to blow air past a scale model of a building and reproduce the velocities found around the original. For the tunnel tests, however, the absolute wind velocities are not important. The main criteria are the direction of wind flow and the relative speeds in the vicinity of the building.

Since it is too difficult to measure wind speed and direction at enough places to be useful, pressures are usually measured instead, and the corresponding velocities are derived from them.

The most important single factor in attaining useful similarity between model and field conditions is to insure either that both represent flows that are laminar, where fluid around a given point moves smoothly in the same direction; or that both are turbulent, with small random movements of the fluid superimposed on the over-all flow.

What Affects the Flow

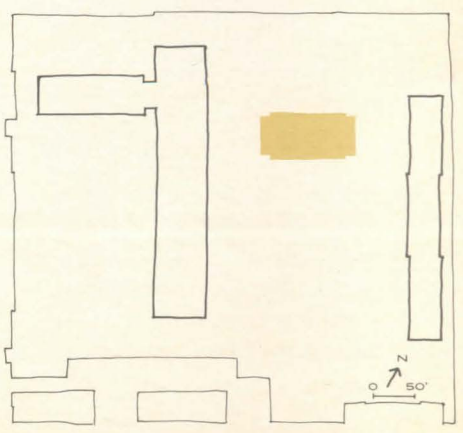
Every situation of moving fluid in a defined space can be characterized by a dimensionless constant called a Reynolds number, R. For these experiments, a Reynolds number larger than 1000 indicates the flow is certain to be turbulent; and, if R is less than 200, the flow is laminar.

R is defined as $\frac{vD}{\nu}$, where v is the velocity of the fluid; D is a characteristic dimension such as the width of the building or model; and ν is a property of the fluid called the kinematic viscosity. Putting in values for the MIT tower, R reaches 25,000,000 — clearly a turbulent flow.

Within the turbulent range, the pressure and velocity patterns will be determined by the geometry of the objects, and the points, if any, at which the fluid flow ceases to cling to the walls of the object. This phenomenon, called separation, occurs when the pressure of the surrounding fluid is too low to force the fluid nearest the object's surface to follow a curved path. If the flow is too fast, or the surface too sharply convex, the fluid path leaves the surface and forms a "dead-air" space with circular currents, called eddies, between the moving fluid and the surface **(5)**.

On streamlined objects, separation will occur at the same place on the model as on the prototype only if the Reynolds numbers of the two are the same. But with ν constant, since air is used in both cases, and D reduced for the scale model, v has to be increased to maintain a given R. Thus a model built at 1:130 scale requires a wind speed of 3900 mph (30 x 130) to make the model correspond to a 30-mph wind on the tower.

Obviously this is impossible, but fortunately, on a rectangular body, there is no occasion for separation from flat surfaces, and separation always occurs at the corners. The separation will occur only at the corners, then, if the model and prototype are both in turbulent flow, and if the model receives a 120-mph wind, its R is



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about 1,000,000, which is certainly turbulent. So, although the model's absolute velocities and pressures may be far different from those of the building, it will mirror reality in its relative pressures and velocities, since the geometry and the separation points will be the same for both.

One more difference between the wind flow in a tunnel and outside deserves attention. The wind flowing past a real building always leaves a layer of low-velocity air near the ground. This boundary layer, generated by other buildings, cars, or trees, is very shallow in wind tunnels because they are designed to minimize it. Although it is possible to produce one intentionally, it is not essential because the boundary layer is pushed aside by the higher speed main flow impacting on the building. This scouring of the boundary layer is illustrated, on a small scale, by the familiar depression in the snow that occurs on the windward side of a fence post or telephone pole.

Tests Provide Theories

Where wind is "attached" to a building surface (not separated), pressure maps show that it flows more or less perpendicularly to the isobars, moving from higher to lower pressures. At any given point, lower pressures usually mean higher velocities.

With the wind tunnel model, the flow separated from the building surface predictably, at the edges of the front façade, and low pressures behind this point indicated eddies between the building and the surface of the moving air.

In the test, the head-on run proved to be the clearest, and the resulting maps of the front and rear façades were the most illuminating **(7)**. In general, the pressures on the front face were as expected: high at the center of the building where the flow is actually stopped, and lower, but still positive, toward the edges. At this point, pressures drop rapidly, as the flow separates from the building, to negative (less than normal atmospheric) pressures on the sides, roof, and rear.

The especially low pressures at the top and bottom of the rear of the building suggest that the flow passes closer to the building here, thus generating a stronger eddy than at the sides, and causing dramatic low pressure zones.

The reduced separation at the top is a result of the roof of the wind tunnel compressing the flow more strongly than its side walls, which are further from the model; this effect is ignored with regard to the real building. But the larger eddy at the bottom indicates the greatly increased wind flow inside the entry opening through the building.

How to Avoid High Velocity

Tests on buildings with shape similar to the MIT tower but without openings through them show the highest pressures on the front, and lowest at the rear, just where the building meets the ground **(8)**. Punching an opening — particularly a wide, shallow one that would not cause great frictional losses to the flow — between these pressure zones, is like removing the valve from an automobile tire; the air rushes vigorously from the high-pressure zone to the low.

If the area of the opening were extremely large, like the "open area" above the building, enough air could move through it at sufficiently low velocities to continuously balance the pressures and reduce the difference between them with a less violent resulting flow.

But the entryway floor in the MIT tower acts as a duct, compressing the area of the flow in the opening even as the separation surface compresses it from above. The resulting velocities are extreme **(4)**.

To check the derivation of wind speeds from pressures, pitot-static tubes were placed in the model to measure velocity directly. The tubes in the opening confirmed that the wind speed was two-thirds higher than outside the model. If this experiment were being done to predict the behavior of a building still on the boards, this one datum alone, independently of the pressure readings that might suggest an explanation or a cure, would be enough to advise the designer that the scheme required revision.

Had this research been done prior to construction of the building, several modifications to the building design might have been tested. One obvious solution would have been to make the opening higher, perhaps 10 or 12 ft more. Alternatively, some aerodynamic devices might be tried in the opening, to increase the friction. If this failed, the architect would at least have been warned that his scheme was unworkable on that particular site.

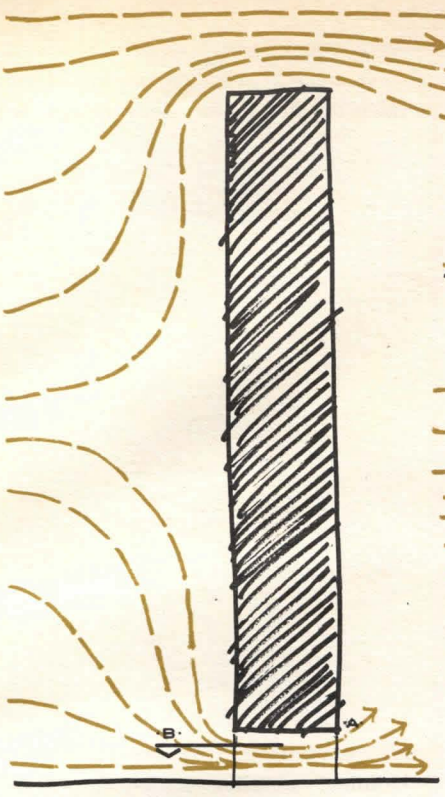
Data for these conditions can only be obtained in a wind tunnel, since the phenomenon is essentially three-dimensional, and, more important, occurs in turbulent flow. Water-table experiments are inadequate because they can only be made in or near the laminar region of the Reynolds number, and therefore have little of value to offer in the study of real wind flows.

Manifold Benefits

The application of wind tunnel study is extremely general. Even curved buildings often can be modeled usefully, as shown with models of the Toronto City Hall (MARCH 1963 P/A). Not only high wind speeds that might cause discomfort to pedestrians, but also negative pressures occurring in a slot or tunnel that might threaten windows, or reversed flows that can carry rain up underneath the best flashings, can usually be located in a wind tunnel test.

Since a precise theory predicting wind behavior around bodies with corners is lacking — though computer modeling may be just around the corner — any unusual configuration such as an opening in a building, an alley or tunnel, a funnel shape, or a courtyard with openings in line or nearly so, should suggest that a close study of wind flow is in order.

A word of warning, however: The experiment described above is an example and not a model for future work. The location and symmetry of the building in question allowed simplifications of the procedure that might in other cases completely alter the picture; such things as nearby buildings, for example, should be included in any study of an urban building, and, to predict wind behavior, any model should be more detailed than the one used for the above tests.



ELEVATION

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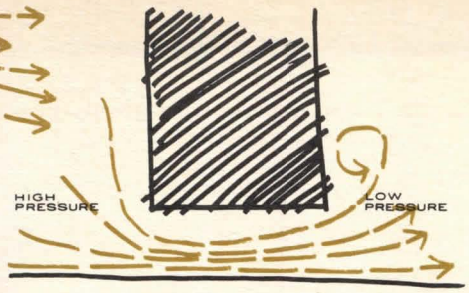
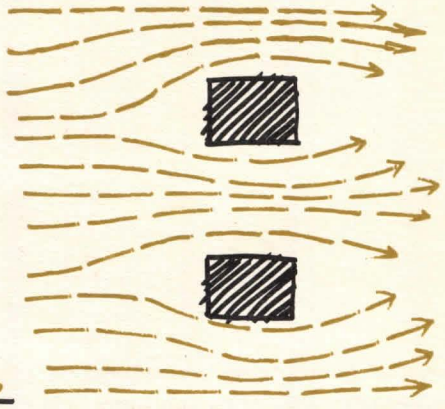


DETAIL AT A



PLAN SEC. AT B

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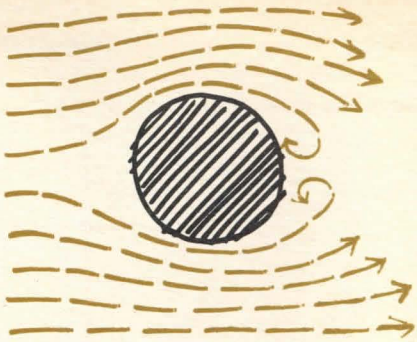
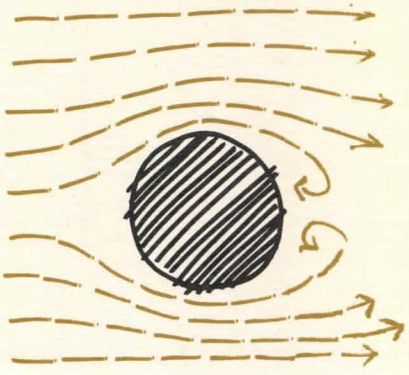




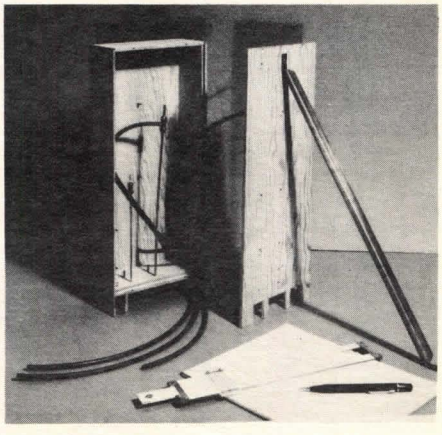
PLAN VIEW

5

Tower obstructs air flow **(3)**; *in order to move same volume of air around and through it, the air must gain velocity. Higher gusts through opening* **(4)** *result from pressure differences.*

Velocity affects wind separation from curved surfaces **(5)** *and controls location of eddies.*

Test model **(6)** *shows 3 of the 27 tubes connecting pressure taps with manometers.*



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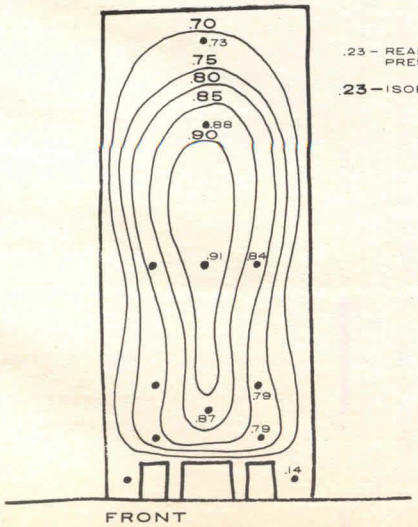
Numbers on pressure maps **(7)** *indicate the ratio between the increase in pressure above normal and the overpressure that would exist if the air flow stopped completely.*

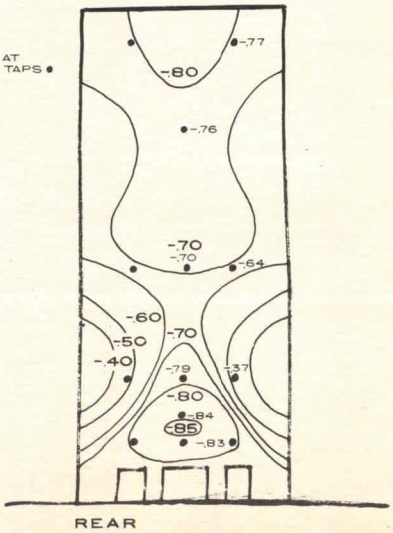
Isobar pattern **(8)** *changes for building of same proportions but without lobby opening.*



FRONT

.23 – READINGS AT PRESSURE TAPS

.23 – ISOBARS



REAR

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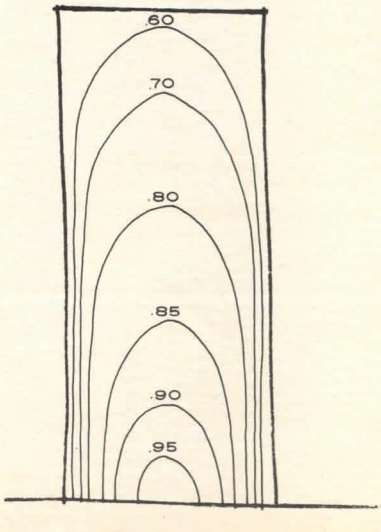

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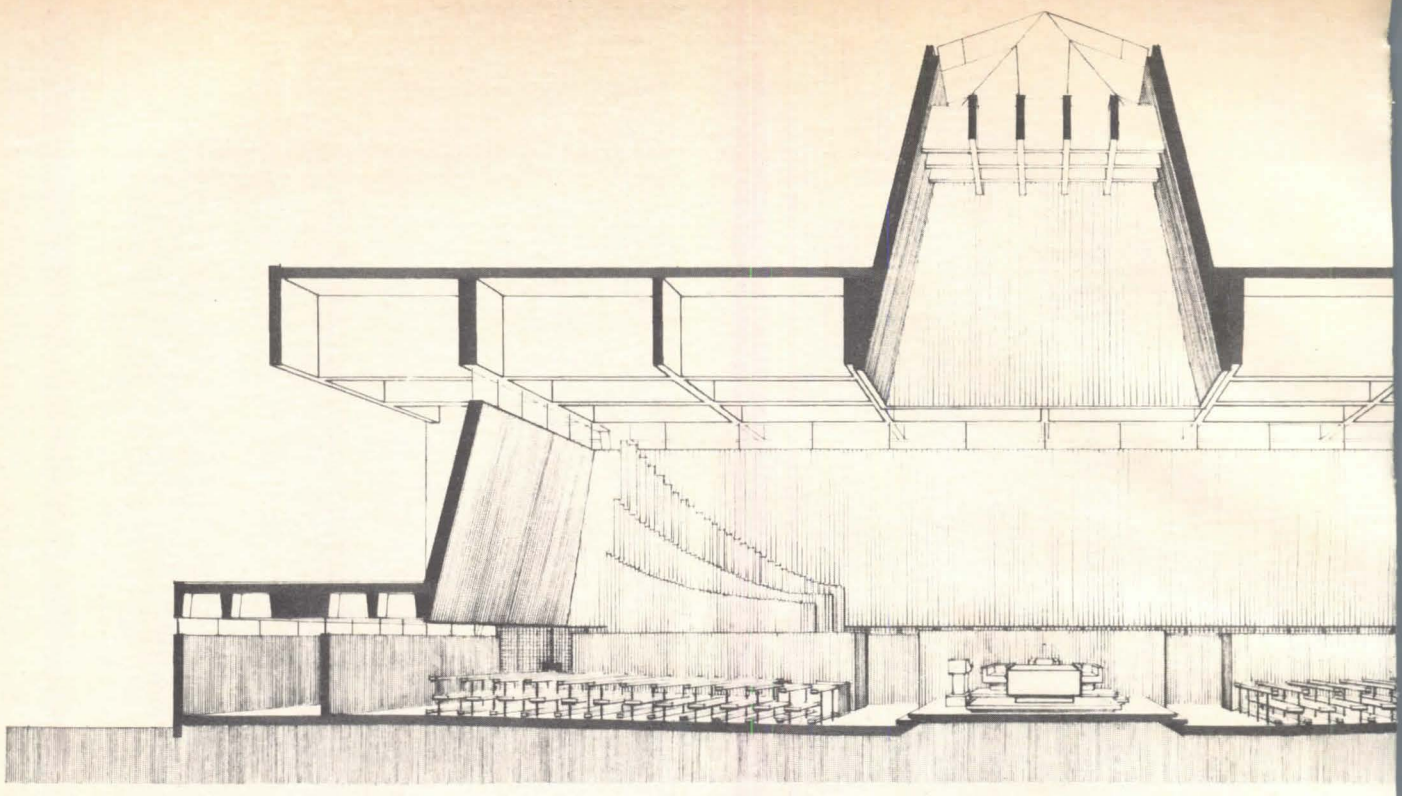


PRESTRESSING OPENS UP CHURCH INTERIOR

Large-span roof tops broad-minded approach to Roman Catholic church design in Florida.

The Roman Catholic Church is sending the money changers from the temple. No more tacky ornamentation, no shoddy pictures or sculptures, and no more multiplicity of altars and shrines. Churches, says the Vatican, are places for liturgical devotion, and should be designed for this purpose only (see p. 133, MARCH 1965 P/A).

With this clear mandate, designers can give a parish more for its building dollar, and much cleaner architecture.

Willoughby Marshall of Cambridge, Mass., followed the 1964 Vatican Council *II* recommendations for the Church of the Nativity in Hollywood, Fla., now under construction. Marshall located the altar near the center of the sanctuary, and wrapped the seating around three sides of the altar. In plan, the sanctuary looks similar to a theater with a thrust stage.

This comparison is not undignified, because the Church is determined to focus attention on one altar instead of two or three, and since a theater audience cannot cope with more than one stage, a congregation cannot be expected to do so.

The Church of the Nativity seats 950 persons in 11 U-shaped rows of pews on a floor slab sloping 1 ft. from the front to back. The ends of the pews line up with the minister's chair located behind the altar, and with the ambo. (An ambo, or reading desk, is an early version of a pulpit, and is now preferred to it.)

The minister's chair, ambo, and altar are all at the same elevation, three steps above the front pews. Again following Vatican direction, there is no rail separating altar from congregation.

Near the main entrance to the sanctuary, a small chapel houses a baptismal font, confessionals, and the Eucharist. The font, like the main altar, stands under a skylight. These, plus a clerestory and ground-floor glass walls will admit plenty of natural light. The walls on three sides of the sanctuary will be enclosed with sliding glass panels and wood screens.

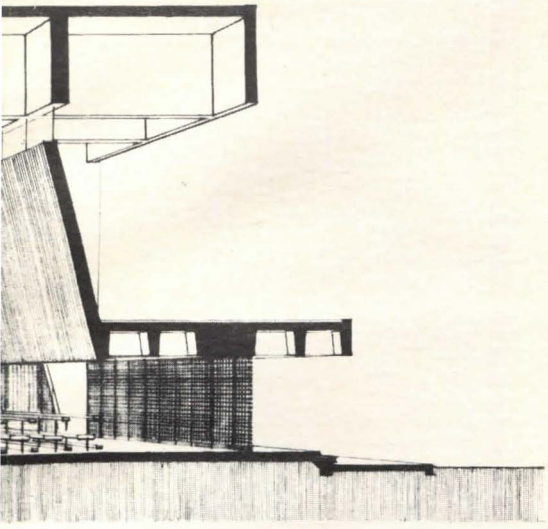
This construction shields the interior from bright, semitropical sunshine, and, with the glass panels open, allows cooling breezes through the church. During the height of summer, the building will be air conditioned.

Concrete Superstructure

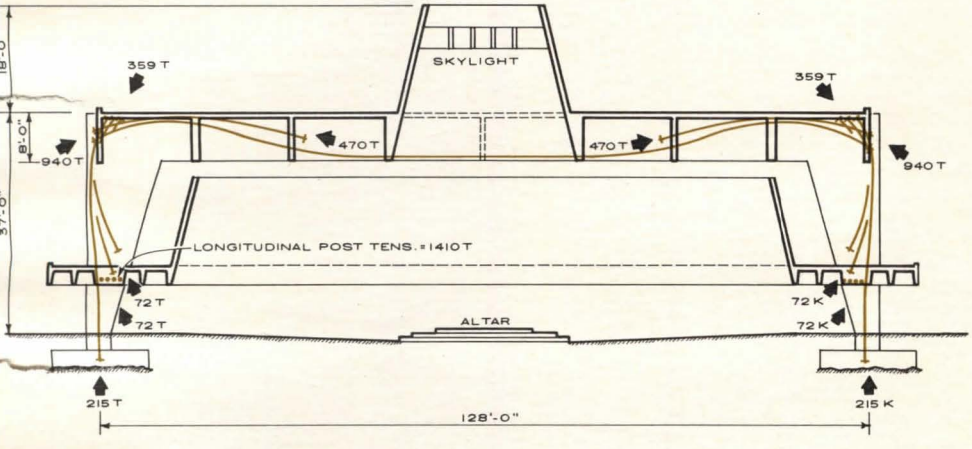
The concrete structure comprises an upper, main roof with a lantern light, a lower, peripheral roof, and a sloping wall extending between the two roofs. The main roof extends between pairs of columns at the four corners of the building. These columns also support the 20-ft-wide roof deck at the perimeter of the church.

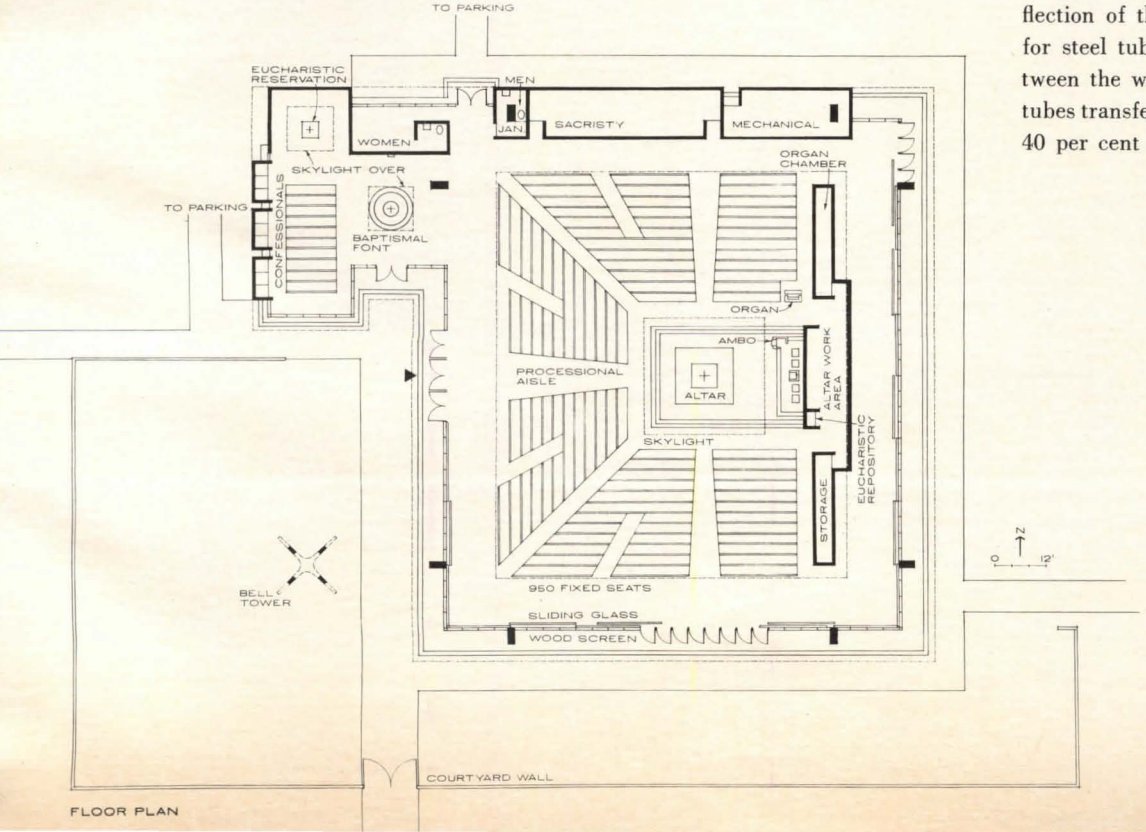
To enclose the space between these two roofs, Marshall cantilevered 18-ft-high concrete walls, inclined like a mansard roof. These sloping walls stop 3 ft short of the underside of the upper roof, and the space is enclosed with glass, forming a clerestory.

With columns spaced 96 ft and 80 ft apart, the main roof required thoughtful engineering. Not surprisingly, the consulting engineer, Sepp Firnkäs Engineering, Inc., of Boston, decided to prestress the main structural components. These are 8-ft-deep beams forming a grid of 16-ft squares, the longitudinal beams in the



Post-tensioning tendons (below) in the roof beams extend across the 128' x 112' roof. Other tendons tie the roof to the columns, and the columns to the foundations.





FLOOR PLAN

lower roof, and the eight columns. Both the slabs between the roof beams and the sloping walls are reinforced but not prestressed.

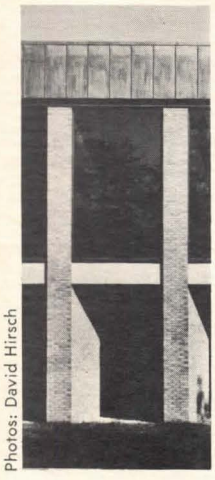
Firnkäs analyzed the roof as a space frame instead of a conventional series of bents. This more sophisticated analysis is only possible with the aid of a computer because the space-frame computation generates 123 indeterminate equations. These arise because the deflection of one joint between intersecting roof beams influences the joints adjacent to it, and in turn, the affected joints influence their neighbors. The computer swiftly calculates and prints out the bending moments, shear forces, rotational moments, deflections, and support reactions for all the joints.

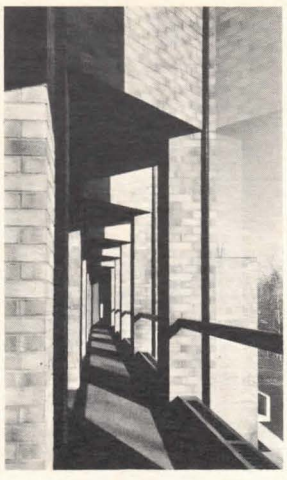
Post-Tensioned Into Foundations

The church, which is now in an early stage of construction, will be cast-in-place and post-tensioned. Columns will be anchored into the foundations with tendons extending to the top of the columns, and roof beams will be tensioned to the columns with tendons that reach nearly to the foot of the columns.

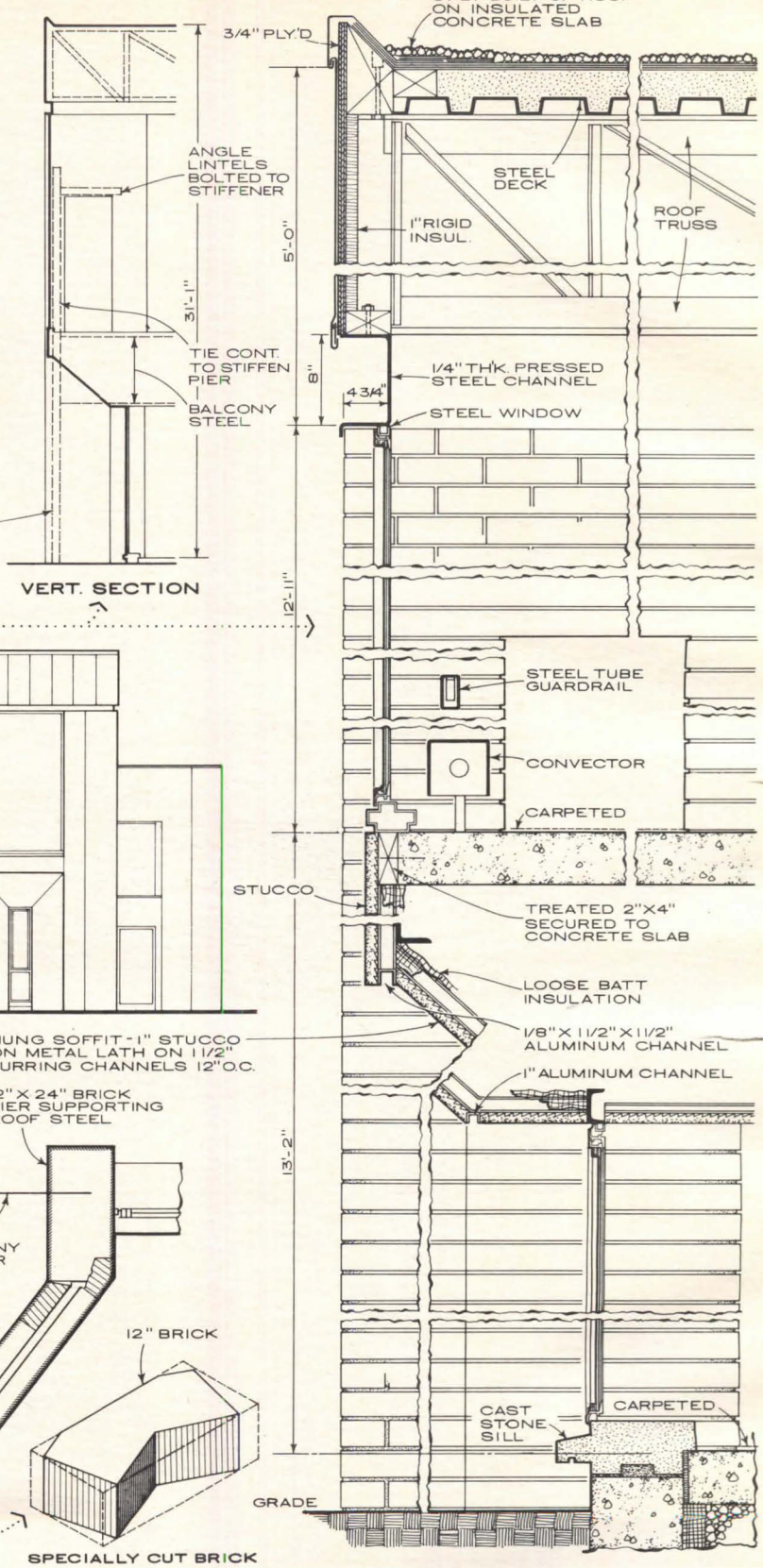
Prestressing the columns counteracts the twisting moments created by the low-level roofs. The roofs, too, are prestressed through central beams spanning between the columns. These beams also serve as braces for the columns.

Cantilevering from the inner edges of the low roofs, the inclined wall carries only its own dead load. To reduce the deflection of the walls, the engineer called for steel tubes to bridge the 3-ft gap between the wall and the main roof. These tubes transfer little vertical load, but about 40 per cent of the horizontal load.





Photos: David Hirsch

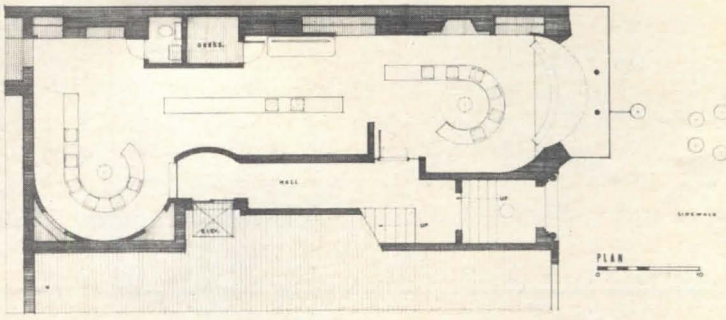


* AGUDATH SHOLOM SYNAGOGUE: Stamford, Conn.
DAVIS, BRODY & ASSOCIATES: Architects

SELECTED DETAIL
WALL SECTION

* See March 1966 P/A

WALK UP ONE FLIGHT AND "POW!"



Interior photos: Ron McNeil

Girl members of the vinyl generation in Boston (yes, they have them there, too) have been given a gear background in "The Upper Crust," a shoe and dress shop on Newbury Street. The place, designed by Boston architect Richard Owen Abbott, jumps with walls striped in vertical silver and aluminum strips, swoops with sculptured plastic display units and seatings, and glitters with transparent spheres for showing the wares.

Location of the shop is the floor above a barber shop in a Victorian brownstone. A cluster of display globes mounted on poles at street level serve as the shop's sign. The interior is a "floor-through" whose long space is bound together by bench display units that curve at either end and have a center section that rises and falls like a roller-coaster. Top surface of the units is white acrylic plastic, the bases are transparent acrylic, and the clerk's stools are transparent plexiglass. The metallic strip treatment of the walls extends up to 8 ft, where dark blue paint takes over. Shoes and dresses are casually displayed on the furniture and on the walls and hung in alcoves cut into the walls. A brick fireplace from earlier days has been preserved. The architect has applied for patents on the interior display-seating units and the exterior display fixtures.

A real swinging place. We wonder what it will look like when girls are wearing female clothes again.

1

POSITIVE PROPOSALS ON "BEAUTY"

That the search for "beauty" in Washington has taken on more substantial proportions than the Pennsylvania Avenue plan or the rejuvenation of the Mall was noted in these pages in a discussion of the plans for Capper Houses Plaza and the Buchanan School playground by Pomerance & Breines and M. Paul Friedberg & Associates (pp. 176–179, NOVEMBER 1966 P/A). Those projects dealt with real problems in real problem areas, and, when built, will bring "beauty" into the capital as an immediate by-product of creative planning and design.

It is heartening in this context to read the recently released report from Lawrence Halprin & Associates, landscape architect of San Francisco, to Mrs. Lyndon Johnson's Committee for a More Beautiful Capital. In a time when the word "beauty," through misguided association with petunia planting and architectural visions of "delight," has taken on the attributes of a pejorative, the Halprin study, by its search for that desirable quality through the means of enhancing man's environment — and hence his dignity — by coming to grips with actual problems in actual places, may help return "beauty" to the responsible architect's lexicon.

In his report to Mrs. Johnson's committee, Halprin has properly ignored monumental Washington and concentrated on Washington, the city where people live. The study therefore has pertinence for practically all urban areas where there are neighborhoods that can do with a little environmental improvement. The major portion of the report is concerned with the East Capitol area, which is generally made up of low-rise, low-income housing and businesses, plus commercial, industrial, and military installations along the Anacostia River and a sports stadium that siphons visitors in and out of the district frequently. Taking typical spaces in East Capitol, Halprin suggests changes that can easily be made to effect their optimum use for the community. An interior block — the community space created by throwing together urban backyards — can be used to create a varied sequence of areas and "happenings" that will transform what is usually a repository for garbage and an occasional forlorn child into vital and interesting spaces (1). Derelict structures can be removed, and, instead of being replaced by future derelict

Before, above; after, below.

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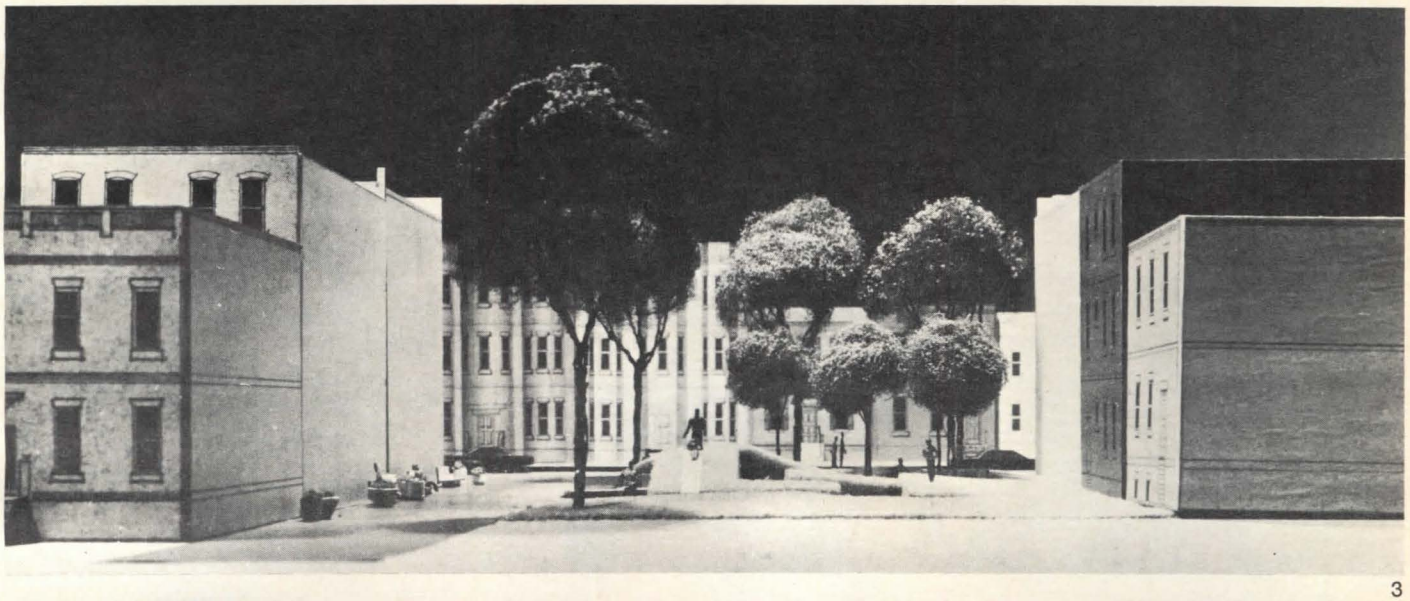

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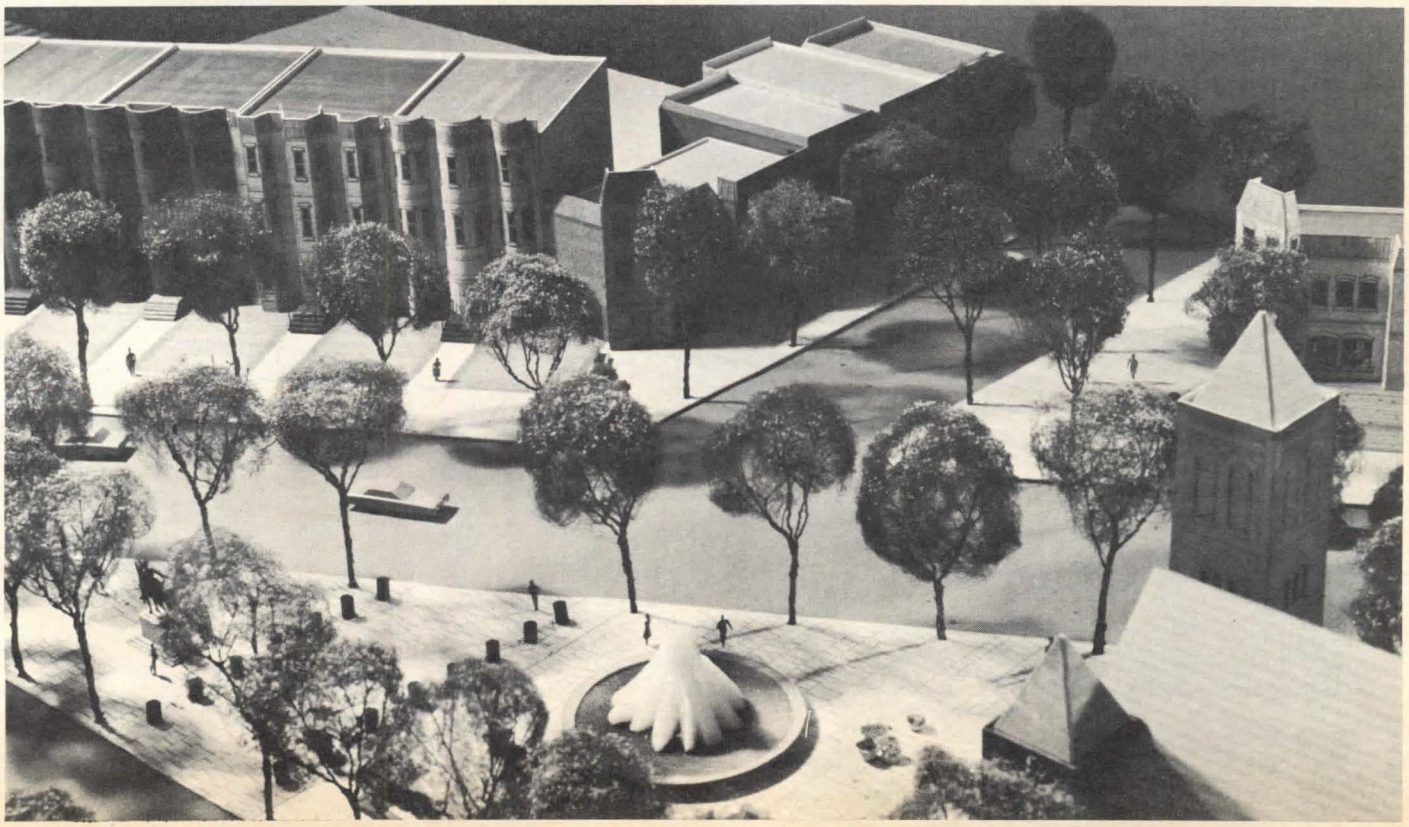

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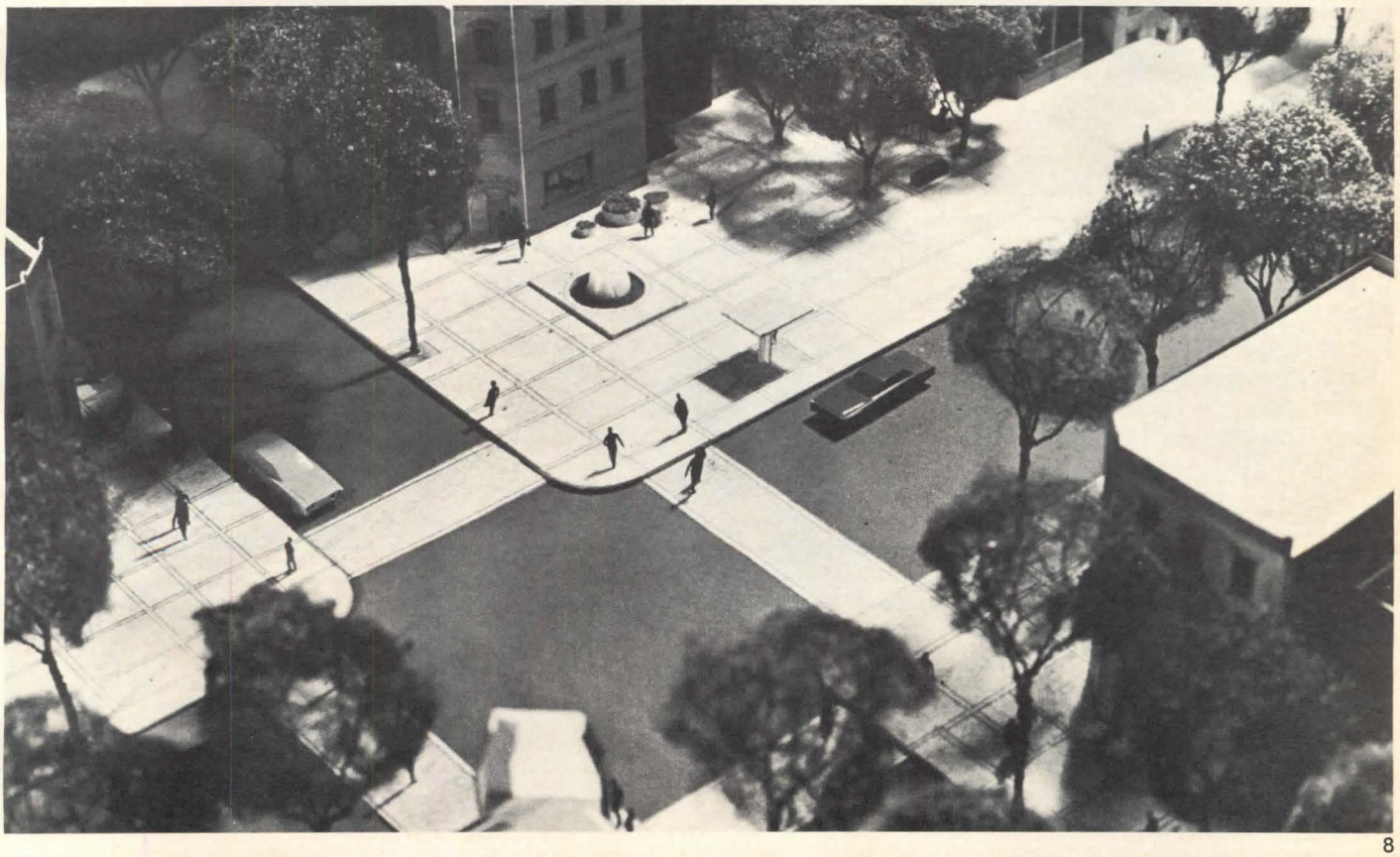
structures, can be replaced by open spaces designed for either passive or active recreation (2, 3). One situation peculiar to Washington is the heritage of triangular corner lots from L'Enfant's city plan. The Halprin report proposes utilizing these places, currently going to waste, as playgrounds, tot lots, or simply as handsomely landscaped urban areas (4). In some cases, these corners are traffic islands; here, the seldom-used side street would be closed off and the connection made between the corner and the block. School playgrounds, the old, asphalted standby in all communities, should be restudied and used for a greater variety of social purposes, according to the Halprin study. There is no reason, for instance, why, when schools are located near each other, sports facilities should be duplicated. The football field of one school can be used for different open space amenities, and the field of a neighboring school can be shared. Near Union Station in Washington, there are more than a half dozen schools within pedestrian range. To Halprin, such a situation should be used to community advantage to maximize the "educational-recreational potential."

One of the possible drawbacks of the proposal to Mrs. Johnson's committee, were it to be adopted and implemented in toto (admittedly an extremely unlikely prospect), is that it would leave so little possibility for undesigned chance. Practically every aspect of open urban space is examined and suggested for improvement, from the interior lot, to the sidewalk (5), to the city street (6), to the cutback commercial corner typical of Washington (7, 8). While this sort of thoroughness is commendable, one suspects it might encourage confusion in the minds of citizens unused in the first place to the idea of creative design of open spaces. As the report correctly states, "*In the final analysis, the po*tential of these changes to Washington's fabric can only be fully realized by the deep involvement of the citizens themselves." It would be a pity if such an involvement were negated by an excess of good intentions and proposals rather than by the usual cause — their lack. — JTB

Existing, above; proposed, below.

7



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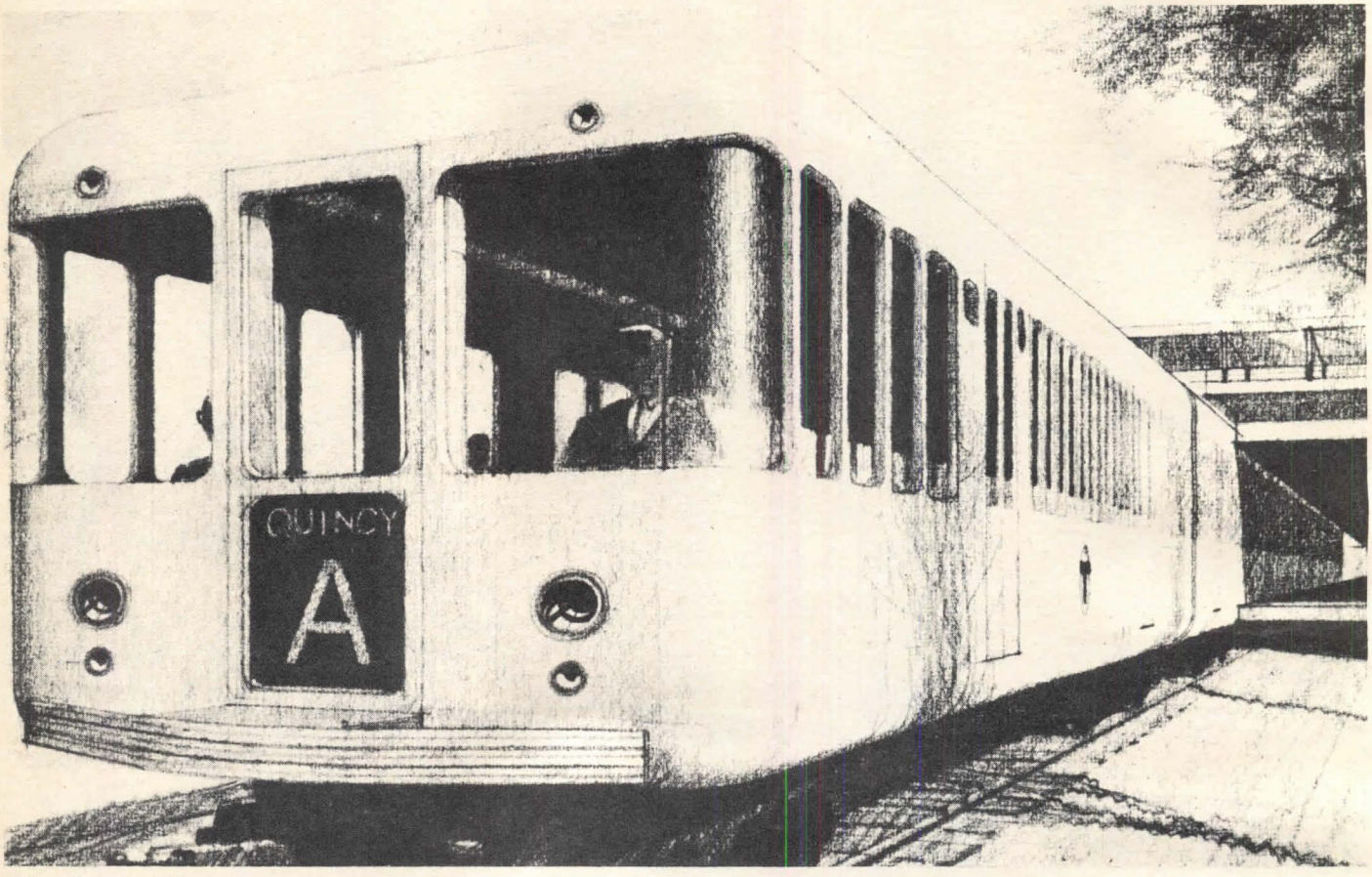
GOOD TRAINING

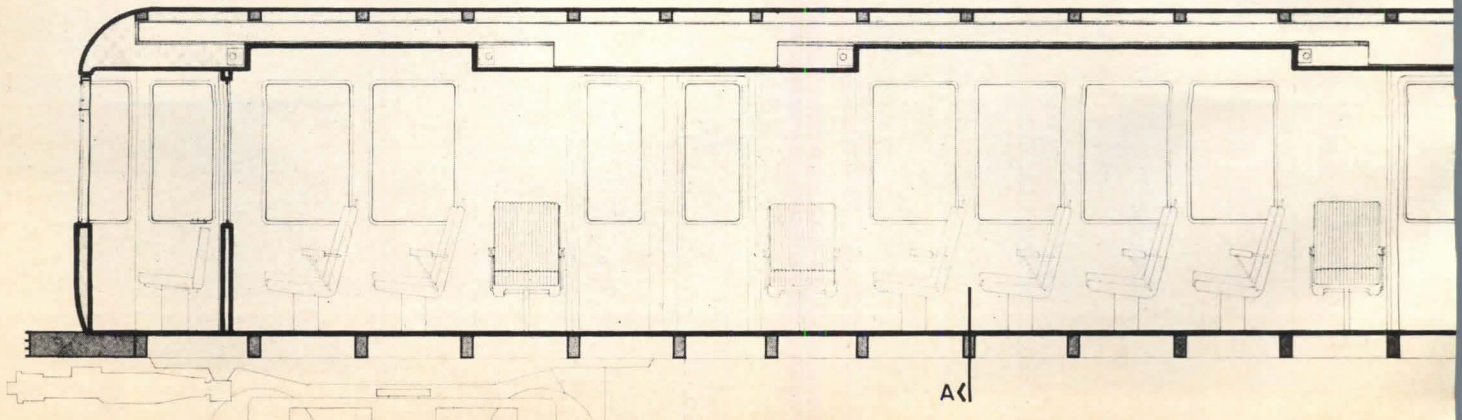


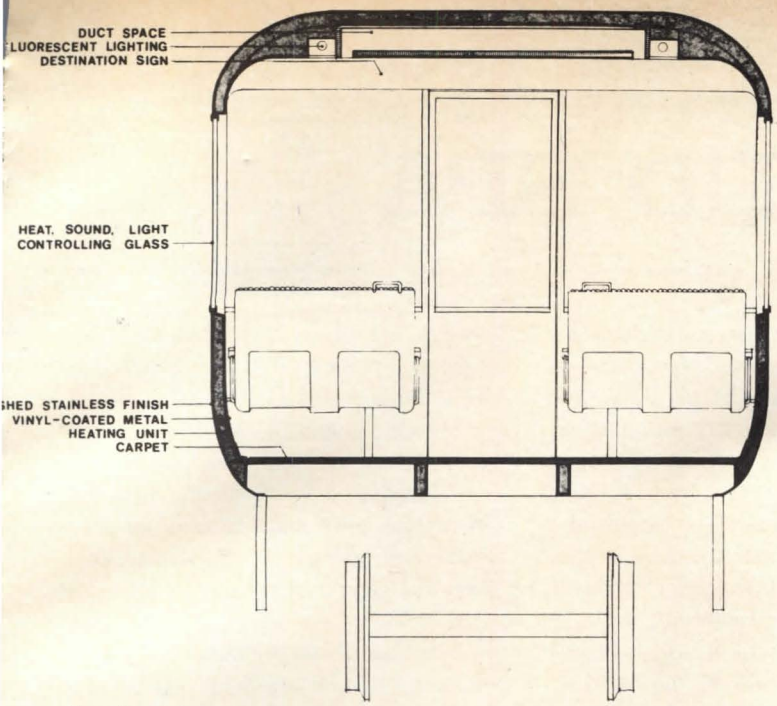
The South Shore Car.

Cambridge Seven Associates, Inc., who as coordinating architects and designers for the Massachusetts Bay Transportation Authority have had a more gratifying experience than Donn Emmons and Lawrence Halprin did with BART in San Francisco — they have managed without too much interference to develop guidelines for station design, graphics, and various industrial components — have now done most of the design of the car in which MBTA's passengers will travel. The ones on the South Shore line, anyway, for that is where the new cars will run.

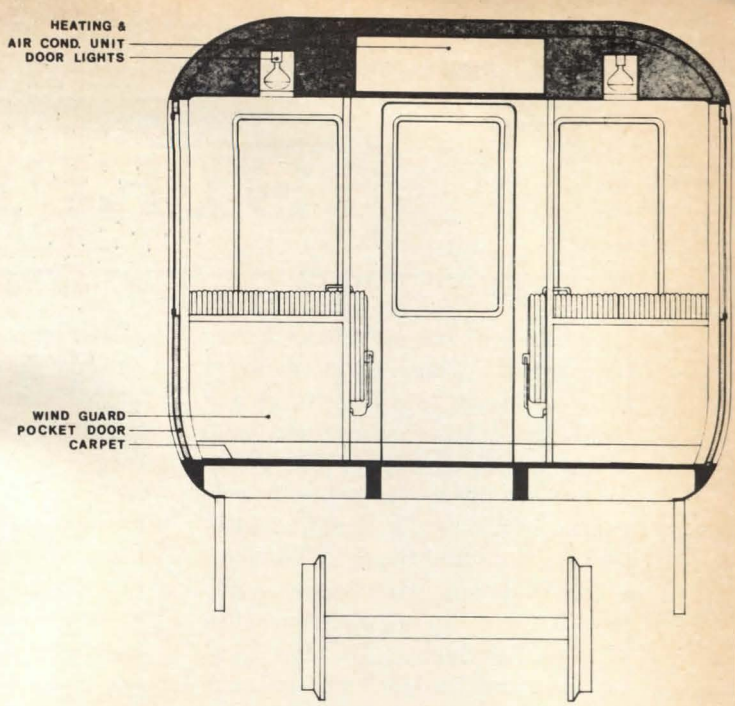
After one wades through a few juicy terms like "a high-speed mobile environment" and "comfort module," it can be seen that Cambridge Seven have done a good job of work in reducing the problem of designing a railway car to its basics: the seats appear comfortable but durable; the viewlines for sitting and standing are generous (this will be a surface car for most of its trip); natural and artificial light has been well thought out and should prove adequate and unobtrusive — brighter near the doors,

Longitudinal section.





Section A.



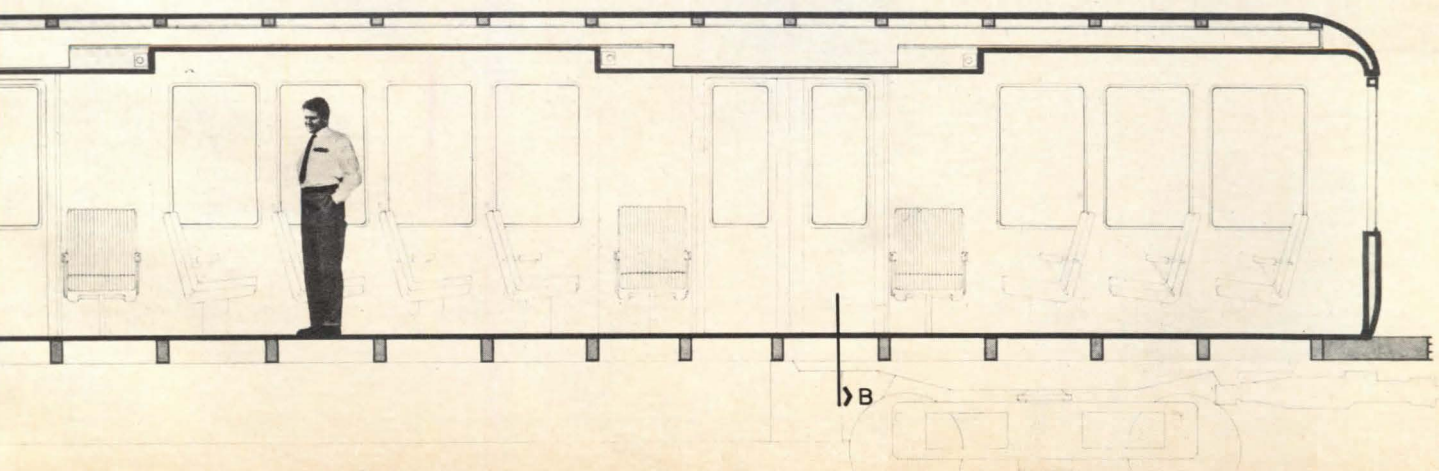
Section B.

less intense over seating; graphics are restrained and informative; the operator's booth and controls are crisply designed; and the appearance of the car inside and out is good and solid. As the designers say, "We and the MBTA feel that the simple, almost classic form will wear well."

As a matter of fact, the architects evidently got into practically every part of the problem except a pretty basic one: What is going to make the trains run? In other words, helping to choose the transportation *system* and helping to design the trains really from the ground (or rails or air pads) on up. What they had to do — design "a high-speed mobile environment" — they have done very well. The question remains, however, whether MBTA did not miss a good opportunity here to make an advance in the design of transportation systems by involving all kinds of design talent with all aspects of the problem from the very earliest conceptual stages. Cambridge Seven, asked to produce a comfortable, efficient, good-looking, everyday railroad car, have done it. What would they have done if they had been commissioned to produce a comfortable, efficient, good-looking transportation system?

Control console mock-up.

Passenger seating.



STEPPED SPA

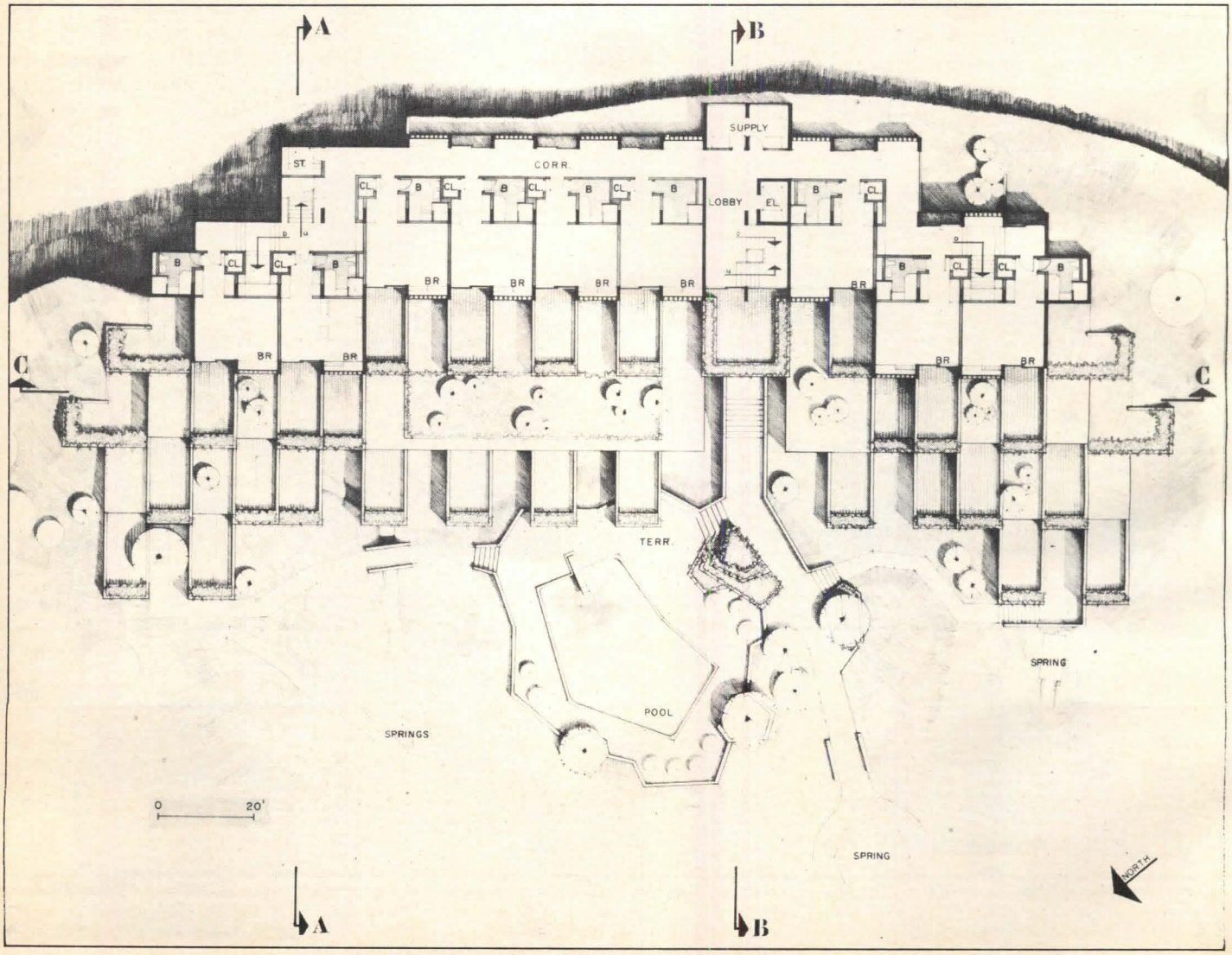
In a valley of the Allegheny Mountains is Hot Springs, Virginia, famed for generations as a place to go and "take the waters" for their salubrious healthful effects. The architecture usually associated with such a place is either the rambling 19th-Century boarding house or the over-upholstered Victorian resort hotel. Now, however, an organization called Virginia Hot Springs, Inc., has asked Architectural Design Associates, the young Providence, Rhode Island, firm, for something quite different.

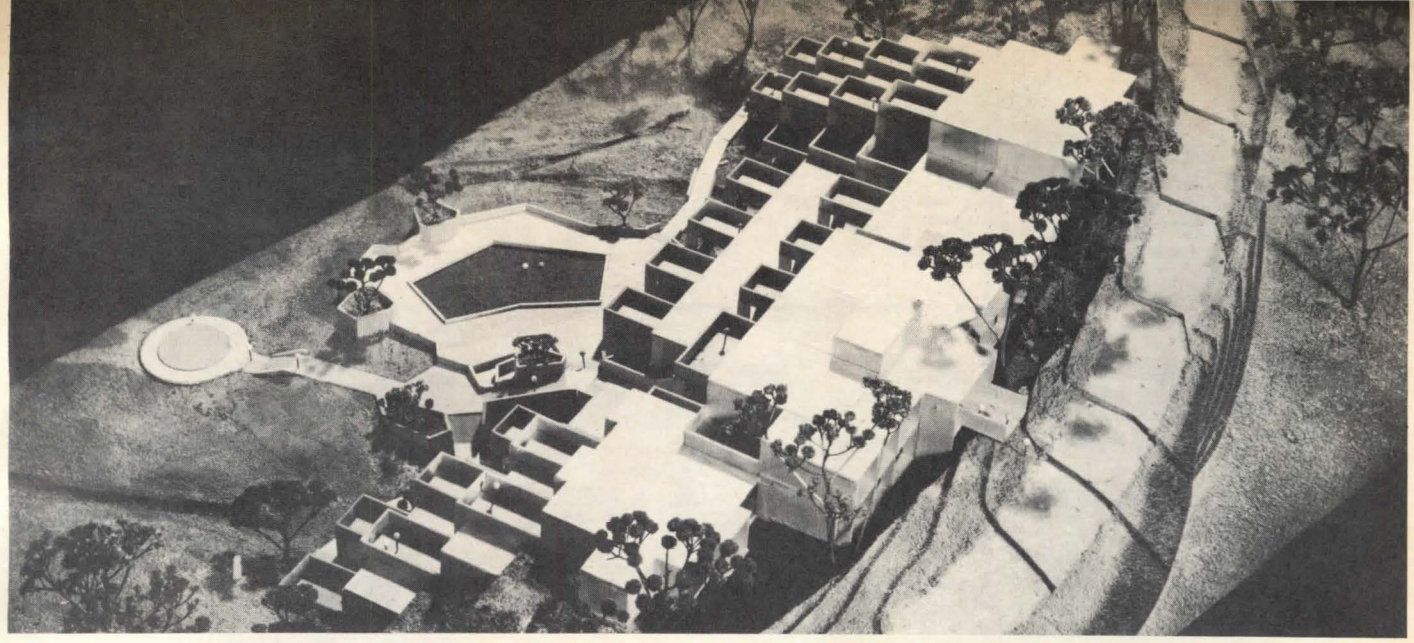
The site of a proposed 30-room resort motel is a steep hillside that slopes down to level off into a sward dotted with natural springs. The architects have terraced the units up the hill in a series of steps. Following the client's wish, the design is rather formal in nature, with emphasis to be given to natural terracing and landscaping. A swimming pool and a hot spring are overlooked by breakfast terraces that extend from each room over the stepped roof. At each end, the building will diminish in size and number of units to "blend" into the hillside. Single loaded corridors feed from a central lobby area past bedrooms to stairways at either end of the motel. The stairs connect all four levels; each level has access to grade. Entry to the lobby is via a concrete bridge from the upper floor at the top of the ridge.

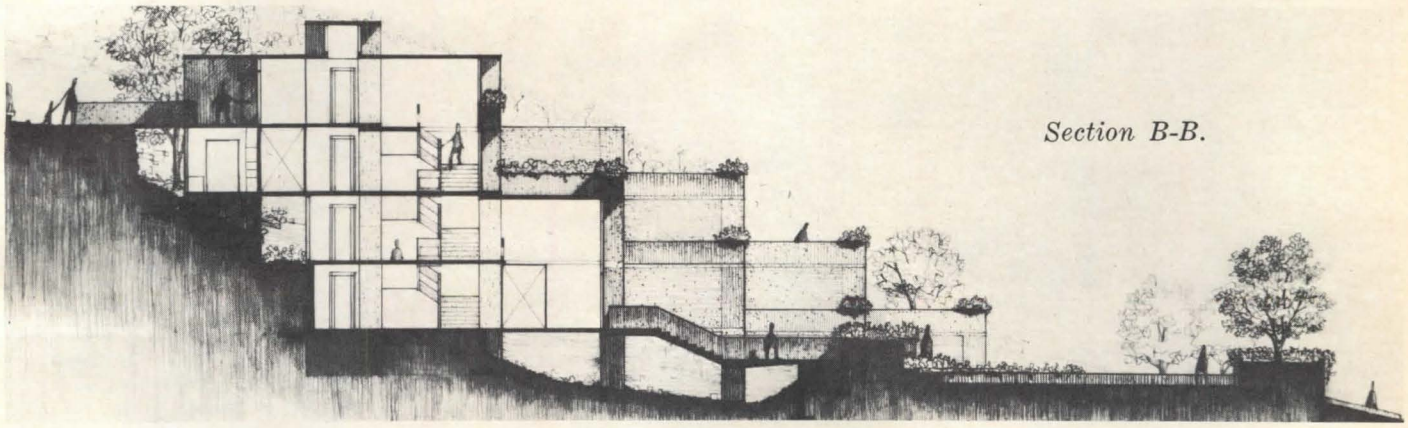
Structure will be cast-in-place concrete with vertically textured surfaces; exposed floor slab surfaces will be paved with quarry tile, interior walls will be plaster and wood paneling, and the building will be carpeted throughout.

The idea of having breakfast in the morning sun on one's private terrace looking out over the valley, followed by a dip in the pool and a swig of spring water to clear up the megrims, sounds very pleasant, especially to an old editor trying to meet a deadline.

Typical floor plan.







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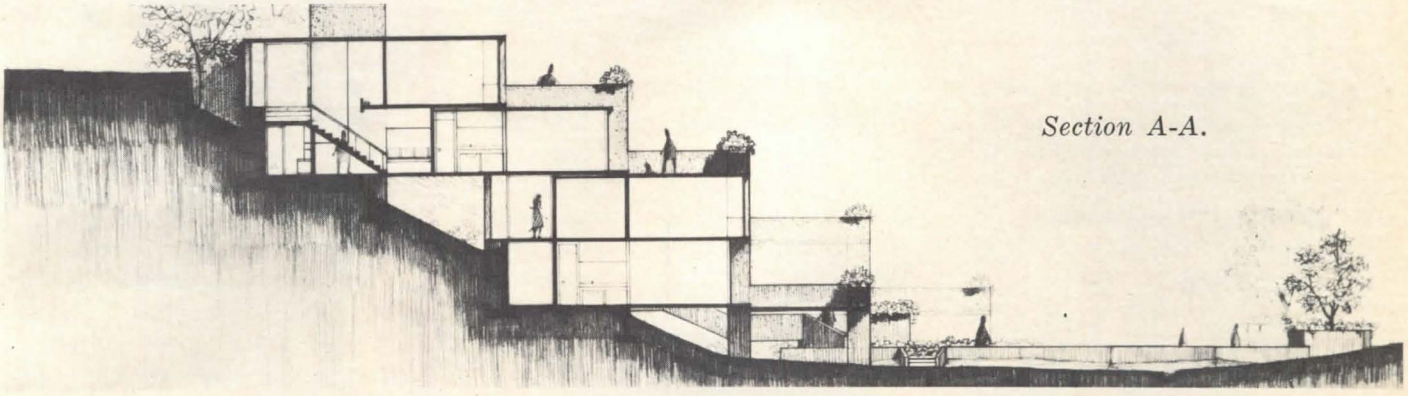

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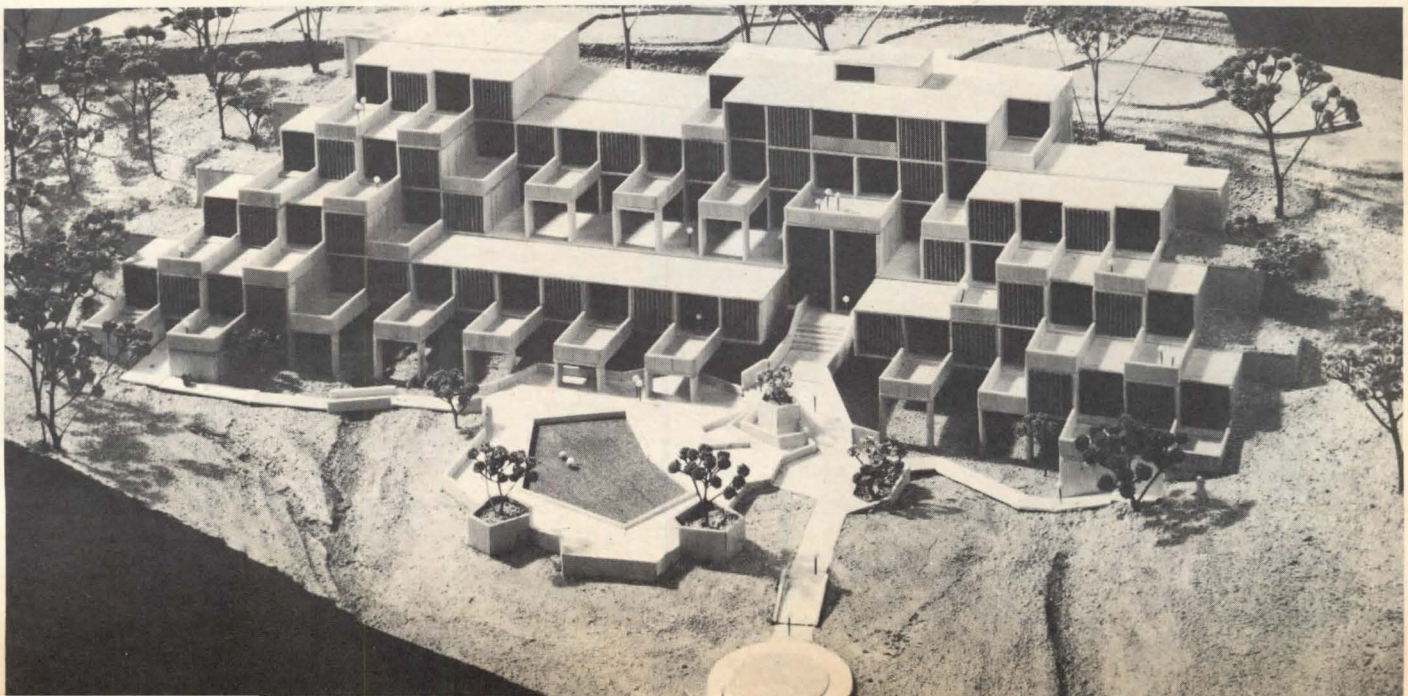
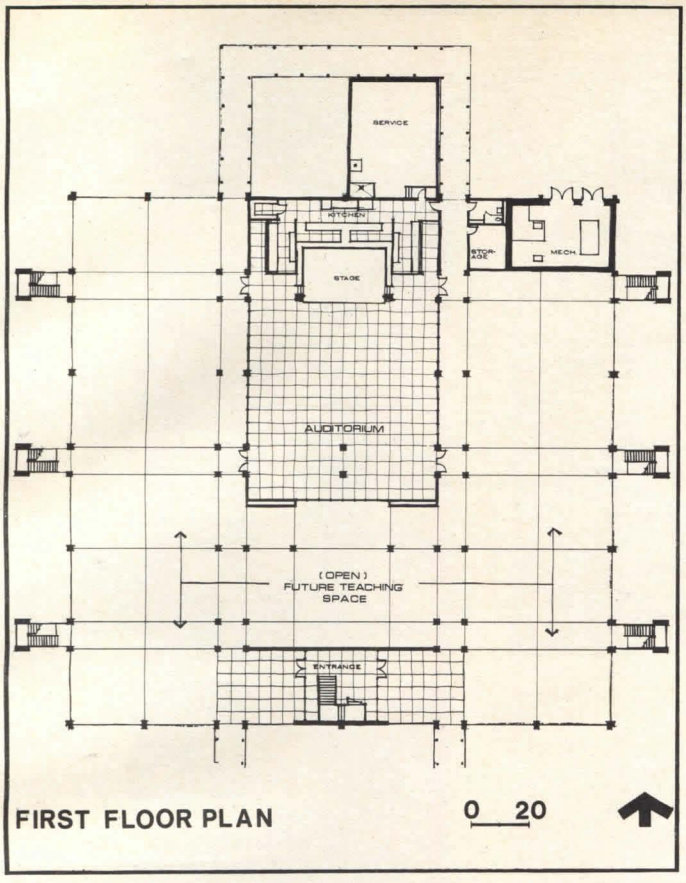


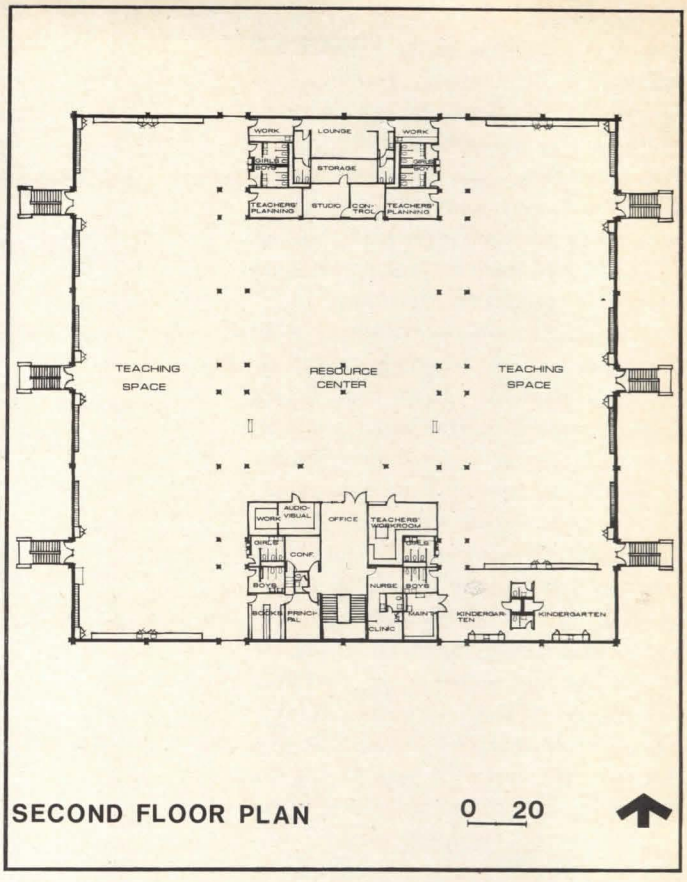
EXPERIMENT IN OPEN PLAN

The open plan school concept has been with us for a few years now, generally with emphasis on team teaching. Not many architects have had a chance to experiment further with actual buildings. Wilson, Morris, Crain & Anderson of Houston were fortunate enough to have such a program in their Ernestine Matzke Elementary School, and we present their description of the building, its processes, and its design philosophies here.

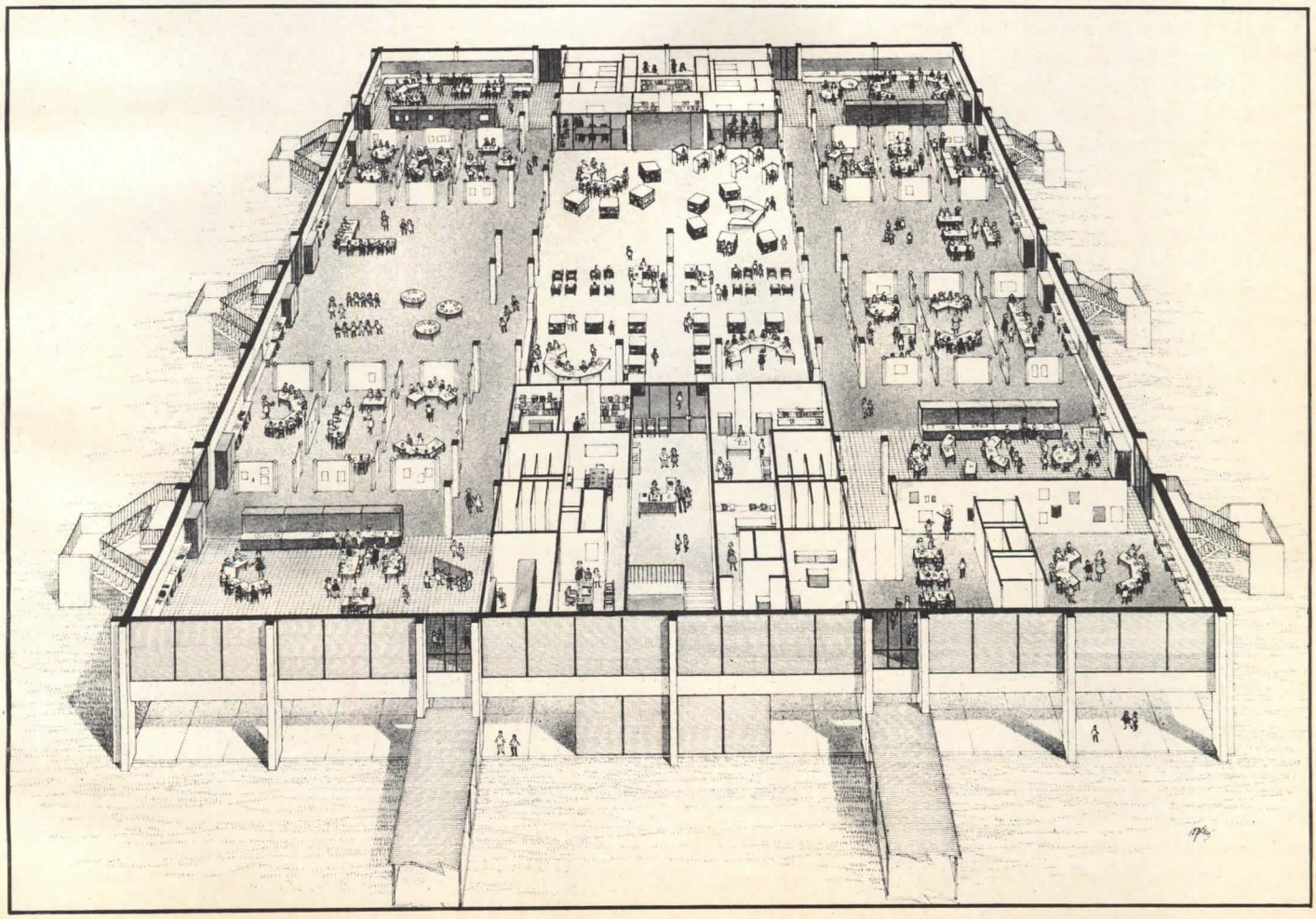
At some time between today's familiar classroom, with one teacher and 30 students, and the day when information will be imprinted directly on the human brain, there will be other schools that will operate similarly to the Ernestine Matzke Elementary School. During the next 70 years, we will make many changes in the processes by which we educate our children. The schoolhouse we build today (and which will be paid for in 30 years) must at least be amenable to change. Better, it should enable and even encourage change. It should not be designed to fit any specific program. Matzke Elementary School building, as operated now, houses an individualized instruction program in a continuous progress organization. All who were a part of its planning believe that it will successfully house future programs. (It can even return to the self-contained classroom layout.) Matzke is the result of three years of planning by a team composed of the Board and Administrative Staff of the Cypress-Fairbanks Independent School District, representatives of the College of Education, University of Texas, and Wilson, Morris, Crain & Anderson, Architects. Planning began as a result of a number of discussions between T.S. Hancock, Superintendent of Schools, and Blair Rowland of Wilson, Morris, Crain & Anderson, concerning the educational process. What was envisioned as a result of these discussions was a program whereby learning, rather than teaching, became the central focus, with each individual student receiving the opportunity to progress through the various disciplines at *his* maximum capacity without regard to the relative capacity of his peers.

The team teaching now being conducted at the Matzke School permits such a program. While most familiar team teaching programs rely heavily on large group instruction, the Matzke program does not. The emphasis here is on small group instruction in all areas other than science, art, and physical education. Considerable instruction is recived from the resource center rather than from the teacher. With a wide range of student-oriented and student-operated media, the resource center is the heart of the school. Time spent by students in the resource center frees the teacher to work individually with other students who may be having difficulty. Multimedia provide for the various cognitive styles of individual students. Removed from the autonomy of the self-contained classroom, teachers grow professionally. Weaknesses are discovered and strengths utilized. Each student receives the opportunity to benefit from the strengths of a team of teachers. Through working with smaller groups, the teacher becomes





Early plan for second floor (below) indicates more rigid space arrangement than one eventually used.



more aware of the student as an individual and may better provide for individual differences. Emphasis is placed on: students becoming more responsible; students directing, to a limited extent, their own learning experiences; and instruction in depth according to each student's ability, interest, and desire—not dependence on a predetermined direction.

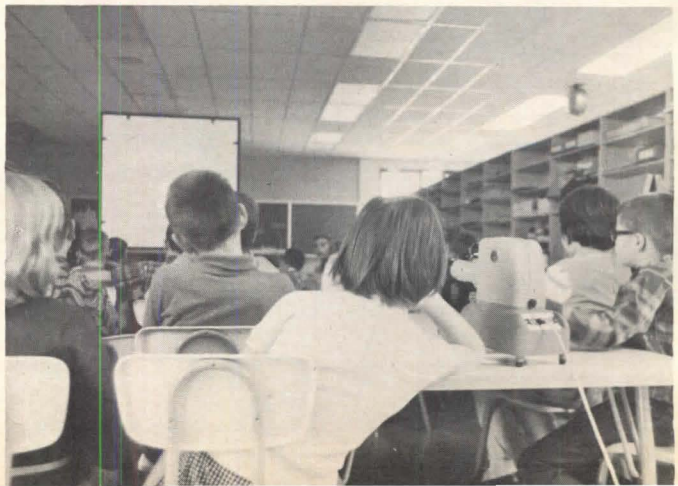
The Matzke School attempts to fit the instructional program to the individual student, rather than fitting all students into the same mold, or even into one of two or three tracks.

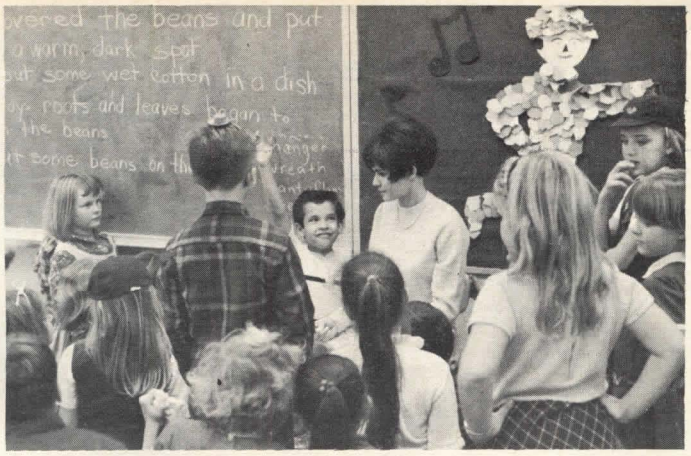
Matzke is one of four elementary schools in the state that are a part of the research and development program of the University of Texas. Dr. E. J. Eaton of the Research and Development Center and one of the nation's leading experts in individualized instruction, has worked with the Administrative Staff and faculty for over a year assisting in the development of the Matzke program.

The Matzke building was not designed *for* its current program; it was designed to *allow* this program, and to provide answers to other continuing problems.

The Cypress-Fairbanks area is a rapidly growing one and the problem of expansion of schoolhouse facilities is a continuing problem to the Board and Administration. With this in mind, and knowing that it is the Board's policy to develop elementary schools to a 48-classroom size, Wilson, Morris, Crain & Anderson have designed Matzke Elementary School as a two-story building, without enclosing the first floor. Each floor will house the equivalent of 24 classrooms. All that is required now to provide additional teaching space, is to enclose on the first floor the amount of space needed with enclosing walls, install light fixtures and air-conditioning equipment, and carpeting. In this manner, the area becomes available very quickly, with minimum disturbance to existing functions. In the meantime, the ground floor serves a useful purpose as covered recreational space.

Including site work and fixed and connected equipment, Matzke cost $13.50 per sq ft. The contractor quoted a cost of $185,000 additional to complete the first floor and to pro-





Photos: Paul Peters

duce completed space equivalent to 48 classrooms. This would result in a final cost of $9.50 per sq ft for a 48-classroom building.

The Matzke Elementary School building is a concrete frame structure and will carry the lowest possible fire rating. There is no waste space in corridors. Approximately 70 per cent of wall space and doors have been eliminated, resulting in a sizable reduction of maintenance costs. The building is carpeted and air conditioned.

Area of the building is 56,827 sq ft, providing 94.7 sq ft of space per student. Enrollment is 600. Consultants were Walter P. Moore, structural engineer; Cook & Holle, electrical and mechanical engineer; and Mulhauser, Holmes & Riggs, food handling consultants.

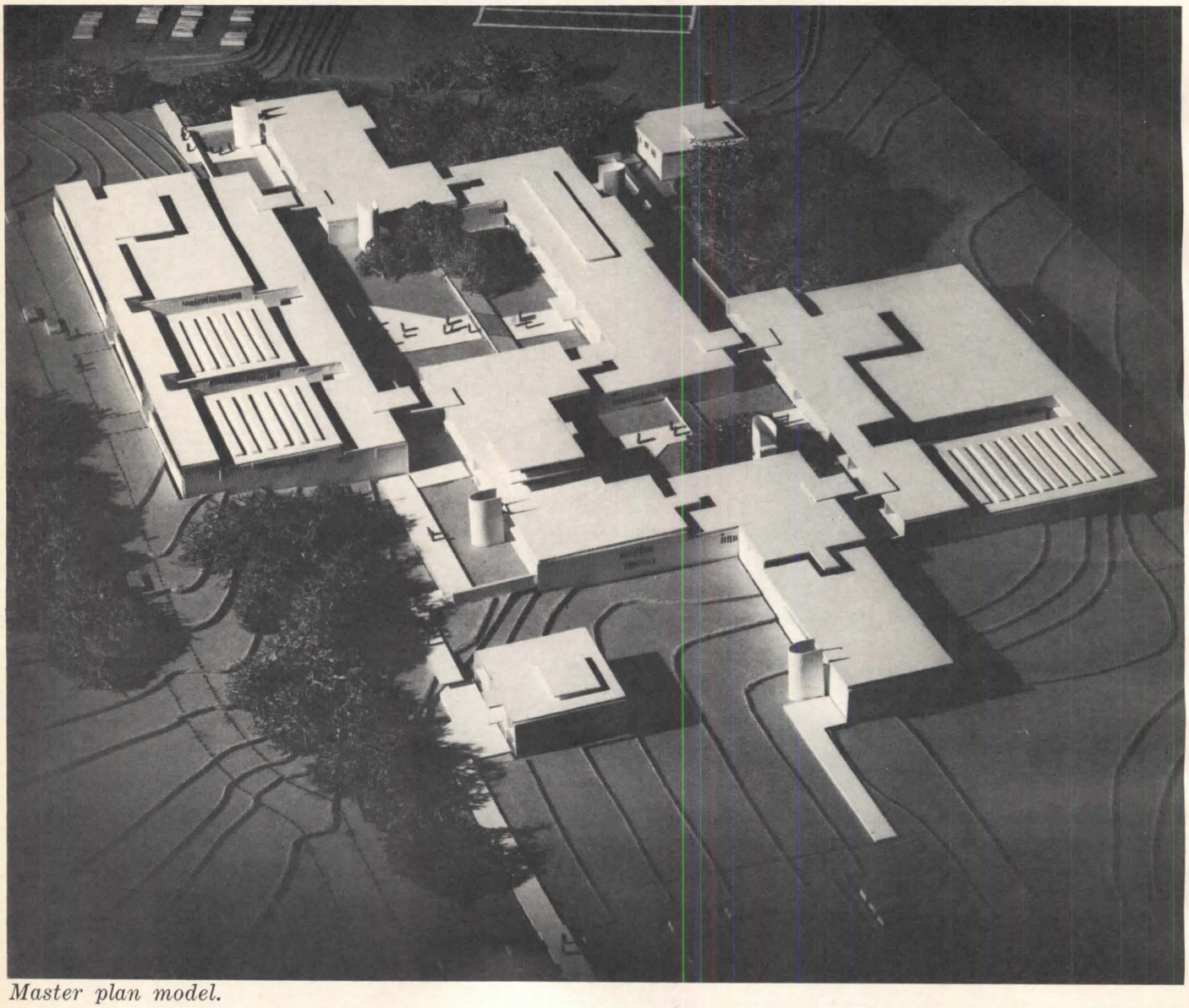
P/A talked with School Superintendent T.S. Hancock to get his opinions on the effects of the program and the building on pupils and teachers. He commented, "Certainly some people were apprehensive concerning noise and the need for a new administrative organizational procedure and some other possible problems. These apprehensions have been found to be groundless and the problems nonexistent. We are all pleased with the building and the program it allows.

"Progress to date in the acceptance and success of the program is much more than we anticipated. From its first week, Matzke has had the highest percentage of attendance of any school in our system. The children enjoy it; they can be allowed unusual freedom if properly motivated. The program and the building provide this motivation."

How successful in terms of repeating the "experiment" has the school been? "We have been visited by groups of experts from many states, even as far away as Hawaii," Superintendent Hancock said. "Many of these people are very interested in following similar programs now."

Did the school pass the acid test: Would you do it again? "Oh, we *are* going to do it again," he replied. "We are planning an additional school now and it will undoubtedly have a similar program and building concept."

10-YEAR PLAN



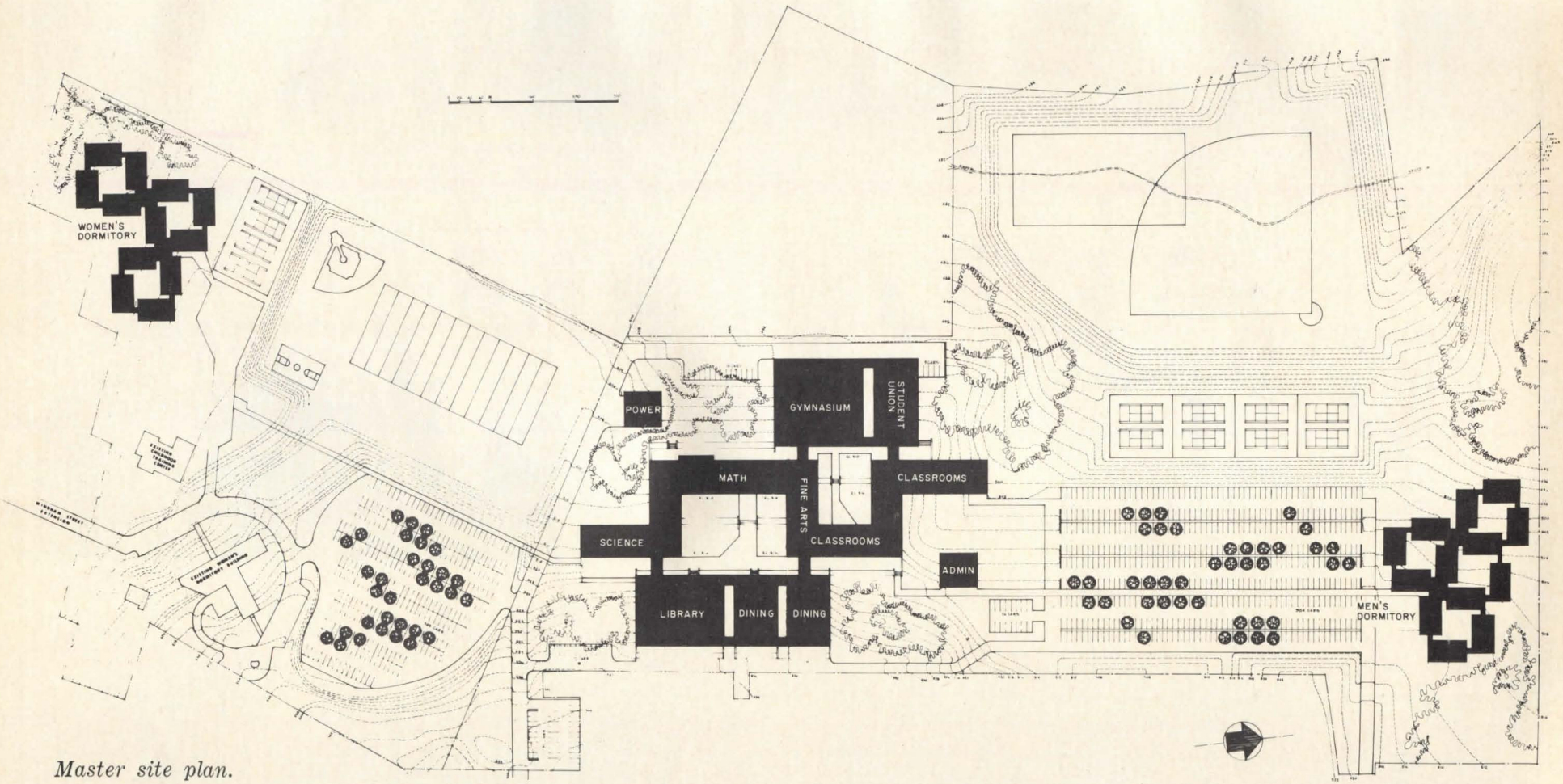
Master plan model.

The most recent P/A Design Awards jury was concerned, in part, with the apparent lack of a graphic language for urban development planning that is not insistent on a particular design vocabulary indicated by the creator of the plan. On a small scale, and on a somewhat different problem, Olson & Miller of Hartford, Connecticut, have performed this service for the development plan of Willimantic State College in that state.

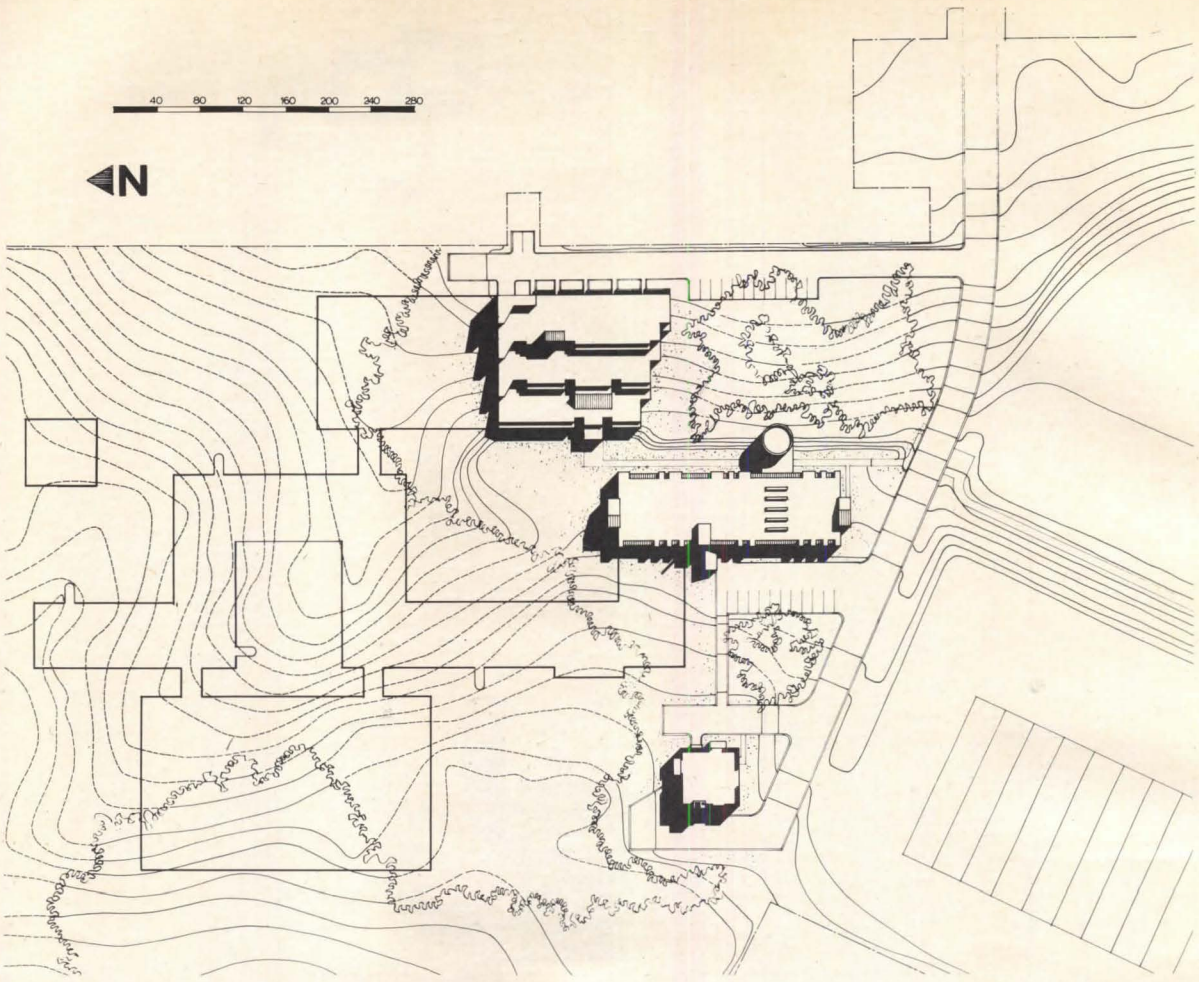
The plan is basically the bare bones of schedules, square footages, and graphics. The entire scheme (an addition to a smaller existing campus) will be completed by 1975, and consists simply of a women's dormitory group, a men's dormitory group, and a system of interconnected buildings housing all other college facilities. Sports fields and parking areas are also indicated.

The center of the new campus is a compactly organized union of five classroom buildings, gymnasium, student center, library, and two dining halls. The administration building and power house, as different function structures, exist separately.

The architects say that the plan was developed as an interconnected system so that it can be developed either by a single architectural firm (Olson & Miller are designing the science building, library, and power house) or by several firms. In the event that a number of designers are involved, the architects "feel that the spaces we have created will make the project a cohesive unit in somewhat the same way as the open spaces and



Master site plan.

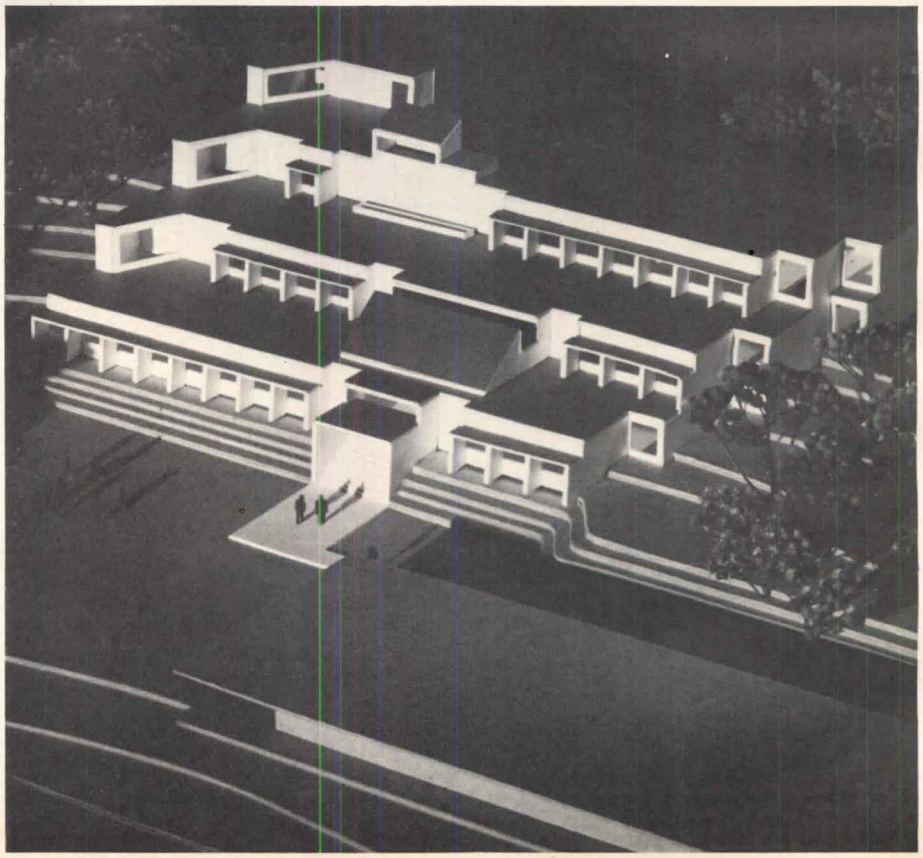


New buildings presently under design.

Proposed library.

streets do at Yale. In New Haven, some courts are bounded by both Gothic and Georgian structures; each is highly individual but a strong spatial sequence and interlocking masses bring these diverse elements together into a single expression."

The design of the library, science building, and power house by Olson & Miller bears out, in the design stage at least, the determination of the architects for a strong but not overbearing architecture. The library particularly, rising up its hill in a series of diminishing floors, promises to be an interesting building. All three, however, seem to share the strength of confident understatement rather than some of the structural and design flamboyance we have seen recently from other sources.



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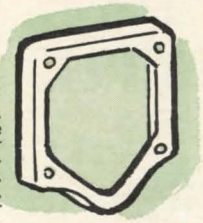
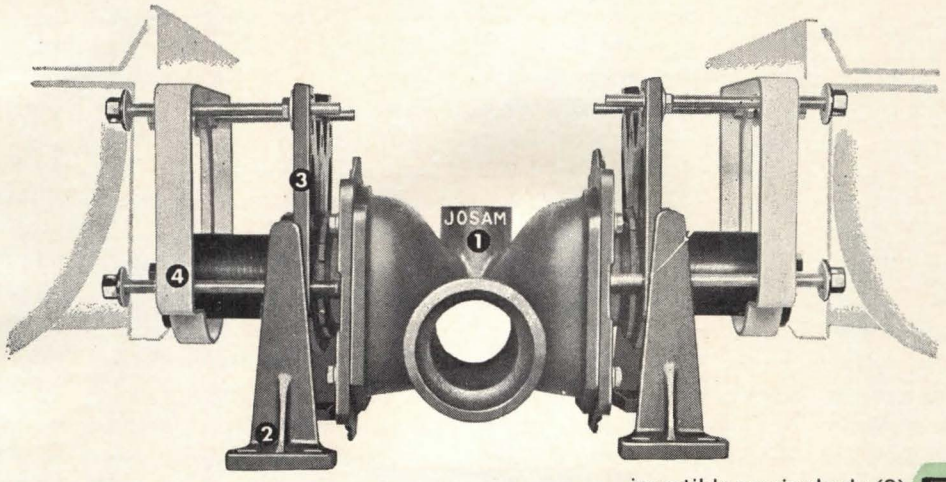
common vent (1)

Saves chase space . . . substantially reduces the number of connections required in a battery of toilets

positioning frame (4)

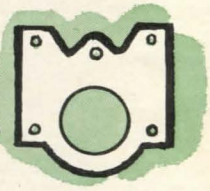
Simplifies alignment... Saves one or more hours of labor per bowl* . . . saves fixture breakage . . . saves call-backs . . . acts as template for wall finish, saving tile-setting time.





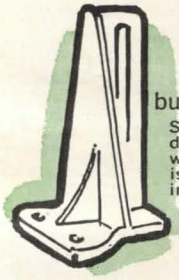
invertible carrier body (3)

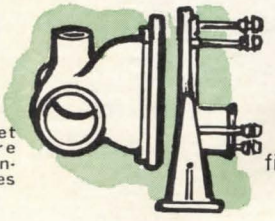
Fits all types of toilets, blow-out or syphon jet . . . saves handling time . . . eliminates stocking and ordering of different carriers.



buttress foot (2)

Short Bulldog feet do not interfere with any type of finished floor . . . saves installation time





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REDUCING ELECTRICAL DEMAND CHARGES

BY Wm. J. McGUINNESS

A control system can reduce power demand charges by disconnecting nonessential equipment when a building's power load reaches a peak. McGuinness is a practicing engineer in New York City.

The rapid increase in the number of buildings exclusively using electric power for heating, cooling, domestic hot water, and other thermal functions makes planning of electrical loads an essential consideration. One of the obstacles to economically running an all-electric building has been a high demand charge.

This charge, as industrial consumers well know, is made monthly by a utility company for installing and maintaining a service larger than would be necessary for the consumer's average power demand. The charge is additional to the energy charge for the kilowatt-hours delivered monthly.

The utility company bases its charge on the maximum kilowatt demand. It establishes this figure by integrating the greatest peak demand over any 15-minute (or other significant) period within the billing month. However, demand charges can be reduced by Permissive Load Control (PLC), a system that reduces peak kilowatt demand by disconnecting loads that are not immediately vital for running a building. Thus, when the nondeferrable load reaches a predetermined power level, PLC temporarily disconnects all further loads.

How PLC Works

PLC can best be explained by considering an application for a large, all-electric motel. This building would be cooled by through-wall, self-contained "incremental" equipment in each room or space. Rooms would be heated by an electric resistance element in each of these cabinets. Either heating or cooling would be available at each cabinet at any time. All other thermal demands would be met electrically, and no boilers or combustion are involved.

Power consumption can be zoned for the building's straight-through loads and its controllable loads as follows:

Loads not to be deferred

Lights, heating, cooling, cooking, elevators.

Controlled loads (in order of priority)

1. Domestic hot water.
2. Heating and cooling corridors.
3. Heating and cooling stairwells.
4. Heating swimming pool in spring and fall, or melting snow in winter.

When sensing unit A **(1)** finds that the immediate power use — largely influenced by the major demands of lights, heating or cooling, and other nondeferred loads — is quite low, it refers controlled-load power demands to control unit B. When the nondeferrable load increases, the controlled loads, if running, are turned off in reverse order of priority, i.e., 4, 3, 2, 1.

Thus, the total demand does not exceed the predetermined value. And, when power again becomes available, control unit B switches on controlled loads in order of their assigned priority.

Deferrable Loads

With PLC, the controlled elements obviously must serve equipment that can be self-sufficient when it is disconnected for varying lengths of time.

A large, two-chambered, specially-designed domestic hot water tank with multiple electric heating elements can coast for three or four hours with no power. Corridors and stairwells can wait for power because they usually have low rates of heat gain or loss, and their surfaces can be heated or cooled during slack periods.

Swimming pools are very stable thermally and can be warmed during night hours: A 24-hour interval between heatings has little effect on a pool. If snow-melting is especially essential in critical areas, such as at front entrances, one area of the cables-in-slab units can be given priority.

Consumer Saves Money

An example of savings to the owner is given in the following tables; see also **(2)**. Note that with PLC the demand reduces from 500 kw to 300 kw. The kwh of total energy remain the same but in Case 2 they are bought at lower rates.

Case 1 (without PLC)

500 kw demand @ $1.00	$ 500.00
100 hrs use x 500 kw = 50,000 kwh @ 1¢	500.00
200 hrs use x 500 kw = 100,000 kwh @ 0.8¢	800.00
Total	$1800.00
150,000 kwh at average cost/kwh	1.2¢

Case 2 (with PLC)

300 kw demand @ $1.00	$ 300.00
100 hrs use x 300 kw = 30,000 kwh @ 1¢	300.00
200 hrs use x 300 kw = 60,000 kwh @ 0.8¢	480.00
*Balance of 60,000 kwh @ 0.6¢	360.00
Total	$1440.00
150,000 kwh at average cost/kwh	0.96¢
Net savings	$ 360.00

** This utility company sells all kwh in excess of 300 total hours "use of demand" at 0.6¢ per kwh.*

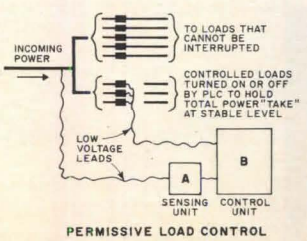
Electric Companies Like It

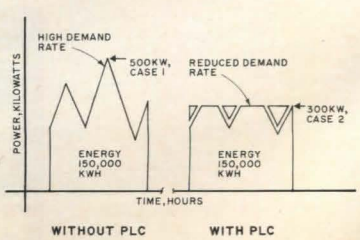
Utility companies like PLC because they can install smaller transformers and less service copper to supply 300 kw instead of 500 kw. A company can then apply part of the installation funds to the service of another customer and thereby sell more energy. Utility companies canvassed in the northeastern United States universally approved Permissive Load Control.

Market Situation

The Climate Control Division of the Singer Co., Auburn, N.Y., makers of incremental heating and cooling equipment, supplied information on Permissive Load Control for this column, and furnished data for the two case studies.

Singer states that less than five years ago, more than 95 per cent of its sales were for steam or hot water for heating equipment, but, in the first six months of 1966, more than 62 per cent of new orders were for equipment using electric-resistance heat. It has installed four PLC systems, and has 20 or more on order.





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SPECIFICATIONS CLINIC

NEW AIA GENERAL CONDITIONS

BY HAROLD J. ROSEN

The author discusses some of the more significant changes in the revised Conditions of Contract for Construction. Rosen is Chief Specifications Writer for Skidmore, Owings & Merrill, New York City.

The Tenth Edition of AIA Document A 201, General Conditions of the Contract for Construction, dated September 1966, contains many conspicuous changes in its format and content.

The number of articles has been reduced from 44 to 14. This was accomplished by assimilating and codifying, under broad article headings, information related to the contract documents, the architect, owner, contractor, subcontractor, and similar categories. In addition, an index provides a ready key for locating information under the 14 articles.

This new format identifies each article, paragraph, and item with a number that permits ready reference and identification of subject matter within the General Conditions during discussions or correspondence. In previous editions, most paragraphs under an article were not numbered, and reference to pertinent paragraphs was cumbersome.

Although this new format is a major improvement over previous editions, it still retains several articles of a nonlegal character that could well be completely removed from the General Conditions and placed under Division 1 of the Uniform System. Indeed, some information concerning a project will now appear in two places: the AIA General Conditions and Division 1, General Requirements of the Uniform System.

In previous arrangements, some of the General Condition articles were modified under the Supplementary General Conditions (changed in the tenth edition to read Supplementary Conditions). Now, an architect or specifications writer must determine for himself where he will modify these requirements.

Writer's Choice

The boxed table shows examples of AIA General Condition articles that are also included under Division 1, General Requirements.

Note that the new edition combines in one paragraph the requirements and procedures for submitting samples and shop drawings. This paragraph is under the major Article 4, entitled "Contractor," which lists the responsibilities of the contractor. In previous editions, samples and shop drawings were separate articles. However, one must now decide whether to supplement the requirements for samples and shop drawings under the Supplementary Conditions, or under Section 1C of Division 1. The same problem exists for modifying "Cleaning Up" and "Cash Allowances."

While on the subject of Cash Allowances, it should be pointed out that the new edition of the AIA General Conditions clarifies something that was rather vague under previous editions — whether the cash allowance is simply for purchase of an item or whether it includes delivery and installation.

The new language is quite explicit. It states, "These allowances shall cover the net cost of the materials and equipment delivered and unloaded at the site, and all applicable taxes. The Contractor's handling costs on the site, labor, installation costs, overhead, profit and other expenses shall be included in the Contract Sum and not in the allowance."

Redefined Terminology

Several new terms and definitions are contained in the tenth edition of the General Conditions. The title has been reduced from "The General Conditions of the Contract for the Construction of Buildings" to "General Conditions of the Contract for Construction."

The term "Conditions of the Contract" is used to include General, Supplementary, and other Conditions. Supplementary General Conditions are now known as Supplementary Conditions. The terms "contract," "work," and "project" have been redefined.

Some major changes that have been written into the new edition seem, in effect, to reduce the architect's possibility of involvement in lawsuits. Paragraph 2.2.4 contains a new statement: "The Architect will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents."

This provision has probably been introduced to safeguard an architect against the methods used by a contractor during the construction operations. A contractor is presumably hired on the basis of his ability and know-how, and therefore should accept and be responsible for his own acts without involvement of the architect.

Reduced Indemnification

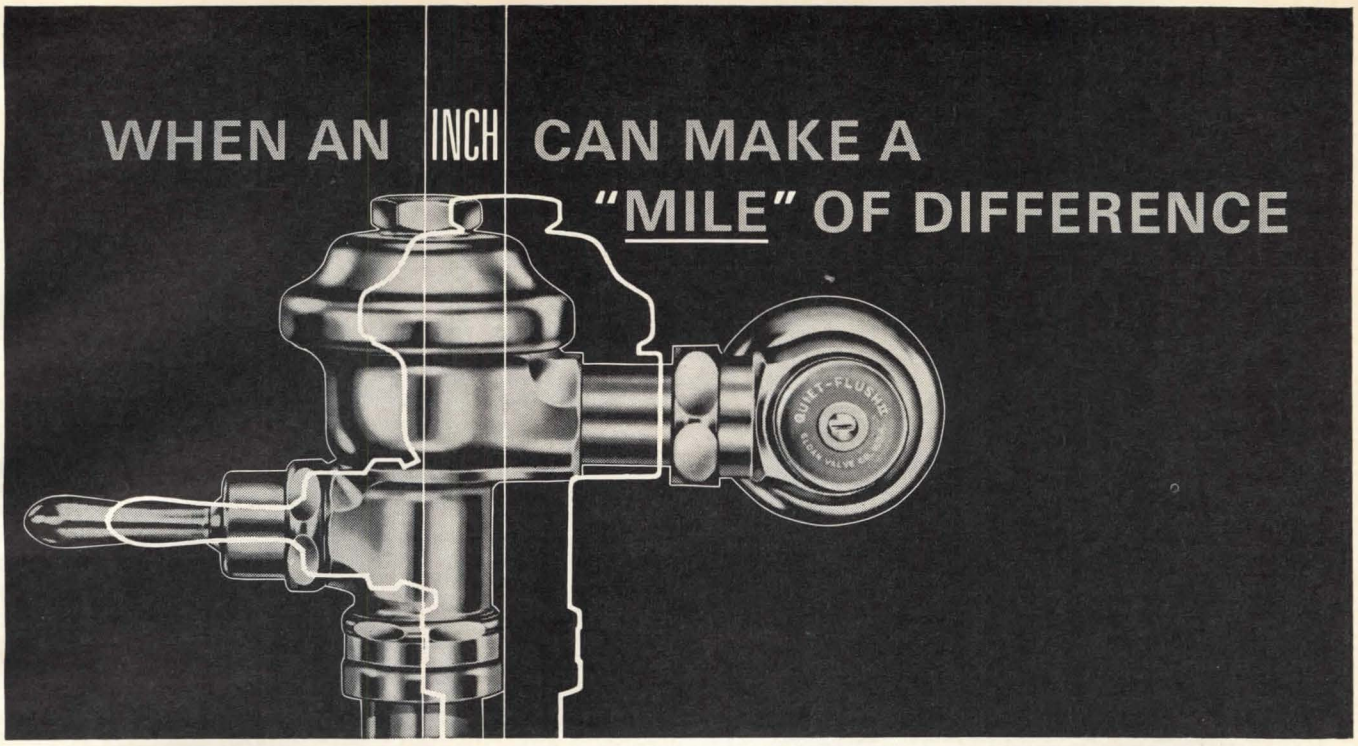
Another change in content that reduces an architect's involvement in third-party suits is the introduction of an indemnification or "hold-harmless" clause under paragraph 4.18. This new paragraph requires that the contractor indemnify and hold harmless the owner and architect from and against all claims, damages, losses, and expenses arising or resulting from the performance of work.

The inclusion of this paragraph has resulted in some misgivings on the part of previous endorsers of the AIA General Conditions. Because of this clause, the Associated General Contractors of America has not approved the latest edition of the AIA General Conditions.

Yet, in many instances, architects have supplemented previous editions of the General Conditions by including similar provisions. The indemnification paragraph is not all-inclusive. It does provide, under paragraph 4.18.3, that the obligations of the contractor do not extend to claims or damages attributable to defects in drawings or specifications prepared by the architect.

Architects who incorporate the AIA General Conditions in their Contract Documents with Supplementary Conditions will find it necessary to rewrite completely their Supplementary Conditions. This revision is necessary not only because of the format, but also as a result of the major changes introduced into the text. It is suggested that the ninth and tenth editions of the General Conditions be examined minutely for other pertinent changes.

AIA General Conditions	Division 1: General Requirements
Para 4.13: Shop Drawings and Samples	Section 1C: Samples and Shop Drawings
Para 4.16: Cleaning Up	Section 1E: Cleaning Up
Para 4.8: Cash Allowances	Section 1G: Allowances



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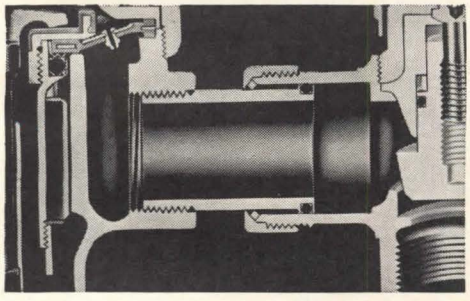

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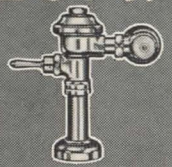

FLUSH VALVES

IT'S THE LAW

CERTIFICATE OF FINAL COMPLETION

BY BERNARD TOMSON
AND NORMAN COPLAN

P/A's legal team discusses a recent case that underscores the importance of the issuance or nonissuance of a certificate of final completion in resolving disputes between contractor and owner.

An architect-issued certificate of final completion, which provides that the general contractor is entitled to final payment, may or may not be conclusively binding on the owner, depending on the terms of the construction contract. Even when the construction contract provides that such a certificate is not conclusively binding, its issuance may significantly affect the legal position of the owner in a dispute with the contractor. This is illustrated in a recent decision of a New York court *(Papl J. Roche, Inc. v. Board of Education,* N.Y.L.J., December 20, 1966), in which a general contractor sought recovery of the sum of $25,000 allegedly due him from the defendant school board as final payment under a contract for the construction of a high school.

In this case, the defendant asserted that it had refused to make final payment on the grounds that improper materials and workmanship had been furnished by the contractor in the installation of a gymnasium floor. This floor had been installed in 1961; in December of that year the center portion of the floor buckled and certain repairs were made shortly thereafter. The floor buckled again in July 1962 and August 1963, with additional repairs being made each time. It was in August 1963 that the architect issued his certificate of completion, certifying that the general contractor was entitled to final payment.

The construction contract provided that the architect was to have general supervision of the work and was the interpreter of the conditions of the contract and the judge of its performance. This contract was somewhat unusual, in that it provided that the decisions of the architect were binding upon the contractor, but were not binding upon the owner. It was further provided in the contract that "the architect's certificate of completion shall not relieve the contractor of responsibility for 'faulty materials or workmanship,' nor shall it estop the owner from recovering of the contractor such damages as the owner may sustain by reason of the contractor's 'failure to comply with the contract.'"

The Court, in interpreting the provisions of the construction contract, concluded that although the architect's certificate was not binding upon the owner so as to relieve the contractor of responsibility for faulty materials or workmanship, its issuance placed the burden upon the owner to prove that the defective floor had been caused by faulty materials or improper workmanship. The Court said:

"The interpretation which this Court places upon the contract provisions above referred to is that the contractor, bound by the decisions of the architect, must follow the specifications of the contract as interpreted by the architect and must use proper materials and workmanship, but that the issuance by the architect of the certificate of completion, though not binding upon the owner, is prima facie proof of compliance by the contractor of the terms and specifications of the contract. The result of this interpretation is such as to shift the burden of going forward upon the owner to show either that the contractor failed to comply with the specifications and/or supplied faulty materials or improper workmanship in the installation of the gymnasium floor."

The Court described the defective condition in the floor as a small hill or bump in the center of the floor, "so that, if one were walking from north to south, he would walk over the hill." This bump at its apex measured almost four inches and ran almost the entire length of the gymnasium floor from east to west. It was pointed out that, in the years following the issuance of the certificate of completion, and even in 1966, the buckling had continued to occur in the warm and humid summer months. The plaintiff suggested several causes for the condition that would have been outside the area of his responsibility and did not involve improper materials or workmanship. The Court, however, found it unnecessary to determine the cause of the condition, since it reached the conclusion that the defendant school board had failed to sustain its burden that the condition was in fact caused by the contractor's improper performance. The Court stated:

"The defendant has accordingly failed to sustain its burden of proving that the excessive buckling of the gymnasium floor was due to any improper act or omission on the part of the contractor. It therefore becomes unnecessary to decide which of a number of other causes, which are concededly not the responsibility of the general contractor, may have been or may be the reason for the excessive expansion. There is no doubt that excessive moisture is the culprit, but the cause of the moisture and the responsibility for reducing it need not be here determined."

There is a significant legal difference between a burden of proof placed upon a contractor to establish he had properly performed, as distinguished from a burden of proof placed upon the owner to establish that the contractor improperly performed. Since the Court determined that the issuance of a certificate of completion by the architect was prima facie proof of proper performance by the contractor, the burden of proof would have been reversed in the absence of the issuance of such certificate of completion, and the contractor would have had the burden of proof of establishing that he properly performed. Thus, the issuance of such a certificate, or the refusal of the architect to certify final payment, may have important consequences in the resolution of a dispute between owner and contractor.

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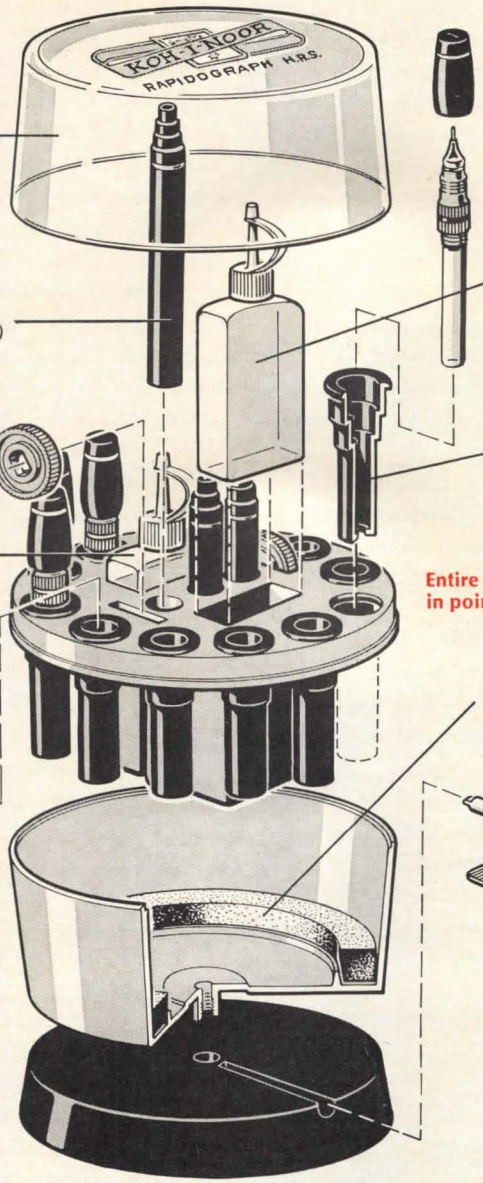

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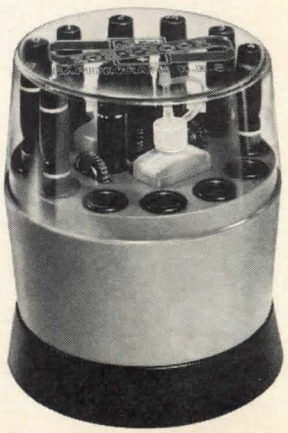

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BOOK REVIEWS

NEO-BUTTERFIELD

School at Hunstanton, England, by Alison and Peter Smithson described by Banham as the first "Brutalist" building and by reviewer Collins as "a design obviously inspired by Mies van der Rohe."

BY PETER COLLINS

THE NEW BRUTALISM: ETHIC OR AESTHETIC. *By Reyner Banham. Published in Germany by Karl Kramer Verlag, Stuttgart. U.S. Distributor: Reinhold Publishing Co., 430 Park Ave., New York, N.Y. 1966. 196 pp., illus., $15. The reviewer is Professor of Architecture at McGill University, Montreal, Canada.*

The New Brutalism, as Dr. Banham points out, originated in England with a *succes de scandale*: A school at Hunstanton won in open competition in 1950, but completed only at the end of 1953 (because of a 14-month delay in steel deliveries). The two architects responsible for the project developed intellectually and emotionally in an atmosphere common to most of the adherents of the New Brutalism. Peter Smithson had graduated in 1948 at Durham University, after having had his professional training interrupted for three years by World War II. His future wife and partner, Alison Gill, only began her architectural studies at Durham University in 1944, but graduated the year after her husband. Both then joined the School's Division of the London County Architect's Office, and, while working there, produced in their spare time the Hunstanton scheme. Their prize-winning drawings were reproduced in *The Architects' Journal* (May 11, 1950), and show a design obviously inspired by Mies van de Rohe. Indeed, when Philip Johnson saw the finished building, he considered it entirely Miesian, and the very opposite of "Brutalist" — a statement hotly repudiated by the Smithsons in 1954 (*Architectural Review*, p. 148, September 1954). By 1953, Alison Smithson was using the term "New Brutalism" to mean a ruthlessness "free from the formalism of Mies." What had happened in the meantime?

No one should be better able to answer this question than Dr. Banham, who was not only a friend and supporter of the prime movers in this campaign, but was their most influential publicist, especially through his famous article, "The New Brutalism," which appeared in the December 1955 issue of the *Architectural Review* (alongside, appropriately enough, an article by S.T. Madsen on Art Nouveau). There is no reason to question Dr. Banham's present appraisal (published at the instigation of Jurgen Joedicke), since, quite apart from his immense literary skill and intellectual integrity, his ultimate expressions of disillusionment demonstrate that his account is unlikely to be even subconsciously biased.

Nevertheless, in his apparently exhaustive account of this short-lived, and hence relatively minor, architectural "movement," there are several omissions that need explaining. For example, Dr. Banham nowhere mentions the important contribution made to the Hunstanton School by R.S. Jenkins, one of the most distinguished engineers then in England, a partner of Ove Arup, the author of the first British publication on theory and design of cylindrical shell structures, and the consultant for all the Smithsons' major schemes. According to the account of the winning project published by the Assessor in May 1950, it was "a simple rolled steel frame, with floors and roofs of precast concrete." Hence, it is difficult to believe that the final, highly sophisticated, welded structure, utilizing some of the infilling brick walling to brace it, was originally the creation of two young architects who had only been out of school a few months and had never even seen a building by Mies van der Rohe, or visited the United States.

Secondly, Dr. Banham disregards completely the working drawings and specifications of the original Hunstanton design. Yet these may be of crucial importance in enabling the reader to assess the importance of costs as a vital factor in the evolution of the New Brutalist doctrine. The most popular comment of those hostile to the Smithsonian polemic was that the much-boasted qualities that caused this school to be — according to the Smithsons — "probably the most truly modern building in England" (*Architectural Review*, September 1954) were simply the result of their inexperience, in that they had been obliged to forego all internal finishes so as to keep within the allotted budget. Whether or not this is true, the fact remains that the maximum price stipulated by the clients was £131,000, the contract price (February 1951) was £131,580, and the final cost was £147,900. Did the original contract drawings and specifications correspond exactly to the price quoted in February 1951? Were any items deleted between February 1951 and the time the building was ready for occupancy? A little less *kunstwissenschaft* about "Wittkowerian or Palladian ideas," and a few quotations from the architects' initial specifications would have been more relevant to resolving this crucial controversial issue.

Thirdly, Dr. Banham's comments on the precise influence of Le Corbusier's "Unite d'Habitation" seem unnecessarily vague. It is surely no coincidence that, just after the Smithsons had won their competition, a group of architects from the office in which they were working paid a visit to the Unite d'Habitation, then nearing completion. Their comments (as published in the *Architectural Review*, May 1951) are most revealing. Max Gooch, after commenting that the "in-situ reinforced concrete and the shuttering [i.e., formwork] is

Continued on page 202

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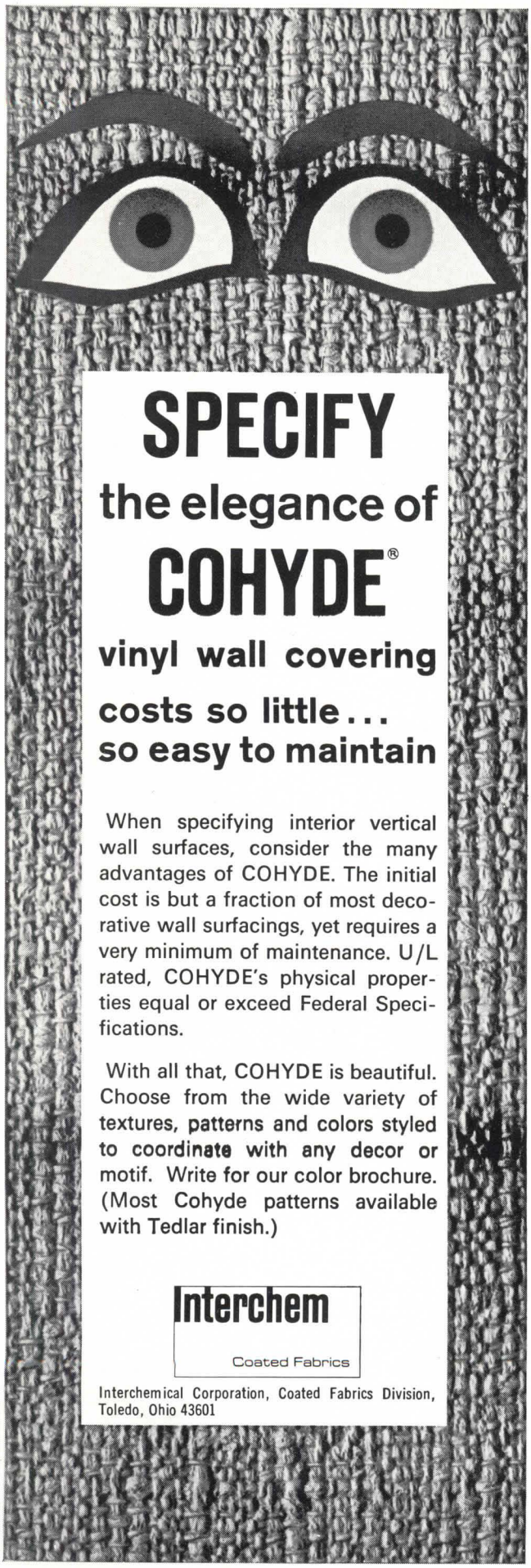

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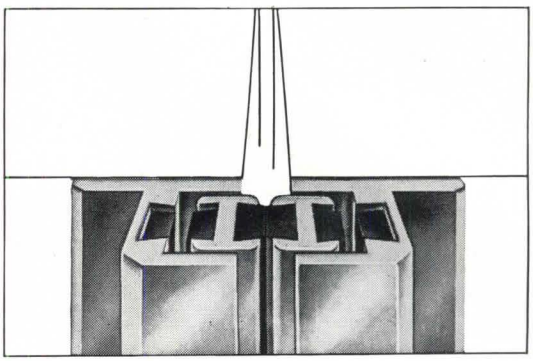

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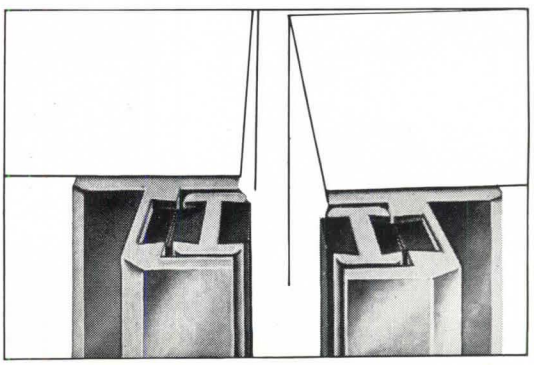

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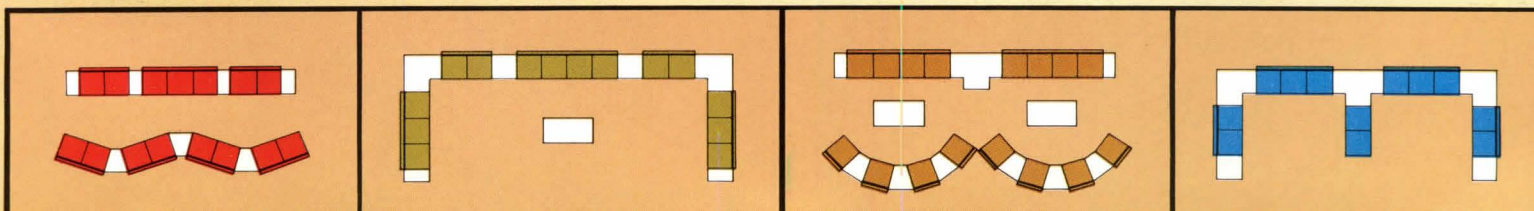

Continued from page 198

quite crude," went on to praise this as a "great contribution to the handling of concrete." But his fellow-travellers reached opposite conclusions. Kenneth Easton thought "the concrete work is deplorable," Thurston Williams that "the constructional methods are almost medieval in their crudity," Philip Powell that "the poor craftsmanship in the handling of the concrete was very evident."

What Mr. Easton, Mr. Williams, and Mr. Powell failed to see (and what Dr. Banham apparently still fails to see judging from his remark on p. 16 about "formwork whose carpentry rarely, in France, attained the level of precision required in the construction of a garden fence"), but what the Smithsons evidently *did* perceive, was that Le Corbusier had *deliberately* made the formwork crude. Both Perret and Le Corbusier were leaving their concrete "*brut de coffrage*" after World War II for the same reason that Perret had left it "*brut de coffrage*" at Le Raincy after World War I; namely, to achieve every possible economy. The word "*brut*" is not, as Dr. Banham seems to think, a synonym for "brutal." Yet whereas Perret's formwork (e.g., at his church at Le Havre) was still as immaculate as ever, Le Corbusier saw the sculptural and textural possibilities of arranging rough boarding in bold patterns, and it was this idea which, when adopted by the Smithsons, evidently prompted their assertion in 1954 that "there must be a new aesthetic of materials, which must be valued for the surfaces they have on delivery to the site . . . a valuation like that of the Dadaists, who accepted their materials as found."

Lastly, the most surprising thing about Dr. Banham's extensive and scholarly account of the birth and death of the New Brutalism is his assertion, in his final paragraph, that, as an ideal, it can be traced historically only as far as Berlage. Even the Smithsons themselves realized that they were going back to All Saints', Margaret Street (*Architectural Review*, p. 152, September 1954). The New Brutalism was, in fact, Neo-Butterfield, and exemplifies in a most dramatic way the extraordinary obsession of middle-class minds during the last two centuries with the idea that deliberate crudeness and lack of refinement is the artistic expression of "manliness." It was as much the pursuit of "male simplicity" as an attempt to express the program poetically that caused Ledoux to introduce crude Mannerist rustication in his Parisian gates and his saltworks at Chaux. "Manly" was one of the favorite adjectives of the proponents of Saxe-Coburg-Gothic, and even Ruskin used it. I suspect, therefore, that Dr. Banham is wrong in insisting on p. 10 that there is a fundamental difference between the term "Neo-Brutalist" and the term "The New Brutalism." "Brutalism" may well be, as he claims, "an ethic, not an aesthetic," but so it was for Butterfield and Ruskin. It amazes me that Dr. Banham should see the New Brutalism as a total rejection of Pevsner's *Pioneers of the Modern Movement*, whereas I see it so clearly as essentially "From William Morris to Walter Gropius" in reverse.

A Primer, At Best

BY EDWARD K. CARPENTER

REBUILDING CITIES. *By Percy Johnson-Marshall. Aldine Publishing Co., 320 West Adams St., Chicago, Ill., 1966. 374 pp., illus., $15. The reviewer is an Associate Editor of P/A.*

Percy Johnson-Marshall, who is Professor of urban design and regional planning at the University of Edinburgh, is also responsible for much postwar city planning throughout Great Britain. In both capacities, he has watched the rebuilding of much of Europe since the war, and his book is in part a report on the planning that has gone into this rebuilding. It is

Continued on page 204

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Continued from page 202

also a compendium of organized urban planning schemes from Palmanova in 1593 to present-day Stockholm and San Francisco. In a thoroughly documented, liberally illustrated work, he treats all aspects of urban growth, including legislative and administrative control of urban planning, in England.

Unfortunately, the resulting book is little more than a first-year primer. The legislative and administrative control cited stop with a bill enacted in 1947. The cities in Europe selected for their postwar planning are few (London, Coventry, Rotterdam) with no explanation of why they were picked and others ignored. Nor is there an evaluation of the planning schemes used, other than the comment that these plans represent the current state of the planning art. In many cases the planning may or may not be good but the architecture is unquestionably second-rate. Yet Johnson-Marshall never raises the question whether planning can be ultimately successful without successful architecture.

What is badly needed in the literature of planning is an evaluation of planning schemes by the people who ultimately have to live with them. Without such an evaluation, future planning can only repeat the mistakes of the past. Thus, taken as a guide to future planning, *Rebuilding Cities* may be an insidious primer. As Johnson-Marshall himself points out, most of the great urban planning of the past, by such masters as Le Corbusier and da Vinci, ignored the precepts of their age to think out untried schemes. At best, Johnson-Marshall's book is a piecemeal glimpse of the past.

Italian Architecture: A Masterly Survey

BY PAUL ZUCKER

ITALIAN ARCHITECTURE: 1750–1914. *By Carroll L. V. Meeks. Yale University Press, 92a Yale Station, New Haven, Conn., 1966. 546 pp., illus., $25. The reviewer is Professor of Art and Architecture at The New School for Social Research, New York City.*

The tourist in Italy, set to enjoy the great art works of the past, is inclined not to pay enough attention to the architecture of the last two hundred years, underestimating its aesthetic qualities. The last work of the late Carroll L. V. Meeks, whose untimely death casts a shadow over the unbridled enjoyment of this masterly and definitive survey of Italian architecture of that period, helps us to discover artistic values of these often neglected

Continued on page 212

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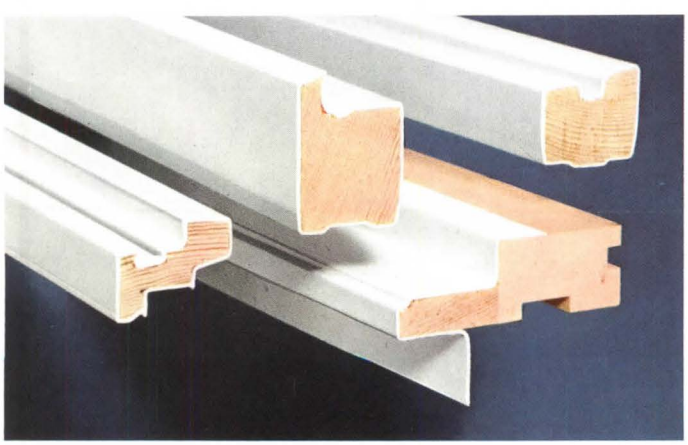

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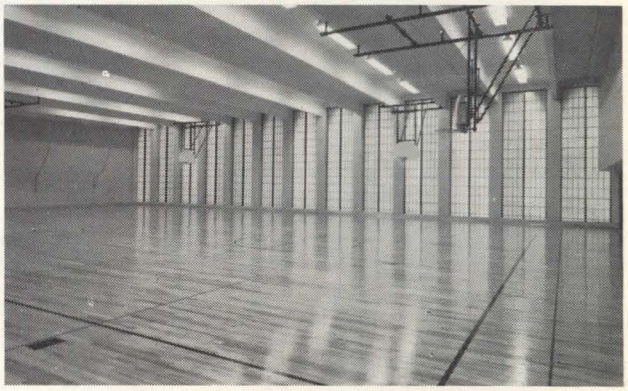

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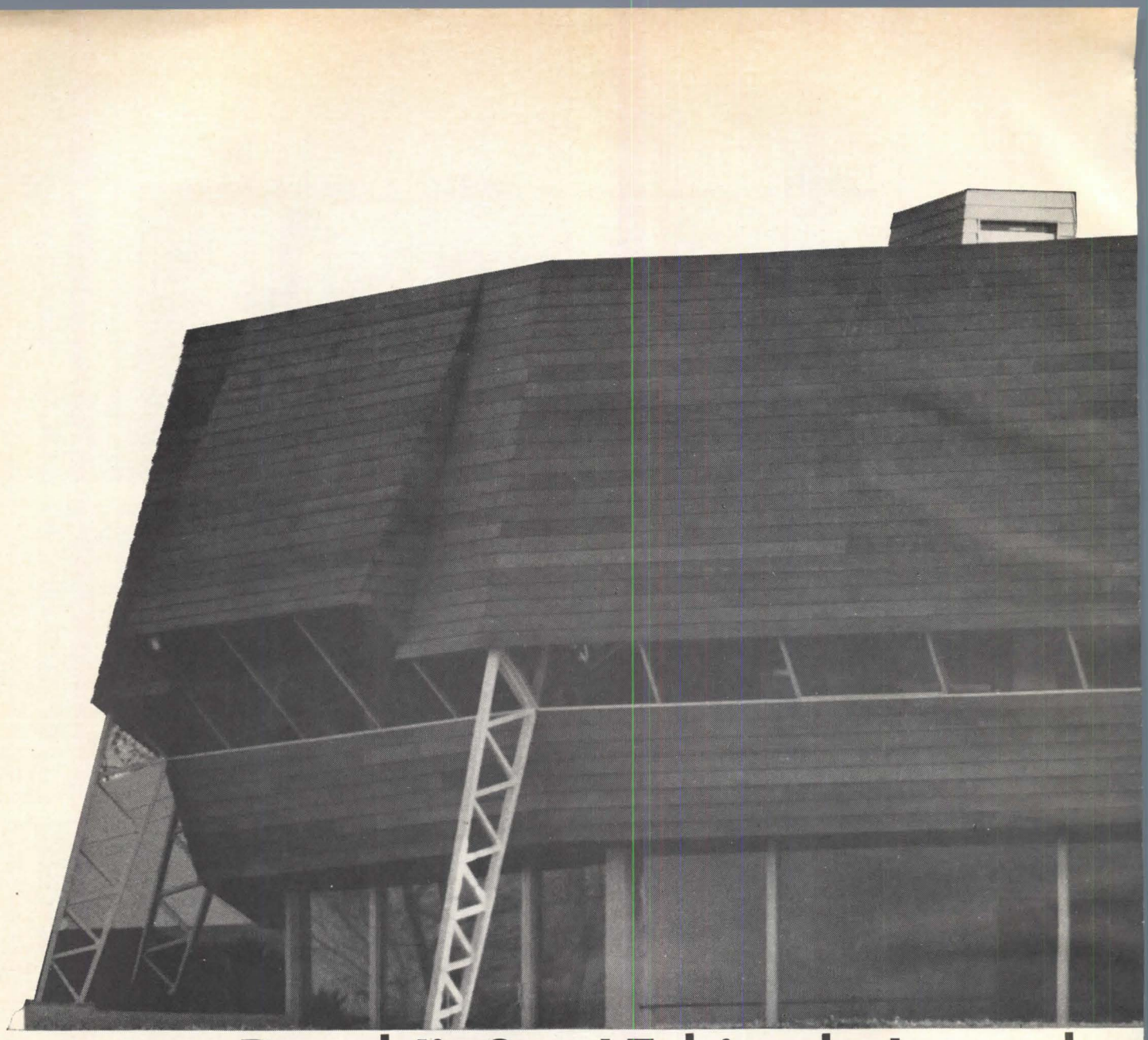

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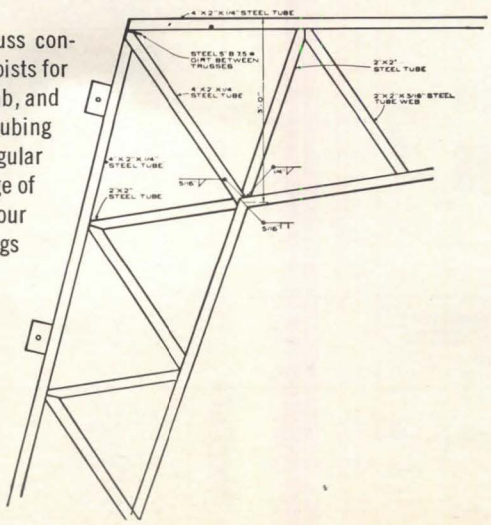

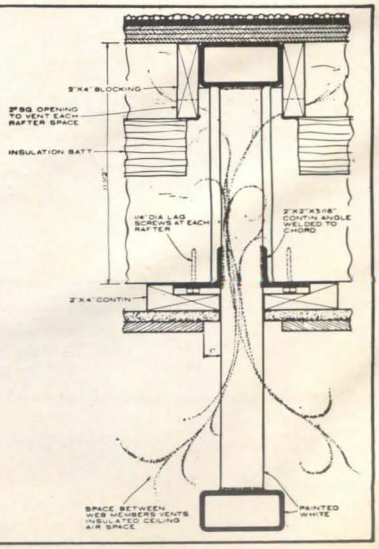

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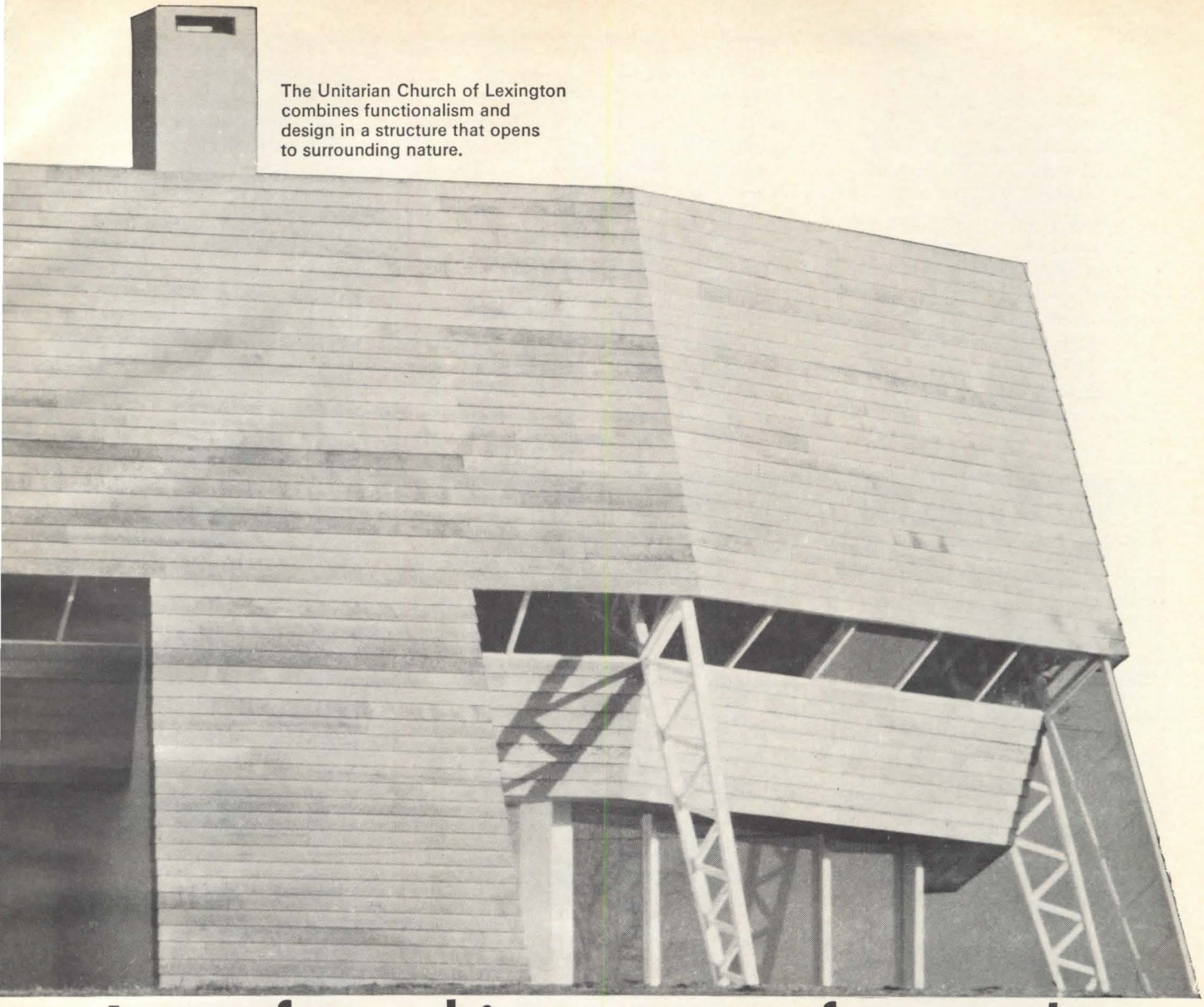

The Unitarian Church of Lexington combines functionalism and design in a structure that opens to surrounding nature.

a place of worship a tower of strength.

Architect Herb Greene specified Republic Structural Tubing for trusses in the new Unitarian Church of Lexington, Ky.

The Unitarians of Lexington wanted their new church to be more than just a meeting place for Sunday services. It had to accommodate weddings and square dances and musicales, plus a theater-in-the-round. And it all had to be accomplished with a small budget.

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Continued from page 204

structures — churches, palaces, commercial buildings, monuments, and gardens.

The stylistic categories of the period are convincingly analyzed, aided by excellent illustrations. The architecture of these two centuries is precisely set off from the echoes of belated Baroque and Neo-Palladian creations. Following the ideas of the late Emil Kaufmann, as formulated in *Architecture in the Age of Reason*, Carroll Meeks describes the main elements of Neo-Classicism generally, as well as its specific Italian variants, which extend into the middle of the 19th Century. Among the best known Neo-Classicist Italian architects are, of course, Luigi Vanvitelli with his Piazza Dante in Naples; Giovanni Battista Piranesi, usually associated with his *Vedute di Roma* etchings; Giuseppe Soli, who, in Napoleonic times, "closed" the Piazza di San Marco, Venice; and, finally, the most prominent of the Neo-Classicist architects, Giuseppe Valadier, to whom Rome owes not only important architecture but also the embellishment of one of her most beautiful squares, the Piazza di Popolo. The mere mention of these few names proves the tremendous artistic potency of Italian architecture, which has continued even after the traditionally admired periods.

After 1840, "picturesque" eclecticism, leaning on medieval Romanesque and still more on Gothic forms, begins to prevail, rarely ever producing buildings of the same high quality as did the Neo-Classicist period. However, we can admire at least the façades of Santa Croce, Florence, and of the cathedral of that city, both of which showed, before the middle of the 19th Century, only plain raw brick fronts. Although these new façades tried to be true to the design vocabulary of the original projects, they show unmistakeably the spirit of 19th Century eclecticism; the same is true of the 19th Century façade of Milan Cathedral, completed in 1888.

Even those most infatuated with Italy and her art must admit that the following *stile Umberto*, dating roughly between 1865 and 1900, created relatively few noteworthy structures. Buildings of this period have been instrumental in creating the erroneous impression that everything Italy produced in the 19th Century is of minor quality compared with works in other nations. Yet the so-called gallerias of Milan, Genoa, and Naples represent an entirely new urbanistic idea, even if we disapprove of the eclectic use of the 15th-Century vocabulary.

The *stile floreale* is the Italianized version of Art Nouveau or Jugendstil — three national mannerisms, all playing with the same "distorted moldings, tapeworm-like ribbons, and improbable plant forms" and all faintly related to Louis Sullivan's "fruity" ornaments. In such a brief review, it would be meaningless to mention architects or individual buildings of that last period that inundate certain quarters of some larger Italian cities. The highest degree of historical objectivity cannot blind us to the artificiality of these *à tout prix* original designs. Even the projects of Antonio Sant-Elia, with their Wagnerian overtones and pretentious monumentality (which, paradoxically, is being highly glorified today in the United States) provide no exceptions to the above general statements.

Two appendices are of greatest value to the scholar: a comprehensive chronological list of publications referring the reader to related subject matter, and a record of important visitors to Italy in the 18th Century, with the exact dates of their sojourns (spiced with the listing of "some notable [architect] absentees").

Few books in the field of architectural history are so engrossing and open so many vistas usually overlooked as does *Italian Architecture: 1750–1914*, the last work of an outstanding historian and teacher.

Continued on page 220

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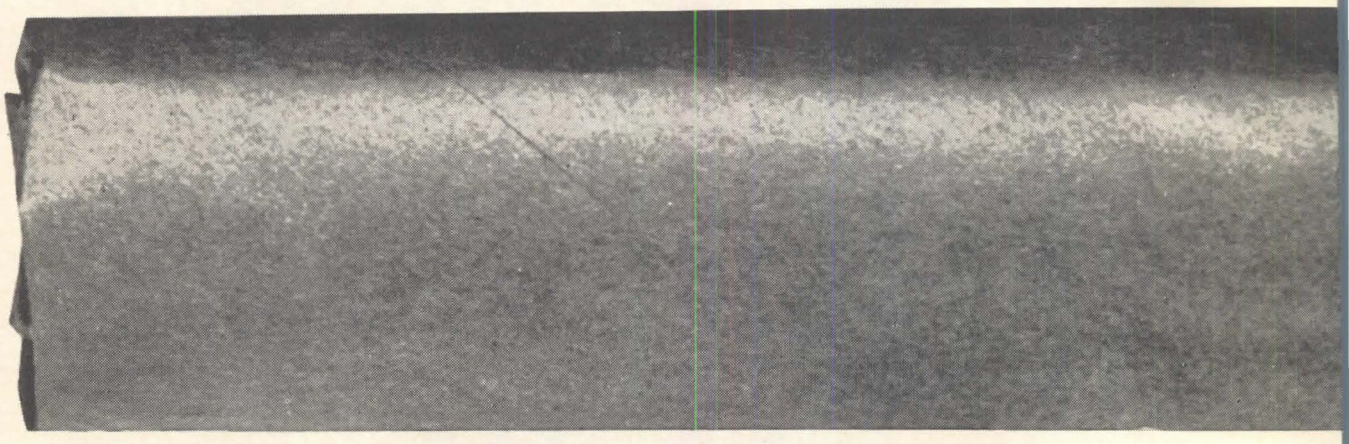

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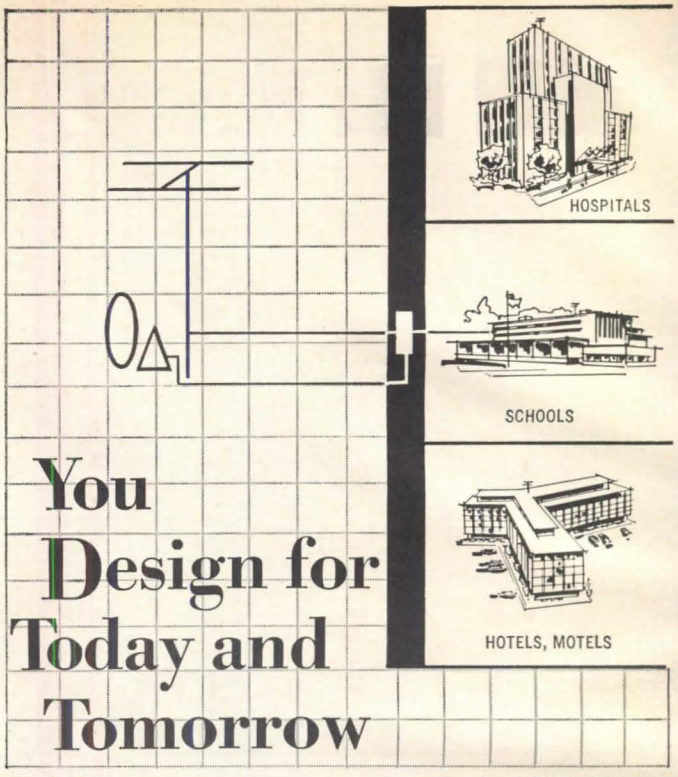

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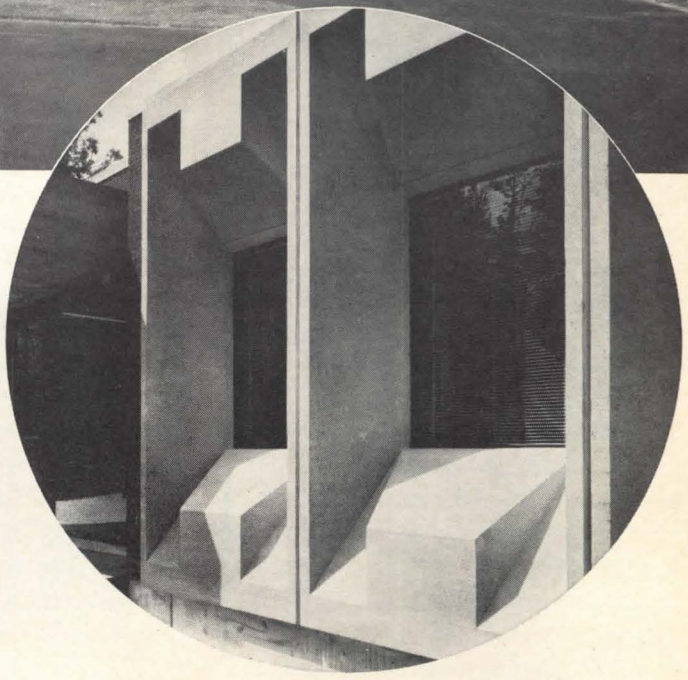

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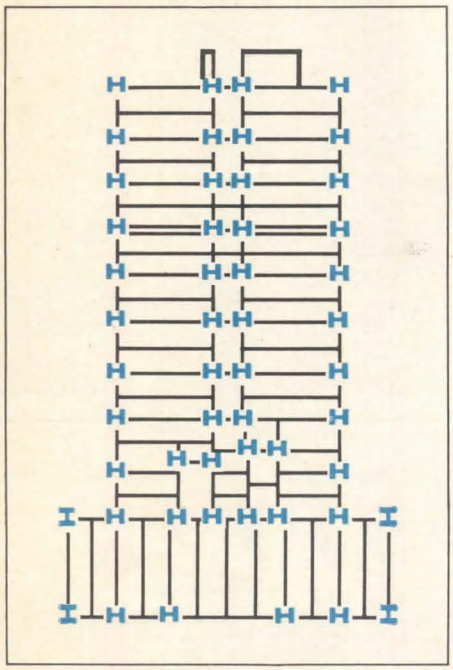
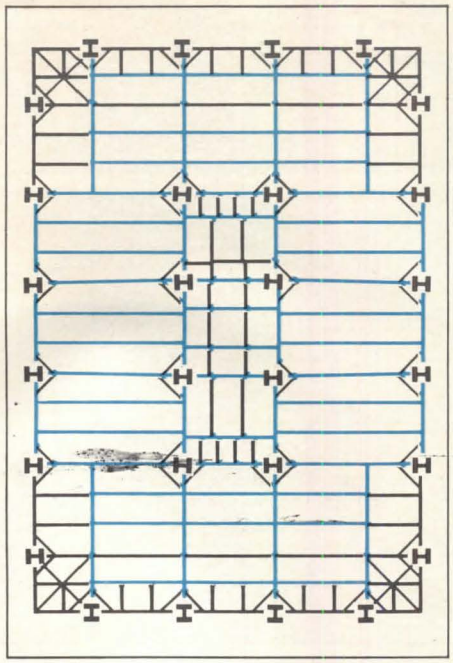
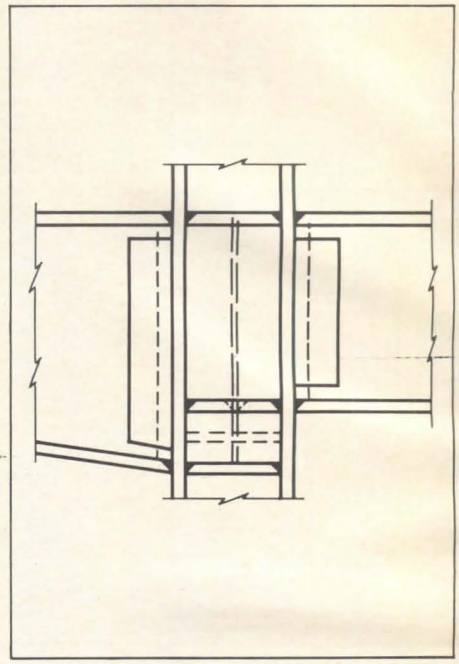
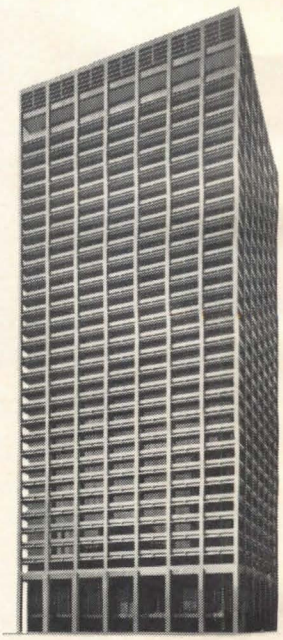


For rent sooner—Sunset Towers, Salt Lake City, Utah, is a 16-story luxury apartment owned by the Artcol Corporation. The architects, developer and structural engineer all agreed from past experience that a steel frame would be competitive in cost, quicker to erect and more flexible for the layout of utilities than any alternate construction. The building uses 172 tons of USS TRI-TEN Steel (A441) for columns and 516 tons of A36 structural steel. The steel frame was erected during the coldest winter weather. Architects: H. A. Carlson, AIA, Los Angeles, California, and M. E. Harris, Jr., AIA, Salt Lake City, Utah. Structural Engineers: Hoffman C. Hughes Co., Salt Lake City, Utah.

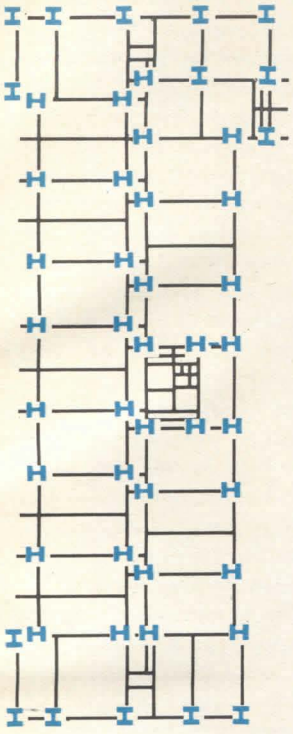


Extra space—How to obtain maximum column-free rentable space was the problem posed by the owners of this building at One Erieview Plaza, Cleveland, Ohio. The solution was developed through the use of a center core structural steel framing system of A36 steel and USS EX-TEN High Strength Steel. This economical combination saved 268 tons of steel. The cantilever problem at the corners was solved by placing a diagonal beam between the two columns nearest the corner. Then another beam was framed from the interior girder to the corner, on top of the diagonal beam. Architects: Shafer, Flynn & VanDijk, Cleveland, Ohio. Engineers: Barber-Hoffman, Cleveland, Ohio.

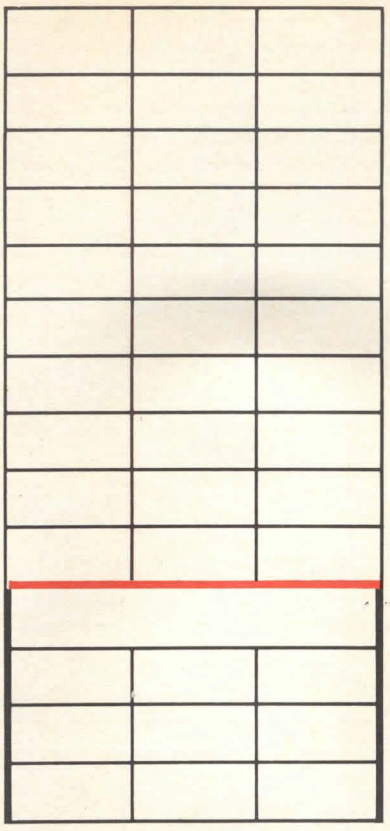


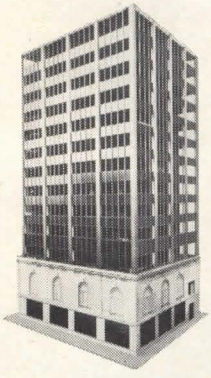


Unique requirements—The architectural challenge of the Tennessee Gas Transmission Company Building in Houston, Texas, was such that only steel was considered as the building frame material. This is a 33-floor office building 195′7″ square. The design provides for a square core area with 55′ clear spans between core and exterior columns. The second floor and the 31st floor are partially suspended from the floors above. This was a job for steel. Structural carbon steel did the job. Architects & Engineers: Skidmore, Owings and Merrill, San Francisco, California.

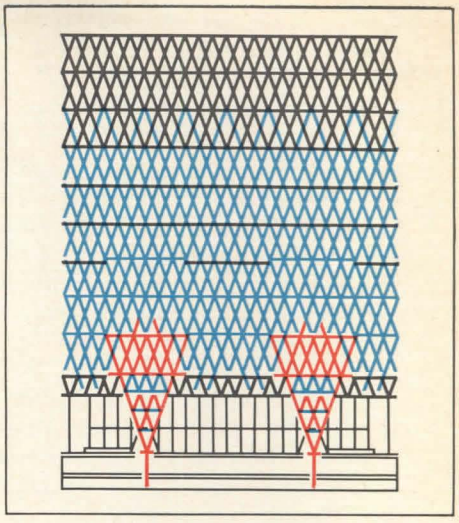


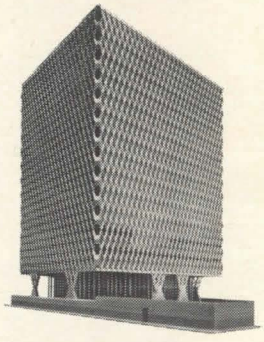
Up fast with less steel—The Maxon Towers, Pittsburgh, Pa., had to be built in a hurry to meet an April completion date—so the architect chose a steel-framed structure for this 12-story apartment house. The engineer specified A36 steel for beams and girders and USS Ex-Ten 50 Steel columns. A steel frame gave greater flexibility in the layout of the building and its mechanical functions, with lower installed costs for heating, wiring and plumbing. The extra load-carrying capacity of USS Ex-Ten steel columns saved significant steel tonnages. Architect: Bowers & Barbalat, Pittsburgh, Pa. Structural Engineer: George M. Levinson, Inc., Pittsburgh, Pa.





Raising the ceiling—Bliss Tower, Canton, Ohio, is a new annex to the Onesto Hotel constructed over an old 3-story base. The owners wanted a large column-free area, 49′ x 57′, on the fourth floor. This posed a problem of spanning 49 feet with two girders. By using USS "T-1" Steel for the girders, engineers cut girder depth from an estimated 5 feet for A36 steel, to 3 feet for "T-1" steel. They avoided reducing headroom to an undesirable point, since the shallower "T-1" steel girders were able to support the load from the upper 10 floors. Architects: Cox, Forsythe and Associates, Canton, O.





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Continued from page 212

Pretty, But Imprecise

BY SANDRA BLUTMAN

ENGLISH BAROQUE ARCHITECTURE. *By Kerry Downes. Pennsylvania State University Press, University Press Bldg., University Park, Pa., 1966. Illus., $22.50. The reviewer is a postgraduate student at the Courtauld Institute of Art, London, England, writing a thesis under Sir John Summerson on English 18th- and 19th-Century country house architecture.*

English Baroque Architecture is a fine example of the publishers' art. With its 578 black and white photographs, 68 textual illustrations, high price, and general quality appearance, it would make an impressive addition to any coffee table. However, one assumes that the author intended to provide more than an attractively bound set of pictures for those interested in some of the most forceful and dramatic buildings produced by English designers. Much of the material included is familiar: Wren, Vanbrugh and Hawksmoor, St. Paul's, Blenheim, Chatsworth. But there are also many lesser known buildings illustrated. One can find no fault with the visual material, which is particularly relevant today, since many of the buildings included have at least a spiritual affinity with recent design. Textural contrasts of heavily rusticated masonry with smooth surfaces, experiments in contrasts of solids and voids, nontraditional fenestration patterns, emphasis on the preeminence of pure geometrical volumes, broken silhouettes, the subdivision of the whole into individual elements, and that occasional wild irrationality of form that passes for originality are characteristics common to both the "English Baroque" and much contemporary architecture.

It is when one looks beyond the pictures for the substance of the book that doubts as to its merits arise. As the stated intent is "a book of plates with commentary," it seems reasonable to ask whether the 129 closely written pages of commentary satisfactorily knit together the visual material and add anything to one's understanding of the period.

The basic premise of the book — that there was an English Baroque Style and that it can be effectively extracted from the body of English architecture of the 17th and 18th Centuries and presented in block form — is not convincing. The book might better have been conceived as a chronological selection of English buildings from, say, 1660–1714, for Dr. Downes seems actually to have relied more on date and architect than on stylistic unity when deciding what to include. Obviously he has been loathe to exclude any important building of the general period, whether in fact it is "Baroque" or not. St. Paul's Cathedral, described as "unclassical and halfway to Baroque," is accorded more space than any other building, because "as an architectural creation it is the most important English building of the 17th Century." The lengthy discussion of Wren's City churches concludes with the statement that "the City churches as a series are not Baroque architecture."

Once having settled on the catchy term "English Baroque," the author is unfortunately unable to avoid the ambiguity and confusion the term inevitably breeds. We are told that the quality of English Baroque is elusive and can only be appreciated by studying the plates. One is continually puzzled as to exactly what the author means every time he uses the term "Baroque." Is it always in reference to those indefinable qualities of English buildings of the period discussed and illustrated in the book? Or is it sometimes used to indicate the qualities associated familiarly with the Italian or German or French Baroque styles? An example will indicate the general confusion caused by this lack of verbal precision. We learn that Wren "is increasingly Baroque in spirit. But while on the one hand explicit Italian

Continued on page 222

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Continued from page 220

Baroque forms . . . remain exceptions in a vocabulary basically French in origin, on the other hand there are already extremely bold Baroque implications in the Great Model of 1673–4, for all its classicism."

Underneath the ambiguity and stylistic imprecision, the commentary consists mostly of solidly documented fact. No attempt is made to explore theoretical bases of the buildings discussed nor to fit them into the historical pattern of English architecture. The assumption that the English Baroque leads nowhere is not strictly true, as individual buildings and architects had considerable influence on later English architects. Adam, for example, found in Vanbrugh the quality of "movement" that he considered so essential for his own kind of architecture. The insistence that the "English Baroque" is ephemeral and escapes definition only emphasizes the inconsistency of the whole concept of such a book.

Although the visual material is impressive and the buildings illustrated have in their dramatic originality a certain relevance to current architectural ideas, the book as a whole is disappointing. The text is too confusing and imprecise for the ordinary reader and lacks the incisive analysis that makes architectural history really useful to designer, critic, or historian.

BOOK NOTES

The Architecture of H.H. Richardson and His Times. Henry-Russell Hitchcock. The M.I.T. Press, 50 Ames St., Cambridge, Mass., 1966. 343 pp. illus., $3.95 (paper).

The first paperback re-issue of the 1961 revised edition of the 1936 original, complete with three prefaces by the author — the most recent one written in Dec. 1965.

ASTM Standards in Building Codes, Specifications, Methods of Test, Definitions — 1966. American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa., 1966. 1658 pp. $17.25 (Members: $12.10).

The Bathroom: Criteria for Design. By Alexander Kira. Center for Housing and Environmental Studies, Cornell University, Ithaca, New York. 1966. 125 pp., illus., $7.

Seventh in a series of Center research studies, this volume is a comprehensive examination of the most outdated room in modern buildings — its design being almost precisely similar to the first private bathrooms of the 19th Century. Besides discussing the cultural and religious aspects of toiletry, Professor Kira analyzes the physiological, anatomical, and functional problems posed by each of the major personal hygiene functions, and offers design solutions for them.

Bettmann Portable Archive. Edited by Dr. Otto L. Bettmann. Published by Picture House Press, 136 E. 57 St., New York, N.Y. 1966. 229 pp., illus., $25.

Continued on page 228

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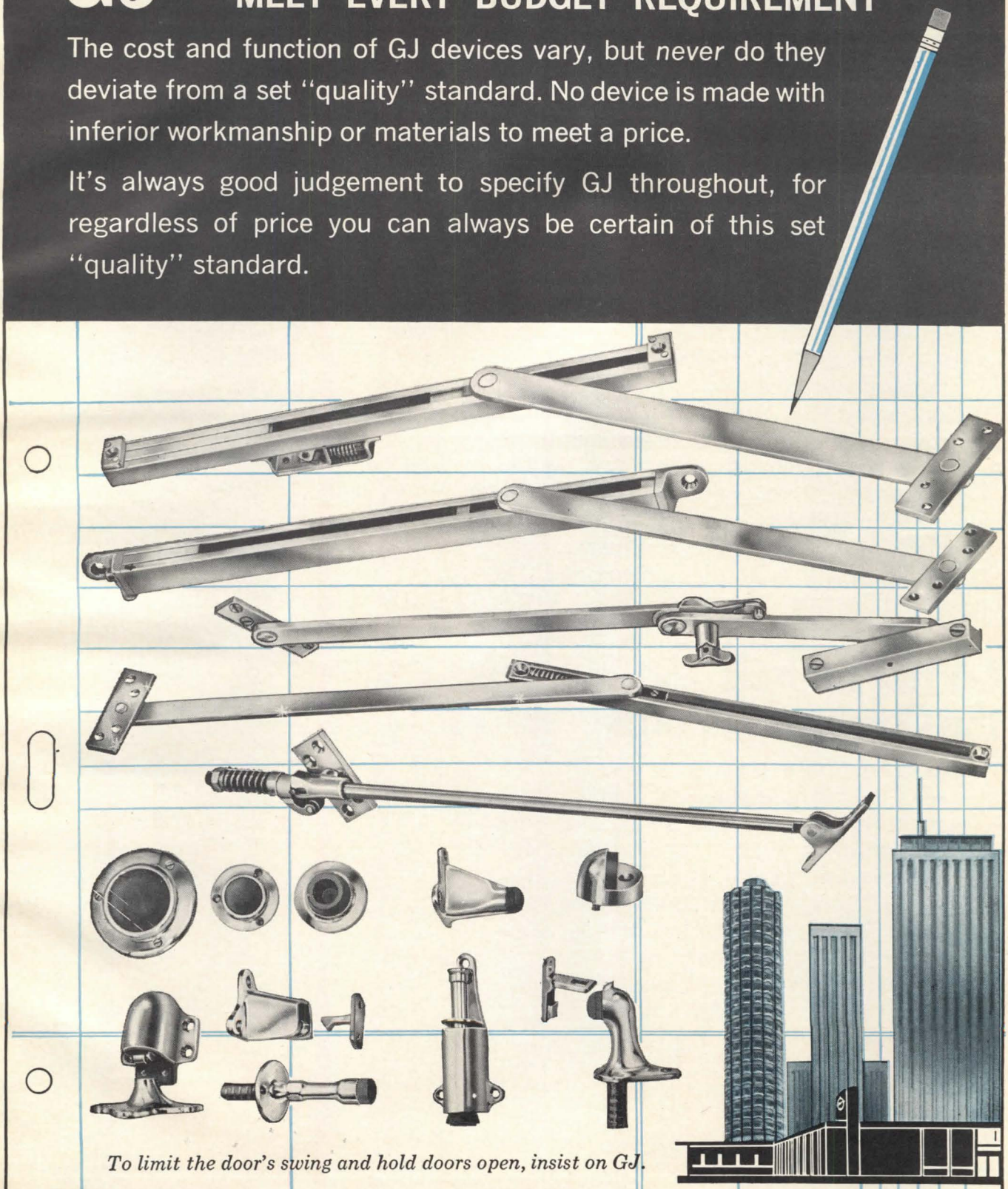

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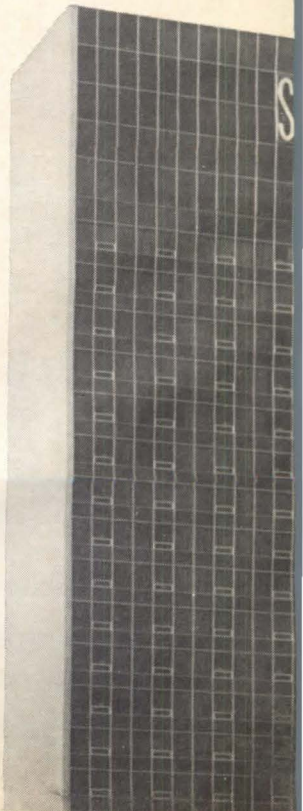

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Architect:
Harrison & Abramovitz, New York, N. Y.
Consulting Engineer:
Jaros, Baum & Bolles, New York, N. Y.
General Contractor:
Turner Construction Company, Columbus, Ohio
Mechanical Contractor:
Huffman Wolfe Company, Columbus, Ohio

Madison Square Garden suspended roof to give column-free view to 20,000 fans

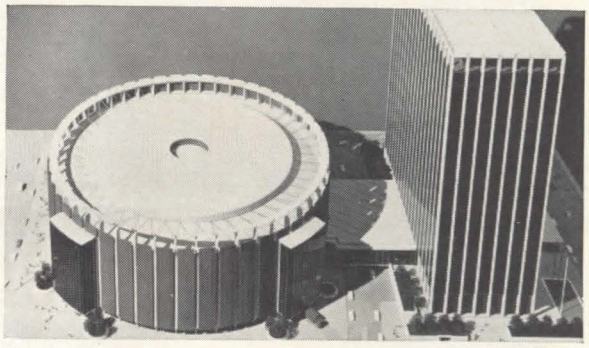
The great feature of any cable-roof is its elimination of interior columns to provide unobstructed space. This is what the designers had in mind when they planned a 425-ft diameter cable-suspended roof for New York City's Madison Square Garden Sports and Entertainment Center.

The unusual placement of the building's mechanical elements—on top of the cables—frees for other uses the space this equipment (air-conditioning, heating, electrical) would have taken.

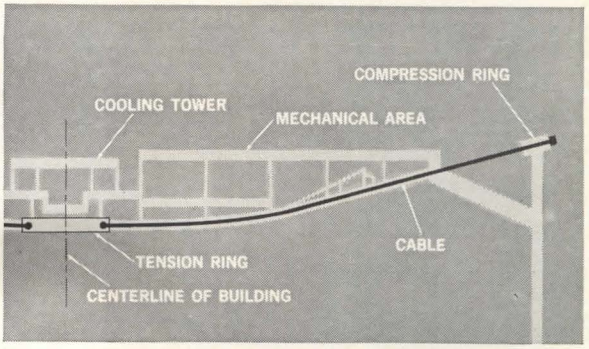
The cables, each weighing about 3½ tons, were strung in a pre-determined sequence. The three-phase system involved the erection of diametrically opposite cables to prevent unbalancing of the system.

Besides supplying the 48 strand assemblies (3¾-in.), each approximately 195 ft long, Bethlehem has provided the technical assistance of its wire rope specialists.

If you are planning a cable-roof structure, you may benefit from a chat with a Bethlehem engineer. Just get in touch with our nearest office. *Bethlehem Steel Corporation, Bethlehem, Pa.*



Madison Square Garden Sports and Entertainment Center is part of a $116-million complex which will also include a 29-story office building.



The area on top of the steel cables is framed with structural steel to carry mechanical equipment. Bethlehem supplied 14,000 tons of structural steel for the building's framework.

Measuring 425 ft in extreme diameter, the building has a height of 150 ft. Below its 20,234 seats will be a 5,227-seat amphitheater, a 501-seat Cinema, a Hall of Fame, the National Art Museum of Sport, and a 48-lane bowling center.

Owner: Madison Square Garden Center, Inc.
Owner's Consultant: Tishman Realty & Construction Co., Inc.
Architect: Charles Luckman Associates
Structural engineer: Severud-Perrone-Fischer-Sturm-Conlin-Bandel
General contractor: Turner Construction Co.-Del Webb Corp., a joint venture
Steelwork and cables: Bethlehem Steel

BETHLEHEM STEEL

BETHLEHEM STEEL

Continued from page 222

Subtitle: "A graphic history of almost everything . . . . Topically arranged and cross-referenced to serve as an idea-stimulator and image-finder." Some of the categories of images: Erotica, Pirates, Suns, Underwear. Headaches, Devils, Corsets, Itching, and Firsts. 185 subjects in all and 3669 illustrations selected from the Bettmann Archive.

The Big Water Fight: Trials and Triumphs in Citizen Action on Problems of Supply, Pollution, Floods, and Planning Across the U.S.A. League of Women Voters Education Fund. The Stephen Greene Press, 120 Main St., Brattleboro, Vt. 1966. 256 pp., illus., $6.95.

Case studies, discussions of the social and political decisions that must be made if the national water crisis is to be solved, lists of Federal and private organizations concerned with water and related land use, and an analysis of the broader strategy involved in entire regions' water problems make this required reading for anyone worried about where his next shower will come from.

Man's Struggle for Shelter in an Urbanizing World. Charles Abrams. The M.I.T. Press, 50 Ames St., Cambridge, Mass. 1966 paperback edition. 307 pp., $2.45.

Paperback edition of Abram's excellent 1964 study of urbanization. (Reviewed by Burnham Kelly, FEBRUARY 1965 P/A.)

New York's Turtle Bay Old and New. Edmund T. Delaney. Barre Publishers, Barre, Mass. 1965. 85 pp., illus., $5.95.

This book is for those with a passing interest in Manhattan's Turtle Bay (stretching from 41st to 51st Streets, from the East River to Third Avenue), its origin as the Turtle Bay Farm, its stormy passage into the Revolution, its return in the 19th Century to quiet country living, its entrance into the post-bellum brownstone era, its gradual deterioration under commercialism and the Third Avenue El (1878–1955), and its 20th Century awakening where the rich, well-known, and the office worker all sit side by side.

Nineteenth Century Houses in Western New York. By Jewel Helen Conover. State University of New York. Distributed by the Antioch Press, Yellow Springs, Ohio 45387. 1966. 176 pp., illus., $10.

A discussion of the Classical Revival and the Romantic era of house building propagandized by Ruskin and Scott. Valuable mainly for its numerous black-and-white photographs.

Proceedings, Permafrost International Conference. Building Research Advisory Board, National Academy of Sciences, National Research Council, Washington, D. C., 1966. 563 pp., tables, diagrams, $35.00.

A Social History of Furniture Design, From B.C. 1300 to A.D. 1960. By John Gloag. Crown Publishers, Inc., 419 Park Ave. S., New York, N.Y., 1966. 201 pp., illus., $12.50.

The author writes that, like architecture, "furniture reveals many confidential things about the social life of the past and present." However, it is mainly "habits, postures, manners, fashions, and follies" that furniture design reveals. An interesting book with a unique point of view.

Structural Steel Detailing. American Institute of Steel Construction, 101 Park Ave., New York, N.Y., 1966. 372 pp., $10.

Specify *something* to insulate cavity and block walls.

How about jawbreakers?

Did your engineering teacher firmly believe that cavity and block walls didn't need insulation because of the "dead" air space?

Was he peculiar in any other way?

Because whenever the temperature differs on the inside and outside of these walls (that's all the time), convection occurs in the cavities. The more different the temperature, the bigger the wind in the voids. The wind carries therms from the side where you want them to the side where you don't. These walls are as good as—or better—than other kinds of walls. But like all walls, they need insulation. Without it, the occupants are as miserable as the heating and air conditioning bills.

If the cavities were filled with lint, jawbreakers, cracker crumbs—anything—it would make the situation somewhat better.

Zonolite® Masonry Fill Insulation: better than everything

Zonolite Masonry Fill Insulation was developed specifically for these kinds of walls. It doubles their insulation value; a real boon to mankind. Keeps inside wall temperatures comfortable and the heating and air conditioning bills easy to take.

Zonolite pours right into the voids, fills them completely, never settles. It is water repellent; any moisture that gets into the wall drains down through it and out.

Cost: as low as 10¢ per square foot, installed. Which is a boon to architects, engineers, and contractors, as well as mankind in general. Next time, specify Zonolite Masonry Fill; the insulation that's already proved effective in thousands of buildings.

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Gentlemen:

Somehow using jawbreakers or lint doesn't sound like a good solution to the problem of insulating masonry walls. Send me Zonolite Masonry Fill Insulation Folder No. MF-83, with complete technical data and specifications.

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*TITLE*_____

*FIRM*_____

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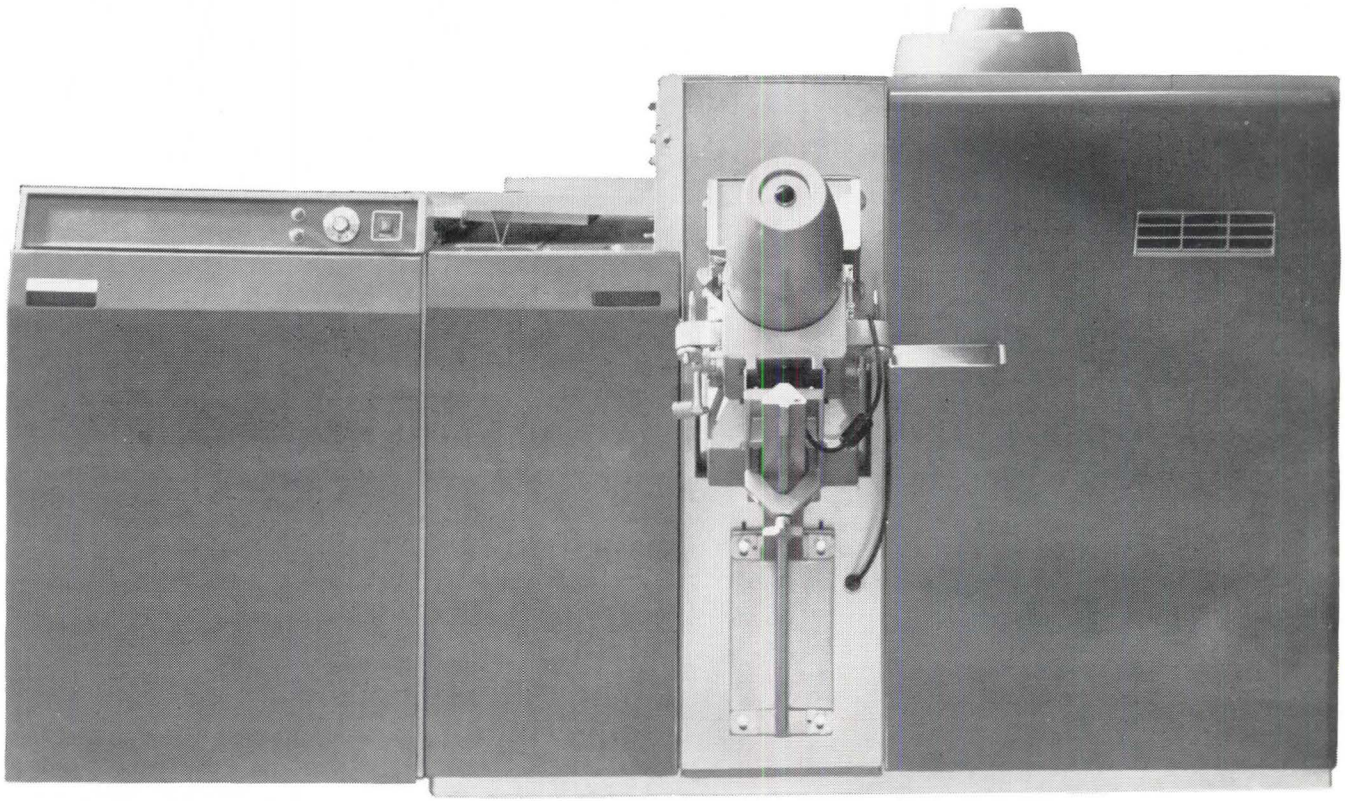
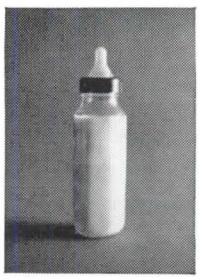
The new Bruning 1200... a new microfilm enlarger-printer



This baby does just about everything and doesn't need a sitter.

Just select print size, quantity, push a button and relax.



And you don't stand around waiting for one print at a time.

Just insert your 35-mm. card-mounted film (or roll microfilm), select any size from 8½ x 11 to 18 x 24, select any print quantity up to 20, push the button and stand back. The Bruning 1200's roll-fed automation takes over.

For volume printing, you can take your 1200 master over to a Multigraph 2024 Offset Duplicator and make hundreds of prints in a very short time.

A boon to engineering microfilm filing/reproduction needs! Learn how by calling your Bruning man. You'll find him listed under Bruning or Addressograph Multigraph in the telephone directories of 155 major cities. *Or write Dept. C, Mount Prospect, Illinois.*

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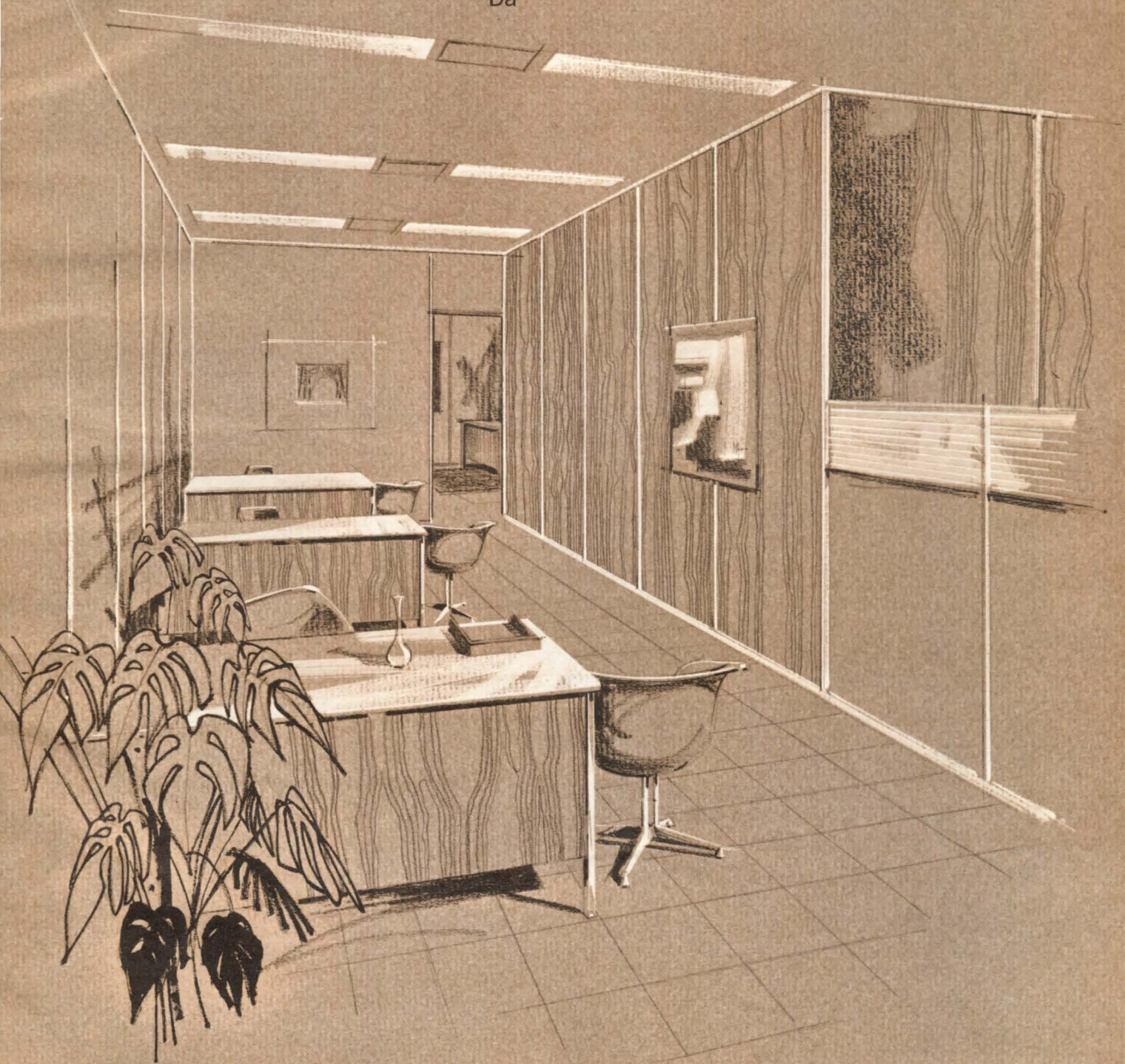

WORK WALL

WORKWALL MOVABLE PARTITIONS/*Division of L.A. Darling Company/Box 130, Bronson, Michigan*

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NOTICES

New Branch Offices

McMillan-Griffis-Mileto, Architects, announce the opening of an office at 201 E. 57th St., New York 10022.

New Addresses

Cohos-Delesalle & Associates, Architects and Engineers, 828 Twelfth Ave. S.W., Calgary, Alberta, Canada.

Robert Ehmet Hayes, Architect, 2512 Dixie Highway, Covington (Fort Mitchell), Ky. 41017.

Wimberly, Whisenand, Allison & Tong, Architects, 2222 Kalakaua Ave., Honolulu, Hawaii 96815.

New Firms

Design Environment Group Architects, 303 McDowell Bldg., 505 S. Third St., Louisville, Ky. 40202.

Martin & Solka Associates, Architects and Urban Planners, 3100 S. Almeda, Corpus Christi, Tex. 78404.

Leroy B. Miller, Architect, 113 N. San Vincente Blvd., Beverly Hills, Calif.

New Partners, Associates

William F. Bernbrock, Architects & Engineers, Moline, Ill., has named John C. Merrick, senior associate and Robert C. Spielman and William H. Meyer associates.

Bright, Kurosaka & McAndrews, Consulting Engineers and Architects, Glens Falls, N.Y., have announced the admission to partnership of John J. McAndrews.

Ekdahl, Davis & Depew, Architects, Topeka, Kan., have announced the appointment of Ralph E. Persson, John R. Adams, and Charles J. Burton as associate members of the firm.

Faulkner, Stenhouse, Fryer & Faulkner, Architects, Washington, D.C. have named Wynant D. Vanderpool a partner and George B. Dolby an associate.

Fordyce & Hamby, Architects and Engineers, New York, N.Y., have named Lloyd Slomanson, J. Karl Justin, and Ian Hutton Smith as partners and C. Woodford Dayton, I. E. Drescher, and Manuel A. Tavarez associates.

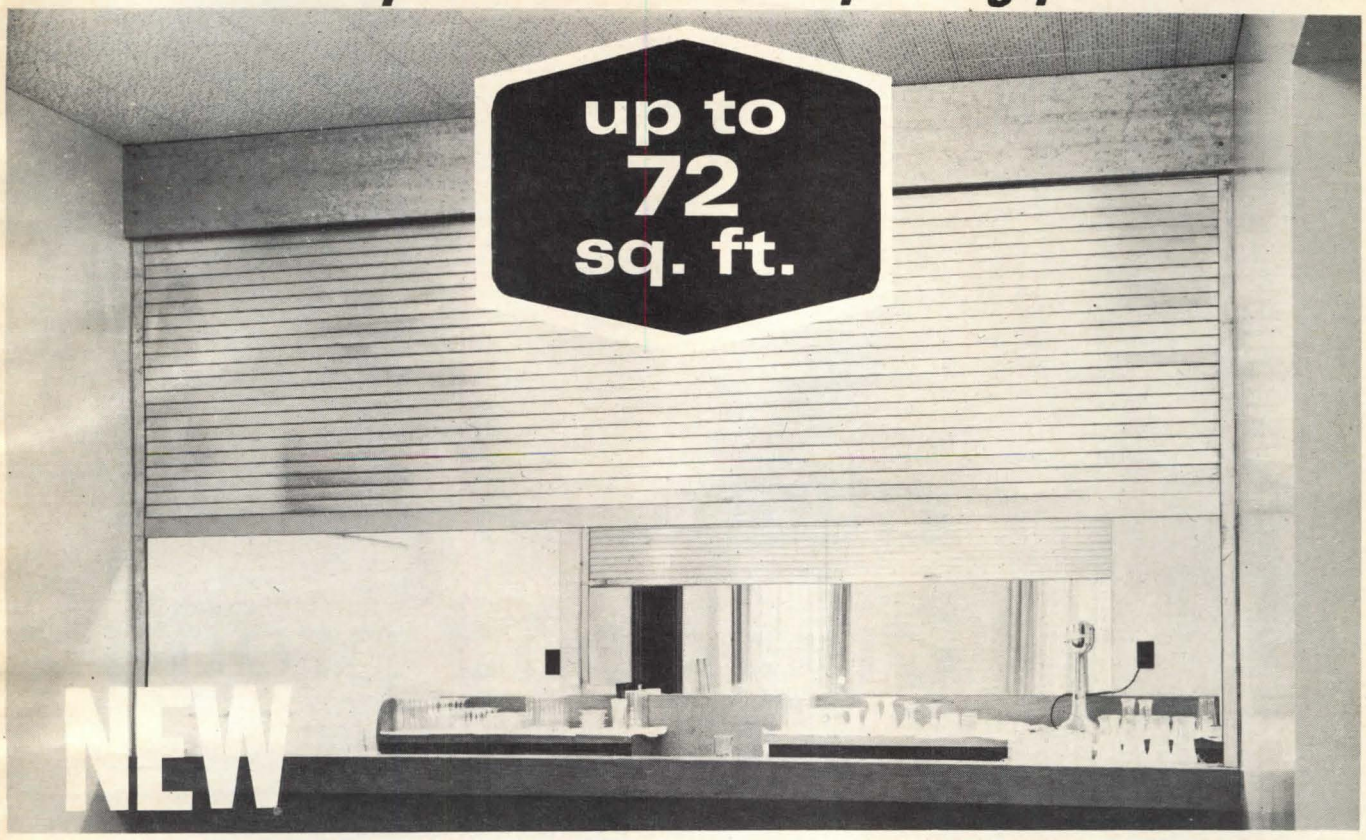
Geddes, Brecher, Qualls & Cunningham, Architects, Philadelphia, Pa., have announced that Roland A. Gallimore and Hamilton Ross have become associates of the firm.

Goldberg-Epstein Associates, Architects, Brooklyn, N.Y., have named Herbert Epstein senior partner and Karl R. Greenfield partner.

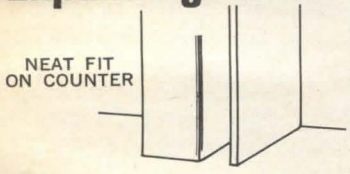
Harris & Reed, Architects, Tacoma, Wash., have named Theodore W. Litzenberger a partner.

Continued on page 238

You can NOW provide counter opening protection...

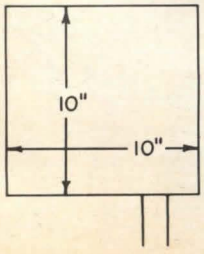


Trim Upward Expanding Guide



Trim Rugged Bottom Bar

Trim Compact Bracket



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U.L. Listed COUNTER Fire Door——

The NEW Kinnear FYR-DOR Rolling Fire Door is especially designed for counters and similar applications calling for "good looks." You can now provide Underwriters' "A" Labeled fire protection for openings up to 72 sq. ft. in area or to 12 ft. widths. Though built on the Kinnear time-proven, efficient interlocking slat principle, this new FYR-DOR Counter Door offers such new design features as:

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- ★ **Automatic closure in case of fire, but operable for daily use**
- ★ **Upward expandable guide — neater, snug fit on counter top**
- ★ **Sealed box-type guides — neat and trim**
- ★ **Tubular foot piece — cremone-type bolt lock**
- ★ **Easy resetting after testing automatic closing mechanism**
- ★ **Face-of-wall or between-jamb — push up, crank or motor operation**
- ★ **Built in accordance with all Underwriters' Laboratories requirements**

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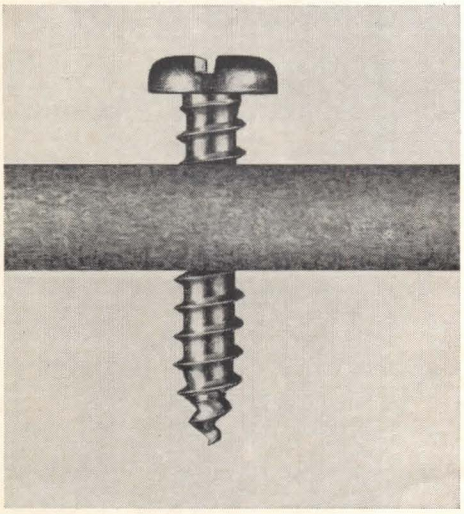
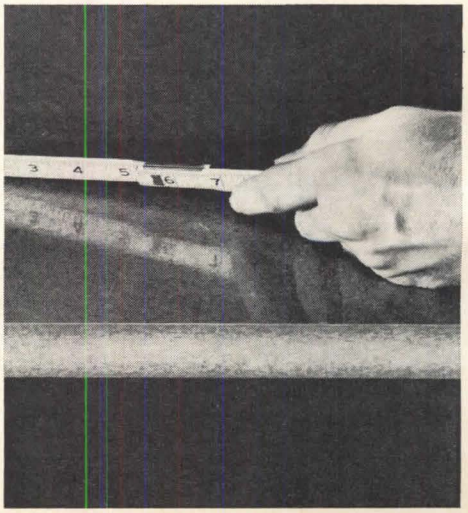
Duraflake has no patches, no core voids, no grain to raise. Screws used on the surface, or edge, bite into real wood and hold fast. Duraflake has an extremely low moisture absorption rate. Used as a horizontal or vertical surface, Duraflake lies flat, stays straight, won't warp, won't telegraph.

Duraflake is the ideal core stock under veneers or laminates, for cabinets and counter tops, furniture construction, shelving, doors, siding, floor underlayment, and other applications.

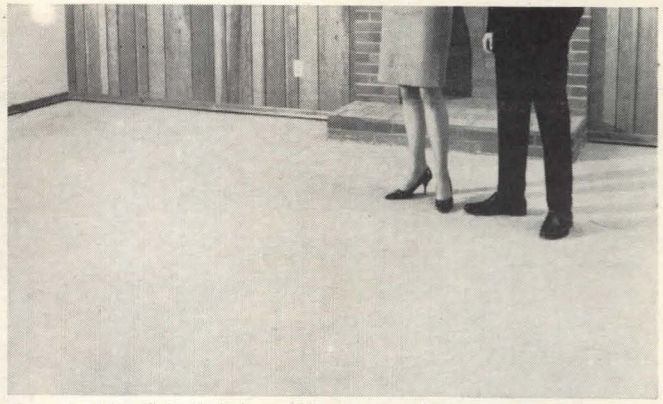


STRONG



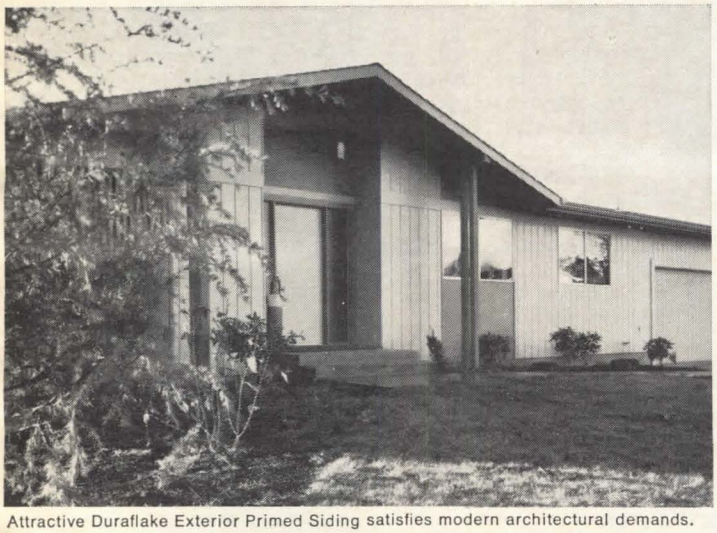
SMOOTH

Duraflake provides solid core for finest finished doors.



Guaranteed Duraflake Underlayment forms a smooth, solid base for floor coverings. No telegraphing.

has led to others



Attractive Duraflake Exterior Primed Siding satisfies modern architectural demands.

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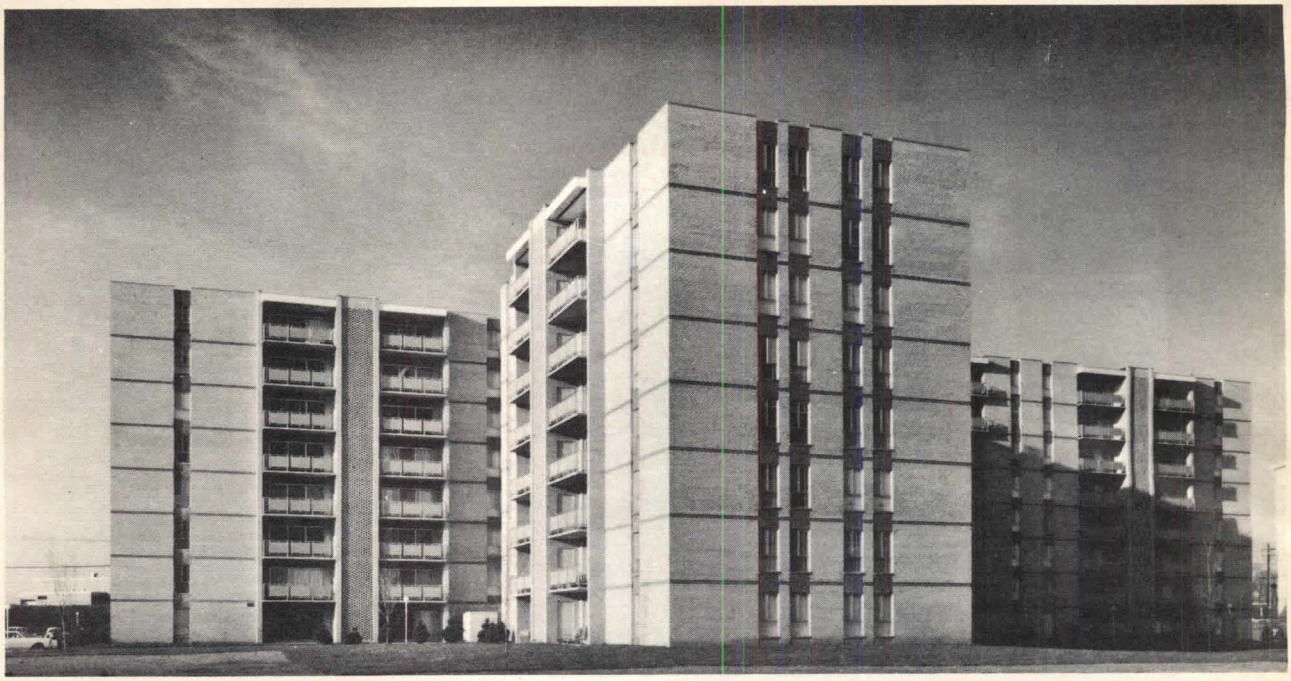


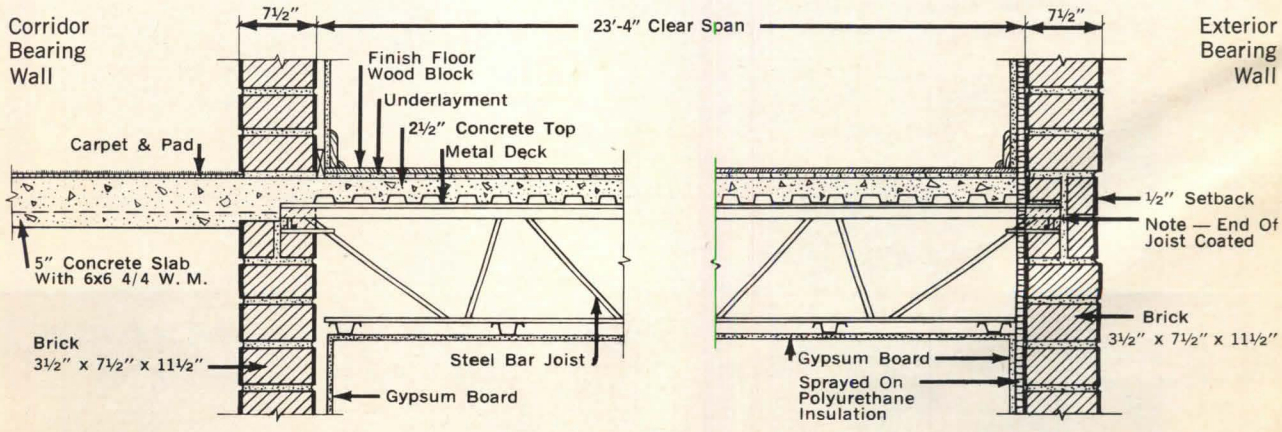
8" BRICK BEARING WALLS IN APARTMENTS

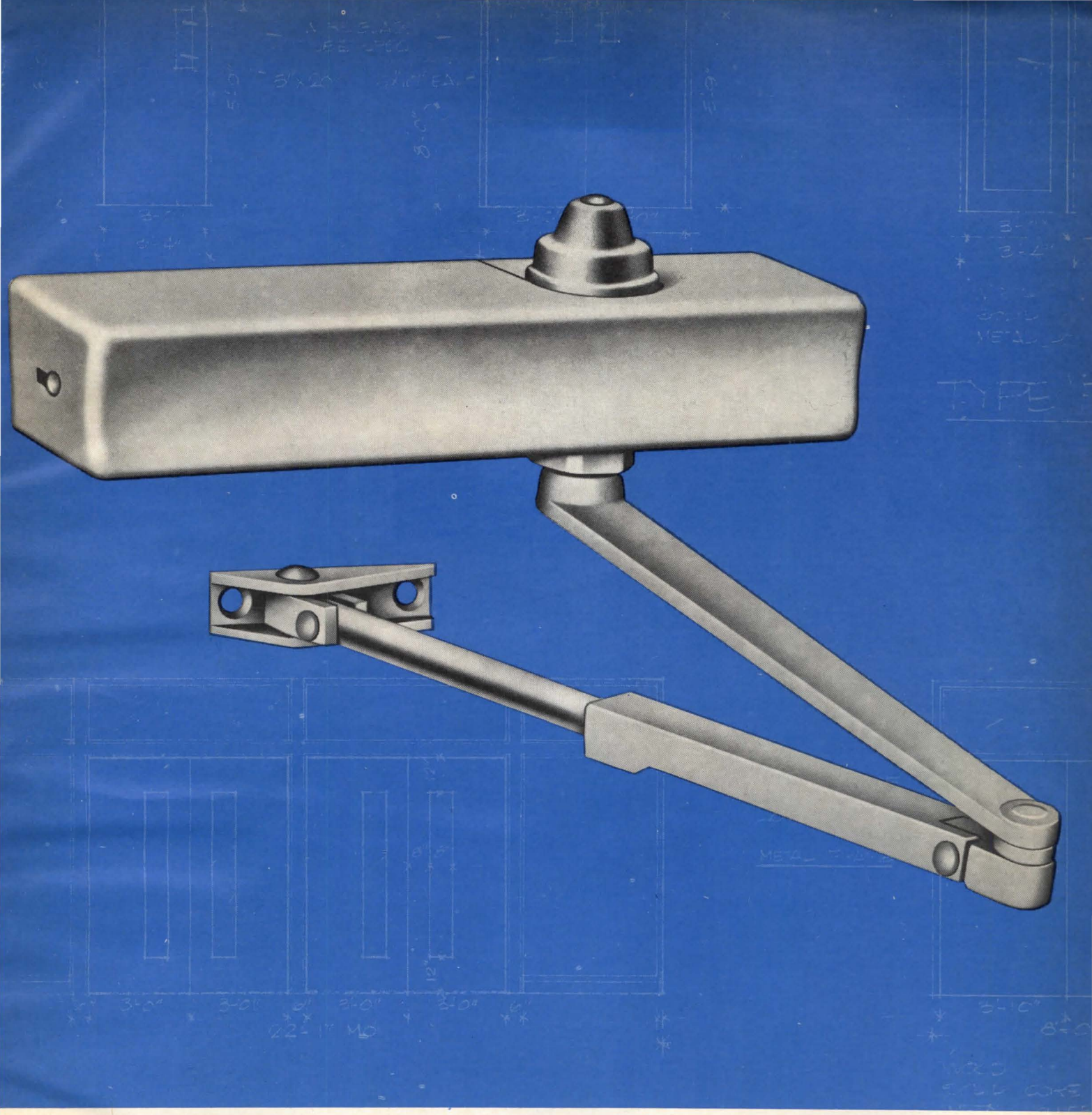
Oakcrest Towers III,
Prince Georges County,
Maryland

8" brick bearing walls are used through the entire eight floors of Oakcrest Towers III, located in Prince Georges County, Maryland, just outside Washington, D.C. Completed at a rate of one story per week, this apartment building contains 161,334 square feet of floor space. The contractor saved more than $1 per square foot of floor area by using brick bearing walls rather than structural frame. (Speed of erection also offers a savings in interim financing.) Construction was simple because all brick wall thicknesses are identical from the foundations to the roof. In essence, Oak Crest Towers III is a series of eight one-story buildings, one atop another.

Maintenance of corridor and shear walls is eliminated because exposed brick serve as the interior finish and as the structural walls. The 4-hour fire resistance of the 8" brick wall provides safety and low insurance rates. Privacy, extremely important to tenants, comes from brick bearing walls with 58 decibels sound resistance. Oak Crest Towers III is another significant example of the modern brick bearing wall concept, providing structure, finish, fireproofing, and sound control.

Architect/Bucher-Meyers & Associates
Engineer/H. L. Keller & Associates
Contractor/Banks Engineering Corporation





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When high traffic areas call for engineered door control, Russwin 2800 Series Closers meet all your requirements. Designed for universal application, they're rugged and precise... handsomely styled with aluminum or solid bronze covers. Tamper-proof construction . . . conventional or inverted mounting . . . optional back-check and delayed action. Take the toughest punishment and keep right on performing . . . in schools, hospitals, offices. Write for brochure. Russwin, Division of Emhart Corporation, New Britain, Conn. 06050. In Canada — Russwin Lock Division, Belleville, Ontario.

RUSSWIN

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Continued from page 232

Elections, Appointments

BROWN & MATTHEWS, INC., Engineers and Constructors, Union, N.J. announce the appointment of GIBSON F. DAILEY as president and chief administrative officer of the firm.

PHILIP CAREY MFG. CO., Cincinnati, Ohio, has announced the appointment of PHILIP D. SHEA, JR., as Architectural Representative of the Western Division.

ELLIS/NAEYAERT ASSOCIATES INC., Architects & Engineers, Warren, Mich., have appointed WILLIAM C. KRELL as Assistant Chief Structural Engineer, JOSEPH J. MACEWICZ as Manager of Project Planning, and ALVIN F. BLAIR as Chief Architectural Designer.

HARPER RICHARDS ASSOCIATES, LTD., Architects and Interior Designers, Chicago, Ill., have announced the appointment of RICHARD N. HAGUE, C. M. BUCK, and WILLIAM M. GAUL as vice-presidents.

P & W ENGINEERS, INC., Chicago, Ill., have appointed CLIFFORD J. OCHELTREE, JR., chief mechanical engineer and ARTHUR C. HAUSWALD vice-president of the Structural Engineering Division.

SYSKA & HENNESSY, INC., Engineers, New York, N.Y., announce the election of JOHN F. HENNESSY, JR., president and ARNOLD L. WINDMAN and ALFRED C. ZUCK vice-presidents.

U.S. OFFICE OF CIVIL DEFENSE announces that G. K. VETTER has been elected chairman of the directors of the Architectural and Engineering Development Centers.

WILLIAMS, TREBILCOCK, WHITEHEAD, Architects, Pittsburgh, Pa., have announced that LES JACOBS has joined the firm.

Name Changes

CASTRO-BLANCO, PISCIONERI & FEDER, Architects, New York, N.Y., upon the formation of a partnership; formerly, ROBERT J. PISCIONERI & ASSOCIATES.

DE VRIES & ASSOCIATES, Architects, Muskegon, Mich., upon the admission of JAMES P. GRAY, and JOHN E. KUIECK as associates; formerly, BERNARD J. DE VRIES.

FELD, KAMINETZKY & COHEN, Consulting Engineers, New York, N.Y., upon the formation of a partnership; formerly, JACOB FELD.

CARL LUCKENBACH & ASSOCIATES, Architects, Birmingham, Mich., upon the appointment as associates of FRANK E. ARENS and KENNETH W. GUNN; formerly, CARL LUCKENBACH.

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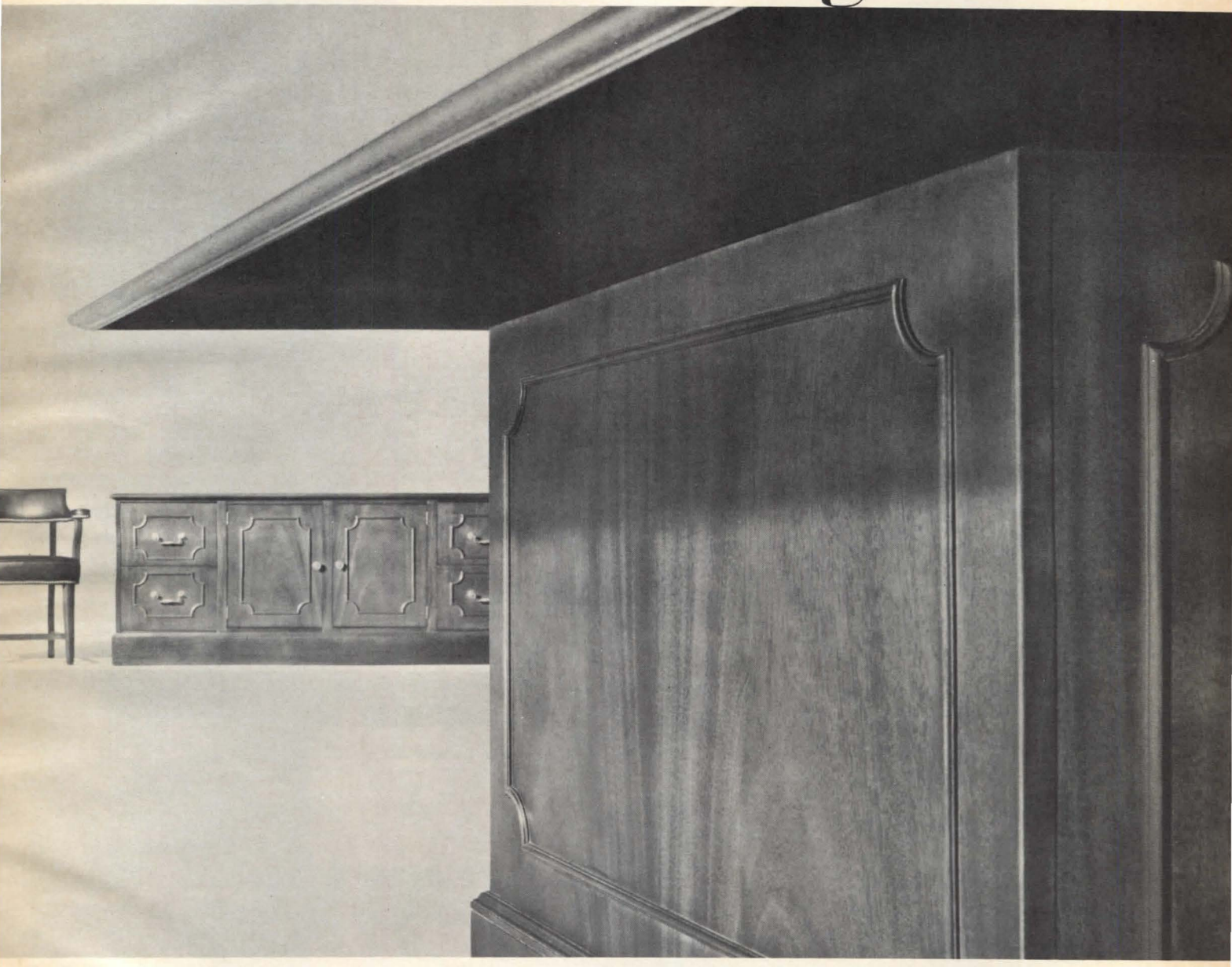
Our designer came in with a lulu of a hangover



It was one of the biggest hangovers we'd ever seen. Executive size, in fact.

It's the 766-82F Executive Desk from the 700 Traditional Series. It has an 8-inch overhang on two sides and the back; over 3,600 square inches of work and conference space. And like the entire 700 Series, it features a Chippendale design crafted in select mahogany. With drawer pulls of English antique brass.

All in all, this desk gives your designs everything a traditional desk should, including some functional contemporary touches. Like a hangover.

So if you're a contemporary traditionalist, look into the 766-82F Executive Desk. We'll show you a hangover you'll never want to get rid of.

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Representatives: Pier 50, WAtkins 9-8383, NEW YORK • Wholesale Office Equipment Company: LOS ANGELES, ANgelus 8-6104; SAN FRANCISCO, YUkon 6-6972; SEATTLE, MAine 2-7143; DENVER, TAbor 5-6174.

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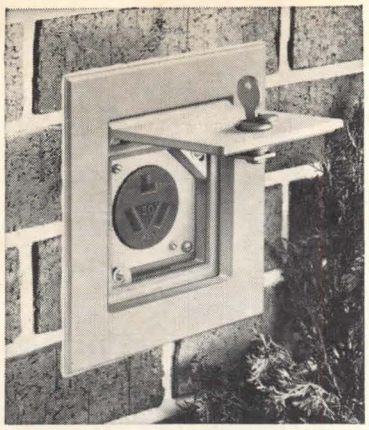

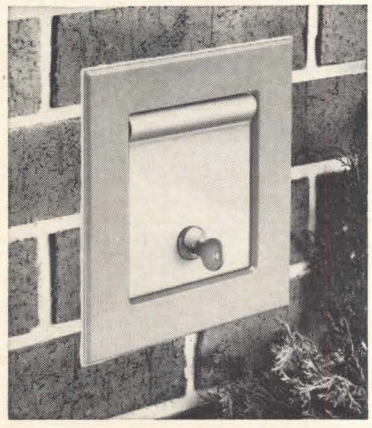

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Shut out vandals, weather and unauthorized use with the locking cover that's flush and can't be pried open.

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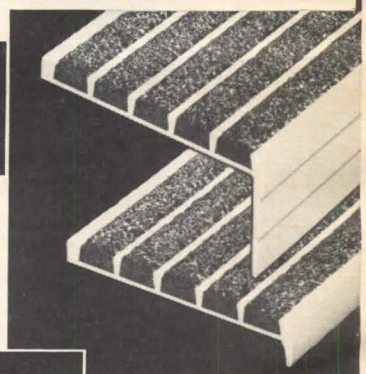

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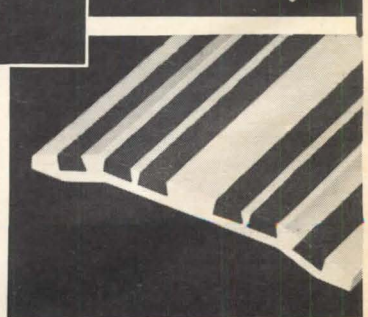

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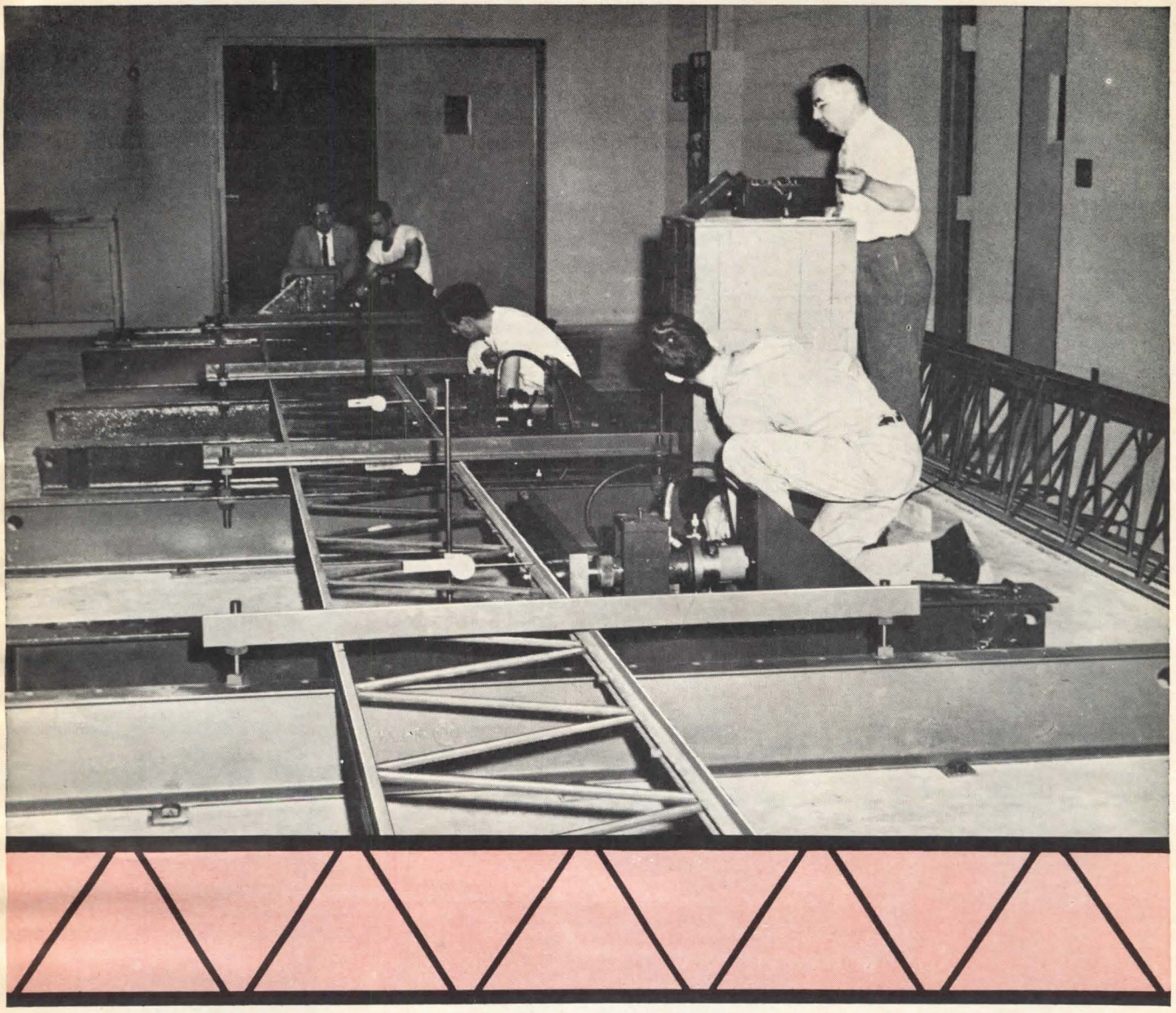

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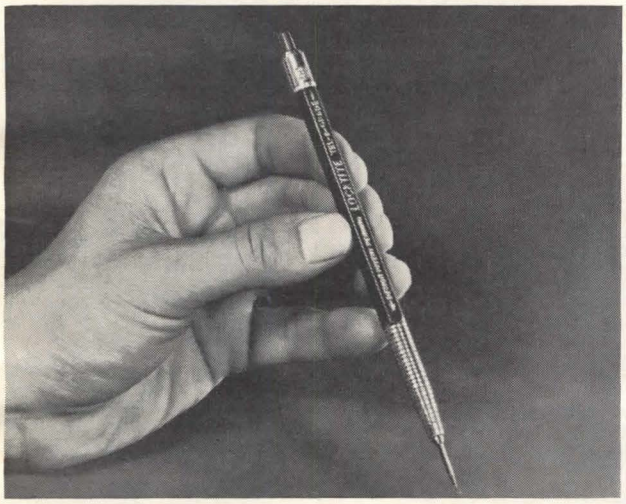

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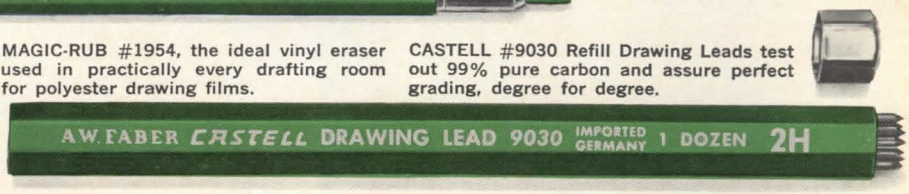

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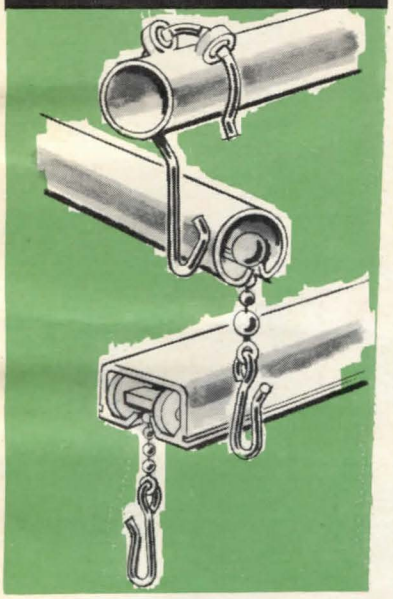

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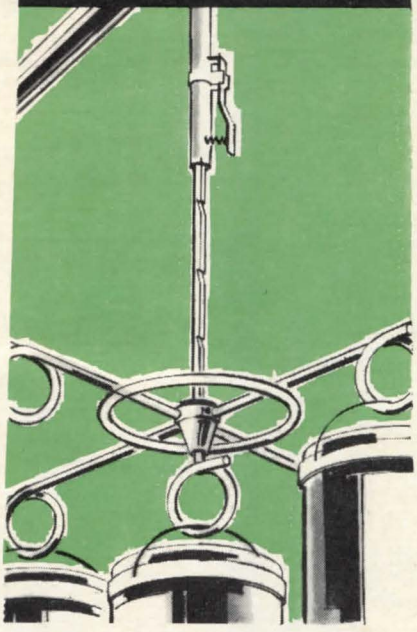

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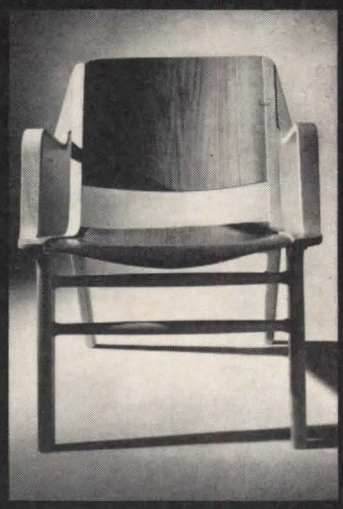

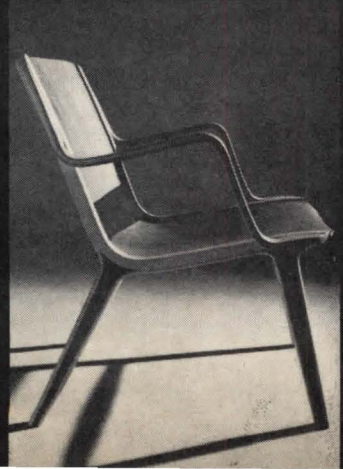

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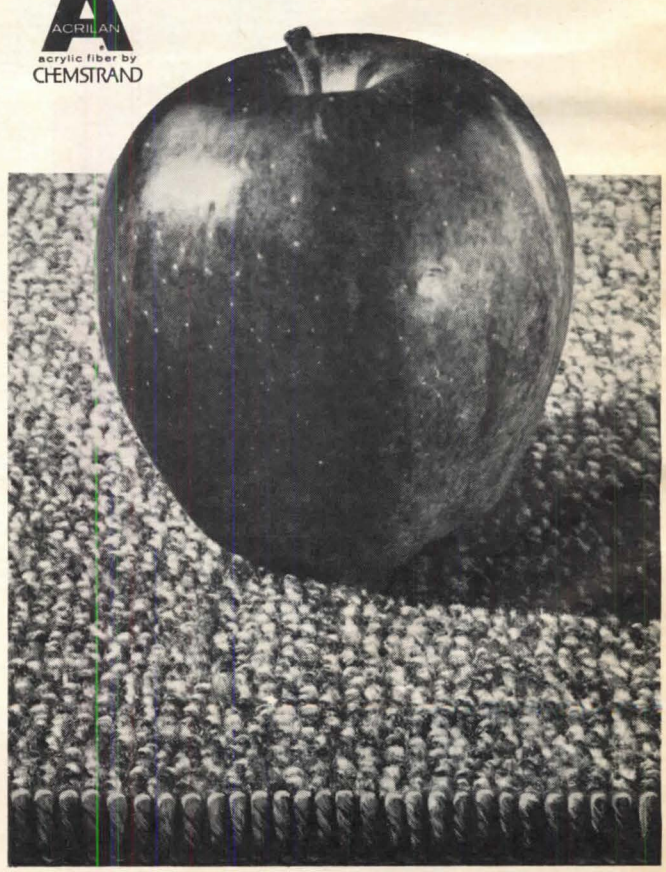

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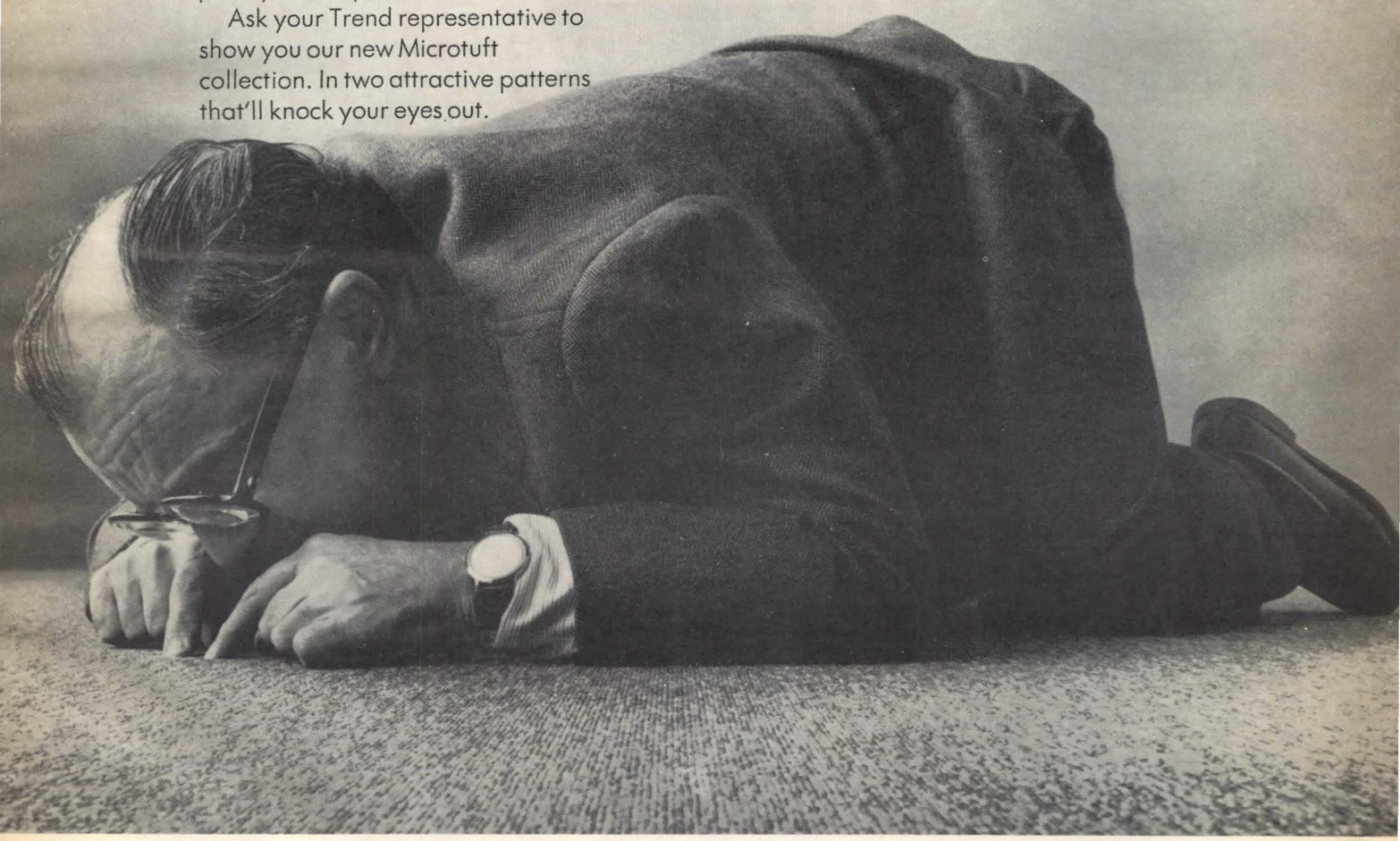

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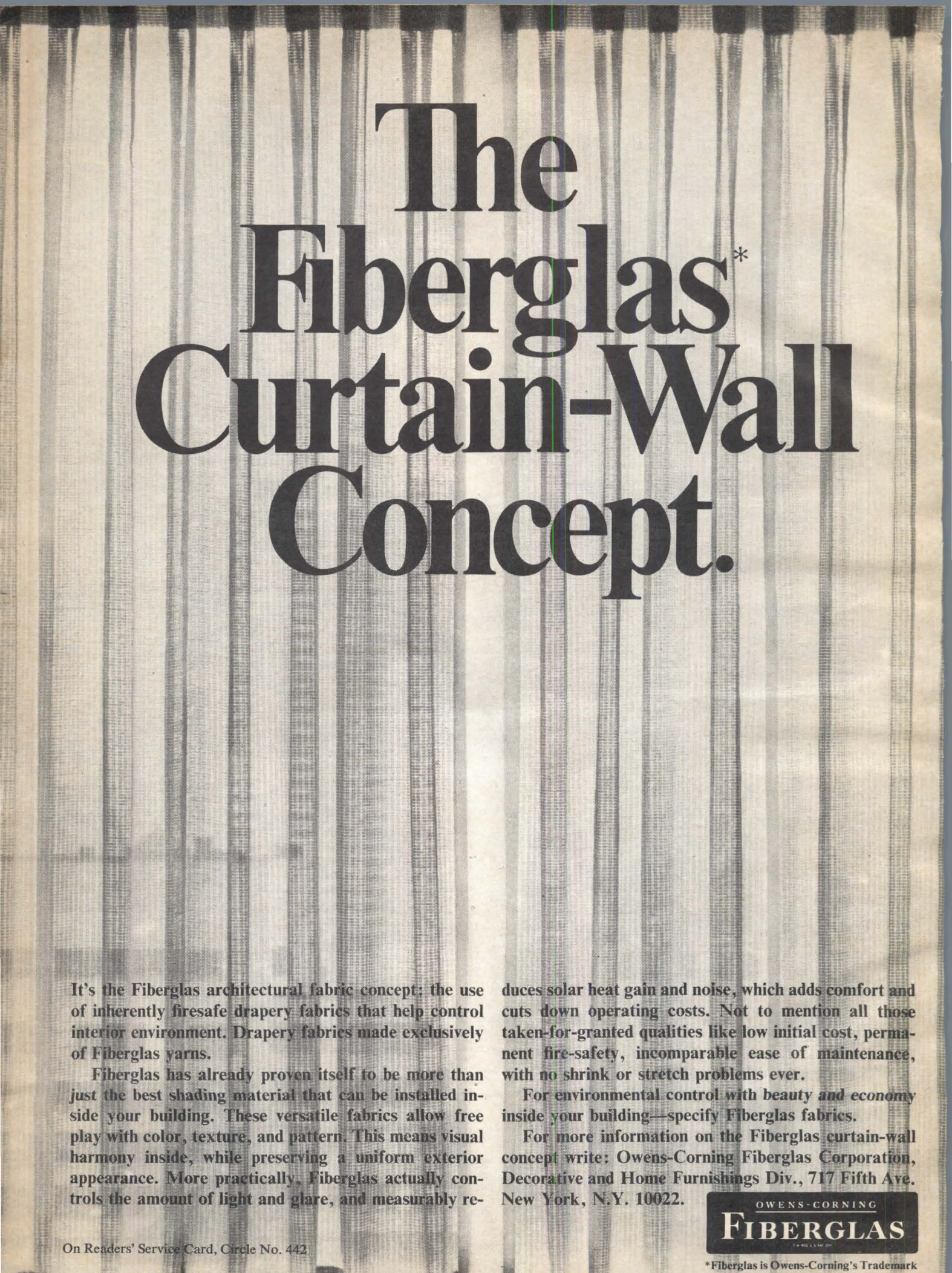

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It actually bounces back after being stepped on by thousands of feet. And it's simple to clean.

A carpet made with Acrilan® acrylic fiber in the pile is also mothproof. Mildewproof. Non-allergenic. You see, like all good modern things, Acrilan is functional as well as beautiful.

Which is the utmost in luxury for your client, isn't it?

Monsanto Textiles Division, New York, N.Y. 10001

ACRILAN®
acrylic fiber by
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On Readers' Service Card, Circle No. 313

Ice cream parlor floor: Kentile Architectural Marbles Vinyl Asbestos Tile. Comfortable, quiet underfoot. For residential as well as commercial use. Thicknesses: 3/32" and 1/8". Ten colors. Step riser and wall base shown: KenCove® Vinyl. Consult your Kentile® Architectural Representative.

This new vinyl tile floor invites traffic—and takes it beautifully!

KENTILE VINYL FLOORS

It's Architectural Marbles—a Kentile exclusive! Lasting beauty because the design flows through the entire thickness of every tile. Easy to maintain. Greaseproof. Low priced, too.