PROGRESSIVE ARCHITECTURE November 1967

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THIS MONTH IN P/A

Progressive Architecture® *November 1967*

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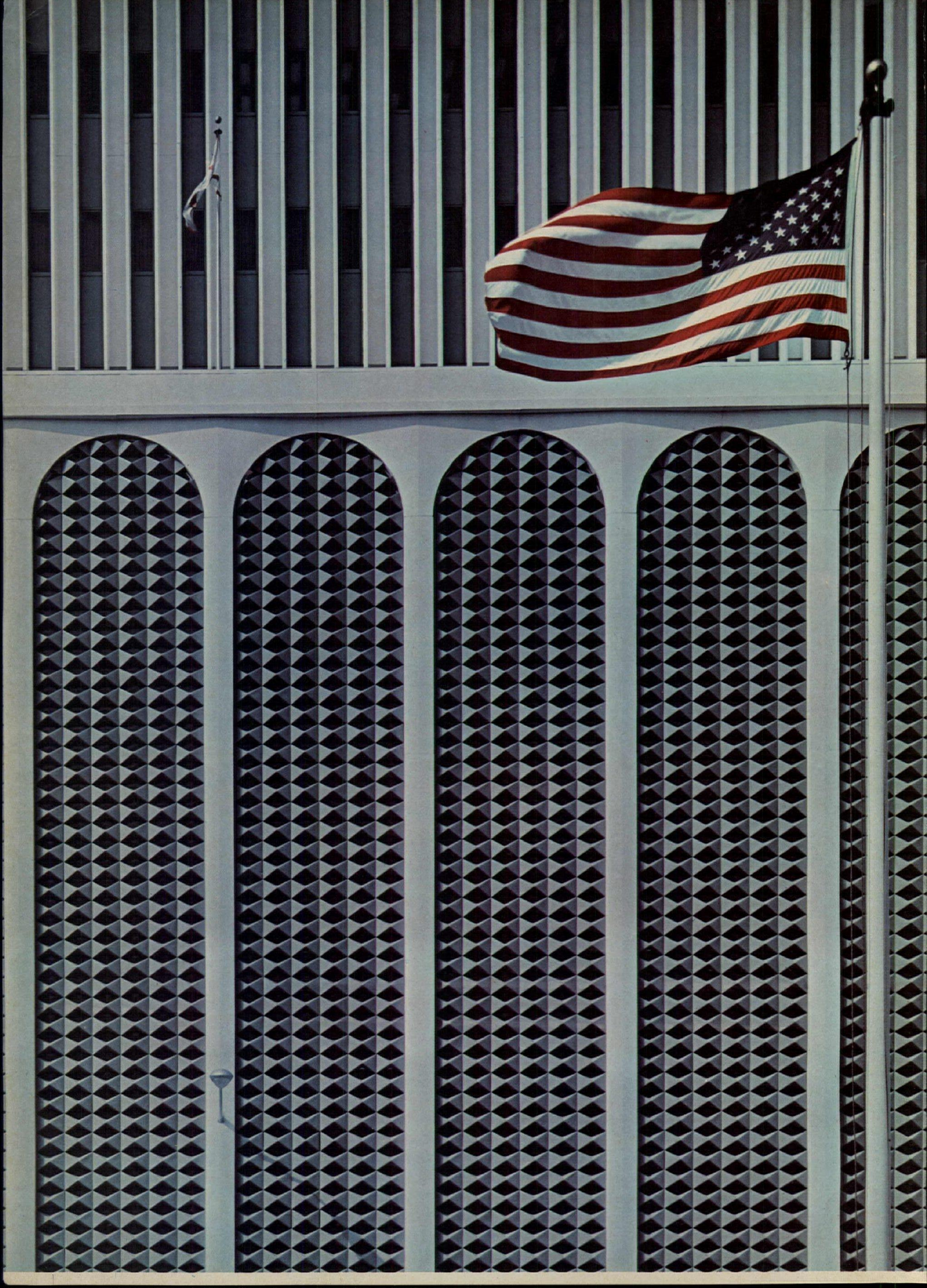

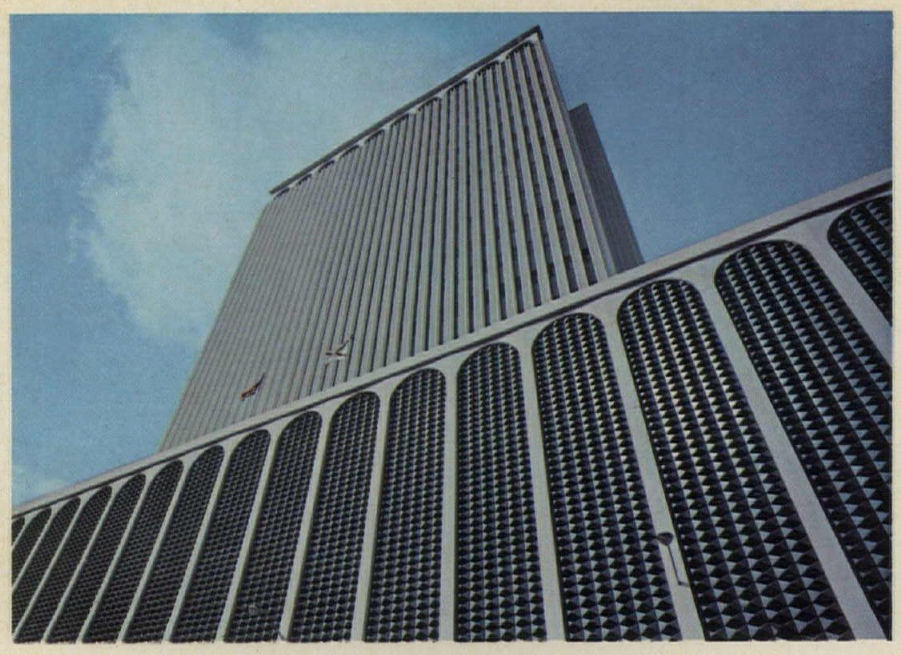

Architect: Harry A. MacEwen
Tampa, Fla.
Fabricator: Architectural Products Division
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It had to be more than aluminum.

It had to be Alcoa.

In Tampa, the Exchange National Bank Building had to be aluminum by Alcoa. The bankers decided they needed a new building—on the same site. The architect got together with Alcoa early in the planning. Through each phase of the building, Alcoa's total capabilities worked for him—applications engineering, research facilities, process development and, most of all, the Alcoa people, who really know how to make aluminum work in architecture.

Since the bank building was to be occupied during the construction of the new facade, it was important to use a material that could be erected easily and fast, and one with "in-place" economy. For these reasons, Alcoa recommended Sol Dec II® Solar Screening. The architect liked Sol Dec for this project, especially because the panel system could be modified to suit the building's requirements. Yet it was standard enough to be economically advisable.

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Alcoa can help smooth the path for any architect, from concept to completion. Contact Alcoa early and receive all the benefits of their wide experience with aluminum and their innovative approach to architectural challenges. Call your local Alcoa sales office collect, and talk to Alcoa at the talking tissue stage.

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VIEWS

Ancestral Thickets

Dear Editor: How appropriate and how enjoyable your article on eclecticism (SEPTEMBER 1967 P/A). Since we are once again in a thicket of cross-purposes, it is only appropriate to pay homage to similar times past.

HUGH HARDY
New York, N.Y.

A Funny Thing

Dear Editor: With regard to your terrific article on eclecticism (SEPTEMBER 1967 P/A), I enclose a clipping from an article in the *Daily Journal*, a local trade paper:

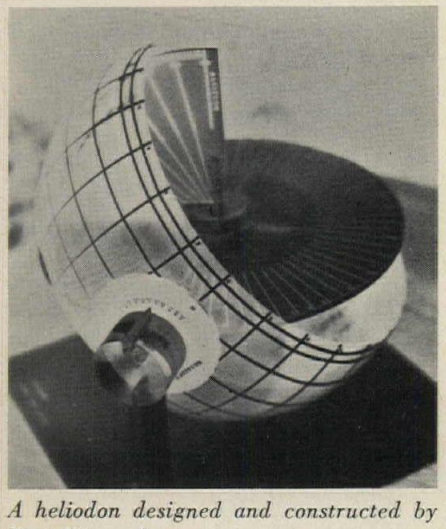
" 'Swinger' Apartments in Planning: Preliminary plans for the complex, to be called the 'Forum,' are being drawn. . . . The title will be reflected on the exterior by Roman-style arched windows with keystones, wrought iron balconies and a curved, molded fiber glass soffit."

Ah, those swinging, eclectic, fiberglass Romans!

HENRY F. LACY
Denver, Colo.

Fabricating Sunlight

Dear Editor: Re your article entitled "The Heliodon," SEPTEMBER 1967 P/A. In the last three years in teaching at Cooper Union and the Parsons School of Design, I have assigned my students the problem of the analysis, design, and subsequent fabrication of a small (8–12-in. diam.) heliodon. I have found this an invaluable instructional device for two reasons: First, it provided the motivated student with a "tool" he can use throughout his professional career for precise analysis of problems that were so skillfully but somewhat intuitively resolved by Corbusier and Wright, and second, because the very analysis, synthesis, and construction of the device itself is a design experience. With all due regard to Henry Wright's heliodon, I feel the student has much more to learn through self-discovery of the dynamics of the apparent motion of the sun about the earth as opposed to the rather psychedelic point-by-point demonstration with 57 spotlights designed by Henry Wright.



A heliodon designed and constructed by Farrell's students.

The reaction of students to altitudes and azimuths is at first dismay, but after discovering the beauties of the sun's apparent motion their reaction changes almost inevitably to delight. I would strongly suggest to all who are responsible for explaining our natural environment to students of design that this be an almost standard assignment, both because of its value as a design problem and the lasting value of the instrument itself.

RANGER FARRELL
Irvington-on-Hudson, N.Y.

Convention Exhibits

Dear Editor: In the closing lines of your interesting report on the annual meeting of the Royal Institute of British Architects (NEWS REPORT, SEPTEMBER 1967 P/A), you remarked that by not allowing product suppliers to exhibit at the convention, R.I.B.A. was "missing a valuable chance for exposure to the suppliers they depend upon."

When I attended the Centenary Conference of the R.I.B.A. in London, I, too, remember that there were no exhibits of products, but one of the sightseeing events on the "programme" was visiting the Building Center — a multistory permanent exhibition of all products, very well arranged. We could pay undivided attention to the products and get all the information we wanted. It was a lot more convenient and efficient than to have a look at exhibits between two cocktails or between two interesting lectures while running from one to the other. The Britons are not missing anything, because their conventions do not depend upon suppliers, as some of ours do.

EUGENE PADANYI-GULYAS
Billings, Mont.

More Praise for August Issue

Dear Editor: I think your issue on "Performance Design" (AUGUST 1967 P/A) is an excellent treatment of a difficult subject and one that can have only the most forceful impact on architectural practice.

ARTHUR R. COGSWELL
Chapel Hill, N.C.

Dear Editor: Your August issue on systems analysis should prove a turning point in the thinking of architects and engineers and help them gear themselves to meet the future. For better or worse, the present technology is changing our society, its thinking and its environment. Design of buildings will have to accommodate these changes. Your August issue offers a basic understanding of a tool that would enable the profession to cope with this technological progress.

Your timely issue is most gratifying to those few engineers and architects, myself among them, who saw the need for utilizing systems analysis for breakthroughs in the construction industry several years ago. Among the pioneers was John Eberhard, who now heads the Institute for Applied Technology. His ability and vision are having a serious impact on the thinking of the construction industry, particularly in the Government departments associated with it. In my opinion, the future impact of his efforts will be of far-reaching consequence.

Please accept my congratulations, not only on your initiative to devote an issue to this topic, but on the lucidity of presentation and the wonderful summary of the present knowledge of systems analysis and its orientation toward "Performance Design."

LEV ZETLIN
New York, N.Y.

Dear Editor: I wish to compliment you and your staff on the excellent issue entitled "Performance Design." However, I feel one comment is necessary concerning the section, "The Changing Practice." In it, there was reference to the SCSD project and considerable space was allocated to remarks made by Joseph White, formerly of Inland Steel Products. I have a very high regard for Mr. White and agree basically with his statements; however, I was somewhat disappointed that you did not consider the importance of the contribution of other component manufacturers, who, in combination, made the SCSD project a success. It is understandable that an architectural publication naturally is more involved and interested in structure than in mechanical systems, but the fundamental success of a building system is dependent on all the various subsystems of which the structure is one part.

Perhaps I am oversensitive on this subject at this time, due to the recent announcement that Inland Steel Products is withdrawing from the modular building program. The coincidental timing of Inland's announcement and your August issue certainly could not be

Continued on page 12

Ruberoid vinyl asbestos offers versatile styling --easy to maintain!

This attractive floor tile installation in a Grandway Department Store was photographed more than a year after the store opened. Thousands of customers have tracked in dirt, mud, rain and snow.

The entrance and check-out (top), boldly patterned with *Thru-Chip* vinyl asbestos—and the main aisles, combining *Travertine* with feature strips (below), look unbelievably new. Racks and bins have been moved frequently across the selling floor, tiled with *Fine Grain.*

Ruberoid's vinyl asbestos has a tight hard surface that resists grease and stains. Spills can be wiped up quickly and easily. A weekly schedule of washing and a light top dressing keep the floor tile in tip-top condition. No need for frequent heavy waxing, buffing and stripping.

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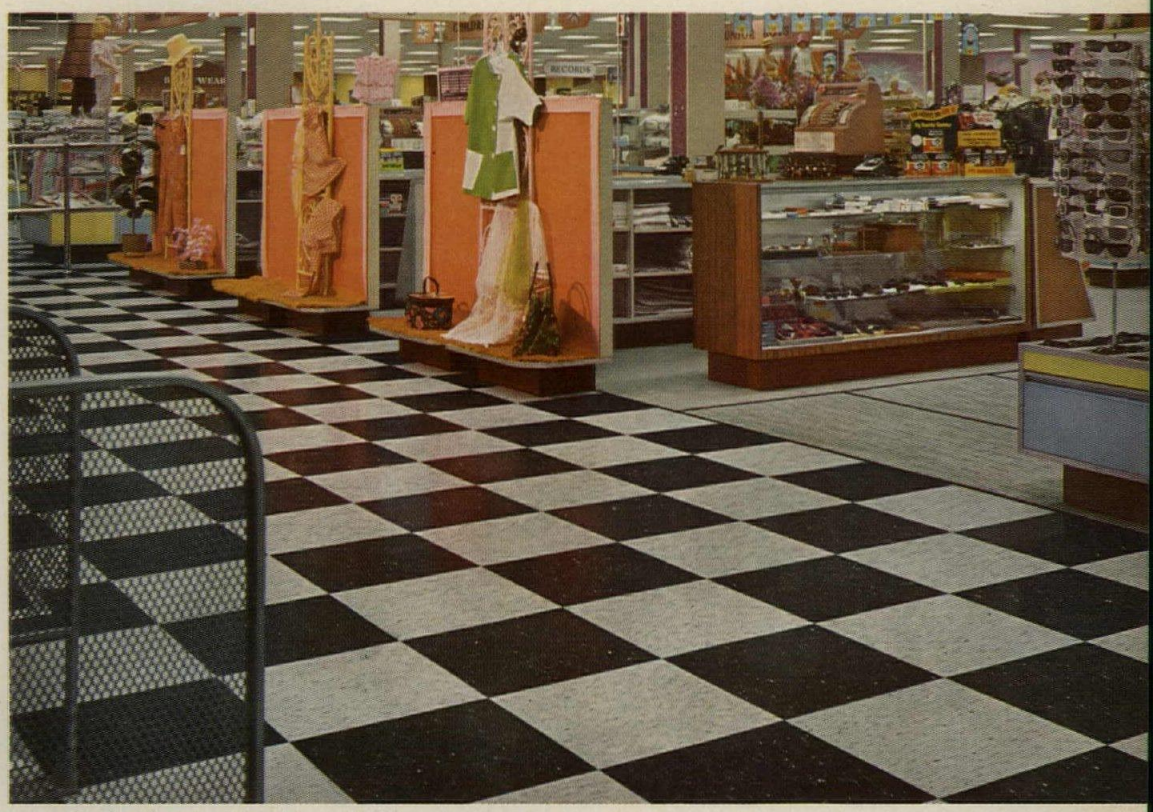

Grandway Department Store, Closter, N. J.
Architect: George Vuinovich, Englewood Cliffs, N. J.
General Contractor: Closter Contracting Corp., Hempstead, N. Y.
Flooring Contractor: Circle Floor Co., Bronx, N. Y.

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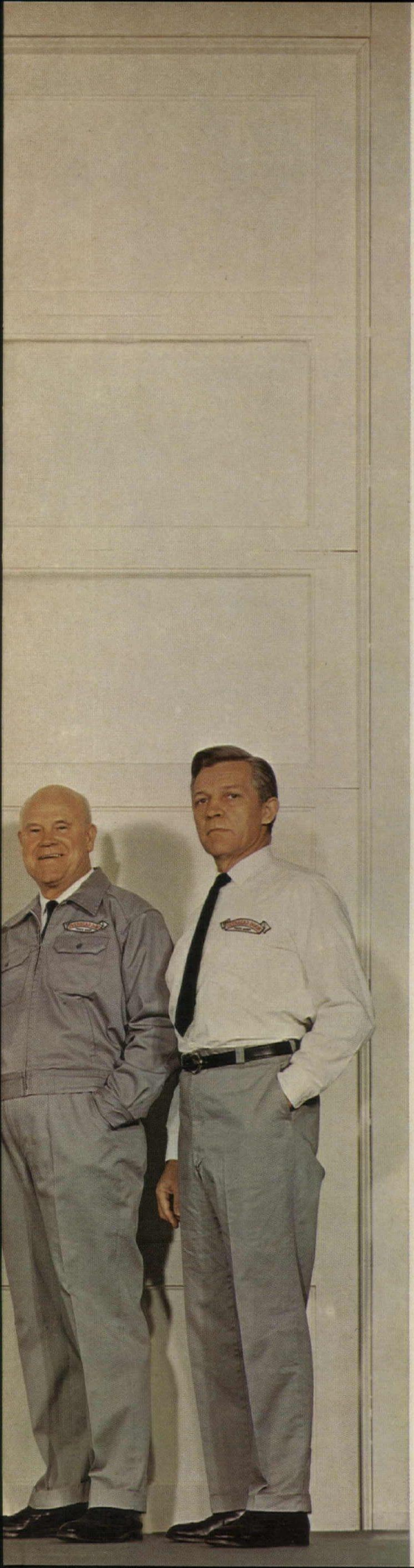

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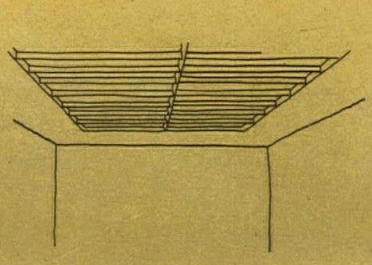
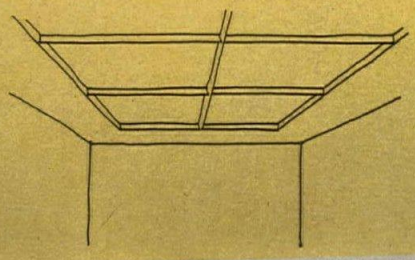
And the structural acrylic diffuser is matte-finished on both sides to completely eliminate reflections from windows or other light sources.

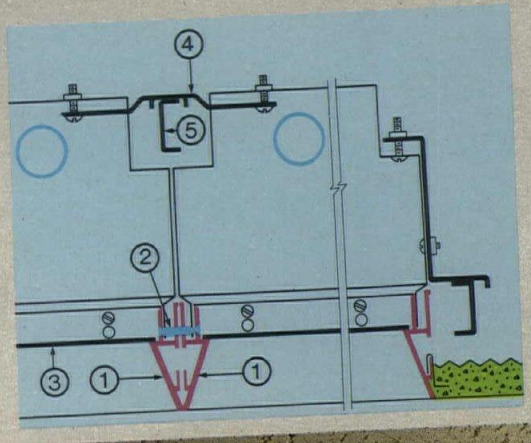
Write us for further information, or visit our showrooms.

We think it's a major step forward in the lighting of large areas.

The Sky-Light is one of the many efforts by Lightolier to better coordinate lighting with architecture.







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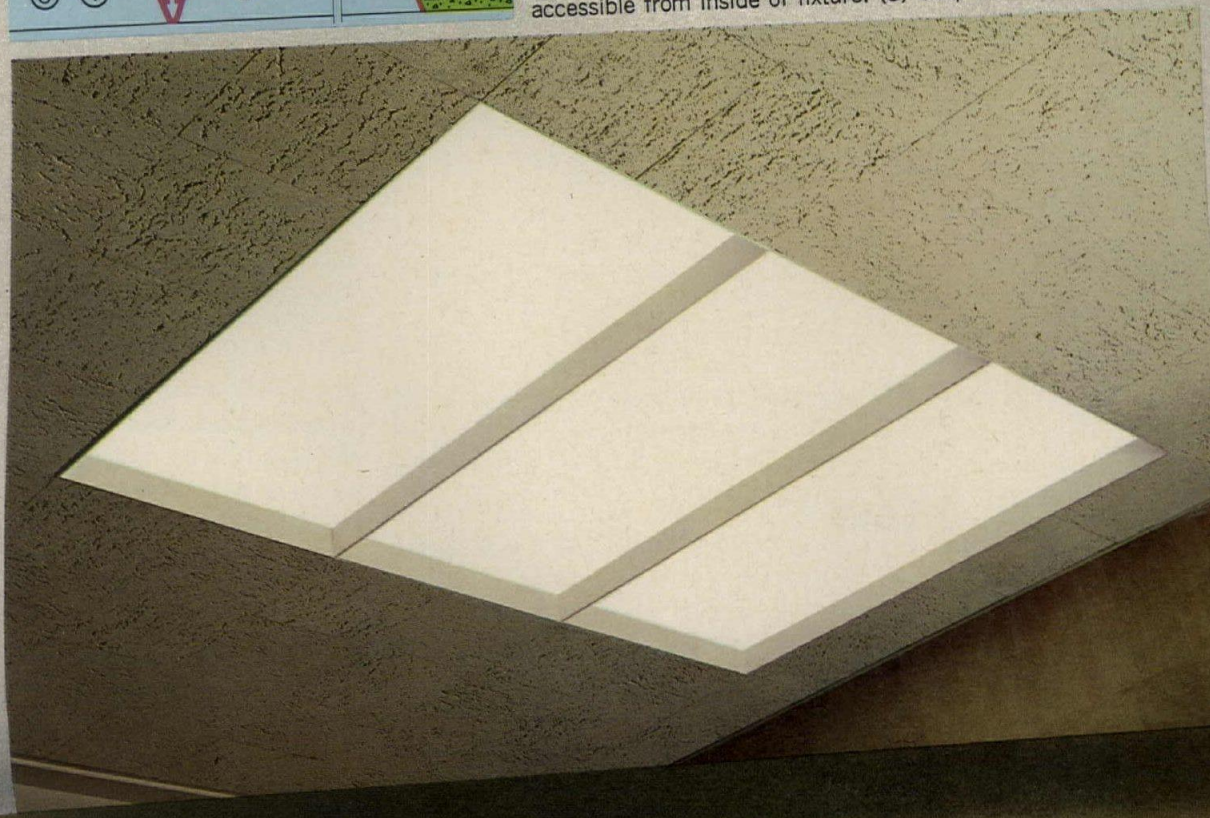

Continued from page 6

controlled by anyone, but it is a regrettable coincidence.

We at Lennox feel we are very much involved in systems planning and have enjoyed a very successful result from our involvement in the SCSD project. We are most optimistic regarding our future in the Systems Development field.

Again, congratulations to P/A for leading the way to an examination in detail of the architect's relationship to systems analysis.

NORMAN L. RUTGERS
Asst. to the President, Lennox Industries, Inc.
Marshalltown, Iowa

Dear Editor: Congratulations on the very profound "Performance Design" issue. "Comprehensive Practice," "Systems Concept," and "Performance Design" still, to us, means creative management of all the resources available to solve the client's problems.

STANLEY M. SMITH
Daniel, Mann, Johnson & Mendenhall
Los Angeles, Calif.

From a Reader Who Really Reads

Dear Editor: Although I am not an architect or associated in any way with the building trades, my interest in current building trends has made me a frequent reader of P/A. I am writing to question certain information in the article "Looking Westward" on p. 116 of the JULY 1967 P/A. From a reading of this article, a person not familiar with San Francisco would be apt to draw some erroneous conclusions.

(1) The site cost is given as $6500, but the article does not indicate when the lot was purchased. I believe that the current price of such a lot would be closer to double that figure, and most certainly not less than $10,000.

(2) The plan of the units indicates that certain renters in the building would have to park in the backyard, while others would be required to park tandem. Rear-yard and tandem parking became illegal in San Francisco some two years ago, and this building could not be built in this manner today.

(3) I would hesitate to purchase a building that had four sizable windows facing south (or any direction) that could be entirely blocked out at such time as the adjoining owner should decide to build up and block them out. This could require alterations that could cost several thousand dollars.

(4) The entry hall and stairway look uninviting and dark. The skylight serves only the two top units. Many people would have second thoughts about entering this hallway and concealed stairway, particularly at night when alone.

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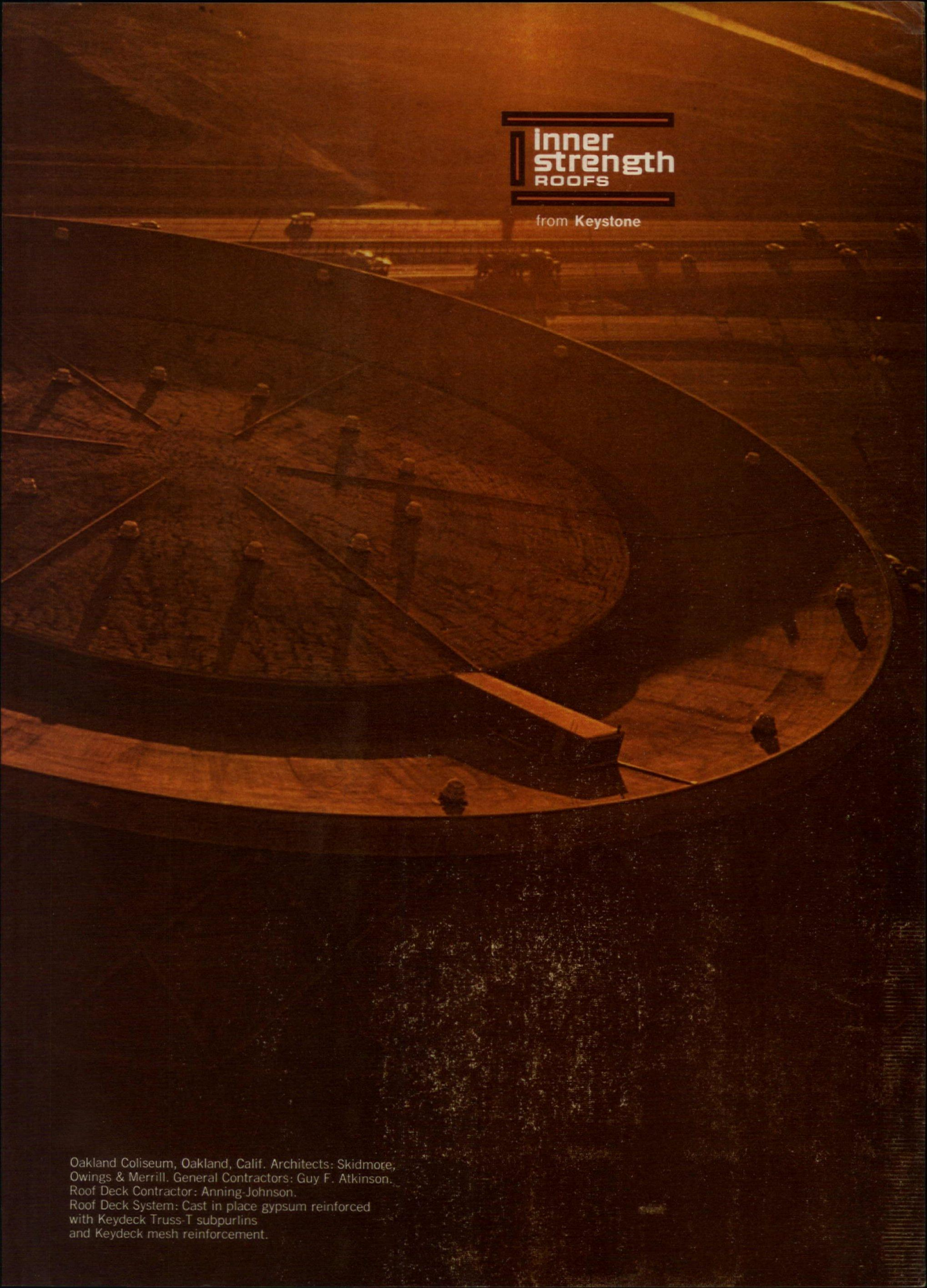

Oakland Coliseum, Oakland, Calif. Architects: Skidmore, Owings & Merrill. General Contractors: Guy F. Atkinson. Roof Deck Contractor: Anning-Johnson. Roof Deck System: Cast in place gypsum reinforced with Keydeck Truss-T subpurlins and Keydeck mesh reinforcement.

The Keydeck Truss-T subpurlin,

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The webs are open.
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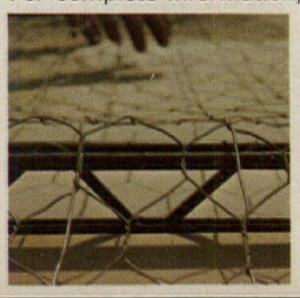
We added an extra improvement, too; widened the base to prevent formboard drop-outs.
These advantages are not theoretical. They have been proved in over 30 tests conducted by C. S. Barnes & Associates, Consulting Engineers, and in hundreds of buildings.
For complete information, call your Keystone representative or write us.



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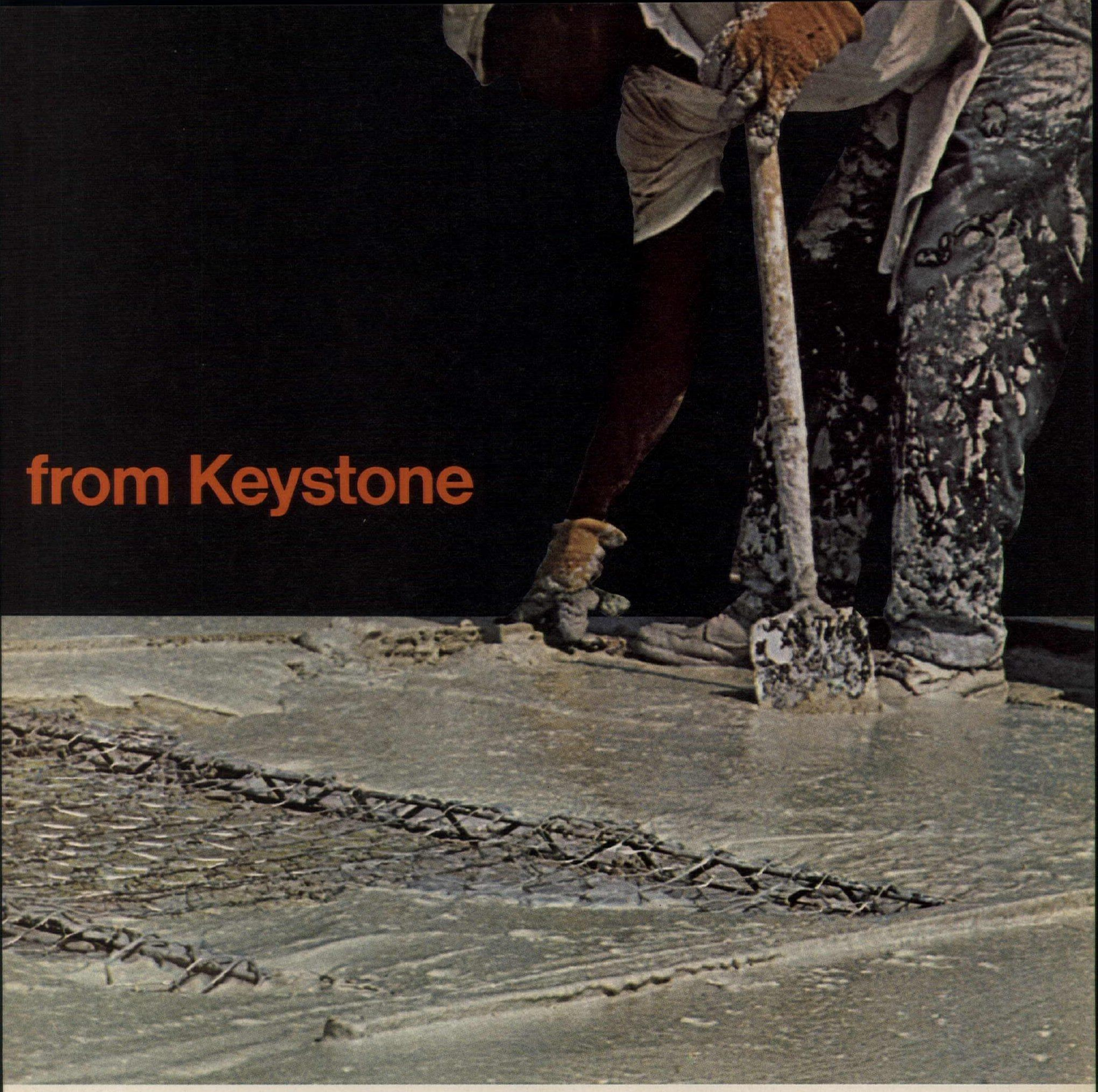

inner strength

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Continued from page 12

(5) Your article describes this as a "neat building." What is neat about the stingy closet space? Or the kitchen that is completely exposed to the living room? Or an entry door that opens about 6 ft from the kitchen sink? Or a bedroom that appears to be about 10 ft square? How do you hang a heavy painting on ¼-in. plywood? And what's so neat about sitting on the deck and gazing at the roof of an automobile parked where a garden ought to be? Where do you store linens, or Christmas ornaments, or the skis and the tennis racquet?

While I cannot agree that this is a distinguished building or even an interesting one, I would enjoy reading an interview with some of the "neat couples" who live in it. I remember the famed Mies building designed for Dr. Farnsworth, whose reaction to the building was at least as interesting as the structure itself.

WILLIAM I. BERNELL
San Francisco, Calif.

A Smash of a Spread

Dear Editor: The spread in JULY 1967 P/A ["Experiments in Environment"] is really a smash. Both Larry and I were sufficiently inspired after reading it that I believe we will do another joint session next summer after all!

ANN HALPRIN
Dancers' Workshop Co.
San Francisco, Calif.

Progressing With the All-At-Once-ers

Dear Editor: Regarding your editorial of JULY 1967 P/A: Wow! Leave the "contemporary traditionalists" to the other magazines. We need a *progressive* architecture magazine.

H. PHILIP GABRIEL
ISD Incorporated
New York, N.Y.

Kinetic Strawberries

Dear Editor: Professor Zuk's article on kinetic building structures (JULY 1967 P/A) is technically interesting. Judiciously applied, this idea, (suggested by Calder's mobiles?), should no doubt prove valuable.

However, the underlying philosophy and humanistic implications of this invention are not above question. First, to argue its relevance in the dynamic image of our times seems exaggerated. This is a little bit like saying that because strawberries are in season, everybody should eat strawberries.

The idea is new and challenging, but this does not mean, as the article implies, that it should, *ipso facto*, supplant all "static" values. Static elements are still

Continued on page 22

Vermont Marble

the architect's choice for contemporary design

Bank . . . house . . . locker room – very different decorating problems, but in each case Vermont marble contributes to a beautiful solution. In the bank, the rich green of Verde Antique accents the pristine purity of Taconic White marble tile; the residence foyer gains a touch of elegance with Danby Cloud White, while Vermarco Florence adds richness to a utilitarian locker room.

To learn how the many moods of Vermont marble can enhance your interiors, call your nearest Vermont Marble Company representative – or write Dept. 11 and we'll see that he calls you.

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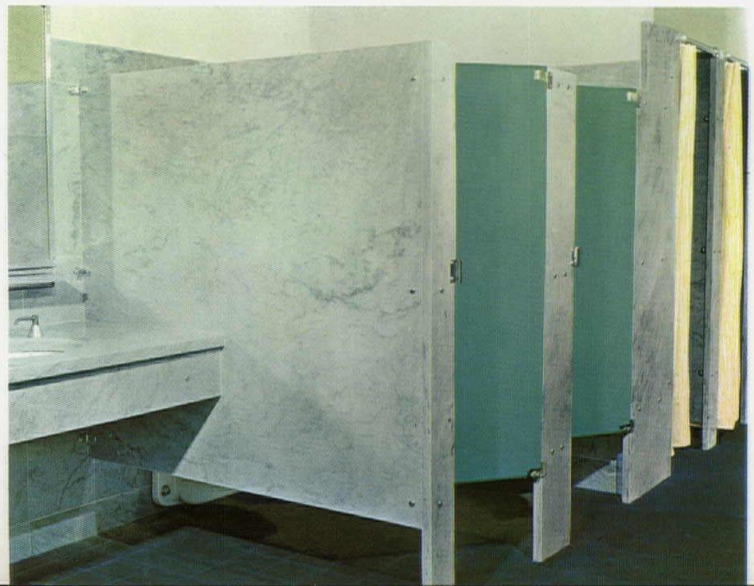
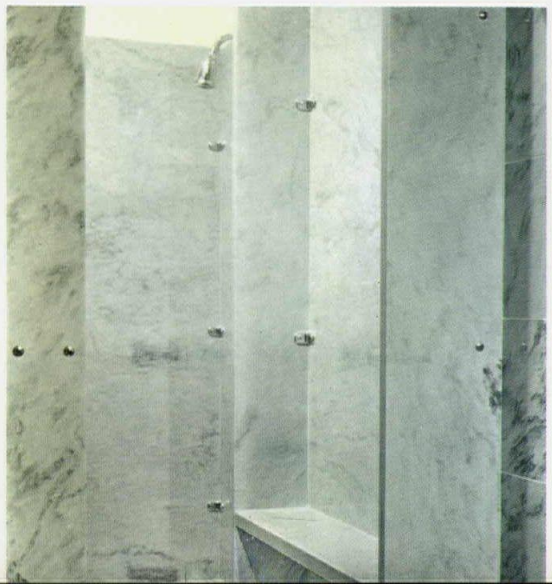
Above, left: Republic National Bank, New York City
Interior Design: Ernest Bonnamy / Kahn and Jacobs, Architects

Below: Woodstock (Vt.) Golf and Tennis Club
Architects: Charles Hood Helmer & Associates





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necessary to provide contrast, to assure man a sense of historical continuity with the past, and to help him maintain some meaningful identity within his environment.

No matter how fascinating a new invention may seem at its inception, its long range effects should not be ignored. The case of the automobile and its long trail of inertial effects, such as air pollution and the evisceration of the landscape by roadway proliferation, is there to remind us of the price we too often have to pay for the implementation of ideas that are considered only in the light of their technical merit.

Considerately applied, kinetic structures obviously have a valuable contribution to make to our times, providing we do not let them become just another fad or gimmick to foist upon our much maligned environment.

HENRY VAUGLE
Summit, N.J.

Bamboozled at Expo

Dear Editor: (Re: JUNE 1967 P/A): Conventional architecture and conventional architectural journalism are equally irrelevant to Expo 67. Nobody but the editors of architectural journals go to a World's Fair to analyze pavilions as isolated abstract designs, empty of exhibits and empty of people.

Only two things matter: How fares the ordinary visitor? What kind of an image is he getting?

Your lively essay on Expo is very good indeed, especially since you carry the heavy handicap of being an architectural editor. I agree with most of your comments, with a few most emphatic exceptions.

How on earth did you manage to miss the superlative Quebec Pavilion? You dismissed the Christian Pavilion which has the most bite of any exhibit at the Fair. You passed up The Indians of Canada which also carries a stunning message. You slighted Jugoslavia. After the visitor has been shoved through several cavernous fixed-circulation buildings, the serene Jugoslav pavilion is appreciated as an oasis of relaxation.

I am at a loss to understand how a person of your discernment could have been bamboozled by the infamous U.S.A. bubble. The hapless visitors are penned and hoisted like hogs at a slaughterhouse. The glowering portrait of LBJ at the entrance is the only example of Stalinoid personality cult at Expo. The rest of the nonexhibits are a disgrace to the U.S., an affront to Canada, and an insult besides to the entire world.

You are too patronizing of the USSR pavilion. It is certainly heavy-handed, but it is informative and sincere. Ironically, the visitors to the US pavilion are brutally regimented while the Russian building provides free circulation.

JOHN MAASS
Philadelphia, Pa.

(Chacun à son gout, *as they say. We* did *mention the Quebec Pavilion as being a sophisticated piece of work. The Yugoslavian Pavilion was, we felt, trite and of appalling workmanship. The Indians of Canada Pavilion did indeed tell a necessary and powerful message of a pitifully deprived people, a message that pertains on this side of the border also, unfortunately. More fortunately, the "glowering portrait of LBJ" was not there when we were, but the equally jingoistic head of Lenin* did *dominate the USSR show. And we fail to see that the USA exhibit, by dwelling on our lighter side and better nature, particularly in these times, fails by not blaring the trumpets and showing of tractors and hog-production statistics.* — ED.)

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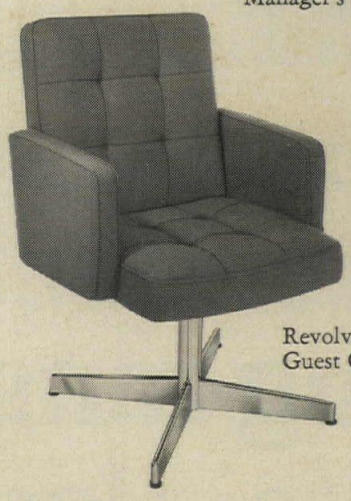
Manager's Office



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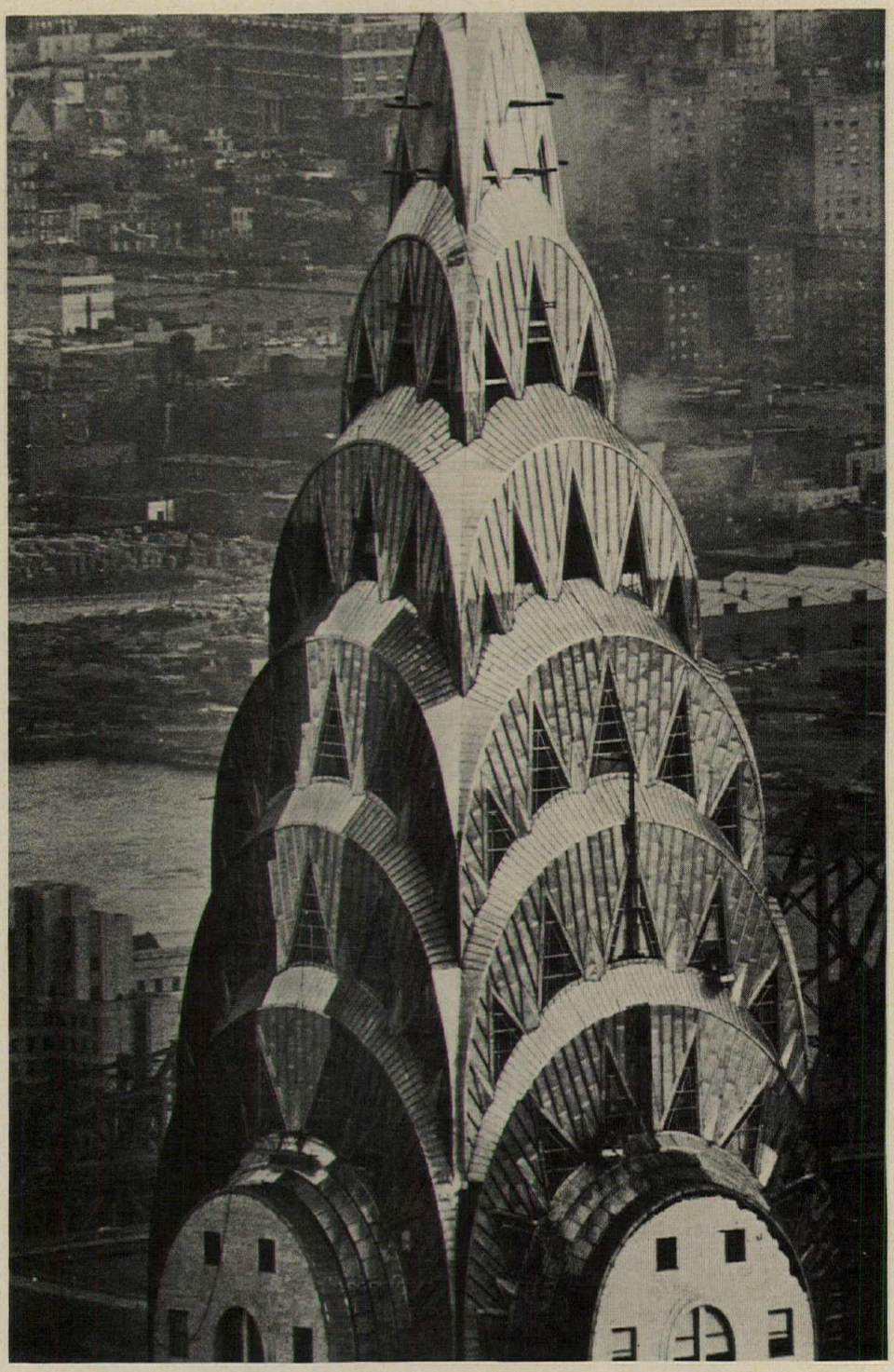

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Concealed Flashing	
Roof Penetration Flashing	Specify soft temper (dead-soft or fully annealed) AISI type 304 No. 1 (strip) or No. 2D (sheet) conventional annealed finish . . .
Miscellaneous Items	(Republic DUROFLASH) appearance – matte

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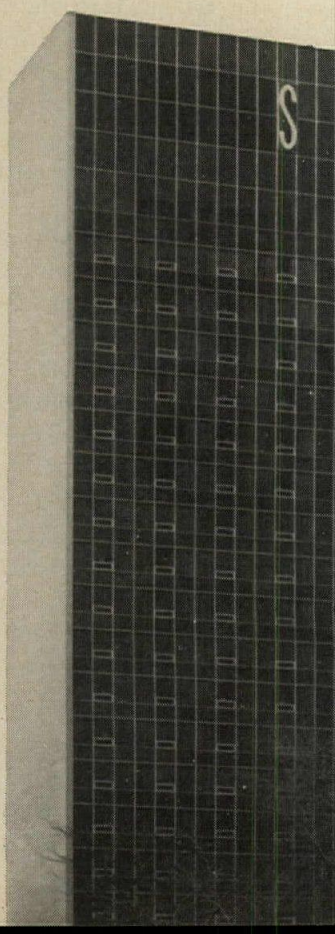

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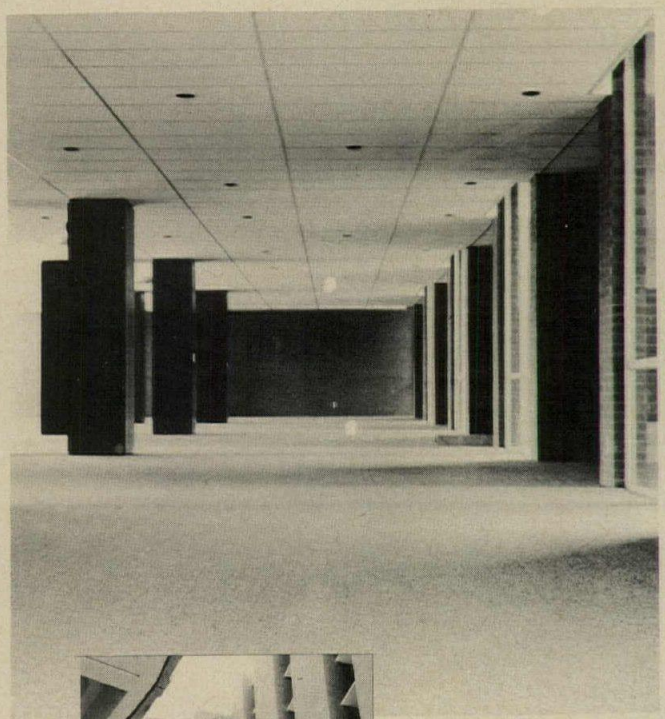

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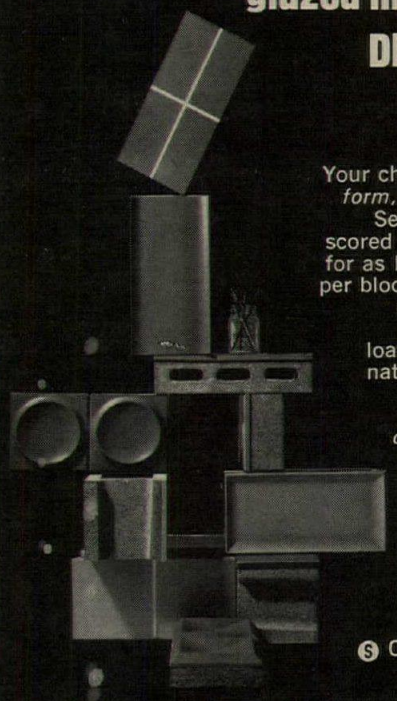

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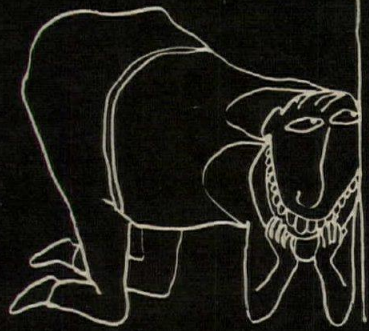

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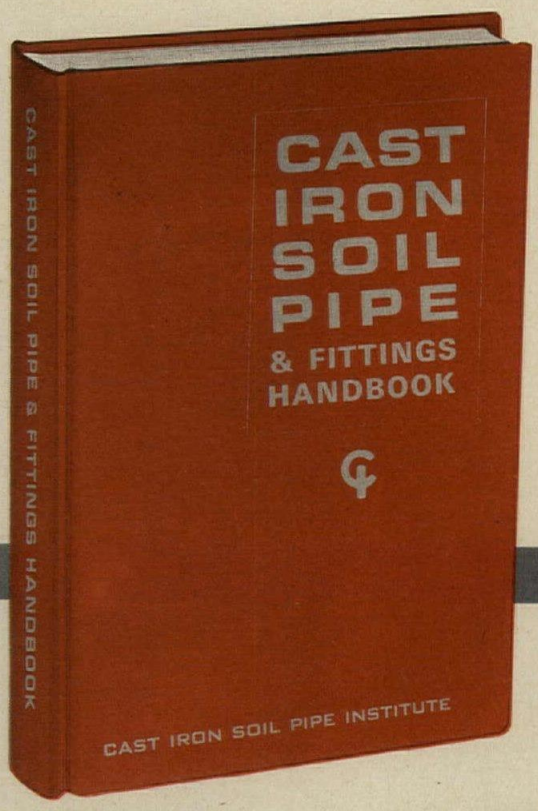

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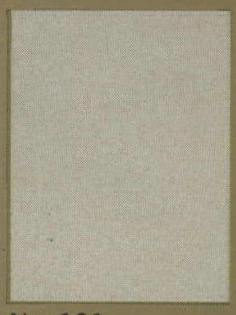

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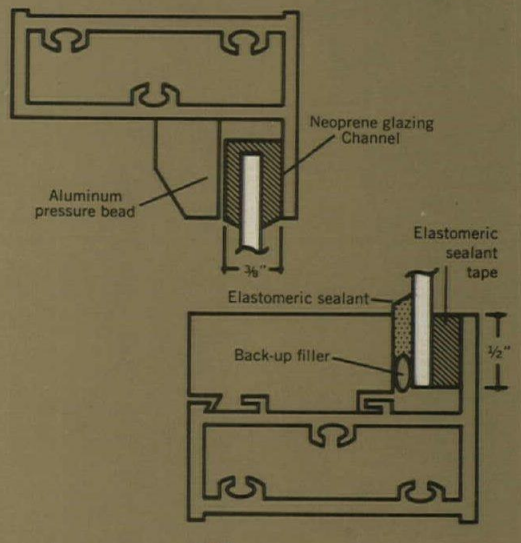

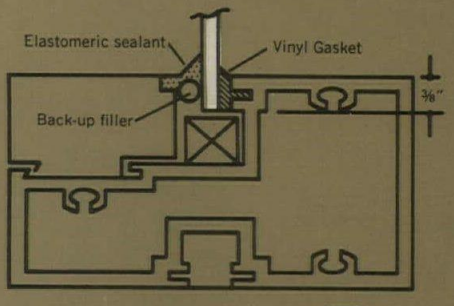

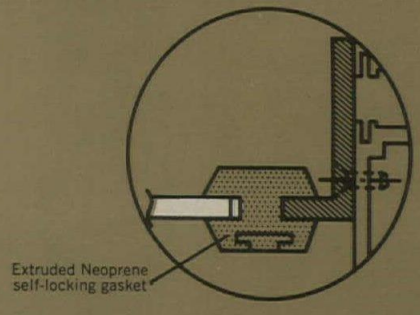

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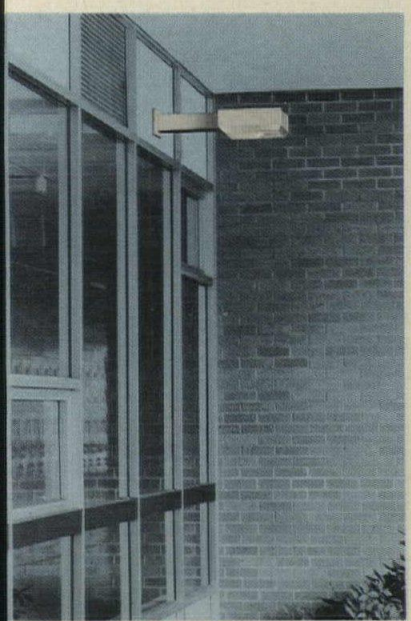

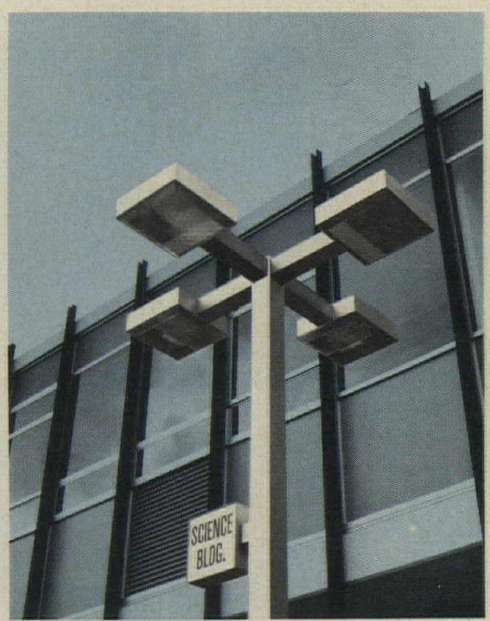

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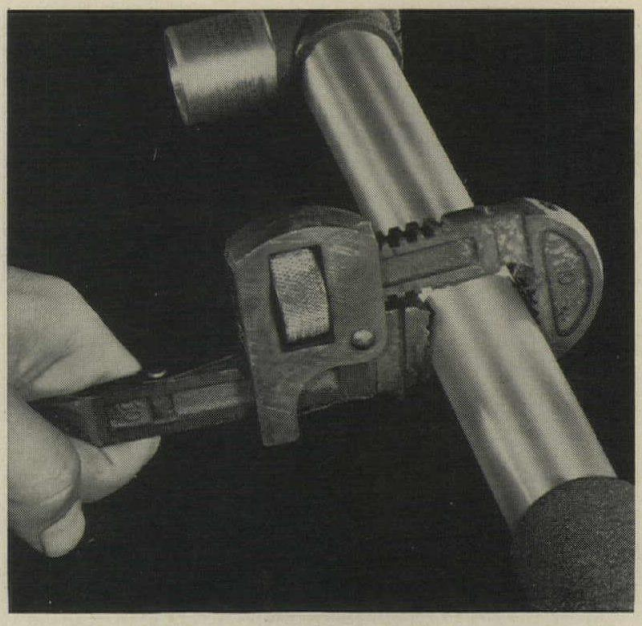

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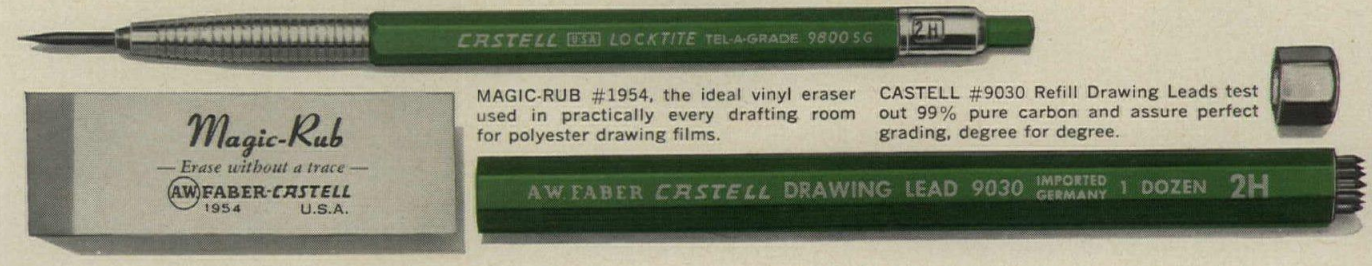

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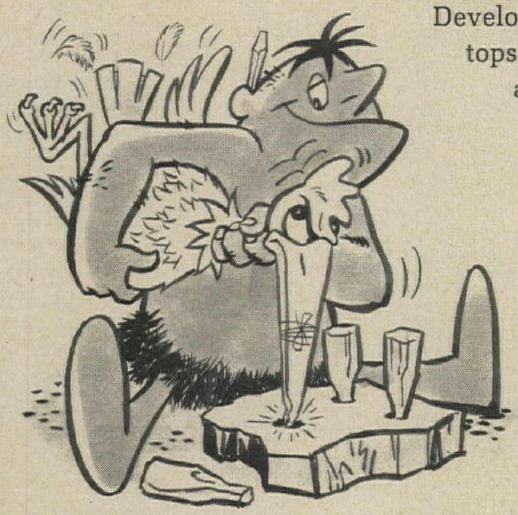

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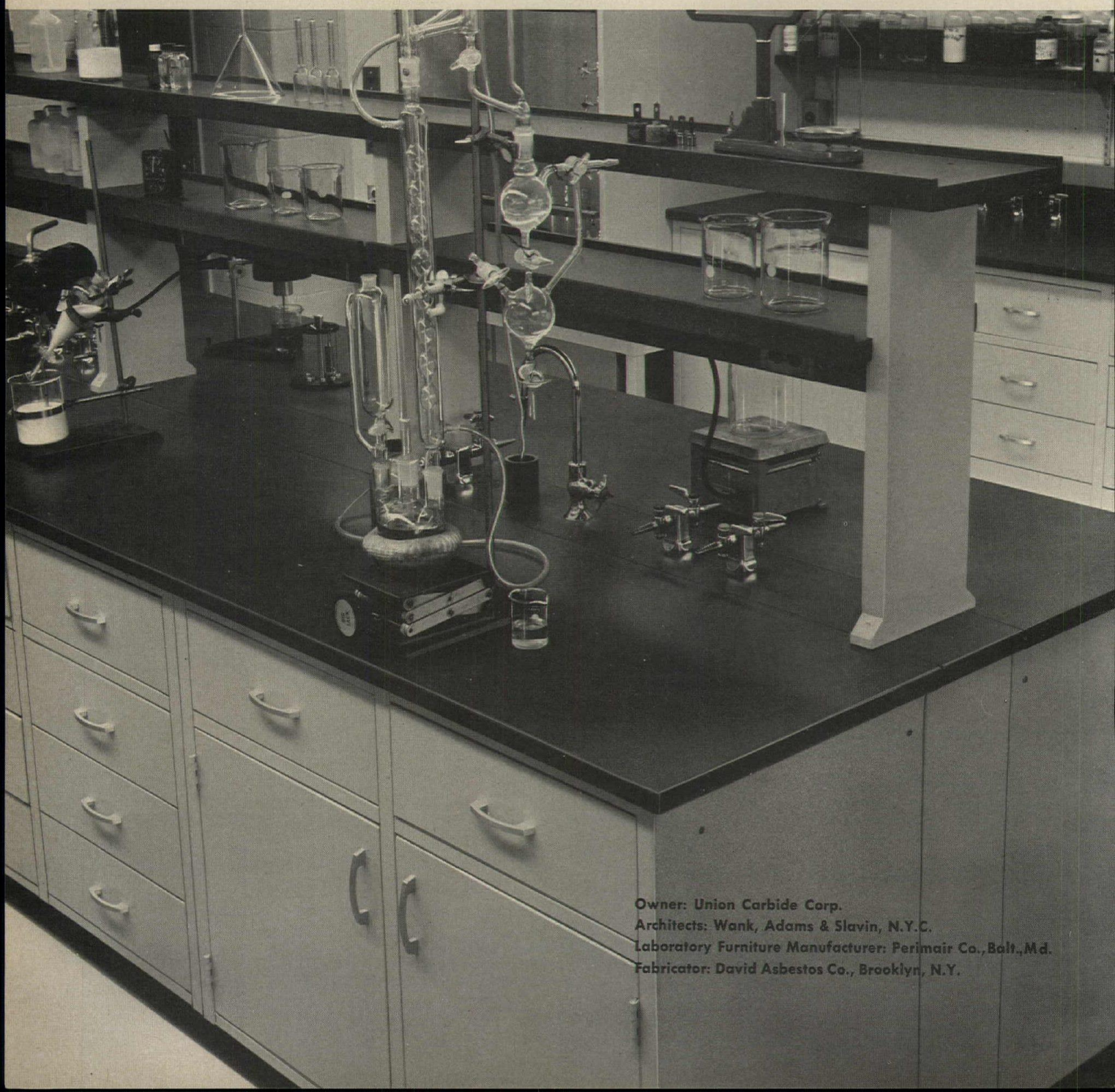

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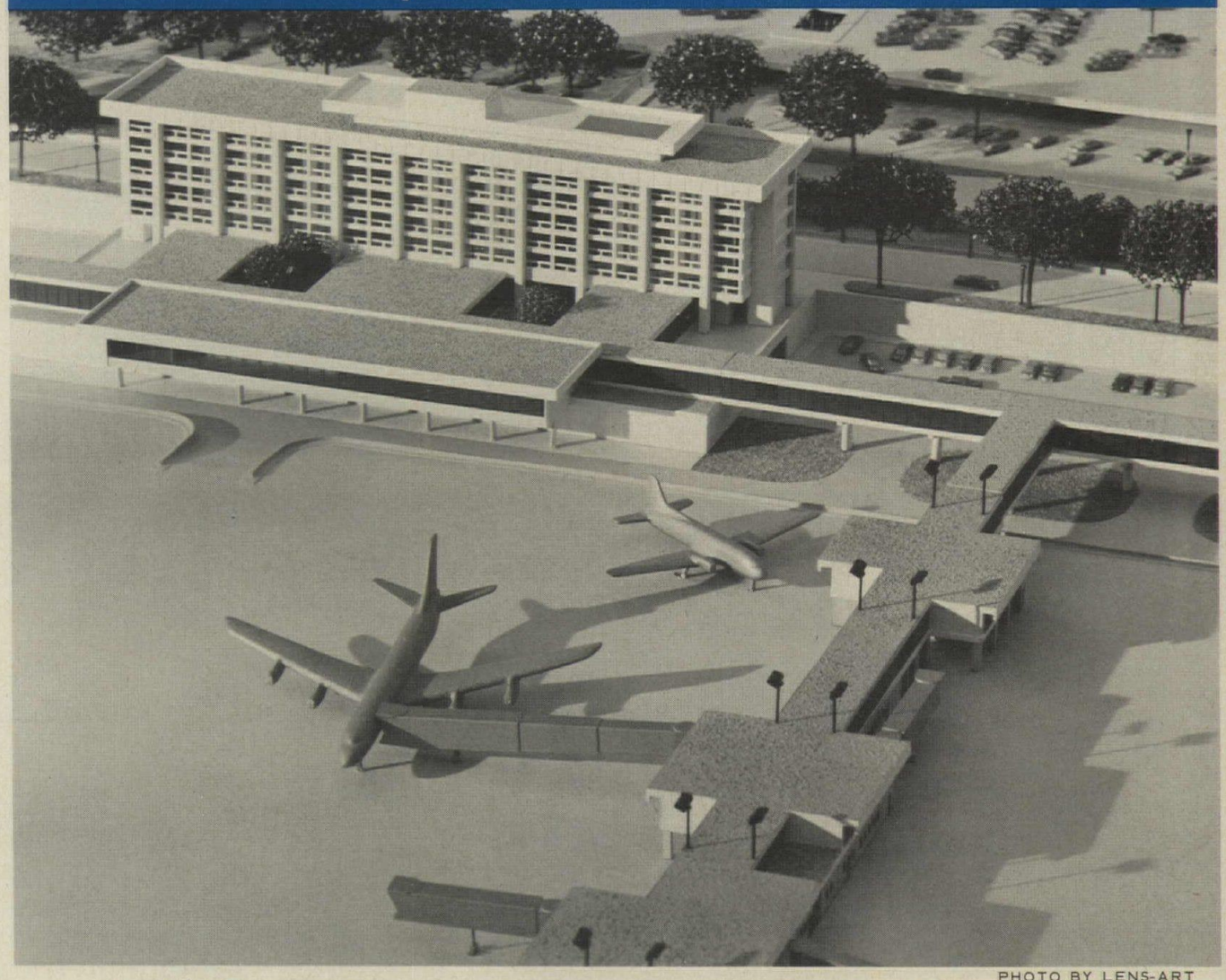

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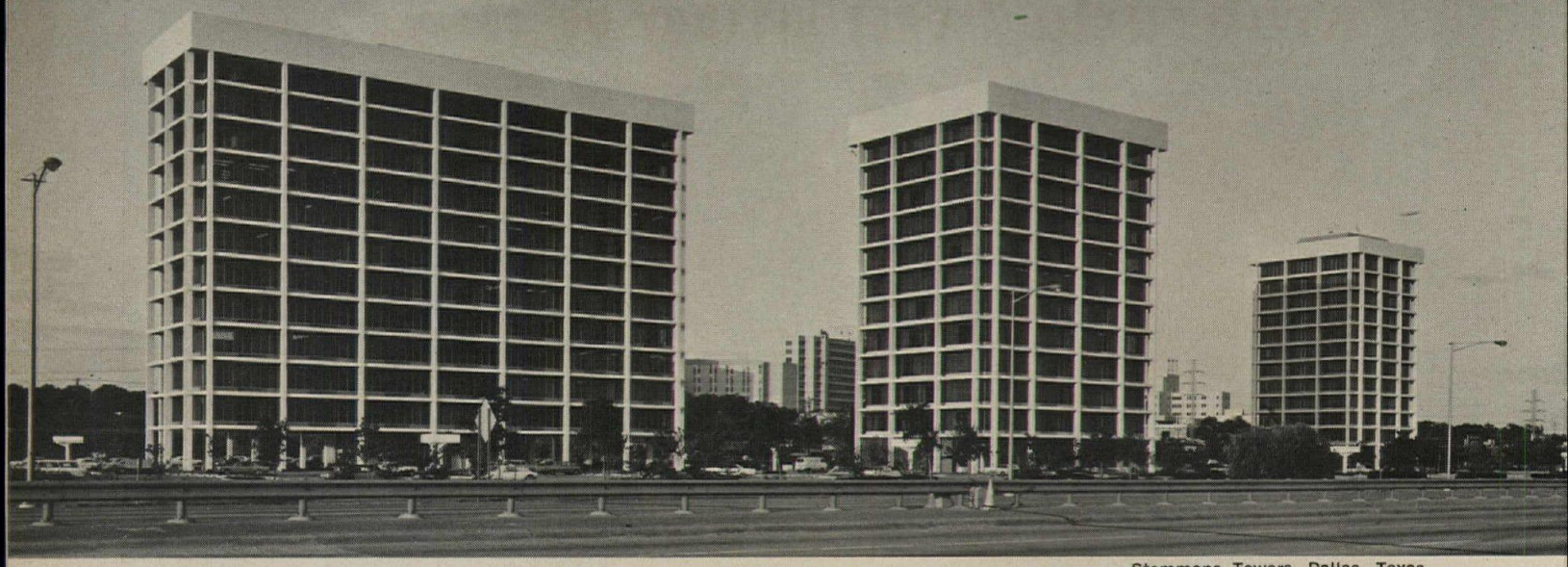

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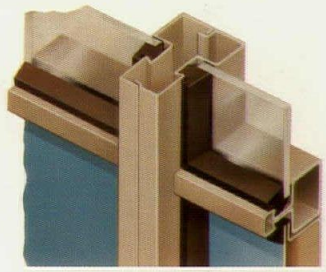

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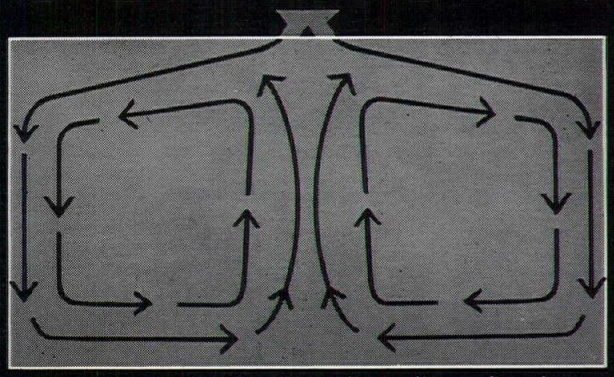

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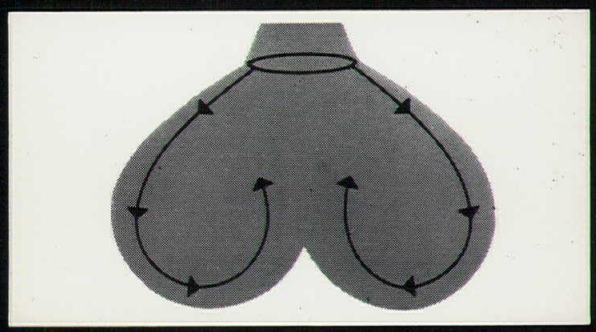

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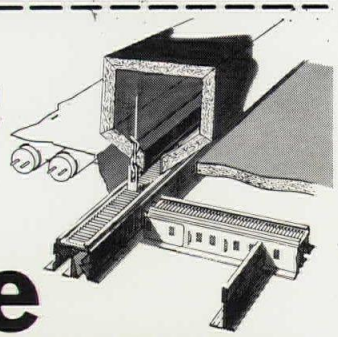

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P/A NEWS REPORT

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

OCTAGON RESTORATION UNDERWAY

WASHINGTON, D.C. J. Everette Fauber, a Lynchburg, Va., architect, started architectural research last month on the design of the Octagon House, AIA headquarters here. Following his research, Fauber will proceed with the Octagon's restoration. The AIA foundation, which owns the Octagon and which will operate it as a national landmark, is going ahead with restoration even though not all the money to cover costs has been raised. Built in 1799, the Octagon House served as the temporary White House for James and Dolly Madison when the British burned the Presidential residence in 1812. The Treaty of Ghent, which established a lasting peace with Great Britain, was signed in the Octagon Treaty Room.

NEW LEASE FOR RESTON

RESTON, VA. As almost everyone knows by now, the Gulf Oil Company took over management of Robert Simon's new town, Reston, in late September. (Simon is now chairman of the Gulf subsidiary that runs Reston.) What no one knows for sure is how the new management will affect the town's widely praised layout and design. Although apartment rentals at Reston are said to be moving well, house sales are so slow that interest payments on Reston's enormous debt, $15 million of which is held by Gulf, were in jeopardy. To service this $2,500,000 annual interest, sales have to be between 500 and 1000 units annually; sales last year were about 300 units. Simon's initial costs were monumental, for he not only assembled 7300 acres of rolling Virginia farmland, but he also built an entire village center, before starting a serious, aggressive sales effort. Gulf has the financial resources to shore up Reston's sagging economy, but whether or not it has the ultimate wisdom to maintain Reston's design excellence is a nerve-wracking question. It is widely thought that, as the design and financial success of Reston goes, so goes the direction of new towns in this country. If Reston becomes a hodge-podge of mediocre housing, it may be years before something like it is attempted again.

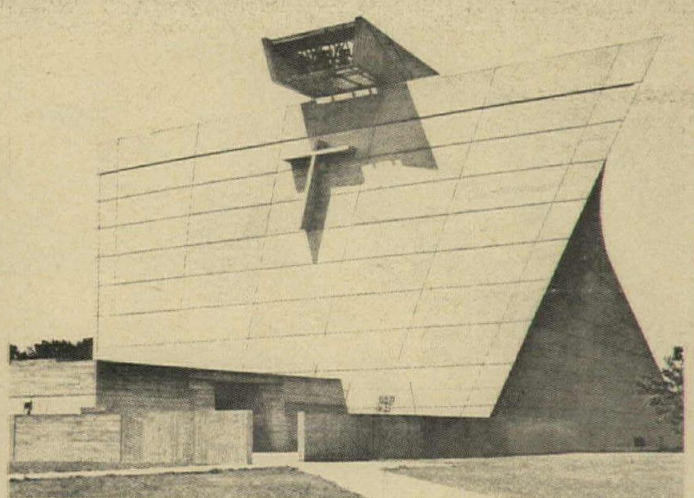
So far, statements from Gulf have been moderately inoffensive. "I do not plan to turn Reston into another subdivision," says Robert H. Ryan, who is running Reston for Gulf. But Ryan has also made statements about the undesirability of Reston's emphasis on "contemporary design," something that not everybody likes, according to Ryan. And while he feels that townhouses are sensible, he believes that, at Reston, they are ahead of their time. There is also the problem of cost. Most houses are in the $35,000 to $47,000 range. Ryan plans single housing on individual lots in a lower price range. What will its "more traditional" design be like?

Gulf must have believed in Reston initially, or it would not have invested in it so heavily. What is to be hoped is that it can use its financial resources and corporate marketing skill to speed development at Reston. "You have to listen to the market," notes Ryan. If Gulf is successful in attracting the type of market for which Simon intended Reston, then what he hears could be pleasant listening indeed.

BUILDING SYSTEMS RESEARCH GROUP FORMED

ST. LOUIS, MO. BIRD is the name of a recently established research and development group at Washington University's School of Architecture. The organization, whose full title is Building Industrialization Research and Development Group, will take on contract research projects and also pursue investigations of its own. The group will work closely with the School of Architecture. Students are to participate in the work as much as possible, and will be able to increase their knowledge of the industrialization of building processes through a special course in the subject offered by the architectural school. British architect Colin Davidson, specialist in the industrialization of building processes and developer of two housing systems, will head BIRD. Davidson has extensively studied the organization of building techniques and served as consultant in several countries.

BREUER CHURCH DEDICATED IN MICHIGAN



MUSKEGON, MICH. Marcel Breuer and Herbert Beckhard specified 7000 cu yds of concrete reinforced with 575 tons of steel for the walls, roof, and floor of St. Francis de Sales Church here. Dedicated in late September, the church will seat 1200 parishioners, who will be summoned to services by bells in a belfry that seems to balance horizontally on the peak of the roof. A rectory is attached to the church, reiterating the horizontality of the belfry, and serving as an anchoring focal point for the soaring backdrop of the steeply slanting church roof.

ARCHITECTS TO TAKE LUMPS

NEW YORK, N.Y. Architects participating in New York State housing programs will be compensated on a lump sum basis. State Housing Commissioner James W. Gaynor, who made the announcement in late September, at the same time called for architectural excellence in the planning and design of state-aided housing developments. The announcement, which may have far-reaching significance, came at a time when the percentage fee system was receiving increasing criticism. "What we are asking," said Gaynor, "is that the professional architect give his talents on the basis of the concept and location of the development, not its cost." Under the new arrangement, fee increases to architects on the residential portion of projects will range from 20% to 45%, and will be based on the number of dwelling units. For example, under the former percentage arrangement, an architect designing a 100-unit project would have gained a fee of $56,925. Un-

You can't beat City Hall . . . unless it's architectural precast concrete made by a Mo-Sai manufacturer

Toronto City Hall / Toronto, Ontario, Canada / Architects: Viljo Revell-John B. Parkin Associates / General Contractor: Anglin-Norcross /

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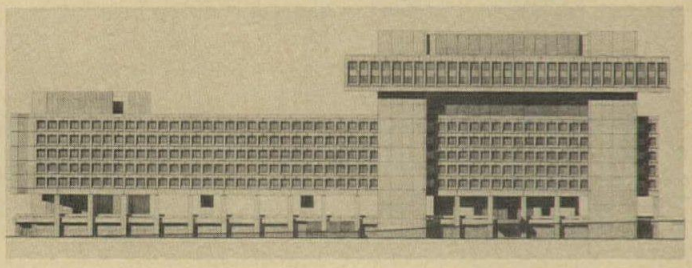
der the new schedule, he will receive $80,000. In addition, architects will be compensated for the design of areas and structures surrounding residential units such as swimming pools, community buildings, and decks. Also, under the new fee schedule architects will have to pay state-set minimum fees to their consultants.

FBI BUILDING GETS THE NOD



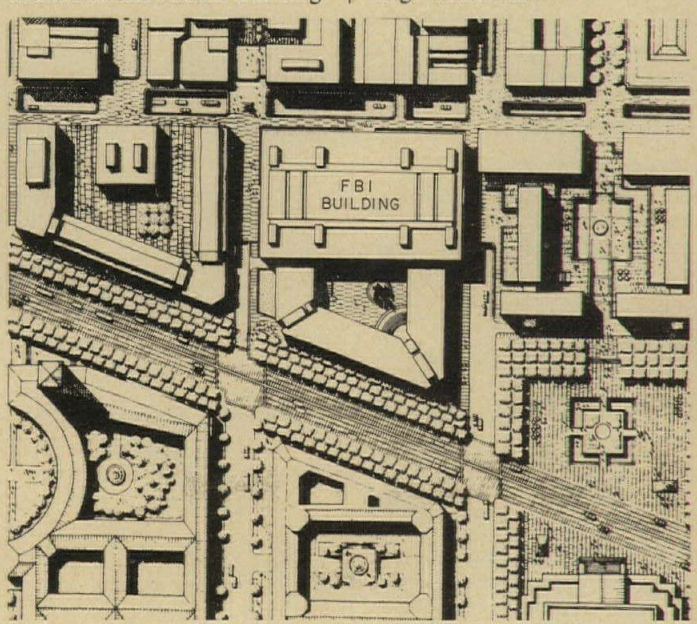
WASHINGTON, D.C. In what looks a little like a standoff, the new building of the Federal Bureau of Investigation will face the Justice Department across Pennsylvania Avenue. In the preliminary design stage for more than two years, the FBI building was approved in mid-September by the National Capitol Planning Commission.

The original design was criticized because the front façade did not parallel the avenue. Subsequent designs were questioned because of their detailing and corner treatment. However, the approved design, by C.F. Murphy Associates of Chicago, is crisp and dignified, competently fitting a difficult site. A setback of 75′ along Pennsylvania Avenue will leave room for the projected arcade of trees. A 78′ covered entrance will lead directly to a landscaped courtyard. And a tunnel will run beneath the avenue to the Justice building.

It will be the first major project to carry out the plans formulated by the temporary Commission on Pennsylvania Avenue, whose chairman, Nathaniel Owings, has said he believes the FBI headquarters will be the best building in Washington.

One of the commission's requirements was an open plaza one floor above Pennsylvania Avenue. This will extend from the avenue all the way back to E Street, from which it will be directly accessible.

The building will have three below-grade levels, comprising 700,000 sq ft; above grade will be 1,700,000 sq ft for laboratories, offices, and files. (Files will be held in the two upper hatlike floors at the E Street end of the building.) These two file floors are supported by eight towers containing mechanical shafts and stairs. Directly beneath the files will be a large cafeteria.



LARGEST DOLLAR VOLUME OF ARCHITECTURAL WORK EVER SEEN FOR 1968

Architectural work in the average U.S. office should increase 3% over the record level predicted for 1967 in last year's P/A Business Survey. Although much of this increase may merely reflect the ever-increasing budgetary slices being taken by labor and materials costs, the indication is that the sound economic health experienced by most architectural firms across the nation in the past few years will continue unabated. Respondents to the P/A survey indicate that the average office has $6,375,000 of work on the boards for 1968, compared with an average of $6,160,000 a year ago. And although the year's success will depend on the vagaries of what a respondent from Baltimore calls "the jolly economy," there are not present this time the many notes of caution, tinged with pessimism, found in last year's survey. The major concerns last year, of course, were with tight money, rising interest rates, and the general lack of available investment capital. This year's respondents are looking for a recurrence of the tight money situation. But their immediate concern is less feverish because, at this point, tight money is only a lurking demon — something yet to happen. More immediate concern is expressed about the alarming effects of the ever-rising wage-price-tax spiral. "Increasing material and *labor costs* — the latter dangerously high — may hold back considerable work," writes a small, four-man Buffalo firm with 48 years of experience. These costs are causing a clamor, more widespread than in the past, for the exploration of new construction systems and techniques.

Industrial Work Doubles

The amount of industrial work in the average office will more than double next year, following this year's 23% slump (Table III). Multiple housing will register a significant 29% gain, following a year when the effects of overbuilding were being absorbed. The outlook for single private residential housing, however, is bleak. At this writing, architects across the country have 31% less private housing on their drawing boards than they did at this time last year. Last year's business survey accurately forecast the upturn in private housing, which finally materialized this fall. But hampered by rising costs, private single residential housing will slow down again next year, perhaps considerably.

Gains Seen for Commerce, Health, Public Use

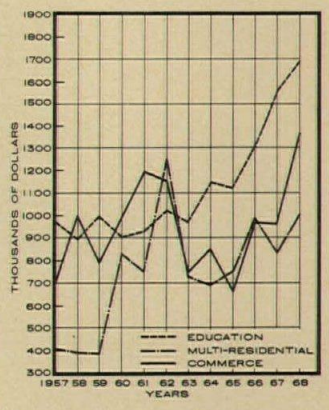
Architecturally-designed Public-Use projects will see a 16% increase over last year's mammoth 90% rise. Also registering significant gains will be Commerce (43%) and Health (35%). Education continues its steady rise with an 8% increase. And Defense and Space show the continuing expansion of the military budget with a 7% gain. Thirty two per cent of all architectural work in 1968 will be for the government — Federal, state, and local. It is interesting to note that, although there will be a general increase in architectural work averaged nationwide, work in seven of the ten responding regions will drop from last year's levels. Responsible for the overall gain are whopping increases in Texas and the Northeast. Architectural work in the average Texas office is seen increasing two-and-one-half times; in the Northeast, 50%. Major losses will be in California-Nevada-Hawaii (57%), the Gulf states (30%), the Northwest (29%), and the Southeast (25%). Texas replaces California-Nevada-Hawaii as the nation's most active area.

Low-Rise Commercial Is Top Category

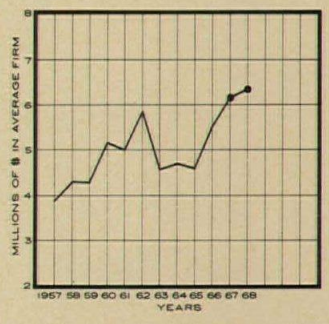
For the past four years, Education has been the most active category of architectural work; in 1968, Low-Rise Commercial will provide work for the greatest number of firms (Table IV). It will be the leading category in seven of the ten regions. Education will be the leader in three regions: Northeast, North Central, and the Central states. In California-Nevada-Hawaii, private single residential will share the most active category with Low-Rise Commercial, both providing work for 43.9% of the offices there.

High Percentage Already in Working Drawings

Since 45% of the work now in architectural offices for 1968 is already in the working-drawing stage, the first half of the year should be strong. Last year, at this time, only 39% of all work was in working drawings.



Three most active building categories are plotted for last 12 years, showing dollar volume in each category in an average firm. All categories show healthy growth for 1968.



Twelve-year breakdown of dollar volume of business in average firm shows uninterrupted growth in architectural business in last three years. Survey shows that 1968 will be busiest year for architects since survey began in 1957.

Specialization

The number of firms reporting work in only one category (10.7%) is up slightly from last year (Table V). No one reports specialization in Defense or Recreation. And this year, both single, private residential work and commercial work are more popular specialties than Education, which led in the past two years.

Commercial Work More Widespread

The percentage of firms reporting work in a particular category is itemized in Table IV. Table III shows the dollar volume in each category in a hypothetical composite average office. In all, 61.7% of firms report work on commercial structures. Commerce, which was the most popular category last year, has grown this year by a few percentage points. The greatest dollar volume generator in our average office is still Education, although only 44.3% of the firms report work in this category. Slightly more than 40% of the firms report Residential work. Religion and Health are next in line.

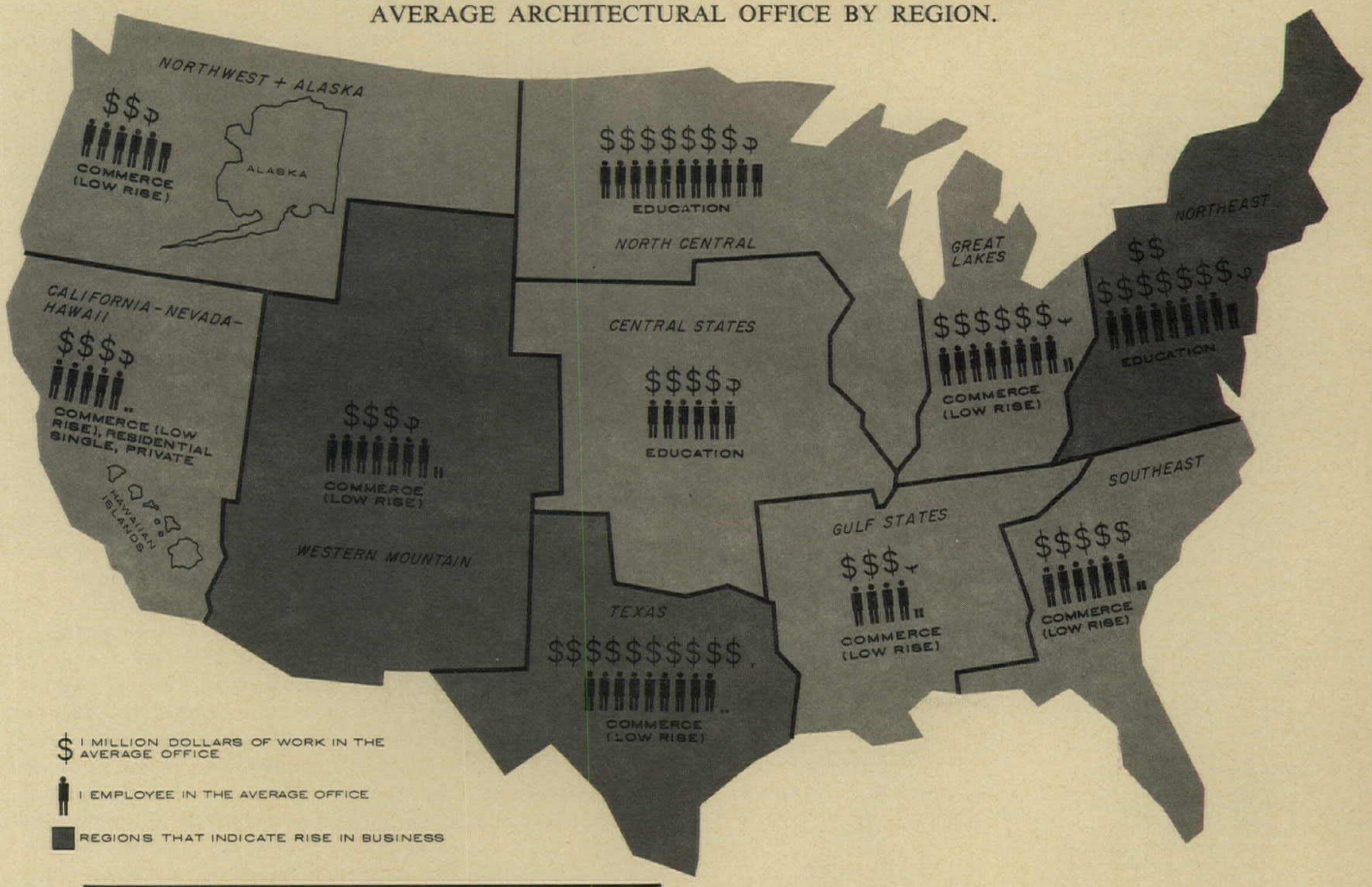
Firm Size Shifts Downward

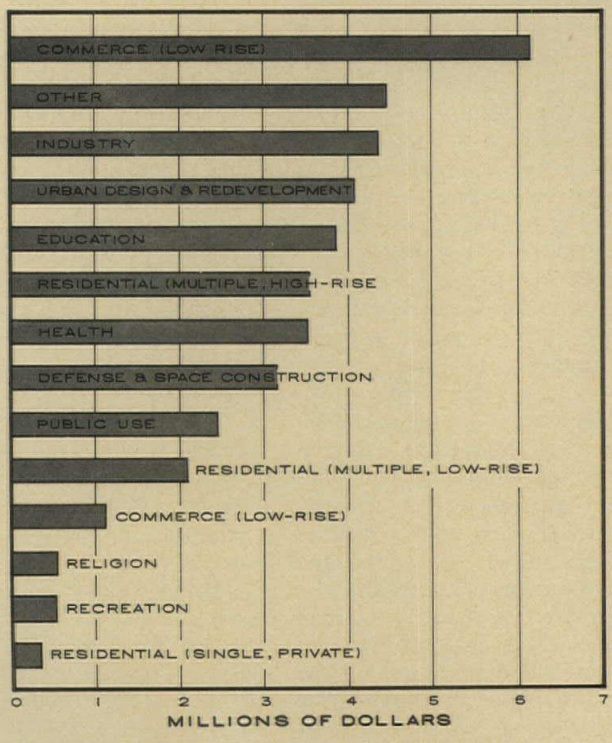
"The large office will take over more work that previously was handled by the small practitioner. Eventually, the very small office will cease to exist," writes an architect with a one-man office in Sherman Oaks, Calif. P/A, however, finds no such trend underway. True, there will be a slight increase in the percentage of offices employing more than 100 persons, from .97% to 1.3%. But the percentage of offices with more than 40 employees will fall off slightly and by far the largest gain will be registered by offices with four or fewer employees — a jump of about 4½ percentage points — from 57.6% of all offices to 62%. There will also be a slight gain in offices with from 10 to 19 employees and a slight dip in offices employing from 5 to 9 persons. Dollar-volume figures bear out this slow shift to smaller offices, with 88.4% having less than $10 million of work in progress, compared with 84.7% at this time last year. Those with over $50 million on the boards will rise one cautious percentage point. And a four percentage drop will occur in the middle range — firms with from $10 to $50 million of work under way. The number of full-time employees in our hypothetical average office, excluding clerical help, is 7.5, and its dollar volume average is $6,375,000. It has been in business 12.5 years.

Looking Back

When asked the reasons for the increase in architectural business during the past 15 years, most respondents mention the population growth, the relatively long period of prosperity, and the extra boost provided by a war-time economy without the stringency imposed by an all-out war. Some cite the increasing complexity and sophistication of contemporary society. According to one San Francisco practitioner, "a more complex and interrelated society that demands from the profession a more comprehensive service" is the reason for the increase. He also recognizes "greater demands for better health and education facilities." Urban renewal is given part of the credit. "The realization that cities must renew their central cores," is the reaction of one Pittsburgh architect, who feels that architects have exploited this realization. If society has become more sophisticated, so have clients, and many have come to realize that "good design can save money," notes a respondent from Santa Rosa, Calif., who also points out an "increasing desire of clients for quality construction." But even while

U. S. MAP SHOWS DOLLAR VOLUME AND NUMBER OF EMPLOYEES IN AVERAGE ARCHITECTURAL OFFICE BY REGION.





Not every office has work in each building category. Bar graph shows the average dollar volume of work done each category by firms having work in that category.

TABLE I

Number of Firms Reporting and Regional Distribution

Region	No. of Firms	% of Firms
Northeast	212	28.5
California-Nevada-Hawaii	92	12.4
Great Lakes	74	9.9
North Central	70	9.4
Southeast	69	9.3
Central States	57	7.6
Northwest	49	6.6
Texas	45	6.0
Gulf States	41	5.5
Western Mountain	36	4.8
Total Response	745	100.00

Percentage of respondents in the Western Mountain states has fallen off slightly with the percentages from the Central and Northwest states increasing. Otherwise, the percentage distribution of firms throughout the U.S. is much as it was last year.

TABLE II

Dollar Volume in the Average Office by Region

Region	Average $ Volume
Texas	10,111,111
Northeast	9,383,255
North Central	7,507,143
Texas Lakes	6,234,589
Southeast	4,757,246
Central States	4,592,105
California-Nevada-Hawaii	3,672,554
Western Mountain	3,517,361
Gulf States	3,207,317
Northwest	2,619,792
National Average	6,375,000

The average office in Texas is this year's dollar-volume leader. Texas takes over the lead from California-Nevada-Hawaii, whose average office dollar volume has fallen off by more than 50%. Last year the California region saw a spurt of activity. For 1968, the activity there will return to a more traditional level. The average office in Texas, however, will more than double last year's volume. The average office in the Northeast will see a 50% rise. National average is up $200,000 over last year.

acknowledging the gains in architectural business (an acknowledgement made grudgingly by some), some worry about the inroads on the profession made by package builders and by the damaging effects of a too-rigid fee structure. Some attribute the growth in the profession to the increasing quality of the architectural press.

TABLE III
Dollar Volume Averages and % Distribution of Work by Types of Buildings in All Regions

Type of Building	% of All Firms' Work	$ Volume in Average Office
Education	21.5	1,692,413
Commerce	17.3	1,361,154
High Rise	(10.4)	(818,665)
Low Rise	(6.9)	(542,489)
Residential Multiple	13.7	1,077,617
(Low Rise)	(7.7)	(608,194)
(High Rise)	(6.0)	(469,423)
Health	12.1	947,496
Industry	11.6	908,801
Public Use	7.2	569,575
Other	5.8	458,496
Urban Design & Redevelopment	3.3	258,194
Defense and Space Construction	2.6	206,449
Religion	2.2	176,479
Residential Single Private	1.5	119,423
Recreation	1.2	92,413

The amount of Commercial work being done in the average office has gone up since last year, as have Urban Design and (slightly) Defense. There is more Urban Design work than Defense work in the average office. The amount of Industrial work in the average office is more than double last year's volume.

TABLE IV
Activity of Architectural Firms in Types of Buildings

Types of Buildings	% of Firms Reporting Current Work
Commerce	61.7
(Low Rise)	(48.3)
(High Rise)	(13.4)
Education	44.3
Residential Multiple	42.4
(Low Rise)	(29.3)
(High Rise)	(13.1)
Residential Single Private	38.1
Religion	30.8
Health	27.0
Public Use	23.4
Industry	20.8
Recreation	17.9
Other	10.3
Defense and Space	6.5
Urban Design-Redevelopment	6.4

Most U.S. firms have work in more than one category, so percentages add up to more than 100. Percentage of firms doing recreational work has bounded from less than 2% to almost 18%. Otherwise, percentages are roughly comparable with those a year ago.

Looking Ahead

What factors will affect the profession in 1968? Most respondents worry about inflation and a return of tight money — "mortgage market, construction costs, land availability," notes a Ft. Lauderdale, Fla., architect succinctly. "The irony," according to a Milwaukee architect concerned with the spiraling costs of wages and materials, "is that the clients want more and more for less and less, and public bodies want to put these services on a competitive basis." Not everyone, of course, shares this pessimism. "We seem to be getting better budgets," notes a firm in Lexington, Ky., which has been in business for two years and reports a 100% increase in business over the last year: "This appears to be the result of a better educated clientele. We also seem to be getting better fees."

Some see rapid transit as making a considerable impact on cities, as persons "shift from the private auto to more efficient ways of getting around." On the other hand, some see the effects of road-building taking hold, opening new areas outside cities for expansion and building. Unquestionably, the practice of architecture is becoming more complex, and a systems analysis approach to environmental problems is mentioned as increasingly affecting the thinking of the profession. But as this complexity grows, so does the search to bring order out of it. Perhaps in one area the order is beginning to prevail. When asked what would affect the practice of architecture, one New York architect replied tersely, "The Pill."

TABLE V
Specialization of Architectural Firms

Types of Buildings	% of Firms Doing Only This Type of Work
Residential Single Private	2.3
Commerce	2.0
(Low Rise)	(1.7)
(High Rise)	(0.3)
Education	1.9
Residential Multiple	1.2
(Low Rise)	(0.7)
(High Rise)	(0.5)
Religion	1.1
Health	0.8
Industry	0.8
Public Use	0.4
Urban Design	0.1
Other	0.1
Recreation	0.0
Defense & Space	0.0
Total	10.7

Total specialization has increased since last year. No firms specialize in Defense or Recreation.

TABLE VI
Sizes of Architectural Firms

Size of Firms by $ Volume of Work on Boards	% of National Total
Under $1 million	28.8
$1-$10 million	59.6
$10-$50 million	9.0
$50 million or over	2.6
Total	100.0

Size of Firm by Number of Employees	% of National Total
Up to 4 employees	62.0
5-9 employees	19.6
10-19 employees	11.5
20-39 employees	4.1
40-99 employees	1.5
100 and over	1.3
Total	100.0
Average number is 7.5	

Percentage of firms with up to 4 employees has increased over four percentage points, and at the same time percentage of firms with more than 100 employees has increased slightly. Percentage of firms with from $1 to $10 million on the boards is up over four percentage points. Firms with over $50 million is up one percentage point.

SCHOOLS

Yale University has announced the appointment of Howard Sayre Weaver as Acting Dean of the School of Art and Architecture, pending the appointment of a successor to Gibson A. Danes, who resigned July 1. Yale's Department of Art and Architecture has redesigned its degree program. Starting this year, the basic, three-and-a-half-year course will lead to an M.Arch. degree instead of a B.A. The current, one-year Master's program will be dropped from the curriculum, and replaced by a two-year course leading to the degree of Master of Environmental Design. To qualify for the M.Arch. degree, students must already hold a B.A. or B.S. degree . . . **Princeton University** is establishing a Research Center for Urban and Environmental Planning that will function within the School of Architecture. The new center will involve departments ranging from biology to engineering. Bernard Spring, Senior Research Architect and Lecturer, will head the center and coordinate research . . . Jean Labatut, who retired this summer from his professorship at Princeton, has been named Visiting Professor of Architecture at **Rice University's** School of Architecture . . . Professors Linwood J. Brightbill, Stephen J. Tang, and Ronald Reach of the **University of Illinois** have received a $7500 grant from the American Iron and Steel Institute to develop a steel roof-framing system for a dome-shaped roof . . . **Cornell University** has a new name for an old college. The change from College of Architecture to College of Architecture, Art and Planning acknowledges independent operation of the school's departments . . . Richard J. Hunter of Los Angeles, Calif., has been appointed associate professor and visiting design critic in the Department of Architecture at **Pennsylvania State University** . . . Jayanta Chatterjee has joined the faculty of architecture at the **University of Cincinnati** . . . Cornell University and the Museum of Modern Art have recently formed the **Institute for Architecture and Urban Studies.** The group, under the direction of Peter Eisenman, on leave from Princeton, will attempt, through teaching and publications, to bring graduate students of architecture closer to the nuts-and-bolts problems of urban areas. Aim of the institute is to make architecture more relevant to social ideas and problems . . . Renewable grants of $600 have been awarded to five undergraduate students of engineering and architecture under the Sverdrup & Parcel & Associates Scholarship Awards Program. Winner of the architectural award was Richard D. Olson, fifth-year student at the **University of Minnesota** . . . James R. Hauber, Ph.D. candidate at **Stanford University,** has been named winner of the Robert J. Painter Memorial Fellowship offered by the American Society for Testing and Materials. The Fellowship carries a stipend of $1500 for the university and $5000 to be used by the Fellow in his study of materials science.

STONE ON WILSHIRE

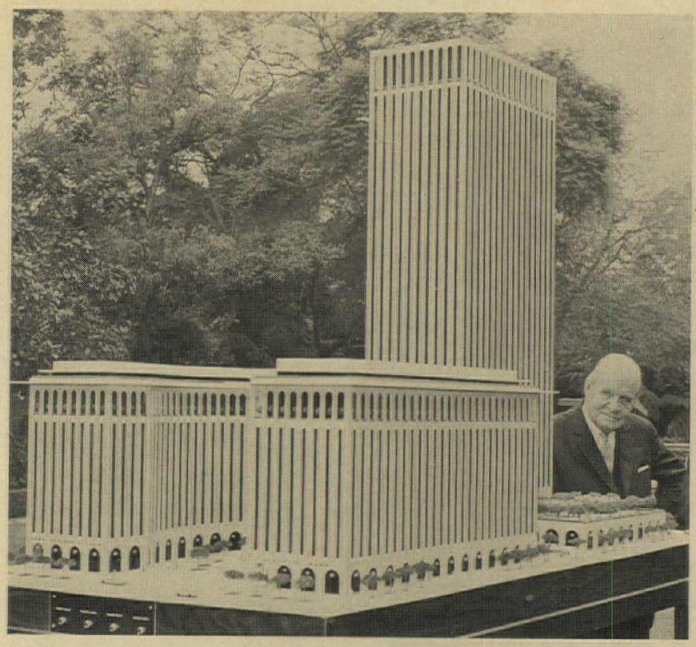
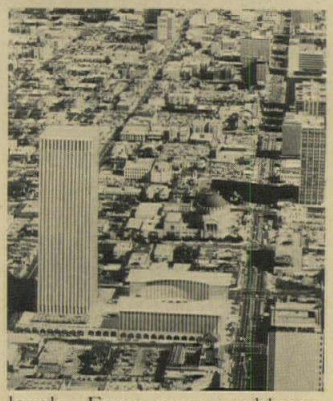


Photo: Rothschild Photos

LOS ANGELES, CALIF. More than 10,000 tons of travertine marble, shipped from Italy, will be used as facing for the structural steel columns of Ahmanson Center, a $75-million, three-building financial office complex on Wilshire Boulevard here. Designed by Edward Durell Stone, the center, with its 40-story tower and twin 10-story portal buildings, will become a dominant feature of this section of L.A. The portal buildings have gently curved inner façades, between which will be an oval plaza with pool and fountains, held the way two curved hands might hold an egg. A landscaped plaza on an upper level will surround the 40-story tower.

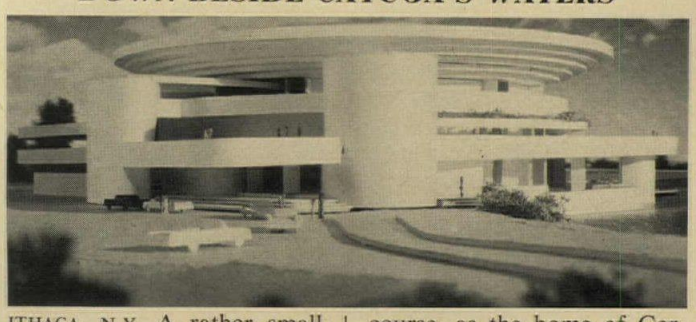
In all, the full block site encompasses about 4 acres; garage space, capable of accommodating 2000 cars, will be located in four underground



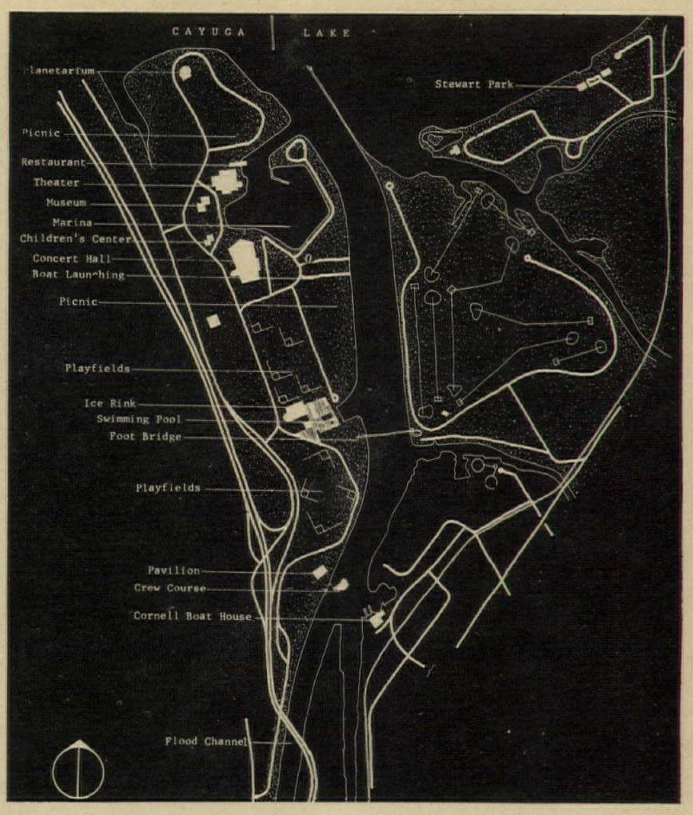
levels. Even more emblematic of Los Angeles will be the buildings' total mechanization.

Each office will be individually soundproofed, for instance, and closed-circuit television will be available for tenants, with individual built-in television sets. Radiant heating will be used beneath the plaza to keep temperatures comfortable, even during a cool spell.

DOWN BESIDE CAYUGA'S WATERS

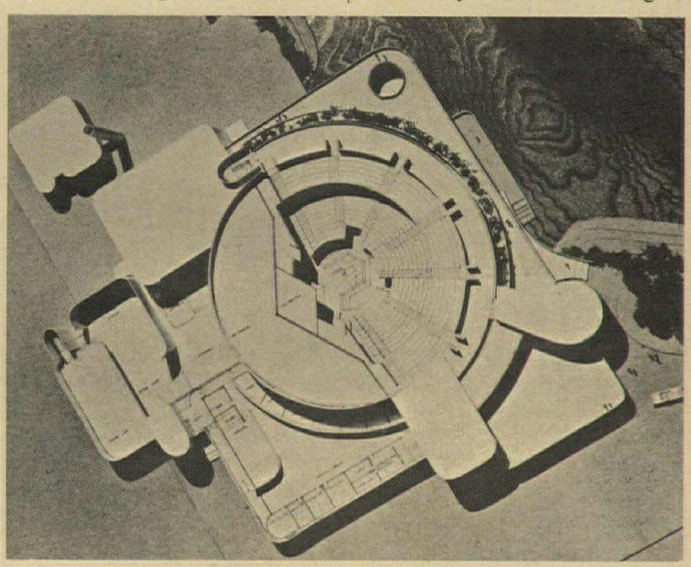


ITHACA, N.Y. A rather small city that lies at the foot of the long glacial hills that snake in and out among the Finger Lakes of upstate New York, Ithaca is known primarily, of course, as the home of Cornell University. The university campus, set atop one of three slopes outside the town, and the campus of Ithaca College, which dominates the



brow of another steep incline, have long been the scenes of most of Ithaca's cultural and intellectual activity. Presently, however, the "townies" (including representatives of local, state, and Federal Government and people from the university) are working hard on plans to establish a comprehensive regional base for recreational and cultural activities.

A great deal of local energy (and money) has been poured into a project to develop 415 acres of open land on the south shore of Lake Cayuga. A master site plan, prepared by Egner & Niederkorn Associates (with Zion & Breen of New York City acting as landscape consultants) and funded by the city, shows a 450-boat marina to be constructed by the State of New York, an 85-acre recreation complex to be built by the City of Ithaca, a Federally-constructed flood-control channel that will double as a fishing and boating stream and intercollegiate crew course, and an ambitiously conceived cultural center, to be built by a private corporation known as the Center for the Arts, Inc. The center of the cultural complex will be a 1700-seat repertory theater designed by Fairfield & Dubois of Toronto, Canada. Seating will be arranged in a 150° arc around an open thrust stage. Stage design was done by Theater Designer



Desmond Heeley. Prior to the preparation of a design proposal, representatives of the Center corporation consulted with Fairfield & Dubois, who were designers of the Shakespeare theater at Stratford, and with the Center's artistic director, Alan Schneider. The building, which will be fully air conditioned, will encompass 80,000 sq ft of working space, including scenery and costume shops, rehearsal stage, and administrative offices. Other facilities planned for future construction are a concert hall, museum-*cum*-exhibition hall, and a children's center. All these will be built by the Center for the Arts, Inc.

Presently, architects are completing working drawings for the theater, and construction is scheduled for early next spring. Construction plans are contingent, however, on a loan being granted by the State Dormitory Authority. Although most of the funds needed to finance the total site development have already been raised, the Center corporation must still raise $2,500,000, nearly 80% of the cost of the theater building. A special act of the state legislature empowered the Dormitory Authority, a bonding agency, to finance the project, but before bonds can be issued, the authority is seeking assurance that the corporation has on hand sufficient money to pay service charges on the debt.

The complex is scheduled to be completed in 1970.

AWARDS

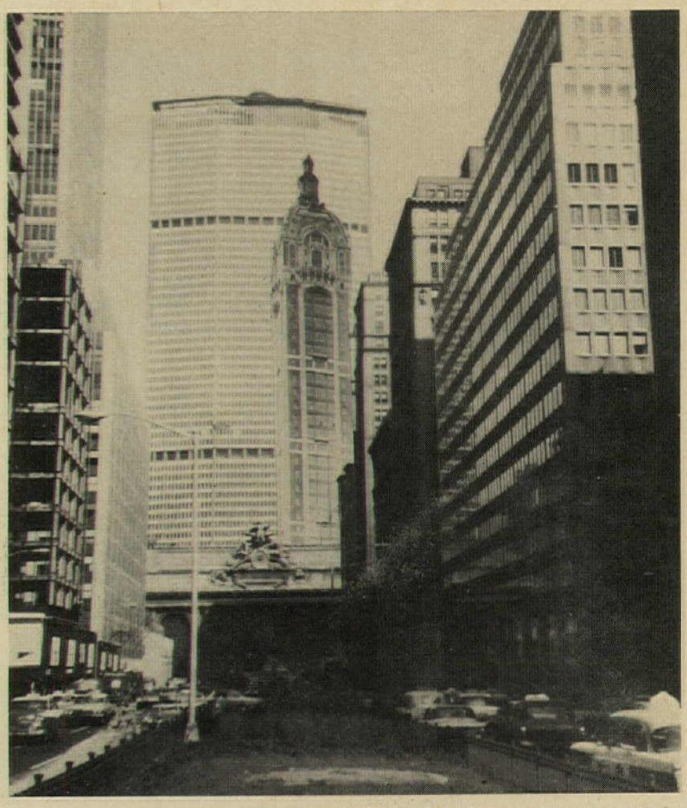
The U.S. Department of Defense, in cooperation with the AIA, has selected winners in its National Fallout Shelter Design Competition. Grand Prize winner was the Houston, Tex., firm of **Brooks & Brooks** for its design of a community center incorporating public shelter facilities. First-, second-, and third-prize winners were also chosen in each of seven regions of the U.S. . . . For the first year, the Albany Area Chamber of Commerce honored six architectural projects in its Beautification Awards Program. Awards went to: St. John's Evangelical Lutheran Church, designed by **Blatner, Mendel & Mesick;** IBM Building, by **Carl J. Petrilli;** offices for Aird Island, by **Donald J. Stephens Associates;** Colonie Country Club, by **Blatner, Mendel & Mesick;** Marine Midland National Bank of Troy, Latham Office, designed by **Turley, Stievater, Walker, Mauri,** and State University of New York Dutch Quadrangle, landscaping by **Clark & Rapuano.**

SOUTH OF LINCOLN CENTER

NEW YORK, N.Y. Fordham University, which already has one building adjacent to New York's controversial Lincoln Center (the Fordham Law School, completed in 1961) has another one under way there. To be called the Leon Lowenstein Center, the $13,500,000 academic building will house four colleges: a new liberal arts college, the Robert I. Gannon School of Education, the Joseph Martino School of Business Administration, and the school of social service. There are 8000 students enrolled in these schools, and it is expected that the new building will be able to accommodate 3000 of them at one time. A plaza with a reflecting pool will lead to the building's entrance. Completion is expected in 1968. White precast concrete will cover the steel frame in what one source describes as an attempt to complement the white travertine mullions of the Metropolitan Opera House, which it faces. Fordham also plans a library and an additional classroom building in the area.

Architects for the design: Perkins & Will. Supervising architects and engineers: Slingerland & Booss.

A GRAND AND CENTRAL PROPOSAL



NEW YORK, N.Y. An announcement by the New York Central Railroad that it would like to put a high-rise office building on top of the Grand Central Station waiting room aroused architectural comment last month. Most of it came form New York architects, who wanted nothing to do with it and wanted no one else to either. So far has the desecration of New York's fine old spaces progressed that whoever contributes to the next defilement will be about as popular as a WCTU member at Hurley's Bar. P/A's art director Richard Lewis proposed the above solution to the space problem. Instead of tearing down the Singer Building (see pp. 170, 171, SEPTEMBER 1967 P/A), he would move it to the air rights above Grand Central. The railroad would have its office space; the Singer building would have the Pan Am Building as a backdrop and New York would have two of its landmarks— a diminishing breed — in a central location where one could see both of them without taking a long walk.

OBITUARIES

Benjamin Bailyn, an associate in the New York City firm of Smith, Haines, Lundberg & Waehler, died July 21 at the age of 55. He served as supervising architect for the Engineering Quadrangle at Princeton University, for the Allied Chemical office building and the Esso Research Laboratory in New Jersey, and for the rebuilding of the Times Tower in Manhattan for the Allied Chemical Corporation.

John T. Clabby, Jr., vice-president and manager of the Systems Division of Daniel, Mann, Johnson & Mendenhall, died October 1 at the age of 43 of a heart attack. For more than 20 years, Clabby was associated with engineering management. He joined DMJM in 1959 as senior member of the technical staff, was appointed director of systems in 1960, and elected vice-president in April, 1961.

Ellery Husted, a retired New York architect who lived in Portugal, died July 18 in Lisbon. He was 66. As a junior partner, he assisted the late James Gamble Rogers in designing the Columbia-Presbyterian Medical Center in New York City. From 1945

real-estate development, taxation, transportation, utilities construction, and building maintenance. In the course of 20 or so rounds of play, teams may construct, on the board, a city of half a million people. The players find their decisions resulting in predictable as well as unforeseen predicaments involving community land use, economic bases, levels of employment, and financial status.

The basic CLUG kit weighs about 40 lbs and comes equipped with currency, erasable board, sets of record sheets and tax roles, transaction cards, and so on. For versions more complicated than the basic model, such as the intricate one developed for the Washington Center for Metropolitan Studies, the kit also contains a computer program written in computer language Fortran IV. Less experienced groups are supervised by two nonparticipants, who make and change the ground rules as the game progresses and who, in addition, keep track of economic facts.

CLUG does not, of course, represent an exact replica of any particular urban situation. One of the real factors conspicuously absent, for example, is the social element. There are no class divisions. But Professor Feldt does see an important use for CLUG as an aid to understanding mathematical simulations of actual urban areas and their growth patterns. So far, CLUG has been used to explore the planning possibilities of upstate New York towns, including Syracuse, Auburn, and Cortlandt. Over the past summer, its inventor worked on a model based on 11 central New York counties to teach people how regional planning works. At Cornell, one course devotes an entire semester to playing the game, and, according to Dotson and Sawicki, never explores *all* the game's possibilities.

GETTING SET FOR THE SST

Photo: Louis Checkman

RALEIGH-DURHAM, N.C. In the next 20 years, air-passenger traffic through the Raleigh-Durham airport is expected to increase 600%, and cargo traffic an impressive 2000%. If expansion plans are on schedule, Raleigh-Durham will be ready for these increases. Recently released was the proposed design for future passenger terminal facilities, prepared by Arnold Thompson Associates, Inc., airport facility consultants. The new terminal will be located midway between two 10,000′ runways and, as traffic increases, will be constructed in four stages. First stage (shown here), scheduled for completion by 1970, will have 14 gates and parking space in a central structure for 1500 cars. The terminal, which will surround the parking structure, will have a one-story continuous lobby, on the second level, connected by short concourses to two circular waiting areas, each of which will have seven gates. On the terminal's third level will be a restaurant with a view.

Expansion in 1980 will add 14 gates and space for more terminal facilities.

WRIGHT'S MARTIN HOUSE TO BE RESTORED

BUFFALO, N.Y. The house Frank Lloyd Wright built for Darwin D. Martin on Jewett Parkway was one of the few Wright houses designed before 1910 that did not have a pool at the entrance. But its ramifications go far beyond that. For Martin was owner of a mail order and wholesale business, known as the Larkin Co., and Wright's work on the Martin house led to his commission for the Larkin Building. Actually, there were two houses. A smaller house for Martin's sister and brother-in-law, the George Bartons, fronted on Summit Avenue. Between the two houses was a garage and conservatory. Recently, the University of Buffalo bought the Martin house for a reported $60,000, to be used as a residence for its new president, Martin Meyerson, former dean of the College of Environmental Design at Berkley. The New York State legislature allocated $30,000 in its 1967 budget for renovation and work is currently underway. There is quite a bit to do to restore the house to its Wrightian design. It stood vacant during World War II; then, after the war, it was bought by Buffalo architect Sebastian Toriello, who tore down the pergola, conservatory, and garage and converted the interior into three apartments. He also put three two-story apartment structures on the grounds, one close to the rear of the house.

In restoring the house, New York architect Edgar Tafel will put up a fence, topped with planter boxes to screen off the apartments. Tafel first saw the house in the early 30's, when, as a student of Wright's, he drove East with him. Since then, the house has suffered the ravages of age and misuse. Tafel will recover the roofs with slate. (Originally, they were clay tile; more recently, asphalt shingles.) Roof lines must be straightened, tile floors repaired, and woodwork, much of which was torn away from the walls and ceiling, restored. Most noticeable change will be the addition of a large skylight to light the inordinately dark living room.

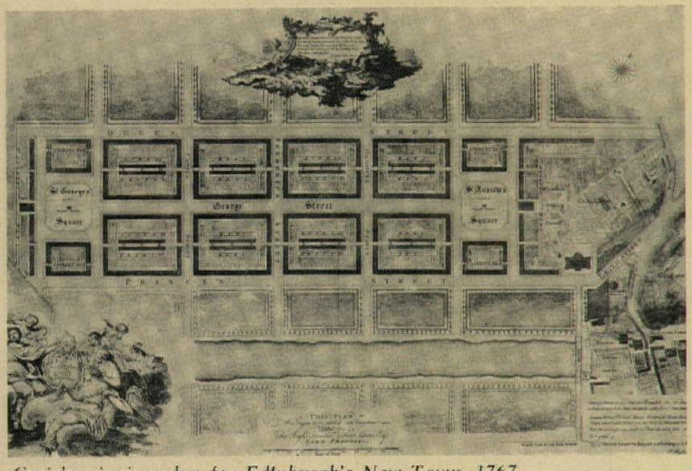
Several curious features will remain. One is an 80′-long ballroom in the basement. Another is the reinforced concrete construction with steelwork roof supports — an unusually advanced structure for 1904. It is refreshing to see a fine piece of architecture put to such an appropriate use. Everyone connected with the project deserves commendation.

CALENDAR

A national conference for the purpose of **"Facing the Union Problem"** will be held on December 1 at the La Salle Hotel in Chicago. Co-sponsors include the AIA, the American Society of Civil Engineers, and the Consulting Engineers Council/USA. Preregistration may be arranged through: Louis A. Bacon, 309 W. Jackson Blvd., Chicago, Ill. 60606 . . . "Quest for Quality" will be the theme of the **1967 Congress for Recreation and Parks** when it convenes at the Fontainebleau Hotel in Miami Beach, Fla., December 3–7. National Recreation and Park Associ-

ation, 1700 Washington Ave., Miami Beach, Fla., is sponsoring the event . . . Eleven national trade organizations are sponsoring an **Aluminum Finishing Seminar,** scheduled for January 30–February 1 at Detroit's Sheraton Cadillac Hotel. Thirty-six experts will discuss nearly all aspects of aluminum finishing processes. Registration forms are available from the Aluminum Association, 420 Lexington Ave., New York, N.Y. 10017 . . . The **Winter Meeting of the National Society of Professional Engineers** will be held January 9–13, in the Shoreham Hotel, Washington, D.C. The society has headquarters at 2029 K St., N.W., Washington, D.C. . . . The University of Wisconsin's Extension Division plans to present a seminar concerning **"Architectural Promenade and Terrace Decks"** January 18–19 at its Madison campus. Director of the program is Dwight D. Zeck, Institute Director, 725 Extension Building, University of Wisconsin, 432 N. Lake St., Madison, Wis. 53706 . . . At the **Joint 1968 Legislative Conference of the AIA and Consulting Engineers Council/USA,** architects and engineers will have an opportunity to preview Congressional legislation likely to affect them during the coming year. The conference is to take place Jan. 30–31 at the Shoreham Hotel, Washington, D.C.

200-YEAR-OLD NEW TOWN



Craig's winning plan for Edinburgh's New Town. 1767.

EDINBURGH, SCOTLAND. Local Edinburghers and visitors to the annual Edinburgh Festival this past summer were privileged to be able to visit a beautifully designed exhibition called "Two Hundred Summers in a City," celebrating the selection, in 1767, of the design by Architect James Craig for Edinburgh's "New Town."

That the design, picked from among six competitive entries, was an appropriate one is proven by the fact that the area remains today largely as Craig planned it. This is the noble stretch between Charlotte Square and St. Andrews Square on the west and east and Queen Street and Princes Street on the north and south. It was and still is a notable example of classical urban planning.

The exhibition did not stop at Craig's plan. It went back into medieval times when Edinburgh clung to the rocks around the Castle, and forward, through present-day Edinburgh, to "City-Scope — an environment in which to imagine future cities" with flashing lights, electronic sounds, etc. The future was not as interesting as the past, in this case.

Craig received an exhibition all his own in a museum on the Royal Mile, a thoroughfare leading from the Castle to Holyrood Palace, and there were fascinating billboards posted around the city showing the significant buildings of various neighborhoods, their architects, and dates.

It was all an exemplary way to show the way a city grew and was planned; one that other cities might emulate, had they the background.

TERMINAL EXPANSION

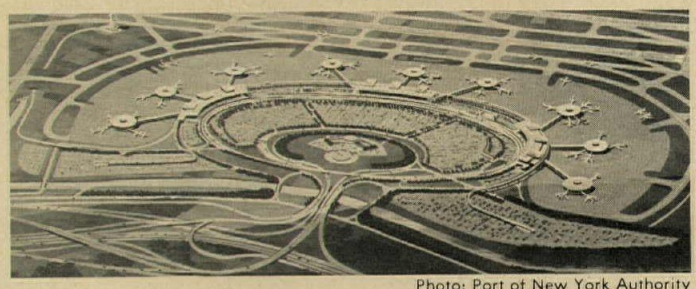


Photo: Port of New York Authority

NEWARK, N.J. A $200 million expansion program got under way at Newark airport last month, which, in the pattern of much airport work nowadays, will be inadequate before it is completed. Supposedly by the time the three new terminals, parking for 10,000 cars, one new runway and the extension of two others are completed in 1975, the facility will be handling 12 million passengers each year. Forecasts of aircraft passenger flow in the New York area have traditionally been too conservative. A few years ago, it was predicted that 3,500,000 persons would use the Newark facility in 1966; the actual figure exceeded 5 million.

Preliminary plans prepared by the New York Port Authority, which owns and operates the airport, call for three curved terminals, surrounding an inner circle accommodating the parking area. Each terminal will have three satellite flight gate structures, attached to the terminal by arcades. Flight gates in the satellites will be large enough to accommodate the supersonic aircraft of the 70's.

Each main terminal will be about 800′ long and 165′ wide, and will have two levels: upper, for departures, and lower, for arrivals.

PERSONALITIES

Charles A. Wood, Jr. will retire from the office of executive director of the National Council of Architectural Registration Boards in order to return to his long-standing practice in New Jersey . . . The Franklin Institute of Philadelphia, Pa., last month cited **Carl Koch** of Carl Koch & Associates, Boston, Mass., for pioneering work in design of prefabricated houses having high aesthetic value, capable of being economically mass produced, and employing latest developments in materials and construction practices. Koch received the institute's Frank P. Brown Medal . . . **Neal English** has been appointed National Director of Information Services for the AIA . . . New York City's new director of building design is **Albert E. Bauer.** Mayor Lindsay has appointed a nine-member Urban Design Council to coordinate efforts to obtain excellence in design of urban projects and to preserve notable buildings. Members of the Council, which will act in an advisory capacity, are: **William S. Paley,** Chairman of the Council and chairman of the Columbia Broadcasting System; **Mrs. W. Vincent Astor,** president of the Vincent Astor Foundation; **J. Richardson Dilworth,** chairman of the board of Rockefeller Center, Inc.; **Philip Johnson** and **I.M. Pei,** architects; **Chester Rapkin,** professor of urban planning at Columbia University; **George N. Lindsay,** lawyer; **Walter N. Thayer,** president of Whitney Communications, Inc.; and **Whitney M. Young,** executive director of the National Urban League. **David Farley,** urban designer and professor at NYU, is executive director of the Council . . . Architect **Arthur Rosenblatt** will resign at the end of the year from his post as First Deputy Administrator of Recreation and Cultural Affairs for New York City in order to assume the newly created position of Administrator for Architecture and Planning for the Metropolitan Museum of Art and the Brooklyn Museum . . . The American Society for Testing and Materials announces several staff changes.

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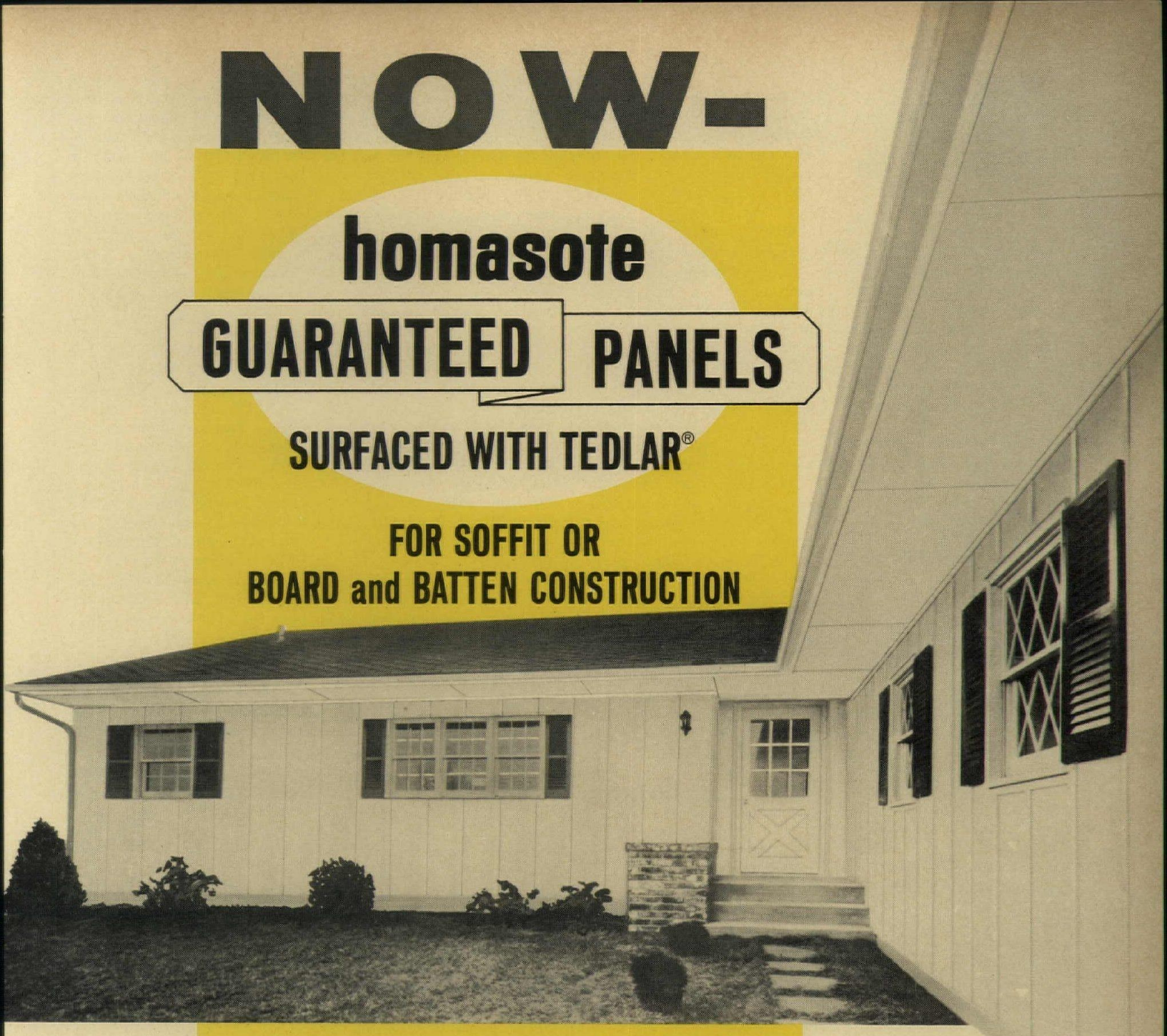

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WASHINGTON/ FINANCIAL NEWS

by E. E. HALMOS, JR.

Planners Discuss Next 50 Years — The subject was a very broad one, and the discussions tended to be quite general, but there were some exciting ideas presented at the American Institute of Planners' conference on "The Next 50 Years" in Washington, early in October.

Among the more than 65 speakers who appeared during the 6-day session, 12 identified themselves as architects, and many others were closely associated with urban planning both in the U.S. and in other countries.

And there was no doubt that the Federal Government, thrashing about in attempts to find answers to growing urban problems, was observing and listening closely.

One proposal (by Charles Abrams, chairman of the division of Urban Planning of the Columbia University School of Architecture) had particular appeal in bureaucracy-oriented Washington:

Creation of an "Urban Space Agency" — Washington immediately found the acronym "URSA" rolled trippingly from the tongue — that would prevent slums by acquiring urban land in advance, planning it thoroughly, then sell or lease it for private development.

The idea happend to fit beautifully with a bill (S.2466) presented to Congress the previous week by Maryland's Senator Tydings, which would broaden provisions of the 1965 Housing and Urban Development act, and make more money available, on better terms, for acquisition of open spaces for future urban use. Tydings complained that the original bill provided $5 million for grants for this purpose, but only $200,000 has been committed because of restrictive regulations, which, among other things, require that a grantee guarantee he will begin construction on the land within five years.

There was also a close tie-in to the President's recent directive calling for a survey of excess Federally owned land in urban areas, for use in planned housing developments; and a concurrent Presidential order to HUD to double its low-cost housing units to be built within the next year to 70,000.

Other thoughts: Within 50 years, the present estimated 7000 persons engaged in planning on all levels of Government must be expanded to 30,000 to 35,000;

New legal instrumentalities and new laws with broader orientation to planning must be evolved, to cope with the predicted coalescence of most of the U.S. population into major "megalopoli";

Development of such "megalopoli" — including one 600 miles long on the Pacific Coast — will require a new look at planning, so that such a mammoth area does not become an endless, rather horrifying expansion of all the evils of present major cities. Plans must make possible diversification of areas within the megalopolitan area, maintaining some individuality for residents.

Over-all, the long meeting had a somewhat dreamlike quality for those listening in — but quite obviously not for those who participated.

Assessing Technology — On a somewhat more down-to-earth scale, there were a number of developments of special concern to professionals in Washington.

Perhaps most important, for long-range effect, was the announcement of plans by the House Subcommittee on Science, Research, and Development, to hold a series of hearings and "seminars" on the question: How can Congress do a better job of assessing the good and bad points of technological programs?

Rep. Emilio Q. Daddario (D. Conn.), subcommittee chairman, said his group "expects the scientific, engineering, and other professional communities" will have much to offer during the study. Discussions are now underway with the National Academy of Science and the National Academy of Engineering on the possibilty of setting up a working group to aid the committee in an eventual recommendation for a "permanent technological assessment" apparatus.

In other actions, Congress eliminated a House-approved amendment to a money bill for the National Aeronautics & Space Agency that was intended to limit NASA's use of "warm body" contracts — those under which contractor-furnished personnel perform support services (including engineering and some architectural service) that otherwise would be handled by civil service people.

And the Defense Department and General Services Administration tried to quiet some of the continuing furor over architect-engineer fees with the announcement that they had dropped use of the long-standing percentage-of-construction-cost method of determining A-E fees in favor of the "detailed analysis" method.

The "method" works this way: The agency estimates the man-hour requirements and types of services or personnel (architectural, mechanical, engineer, etc.) for each phase of the services to be required of the A-E, such as site investigation and design services. Estimated hourly rates are then applied to the estimated number of man-hours, and allowances made for the A-E's overhead and profit, in order to arrive at the total estimated fee as the basis for negotiation.

Nevertheless, fees must still conform to the existing 6% limitation.

Finally, the Washington-based Construction Specifications Institute announced that it plans to establish its own research organ — to be known as the CSI Research Foundation. Idea is to conduct research into automation as it may affect specifications practices and techniques. The move is an outgrowth of a recent study sponsored by CSI and conducted by Stanford Research Institute, which forecast "dramatic changes" in architectural and engineering practice as they pertain to specifications.

Variance for FBI Building — For reasons that seemed a little incongruous, in view of the nature of the agency, the National Capital Planning Commission has approved a variance in grand plans for redevelopment of Pennsylvania Avenue that involves the Federal Bureau of Investigation building.

The Pennsylvania Avenue Commission, headed by Nathaniel Owings, had recommended that all new buildings on the avenue incorporate arcades, so that pedestrians could walk without worrying about the weather.

But FBI director J. Edgar Hoover, considering the plans, would hear of no arcades.

Reason: The FBI hires quite a few young girls, some of whom work at night. The arcades would provide a hiding place for undesirables.

NPCP member Architect Paul Thiry, supporting the idea of arcades — commission members suggested that if FBI were allowed a variance, all other plans would be killed — argued that few muggers would choose the FBI building as scene for their operations. Replied FBI spokesmen: FBI isn't a policing agency, only an investigative one.

Financial — There were some huge amounts of Federal money poured into the construction economy, as Congress finally began to move (late, as usual) on annual appropriations measures: $2,500,000,000 for military construction around the world; $4,700,000,000 for "civil works" and other public construction; other money for the Bureau of Reclamation. The Bureau of Public Roads, meanwhile, got around to apportioning a total of $4,800,000,000 for obligation by the states in Fiscal Year 1969.

☐ The construction industry as a whole was performing about as predicted — holding just about even with last year, showing only very slight gains. The Census Bureau reported that, in July, rate of total new construction put in place was at an adjusted annual figure of $75,400,000,000 — not quite 4% over last year at the same period.

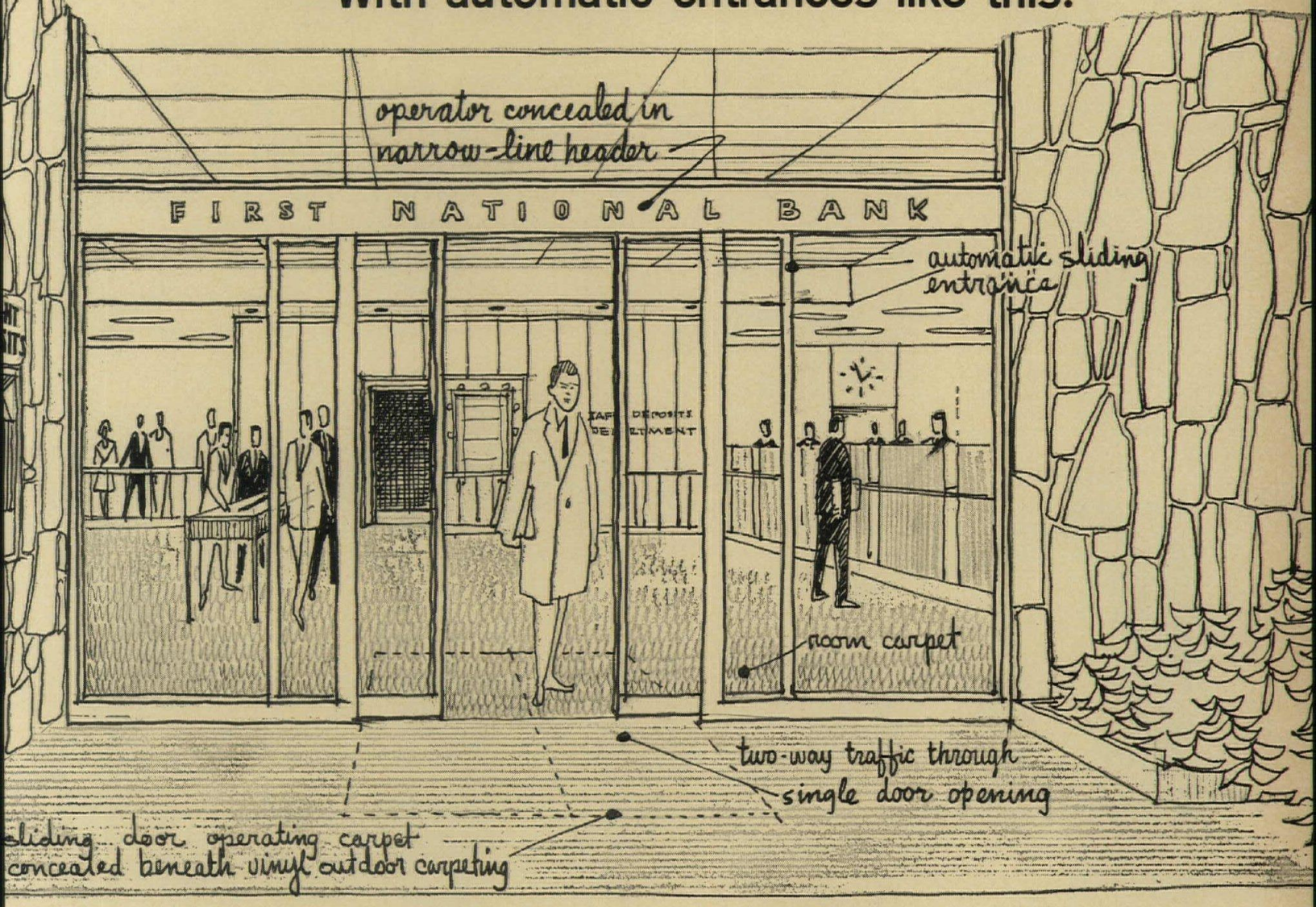
☐ Housing showed a slight upturn in July, but nobody was willing to make any predictions. Rate for the month was 1,360,000 units, compared to a rate of 1,079,000 a year ago.

☐ Corollary of the housing starts, and reason for the breath-holding by observers, were other figures, showing a drop in house sales. In June, said Census, sales of new one-family homes dropped 3% under the May rate.

Who is doing something to open doorways to design freedom?

Stanley is.

With automatic entrances like this.

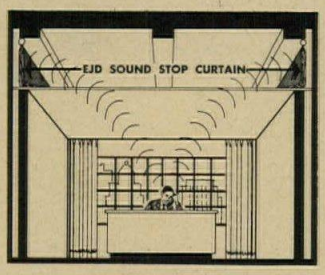


Help us strike a blow for freedom of design! Get information on Stanley automatic sliding entrances. Write us for Folder No. M67-COM. Look us up in Sweet's. Or check under "Door Operating Devices" in the Yellow Pages for the name of the Stanley distributor nearest you. Stanley offers a complete line of famous MAGIC-DOOR™® operators (pneumatic, hydraulic, electric), controls and accessories for doors that swing, slide or fold. Stanley Door Operating Equipment, Division of The Stanley Works, New Britain, Connecticut.

THE STANLEY® WORKS

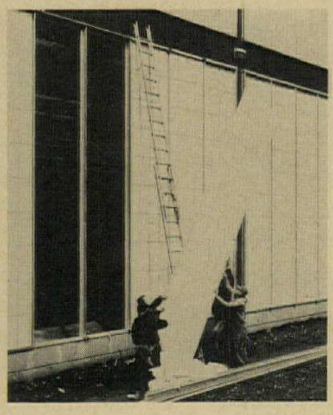
PRODUCTS

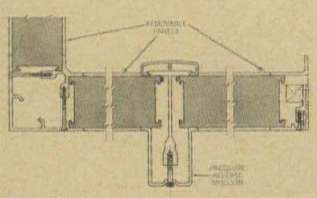
ACOUSTICS



Sound control for suspended ceilings. The "Sound Stop Curtain" solves problem noise transmission from one room to another through the plenum above a suspended ceiling. Curtain is hung from underside of concrete arch or floor above so that it touches the suspended ceiling, presenting a barrier to sound. Made of treated fibrous glass that is enveloped in a reinforced, aluminum-faced wrapper, curtain is said to reduce over-the-wall noise by 30%–50%. Also effective in factory areas, arenas, and auditoriums. The E. J. Davis Co., 10 Dodge Ave., Defco Park, North Haven, Conn.
Circle 100, Readers' Service Card

CONSTRUCTION

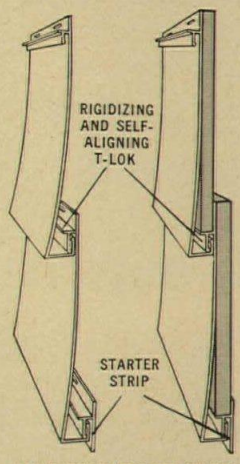




Removable walls. Wall system consists of acrylic modified glass-fiber panels bonded to both sides of an aluminum I-beam grid core, on mountings of two-piece aluminum extrusions. The wall system includes a pressure-venting panel mounting that releases wall panels at a pressure of 20 psf without letting them fall to the ground, and permits reinstallation of the same panels. The insulation value of the 2¾"-thick panels is said to equal that of a concrete wall 40" thick. These 4' x 20' translucent, chemical-resistant panels weigh only 120 lb to facilitate installation and removal. Kalwall Corp., 88 Pine St., Manchester, N. H. 03103.
Circle 101, Readers' Service Card

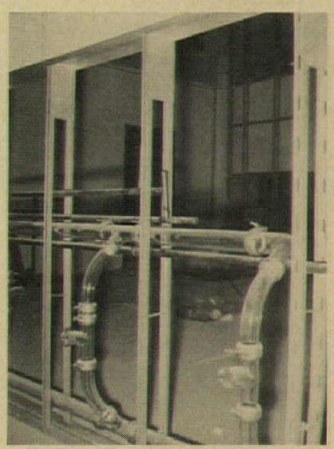
Roof-ceiling system. The all-steel "Convex" roof system consists of two chords of corrugated steel panels joined by diagonal struts. The top chord is arched to form a roof; the bottom chord forms a ceiling. Roof and ceiling are both working parts of the structural system, which is said to result in savings in material. Spans up to 200' in 41" modules. Manufacturer claims further advantages such as speed of erection, efficiency of insulation, and maintenance-free life. Behlen Manufacturing Co., Columbus, Neb. 68601.
Circle 102, Readers' Service Card

Economic polysulfide sealant. Rubber Calk 700 Sealant combines polysulfide performance properties and air-curing qualities with the economy of an acrylic or polyurethane sealant, according to the manufacturer. The manufacturer developed this sealant using a newly created polysulfide polymer as a base. It has the following features: quality of adhesion, resilience, quick, easy extrusion, flexibility in heat and cold, good resistance to weather aging. Products Research & Chemical Corp., 2919 Empire Ave., Burbank, Calif. 91504.
Circle 103, Readers' Service Card



HOLLOW-BACK OR WITH DROP-IN BACKBOARD

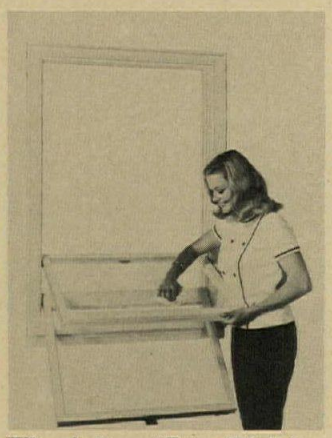
Vinyl siding. "T-lok" vinyl siding comes in panels 12'-6" long, 8" and 4" clapboard styles, as well as in vertical, and board-and-batten designs. The white or colored vinyl eliminates need for protective painting, is chemically inert, and will neither support flames nor conduct electricity. Acts as heat- and cold-insulator and muffles noises. Can be applied to new houses, or over many wall materials of older homes. Nails are attached to allow for expansion and contraction from temperature changes. Mastic Corp., 131 South Taylor St., South Bend, Ind. 46601.
Circle 104, Readers' Service Card



Variable cavity wall. Wall structure permits concealment of pipes, while still allowing ready access to them. It is said to be particularly suited for laboratories or facilities requiring 100% utility concealment. Architect may specify cavity dimensions in a range from 3" to 8", and in excess of 8" as a custom design. Resilient spring clips holding facing panels in place are removed without special tools. Any facing panel from ¼" to 1" can be used. Neslo Manufacturing Corp., Doylestown, Pa. 18901.
Circle 105, Readers' Service Card

Industrial adhesive. "Betastay (R) 55-76" bonds a variety of substrates including wood, nylon, rubber, plastics, and concrete at room temperature. Manufacturer emphasizes this adhesive's flexibility and resistance to oil. It has a viscosity of 400–500 cps, which allows it to be applied by brush, roller, or by dipping; with an additive, it can be sprayed. Essex Chemical Corp., 1401 Broad St., Clifton, N.J. 07015.
Circle 106, Readers' Service Card

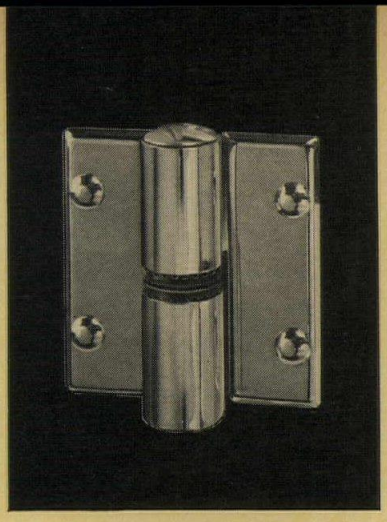
DOORS/WINDOWS



Tilt window. "Trim Tile" is a weatherstrip-balance combination that allows window sash to be tilted for cleaning; tilted window may also be removed for maintenance by lifting upward and out. Sash can be tilted and removed at any point of travel and will not strike the screen or storm window. Contact between sash edges and weatherstrip is said to provide good resistance to air infiltration. Caldwell Manufacturing Co., P. O. Box 444, Rochester 2, N.Y.
Circle 107, Readers' Service Card

FURNISHINGS

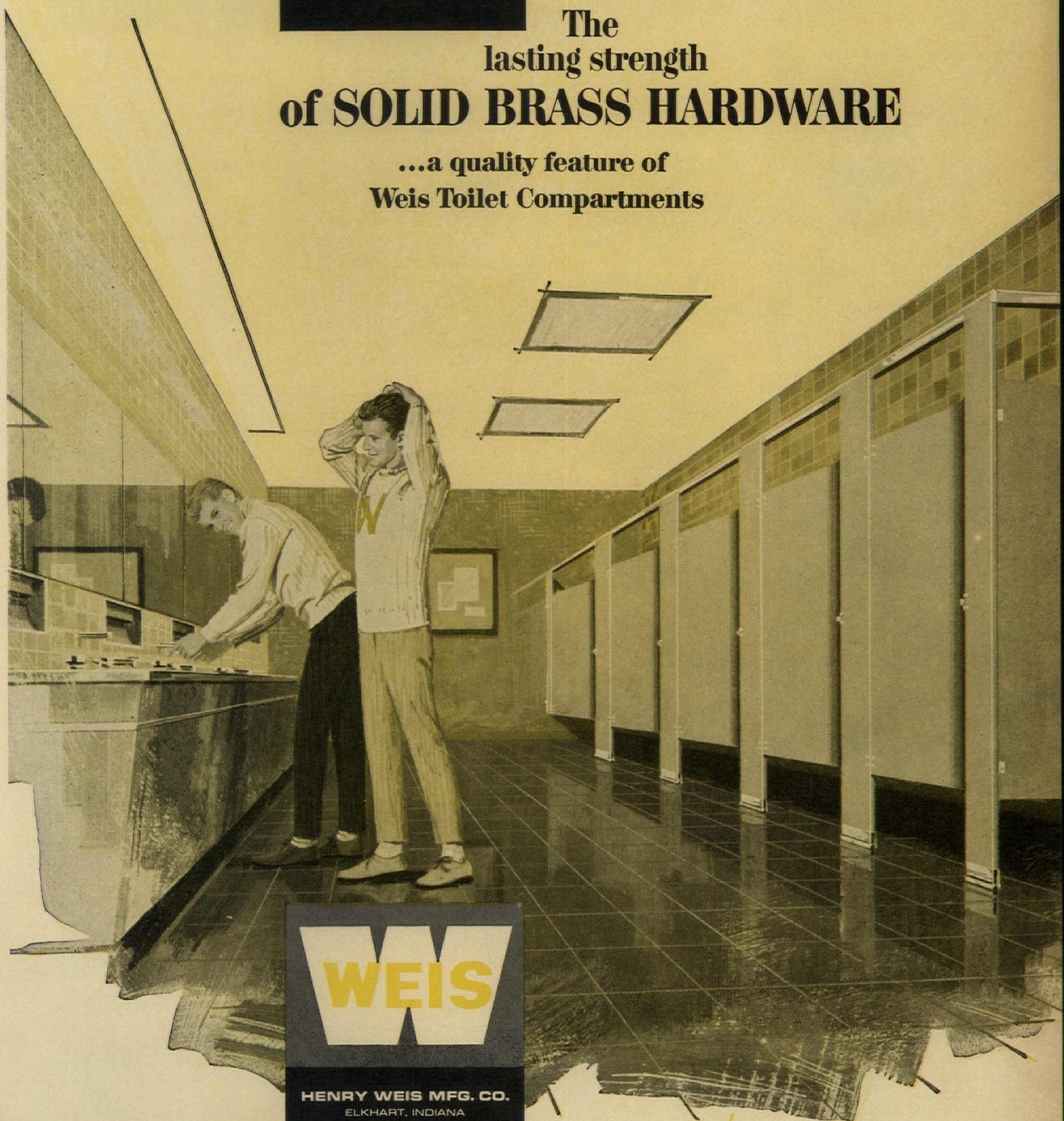
Colorful rain-or-shine carpet. Desert red, lime green and a range of other colors can now be found in rain-or-shine indoor-outdoor carpeting. Fab-



Weis hardware is solid brass with the added protection of brilliant chromium plate. This rugged, handsome hinge mounts on the interior surface for inswing, or exterior for outswing, and is adjustable to stand in any position.

The lasting strength of SOLID BRASS HARDWARE

...a quality feature of Weis Toilet Compartments



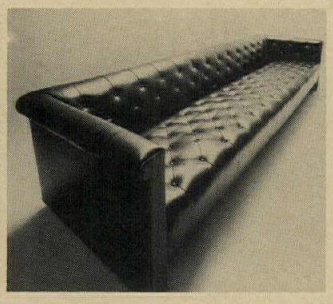
WEIS

HENRY WEIS MFG. CO.
ELKHART, INDIANA

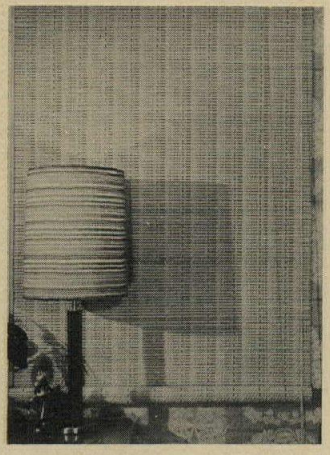
Write for Catalog / See Weis in Sweet's

On Readers' Service Card, Circle No. 390

ricated of Herculon polypropylene olefin fiber, this carpet is said to be color-fast, stain-resistant, and ultraviolet-resistant under normal conditions. It can be cleaned by vacuuming, and stains may be mopped up. Nafi Division, Chris-Craft Industries, Inc., 1980 E. State St., Trenton, N.J.
Circle 108, Readers' Service Card

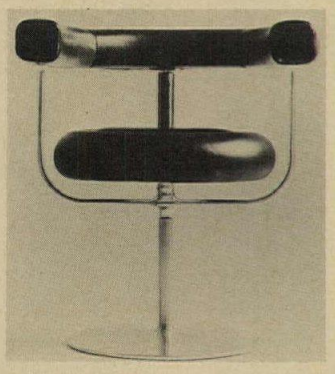


Zographos sofa. A special steel bridge permits this leather or fabric tufted sofa (SO 33.120) to extend 120″ supported by only two legs. The polished solid aluminum "T" legs on which the thick sofa frame rests give the impression that the 25″-high sofa floats several inches above the floor. Available also as club chair and in shorter sofa lengths. Zographos Designs Ltd., 510 Madison Ave., New York, N.Y. 10022.
Circle 109, Readers' Service Card



Woven woods. Wood and colorful yarns make up this line of woven wood designs. Used for drapery panels, area dividers, window shades, folding door units, and lamp shades, the designs come with descriptive titles such as "Sand Pebble," "Guild Felt," and "La Playa White." Tropicraft of San Francisco, 568 Howard Street, California 94105.
Circle 110, Readers' Service Card

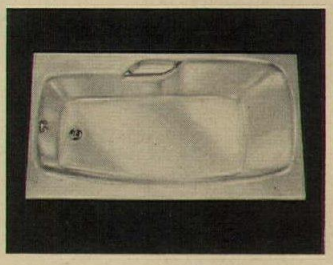
Tables fold flat. These collapsible tables are attached to wall studs and can be folded down flush with the wall. They do not use swinging braces or folding legs. The tops are of Fiberesin solid plastic material in a choice of dark or light wood-grain pattern. Top is 15½″ square. Cee Kay, 5713 North Lake Rd., Oconomowoc, Wis. 53066.
Circle 111, Readers' Service Card



Concentrically circular and sturdily squared. Two new chair designs by Esko Pajamies include a circular swivel chair and a rectangular armchair. The swivel chair is made up of a back-arm combination shaped like a half-doughnut above a round seat. Three polished metal rods attach the back-arm section to the base so that the whole section swivels above the pedestal base. A second chair has

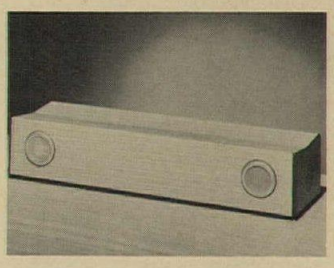
thick rectangular cushions enclosed by a frame supported by polished metal strips. Upholstery for both chairs is leather, available in several colors. A third new Pajamies chair — a semicircular armchair — is also available from the distributor. International Contact Furnishings, Inc., 145 E. 57 St., New York, N.Y. 10022.
Circle 112, Readers' Service Card

SANITATION PLUMBING



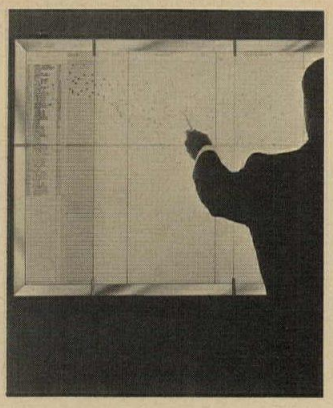
A regal bath. The "Empress" incorporates recent ideas in bathtub design for safety and convenience. Among the innovations in this tub is a built-in grab-bar, tapered design for roominess, a contoured backrest, a broad storage shelf, and deep interior space. Crane Co., 4100 S. Kedzie Ave., Chicago, Ill. 60632.
Circle 113, Readers' Service Card

SPECIAL EQUIPMENT



Battling burglars. Intrusion alarm system projects an ultrasonic beam, which will cover any desired area, and which will be triggered by any object, including a burglar, that moves within the area. Intended for use in homes, apartments, offices, and stores. Other assets include minimal expense, speed of installation, dependability, and flexibility. Euphonics Corp., 173 W. Madison St., Chicago, Ill. 60602.
Circle 114, Readers' Service Card

Illuminated schedule board. The "Controla 110" can schedule 110 items continu-



ously over a 15-month period. Operating on a scanning principle, it is said to be suited for scheduling construction jobs, bids or budgets, and implementing critical path and PERT techniques. A moving grid brings scheduled items (four months are always in view) from the white area into a yellow "caution" zone, and, if the schedule is not met, on into the red "danger" zone. The roll of grid paper provides a permanent record for review. Controla Division, Quill Products, Inc., P.O. Box 5156, Elmwood Station, Berkeley, Calif. 94715.
Circle 115, Readers' Service Card

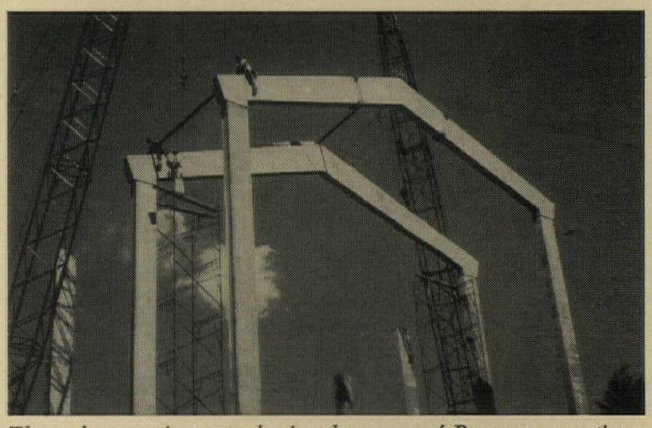
Instant landscape. Trees, shrubs, trucks, airplanes, people, and cars are all available (in ink form) for instant application on architectural drawings. Transfer is achieved by rubbing sheets of waxed paper, stamped with a figure, with a pencil or dowel. Each transfer sheet contains all sizes available for the particular item. Plan trees range in size from 3″ to ½″; plan shrubs from 1½″ to ½″; and people from a ½″ scale to a 1/16″ scale. Other size ranges are similar. Instant Landscape, 1115 Embarcadero, Sacramento, Calif. 95814.
Circle 116, Readers' Service Card

THE PRESCON MEMO NEWS

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

COLUMN-FREE AREAS

REDUCED COSTS AND FASTER COMPLETION GAINED BY POST-TENSIONING



These three projects emphasize the scope of Prescon operations. Twenty offices offer assistance to architects, engineers and contractors to gain the advantages the Prescon System offers.

Eleven precast and post-tensioned prestressed concrete frames give architectural unity and expression to the new Chapel and Dining Hall for the Sisters of Notre Dame de Namur in Fairfield, Conn. Designed by J. G. Phelan and Associates, and Fletcher-Thompson, Inc. Architects and Engineers, Bridgeport, Conn., 22 peripheral frame columns support the main Chapel floor and rise from the Ambulatory to a height of 55′. Saddle-shaped concrete beams connected to the column at the top, to form rigid frames, rise from 46′ to 65′ height and support the roof.

The prestressed concrete frame components were precast and prestressed as individual units. They were assembled in their final position to form rigid frames. The bent frame spans range from 56′ to 78′.

Beams and columns were post-tensioned immediately after the concrete reached a strength of 4,000 psi. They were assembled to rigid frames by post-tensioning the junction. Prescon Type S grouted tendons were used.

The frame beams are designed for simple bending under their own weight and part of the dead roof load. The balance of dead load, snow and wind forces are resisted by frame action. The columns were prestressed to resist wind loads, to absorb the tensile stresses from frame action and to prevent bending cracks during handling and erection. The compressive force resulting from beam end-reaction and bending moment was transferred into the column thru a lead pad, to provide uniform stress distribution.

It is estimated that the methods and construction used greatly reduced costs. Precasting saved $22,500, and prestressing steel was slightly over $1,000 per frame. Reduction in steel weight afforded in additional savings in material handling.

Prestressing the concrete frames eliminated cracks due to shrinkage, bending, and handling, resulting in controlled deflection and a structure more than twice as rigid as one designed by conventional methods.

Contractor: E. & F. Construction Company, Bridgeport, Connecticut.

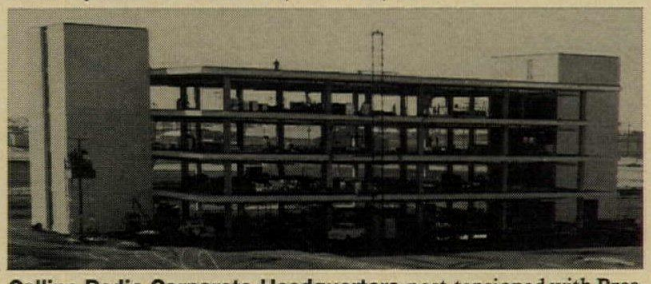
$12,000,000 Mills Square Complex is central stressed with Prescon tendons. Located in San Mateo, Calif., this 3-building complex – 9 story office building, 9 story apartment building and 4 story hospital plus 3 lower levels of parking for 680 cars – largest central stressed project in the United States, used central stressing to eliminate pour strips, and speed up construction schedules. In the garage area the use of steel expansion joints prevented conventional end stressing, complicated expansion joint construction, and demanded an all too rigid sequence of placing concrete. Central stressing solved these problems. There is a total of 700,000 sq. ft. of floor space.

The floor system has spans up to 28′ in two directions, with 8″ flat slabs post-tensioned in both directions. Central stressing was used where needed to simplify construction or speed up concrete placing. Post-tensioning eliminated slab deflection and allowed greater flexibility in placing interior walls, and eliminated many columns in the parking garage, allowing easier self-parking.

Central stressing tendons varied from 4 wire to 10 wire Prescon Type X (central stressed) tendons, with conventional Type S (standard end stressed) tendons used where central stressing was not required. Blockouts for stressing the Type X tendons were formed of plywood with each side sloped slightly to facilitate early removal of the form and allow reuse. Blockouts were located at approximately the quarter point of one of the spans near a point ⅔ the length of the tendon. Exact location was determined by the position of the nearest quarter point of a span near the 60′ dimension.

The stressing blockouts for adjacent tendons were located on alternate sides of a column strip. This prevented any conflict of blockout forms and reduced the chance of temporarily weakening the slabs. The first two elevated slabs terminated against an embankment supported by sheet piling. Conventional end stressing was impossible in this area. Type X, central stressed, tendons terminated at this point with dead end anchorages, allowing the concrete to be placed hard against the sheet piling. Spacing of tendons averaged approximately 36″ on center in the middle strip, and 24″ on center in the column strip.

Owner: San Mateo Civic Center Associates, San Mateo, Calif. Architect: DeWolf & Associates, AIA, San Mateo, Calif. Structural Engineer: T. Y. Lin, Kulka, Yang & Associate, San Francisco, Calif. General Contractor: Stolte, Inc., Oakland, Calif. Owners Representative: Alex Groswird, Menlo Park, Calif.



Collins Radio Corporate Headquarters post-tensioned with Prescon tendons. Twenty columns support a prestressed concrete area of 25,000 square feet per floor in the four-story headquarters in Richardson, Texas. This remarkable, yet simple structural system yielded an economical and functional building with a long span, thin floor system for clean, crisp lines.

Large column-free areas enabled flexible office arrangement. Bays are 41′-8″ x 37′-6″, floors and roof slabs cantilevered 8′-4″ beyond the north and the south column lines, and 12′-6″ beyond the east and the west column lines to reduce heat load and sun glare. Live load requirement was 100 pounds per square foot.

Analysis by the Owner's Construction Division determined that a post-tensioned waffle slab offered the best solution to cost, time, and construction depth requirements. Such construction would also allow deflection control by choice of size and positioning of the Prescon tendons. The waffles were 3′-5″ square with a 9″ wide rib 16″ deep, plus a 3½″ slab.

Concrete for each floor and the roof was placed in two days. Tensioning began when concrete reached 3000 psi which was 5 to 6 days later. Forms and shores were then immediately removed. Some reshoring was required while concrete was placed at the next level, and remained in place until the new slab was stressed.

It is estimated that 2 weeks were saved in constructing the frame, and $25,000 in costs by using a post-tensioned prestressed concrete structural system.

Owners: Collins Radio Co. Consulting Engineers: Terry-Rosenlund & Co., Dallas, Tex.

The advantages that often can be gained by post-tensioning prestressed concrete makes it important that the Prescon System be considered in your project design. Write for literature.

THE PRESCON CORPORATION

General Offices: Corpus Christi State National Building
Phone: (512) 882-8291, Box 2723, Corpus Christi, Texas 78403

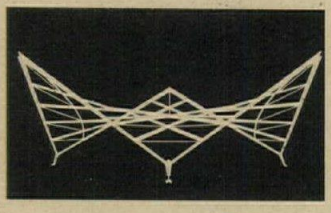
 H67

MFRS' DATA

ACOUSTICS

Acoustical, flexible metal ceilings. Brochure illustrates qualities of acoustical metal for ceilings: Sound absorption, strength, ease of installation, possibility of combination with partition attachment. Properties including sound absorption coefficients (ASTM C423-63T), attenuation (AMA I-II), light reflectance (ASTM C523-63T), and combustibility are given in charts. Texture and perforation patterns available are shown. 8 pages. Steel Ceilings Division, The E. F. Hauserman Co., 5889 Grant Ave., Cleveland, Ohio 44105.
Circle 200, Readers' Service Card

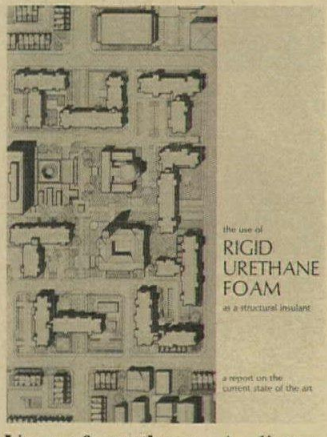
CONSTRUCTION



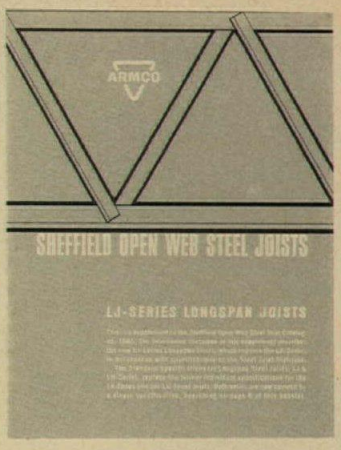
Steel literature. Fifty-five steel abstracts are listed according to category of construction (research and design, buildings, bridges, miscellaneous structures, water storage and transmission). A short synopsis of each abstract is given, key words noted, and source indicated. Booklet also gives the addresses of all the sources for the abstracts. 22 pages. American Iron and Steel Institute, 150 E. 42nd St., New York, N.Y. 10017.
Circle 201, Readers' Service Card

Adhesive for ceramic tile. "USA Standard for Organic Adhesives for Installation of Ceramic Tile" gives the standards for two types of organic adhesives for interior areas — those requiring prolonged water resistance, and those requiring intermittent water resistance. Brochure discusses requirements for these adhesives, methods of testing, manufacturer's instructions, toxicity, and flammability. Sketches show ceramic tile assembly template, test assembly, and oven. 15 pages. United States of America Standards Institute, 10 E. 40th St., New York, N.Y. 10016
Circle 202, Readers' Service Card

The ASTM standards book. The American Society for Testing and Materials issues parts of its 32-volume book of standards periodically throughout the year. Volumes recently released cover cement, lime, and gypsum (Part 9); ceramic materials, manufactured carbon, and graphite products (Part 13); and 10 subjects including general testing methods, appearance of materials, and sensory evaluation of materials, and products (Part 30). Prices are $8.00, $10.00, $18.00 respectively. Quantity discounts. A prospectus with description, availability date, price, for each part is available. American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103.
Circle 203, Readers' Service Card



Uses of urethane. A discussion of urethane foam used in residences, commercial, agricultural, industrial, and manufactured buildings is included in "The Use of Rigid Urethane Foam as a Structural Insulant." Charts show, among other information, the k-factors for five other insulating materials and urethane foam, and compression and shearing properties of typical rigid urethane foam. Illustrations. 15 pages. Mobay Chemical Co., Pittsburgh, Pa. 15205.
Circle 204, Readers' Service Card

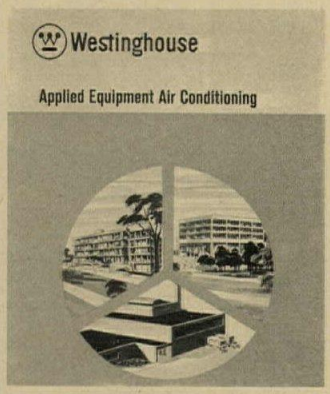


Standards and Specifications for Steel joists. Booklet concerns L-J Series longspan steel joists. In addition to standard specifications, it gives data, including diagrams and charts, on properties and dimensions, a standard load table adopted by the Steel Joist Institute and American Institute of Steel Construction, Inc., diagrams of pitched-chord joists for roofs, and a discussion of joint accessories. 11 pages. Armco Steel Corp., 7000 Roberts St., Kansas City, Missouri 64125.
Circle 205, Readers' Service Card

In case of fire . . . The "Code for Safety to Life from Fire in Buildings and Structures," a publication of the National Fire Protection Association consists of 17 chapters of fire safety requirements. Chapters include general requirements and special provisions pertaining to egress, places of assembly, and various categories of occupancies (educational, institutional, residential, mercantile, office, industrial, storage). Explanatory material and recommended supplementary publications. 209 pages. $1.50. National Fire Protection Association, 60 Batterymarch St., Boston, Mass. 02110

Fire resistance of gypsum products. Manual presents performance and fire resistance characteristics of construction assemblies incorporating gypsum. Fire resistant partitions, floor-ceiling assemblies, steel columns, and gypsum concrete roof decks are shown and discussed. Data includes construction details, hourly fire resistance rating, and fire test reference. Description of protection of beams, girders, and trusses by three gypsum application processes. Requirements for fire protection and sound proofing data. 57 pages. Gypsum Association, 201 Wells St., Chicago, Ill. 60606.
Circle 206, Readers' Service Card

ELECTRICAL EQUIPMENT



Air conditioning. "Applied Equipment Air Conditioning" describes air-conditioning equipment applicable to manufacturing plants, public buildings, banks, hospitals and theaters. Listed are capacity, dimensions, and approximate weight of four chillers, and two condensing units. Also discussed are several types of heating and cooling coils, air-distribution units, unit heaters, and air cleaners. Two other catalogs in the series: "Residential and Commercial Air Conditioning," and "Air Handling Equipment." 8 pages. Westinghouse Air Conditioning–Sturtevant Divisions, P.O. Box 510, Staunton, Va. 24401.
Circle 207, Readers' Service Card

FINISHES PROTECTORS

PVC coatings in severely corrosive atmospheres. Channels, accessory fittings, and hardware coated with perma-

Now a roof board that "breathes" with no loss of insulation value— CELRAMIC®-BOARD

Pittsburgh Corning, the insulation people, introduce CELRAMIC-BOARD— the low-cost, permanent roof insulation.

The secret's in the remarkable new glass nodules developed by Pittsburgh Corning. Each tiny nodule contains countless closed cells which trap still, dry air—the ideal insulating medium—inside a vaporproof, moistureproof shell of glass.

Each 2′ x 4′ x 1″ CELRAMIC-BOARD contains thousands of these multicellular nodules in a bituminous binder. An endless network of tiny air passages between the nodules permits the board to "breathe." Trapped vapor is dissipated harmlessly. No vapor pressure can collect beneath the built-up roof and cause felts to separate from the insulation. Wrinkling and buckling are minimized or eliminated.

CELRAMIC-BOARD can be installed easily; its bituminous binder makes it compatible with pitch and asphalt. CELRAMIC-BOARD costs little more than the lowest price roof insulation.

For information and sample, write Pittsburgh Corning Corporation, Dept. PP-117, One Gateway Center, Pittsburgh, Pa. 15222.

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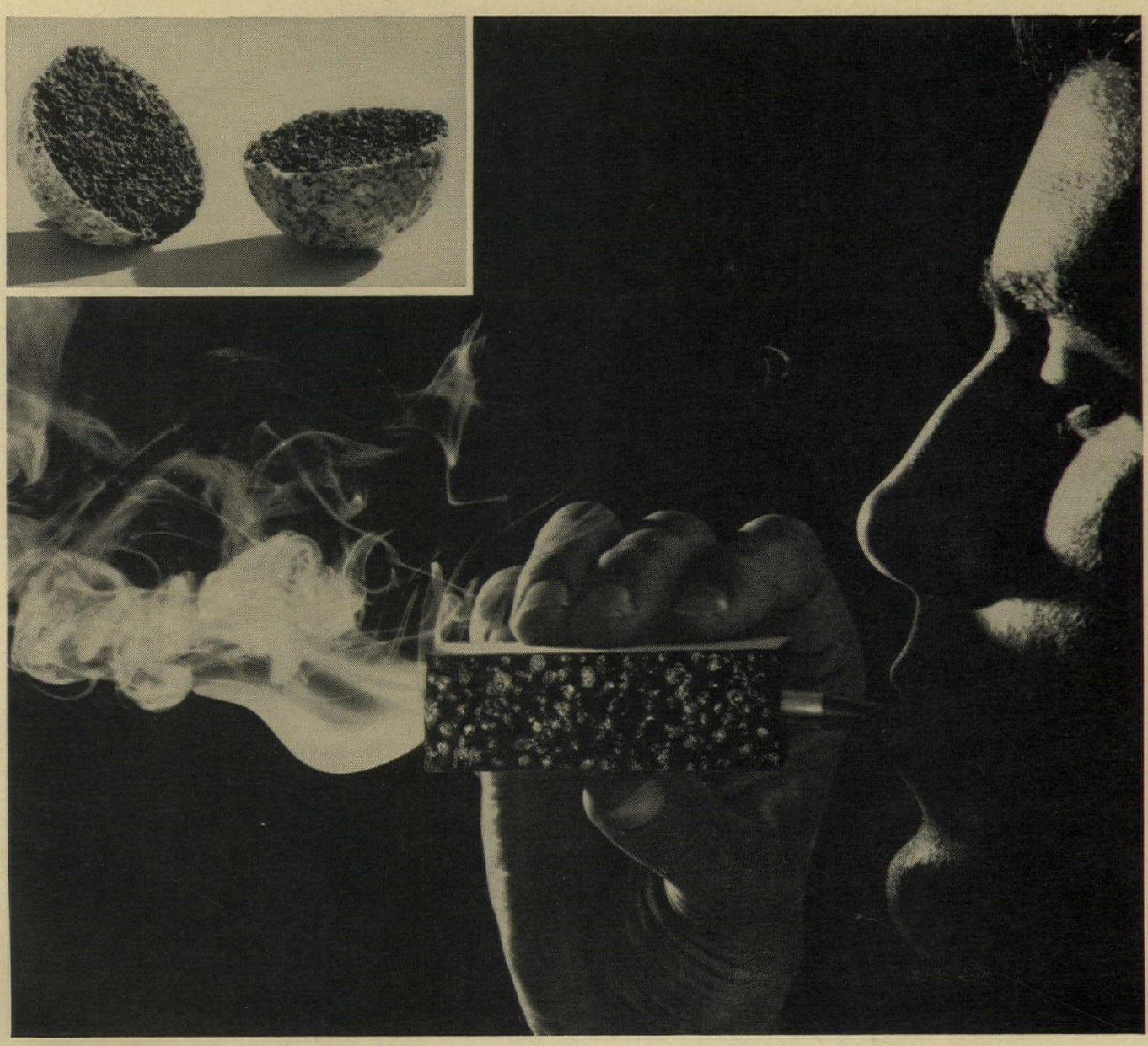
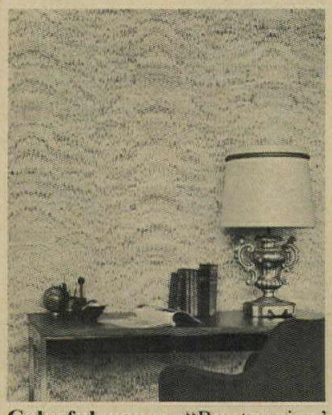


nently fused-on polyvinyl chloride are shown in manufacturer's catalog. In addition to product descriptions the catalog gives properties of the "Plasti-Bond" polyvinyl chloride coating and a corrosive-resistance table. 6 pages. Steel City Division, Midland-Ross Corp., Pittsburgh, Penn. 15233.
Circle 208, Readers' Service Card

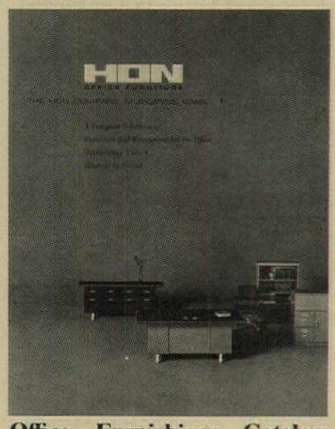
The '68 fashion in industrial coatings. A 1968 catalog features interior and exterior coatings for industrial uses, anti-corrosive coatings, and machinery and equipment enamels. Data on properties, use, primers, application, and coverage. Includes a color card, surface preparation information for concrete surfaces, and a chemical resistance chart. Description of manufacturer's floor materials and sealants. 39 pages. Steelcote Manufacturing Co., 3418 Gratiot, St. Louis, Mo. 63103.
Circle 209, Readers' Service Card

FURNISHINGS



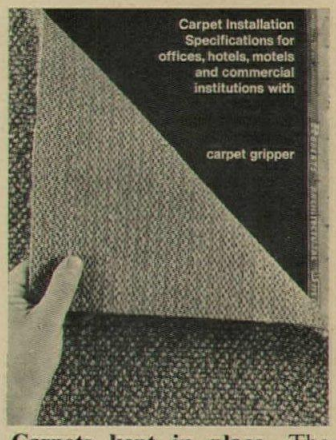
Colorful paper. "Buntpapier,' the 1967 A.I.D. International Design Award winner for contemporary wallpaper is shown in a hardbound 13½" x 20" sample book, "Volume 7 Gravure Collection." The design of the paper is a series of semiovals in columns of varying widths superimposed in three colors. It comes in a variety of color combinations, and is applied so that the design elements never repeat, obviating side to side matching, although the overall appearance is consistent. "Buntpapier," one of 18 designs in Winfield Design Associates' Gravure Collection, is printed in vinyl ink for durability and washability, and may be coated with DuPont's "Tedlar" protective coating, for extra protection. Sample book, $12.00. Katzenbach & Warren, Inc., 575 Madison Ave., New York, N.Y. 10022.

Vinyl wall patterns. Sixteen patterns of vinyl "Vicrtex" wall covering are shown in a brochure from the manufacturer's stock of over 50 patterns. Cloth-like patterns include ones resembling silk, handwoven cotton, and grasscloth. A woodgrain sample is also shown. Photographs illustrate not only "Vicrtex" swatches, but room interiors in which "Vicrtex" is used. Data Chart. Suggested Specifications. L.E. Carpenter & Co., Empire State Bldg., New York, N.Y. 10001.
Circle 210, Readers' Service Card



Office Furnishings Catalog. The "H-O-N Catalog No. 102C" features office furniture and equipment of contemporary and conventional styles. In the "Conventional" line desks have options of 4 metal colors and either plastic or linoleum tops. Seven styles of chairs are featured with 27 colors in vinyl upholstery. The "Contemporary" line features slim-styled desks and plastic tops in wood-grain patterns with ebony or "Tropic Sand" metal colors. Drawers operate on a suspension cradle, eliminating handles. Chairs in this line, more rectilinear than the conventional line come with upholstery in either vinyl or 16 nylon fabrics. 48 pages. The Hon Co., Muscatine, Iowa.
Circle 211, Readers' Service Card

Fire-treated lumber. Pamphlet discusses process of fire retardant pressure impregnation of lumber and plywood. Fyr-Gard treatment protects wood against fire, termites, and decay. Underwriters' Laboratories Ratings for Fyr-Gard are given for five woods and plywood..Tests and specifications. Practical applications. 4 pages. Niedermeyer-Martin Co., 1727 N.E. 11th Ave., Portland, Ore. 97212.
Circle 212, Readers' Service Card



Carpets kept in place. The "Smoothedge" carpet gripper keeps carpets in place, explains brochure. Specifications are given for its use in offices, hotels, motels, and commercial institutions using heavy commercial-weight stiff-back carpet with 48-oz. or heavier padding in short or long stretch areas, and with 48-oz. or lighter padding in long stretch areas only. Advantages mentioned include labor cost savings, reliability, variety of types for different installation requirements. Roberts Consolidated Industries, Inc., 600 N. Baldwin Park Blvd., City of Industry, Calif. 91747.
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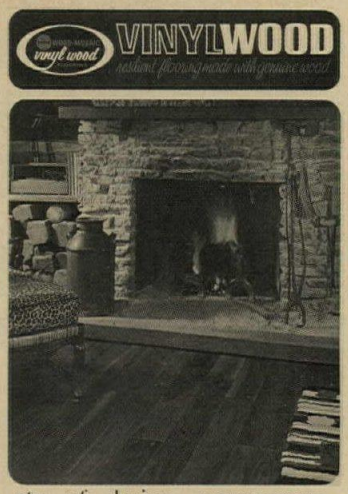
Resilient wood flooring. Hardwood veneer protected by a sheet of clear vinyl produces flooring with the qualities of resilient vinyl. Pamphlet mentions upkeep, variety of design, permanence, and installation; an installation manual is also available. Some technical data concerning construction of "Vinylwood," dimensions, noise control, along with stain, moisture, and impact resistance. Wood-Mosaic Corporation, 5000 Crittendon Dr., Louisville, Ky. 40221.
Circle 214, Readers' Service Card



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Automatic dispatching. "Switch-Cart" systems automate storage and retrieval functions of warehouses. Carts travel along a 3" deep by 2¼" wide track, following routes designed for each installation, and each cart can be programmed for a specific location. Roller-bed and tilt-tray carts discharge their loads automatically. Brochure describes operation of system, and illustrates text with typical layouts and photos of carts in operation. 8 pages. SI Handling Systems, Inc., Easton, Pa. 18042.
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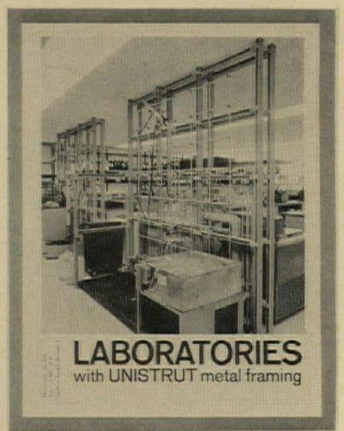

Metal framing in the lab. Booklet shows how manufacturer's metal framing is used in laboratories as ceiling support systems, wall supports,

pipeline or shelving supports, and apparatus or instrument frames. General applications are discussed. Data and illustrations of channels and fittings. Specifications. 39 pages. Unistrut Corp., 4118 S. Wayne Rd., Wayne, Mich. 48184.
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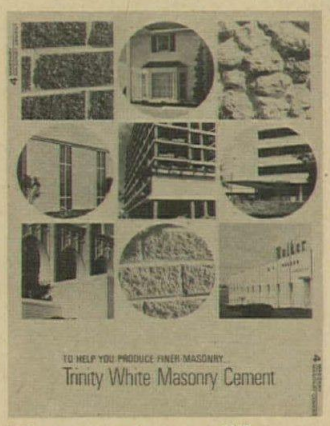
SURFACING



Mortar makes a difference. Color illustrations show white and tinted mortar in a variety of buildings. Photographs show what color effects can be achieved and the contrast between white and tinted mortars. 8 pages. General Portland Cement Co., 4400 Republic National Bank Tower, Dallas, Tex. 75201.
Circle 217, Readers' Service Card

Pick a presswood panel. "The Many Moods of Royalcote," lists and pictures the manufacturer's interior wall panels. Most are wood grains, but hardboard (marble and filigree) are also shown, as are pegboard and panels with predrilled slots for shelf brackets. Details and accessories, joint treatments, conditioning and finishing are described. 24 pages. Masonite Corporation, Masonite Building, 29 N. Wacker Dr., Chicago, Ill. 60606.
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PROGRESSIVE ARCHITECTURE
NEWS REPORT

REINHOLD PUBLISHING CORPORATION
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NEXT MONTH IN P/A

CALIFORNIA ARCHITECT DESIGNS NEW ENGLAND VILLAGE. *When the young brothers Papparazzo decided to build a new retirement village in rural Connecticut, they asked Charles Warren Callister, noted for his Bay Area Style architecture, to design it. The results were surprisingly appropriate and rewarding, as will be seen in the December P/A.*

OLD TOWNS INFLUENCE NEW TOWNS. *Erwin Galantay investigates the "new towns" built by the Dukes of Zahringen in Germany and Switzerland in the 12th and 13th Centuries, and finds object lessons in them that might well be studied by today's planners and architects.*

CRAC DES CHEVALIERS. *A picture story of a little known, but outstanding medieval monument, the Crac des Chevaliers in Syria. This imposing castle has a long history of association with the Kurds, the Crusaders, and the Knights Hospitalers. It has been largely restored by the Syrian Department of Antiquities and Museums.*

FOUNDERS ROOM OF THE MUSEUM OF MODERN ART *is Philip Johnson's intriguing reverse-hue version of his black-steel-framed museum addition. Here, the white-painted steel interior makes a playful Miesian comment in very sophisticated terms.*

PLUS: *a discussion on the problems and means of "Financing Public Housing"; happenings-of-the-minute in P/A NEWS REPORT; criticisms and controversies in P/A OBSERVER; and all the informative and readable P/A departments and columns.*

TEAR OUT, FILL OUT, AND SEND IN *the subscription order card at the rear of this issue and you will receive all the good reading described here, plus 11 other equally powerful issues.*

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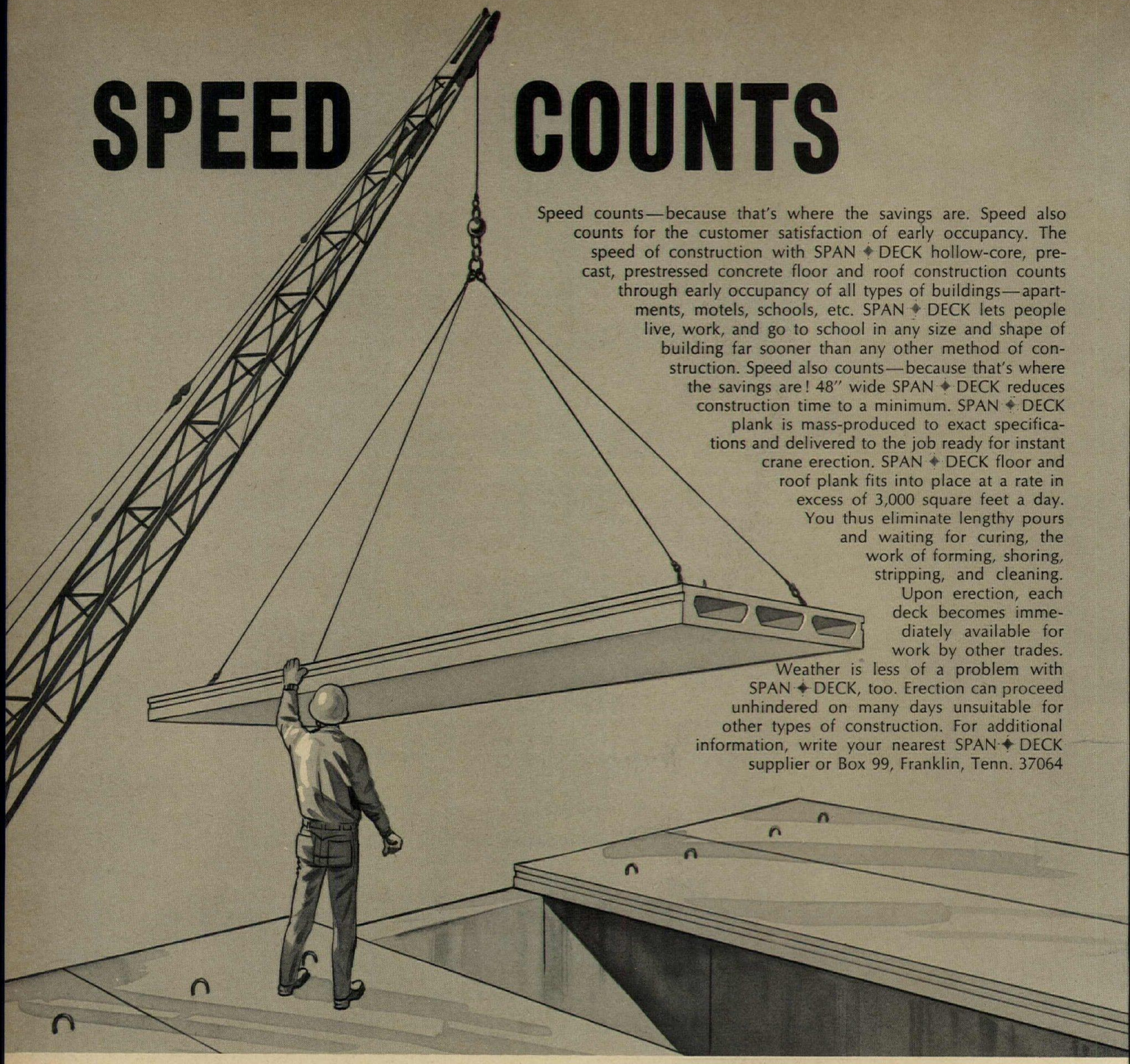

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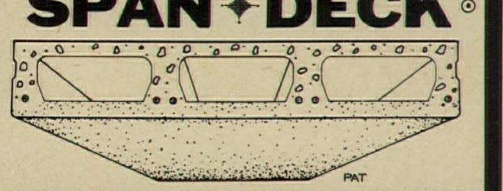

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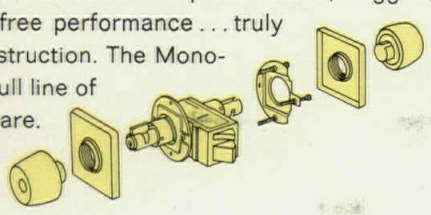

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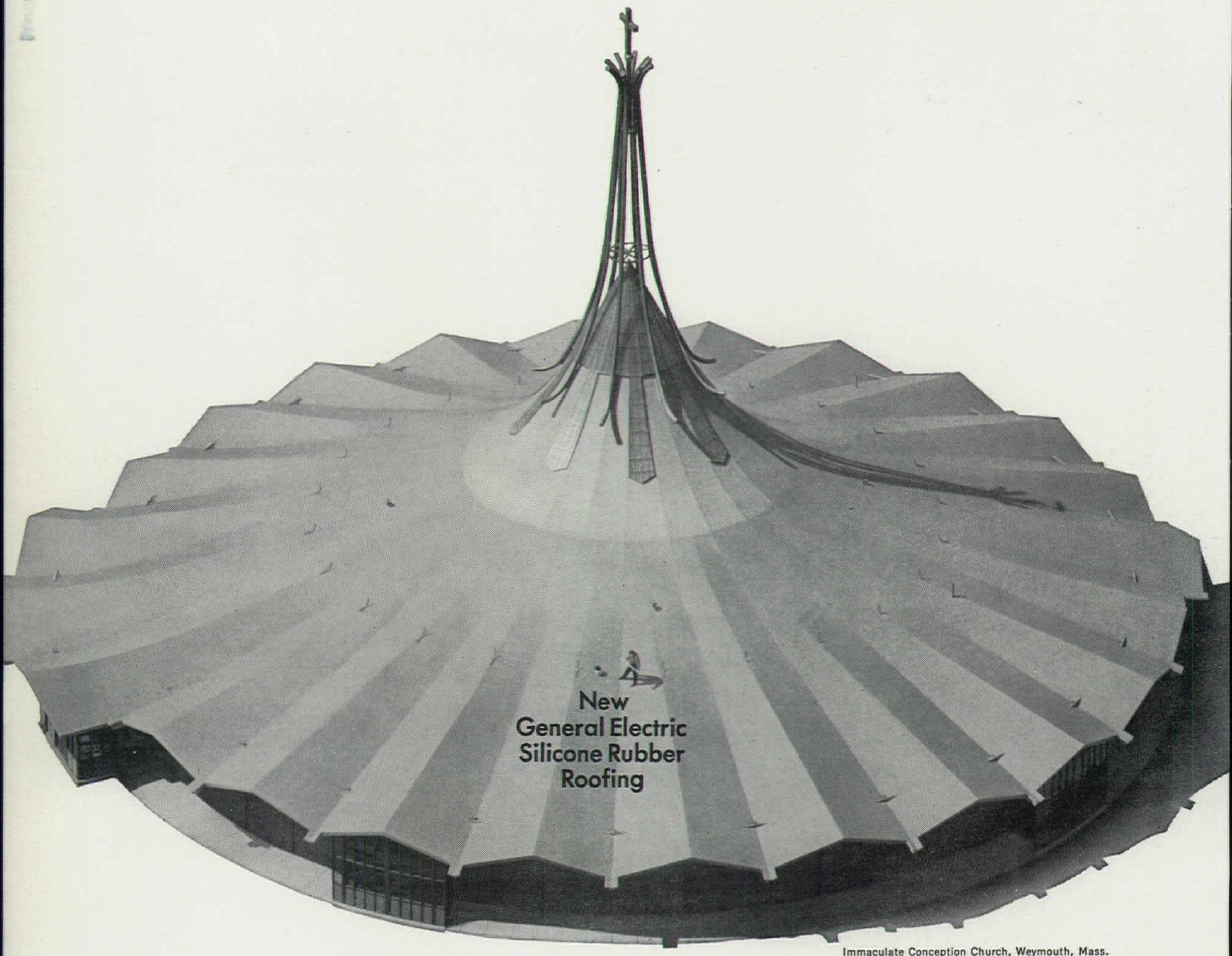

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Architects: Holmes & Edwards, Boston, Mass.

The Goof Proof Roof.
It covers any shape you can dream up.

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And, Silicone Rubber Roofing will stay weather resistant, seamless and resilient for years, if the substrate does its job. And that solves the most common problem of intricate roofs like this. Leakage.

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GENERAL ELECTRIC

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Washington Club Inn, Virginia Beach, Virginia, features 40 8-foot Andersen Perma-Shield Gliding Doors that give each guest a sweeping ocean view. Architect: Evan J. McCorkle, Virginia Beach

Is it overstatement to suggest that new Andersen Perma-Shield™ Windows and Gliding Doors might be perfect? You'll have to be the judge of that.

They do combine treated wood and a sheath of rigid vinyl to create the most maintenance-free, best insulating windows ever.

Then consider these advantages for you and your clients:

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And rigid vinyl is manufactured to the same close tolerances that make Andersen designs famous for weathertightness.

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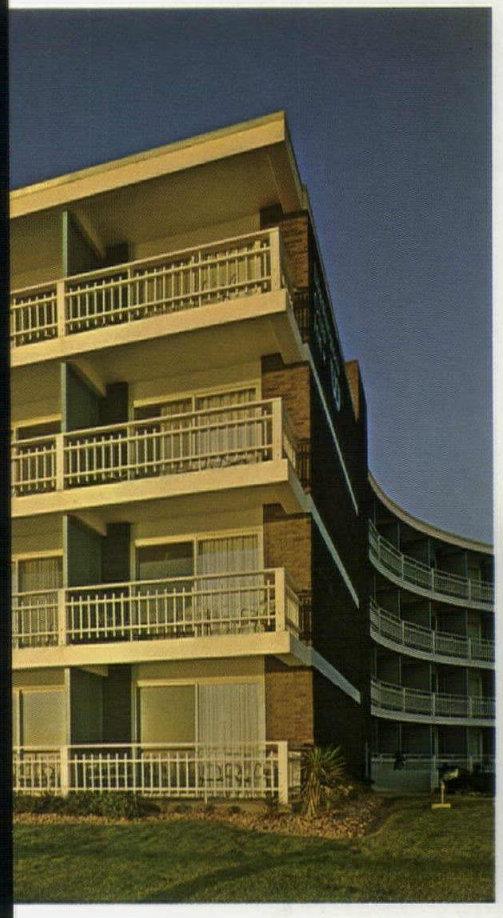

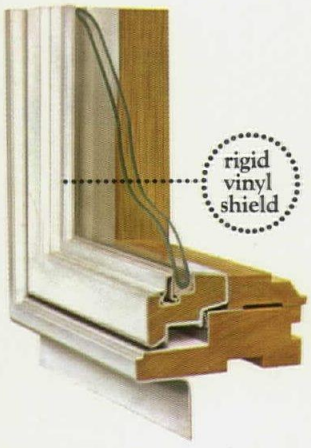

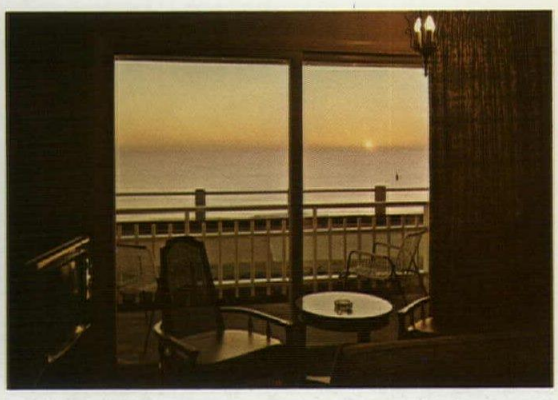

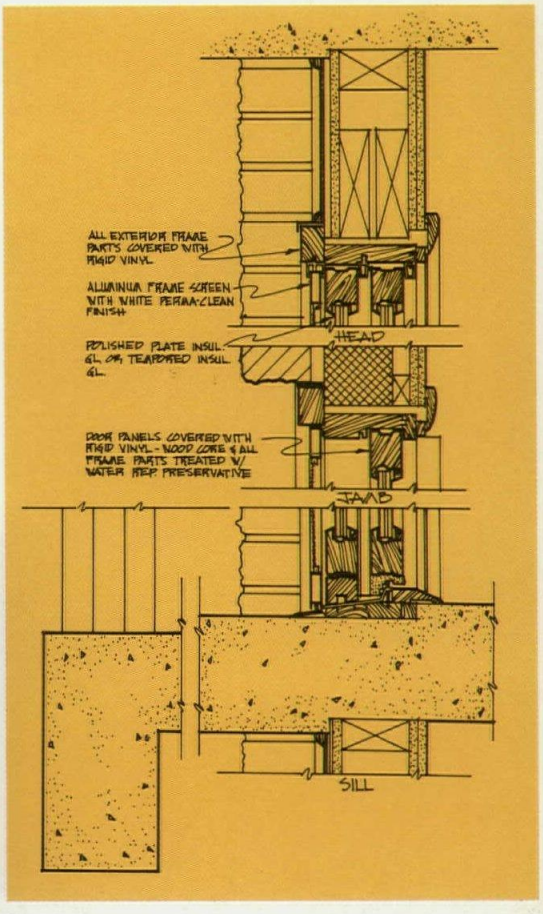

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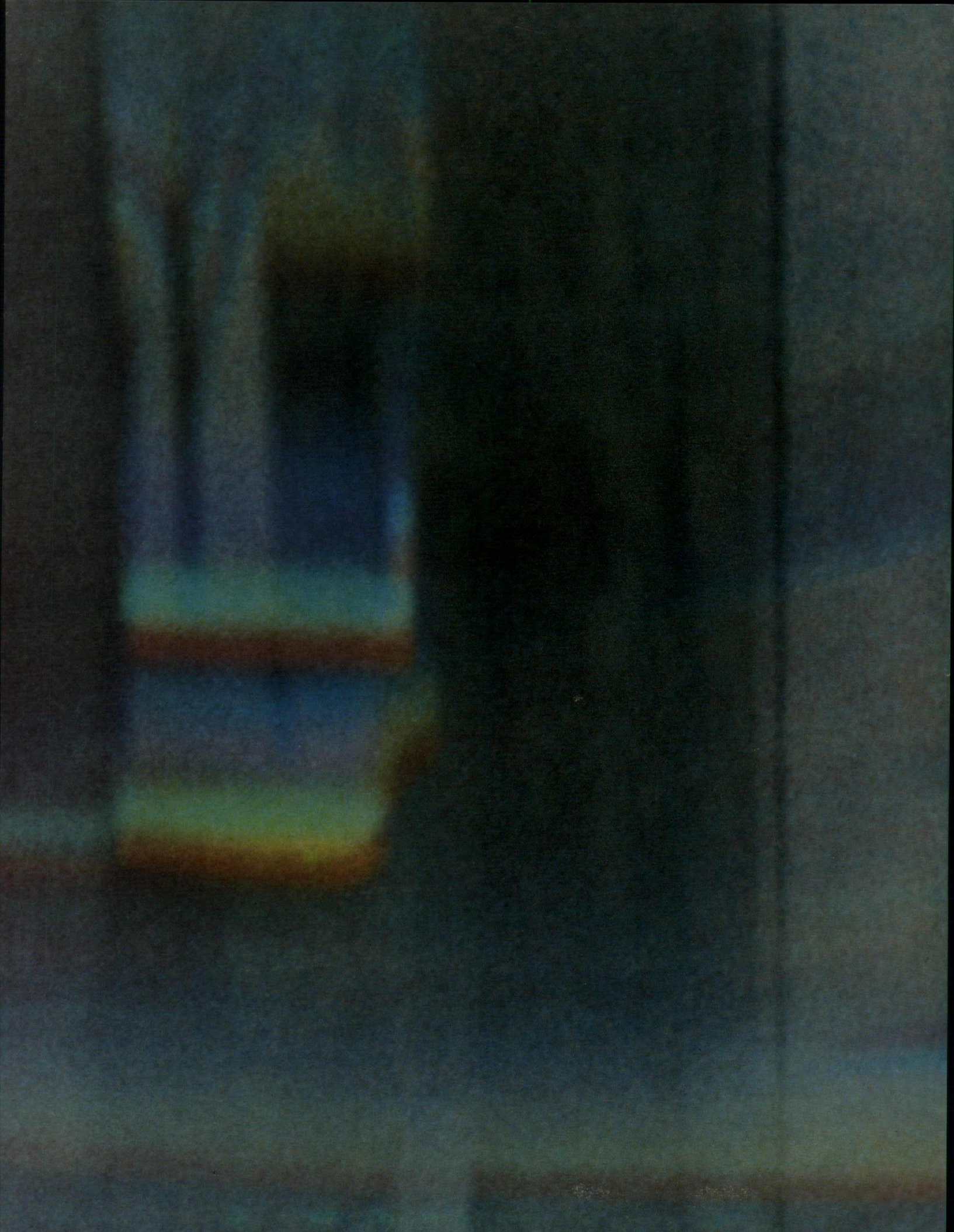
Created by Andersen for the low-upkeep building



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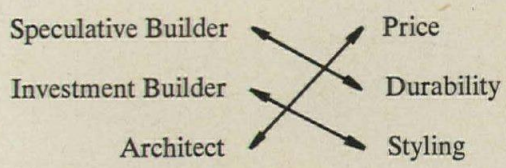
Architect ⟷ Styling

How it is



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See our catalog in Sweets Architectural File 15d-AL.

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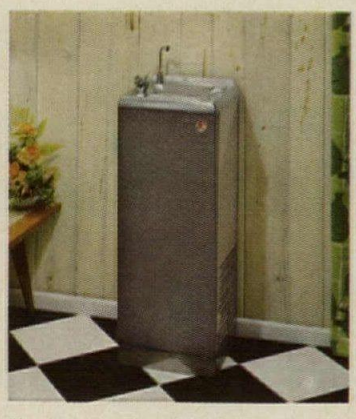
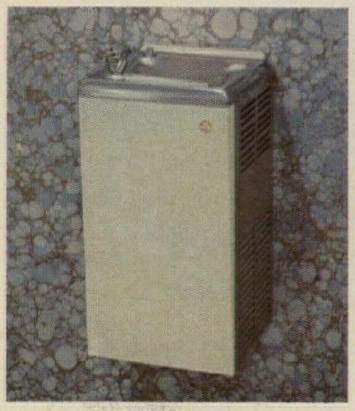
SOMETHING FROM SUNROC FOR EVERYBODY

Semi-recessed models with choice of stainless steel or charcoal vinyl apron. Air or water cooled.

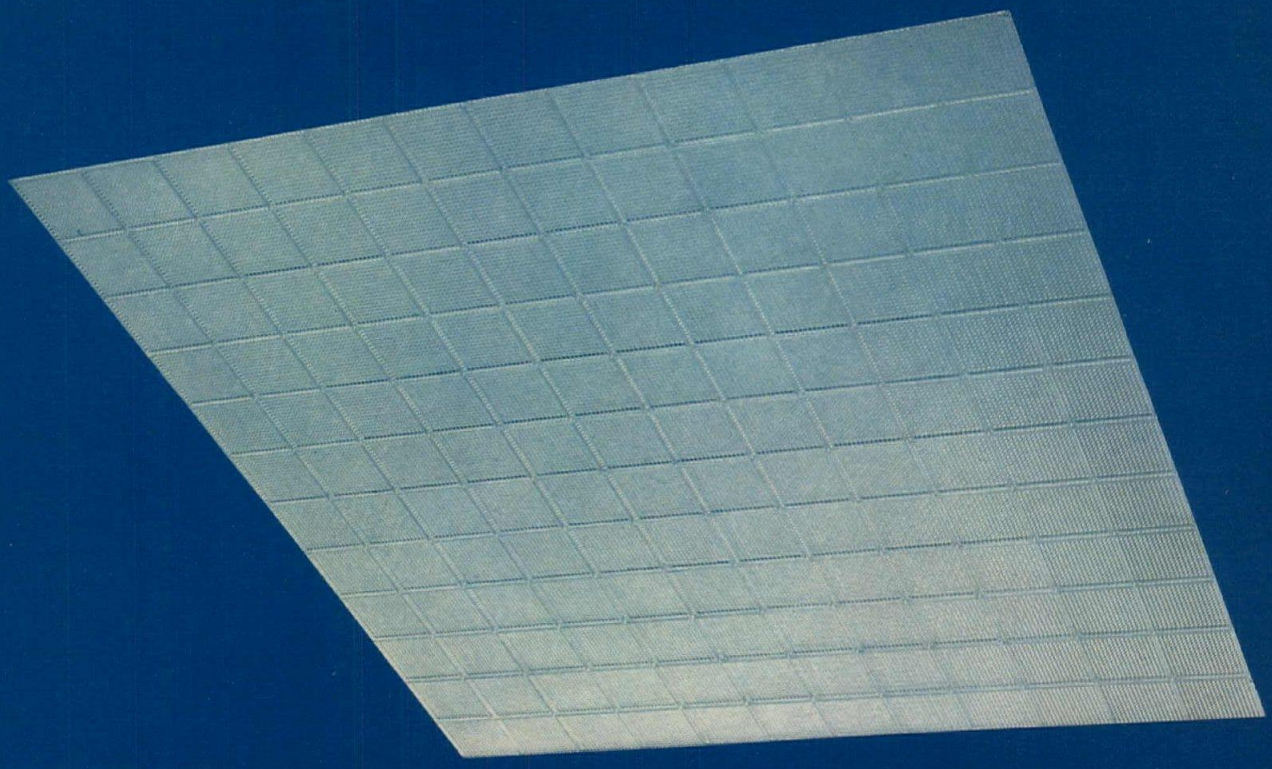


Flush-to-wall models are standard with an off-white or charcoal vinyl front. Hot and cold water units available.



Wall-mounted models with off-white vinyl apron that can be spray painted on the job any color you specify. 706

VERSATILITY



Holophane's new Controlgrid Controlens® has a truly distinctive modular look. You can specify it in sizes up to a big 3′x3′–or in ANY smaller size.

Clean, crisp appearance. Controlgrid's rectangular grid pattern gives it the trim, lean, unobtrusive look so popular in contemporary interiors. The grid pattern of slightly raised ridges gives Controlgrid a unique modular look and helps keep the lens rigid no matter how large the lens area.

Design flexibility. Controlgrid is molded in 2′ X 4′ and 3′ X 3′ sizes, and is available in ANY smaller size you specify. That means you can use different sizes to meet different lighting needs while keeping appearance uniform *throughout* your design.

Precision light control. Controlgrid's prismatic structure is carefully engineered to deliver the maximum amount of glare-free, prismatically-controlled illumination *uniformly* over horizontal surfaces. You get more light where you need it. And Controlgrid has exceptionally low and even lens brightness—it *never* intrudes on your design.

CONTROLENS by

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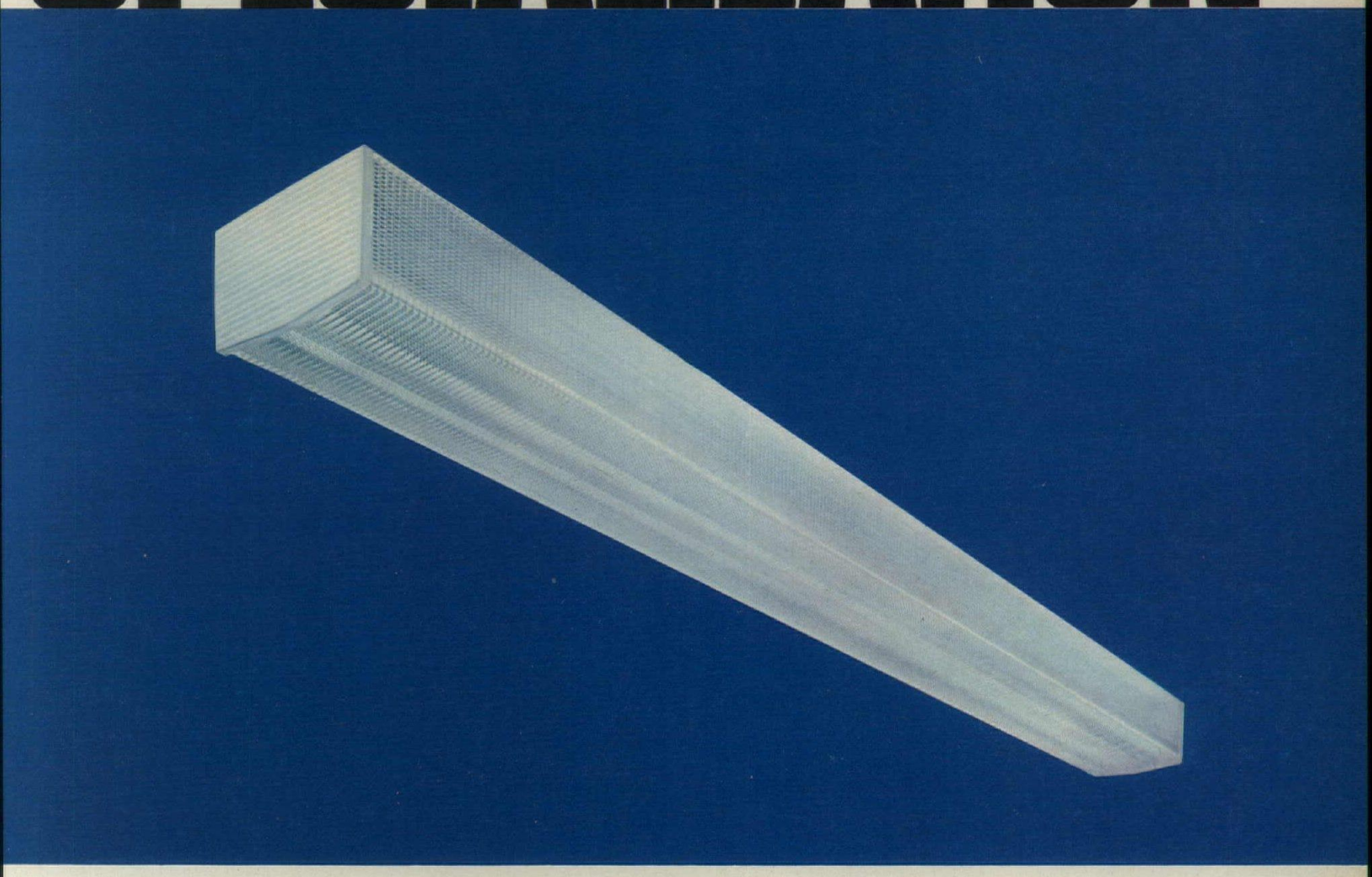
SPECIALIZATION



Holophane's new 6100 Controlens has the slim styling and specialized performance you need for lighting corridors, library stacks and similar areas.

Full ceiling and wall illumination. The 6100 is a slender, one-lamp wrap-around lens designed to distribute light prismatically onto ceiling and walls as well as floor. This eliminates all dark areas, makes any corridor or aisle safe, cheerful and inviting.

Uniform, glare-free illumination. A combination of longitudinal and transverse prisms on bottom of lens distributes glare-free light uniformly over a broad area, not just under the fixture. This means you can space units more than twice the aisle width apart and still get completely uniform illumination.

Low and even lens brightness. A unique configuration of linear prisms obscures the lamp, illuminates the lens evenly and unobstrusively. There's no socket or lamp-end darkness. And since the lens attaches to its fixture by its rugged endcaps, it functions like a frameless Controlens with no visible hinges to mar appearance.

You can specify both the Controlgrid and 6100 lens in the fixtures of dozens of leading manufacturers. For full information on these newest Holophane lenses, write: Dept. **G-11** Holophane Company, Inc., 1120 Avenue of the Americas, New York, N.Y. 10036.

CONTROLENS by

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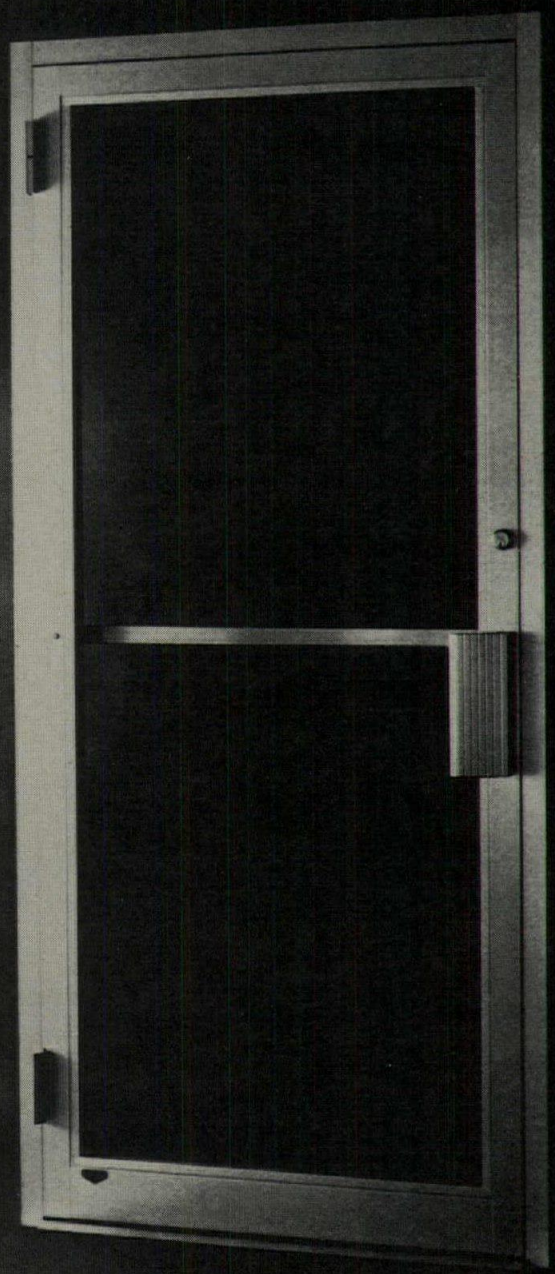
Case in Point.

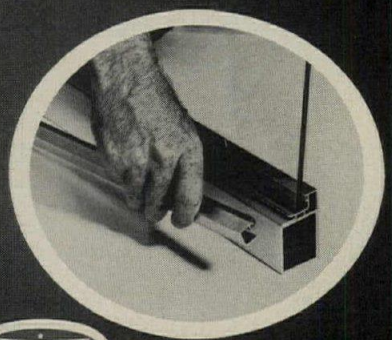


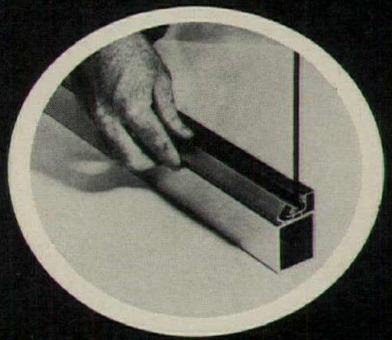
Quality is more than a word at Natcor.

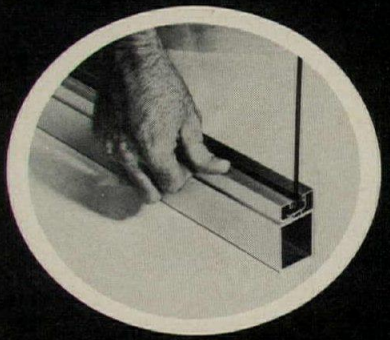
Natcor's ingenious Vinyl Glazing Bead principle saves time and labor. Only one member to snap in during glazing of door, assuring snug, permanent fit and simple, fast installation—Just one of *six* solid reasons why your specifications always mean quality and dependability with Natcor.

1. Patented, adjustable Butt Hinge. 2. Snap-In Vinyl Glazing Bead. 3. Quality Extrusions. 4. Maximum Security Lock. 5. "Sure-Grip" Pull Handle. 6. Reinforced Corner Construction.

For full information on a complete line of doors and entrances, see our catalog in Sweets, or write Natcor.







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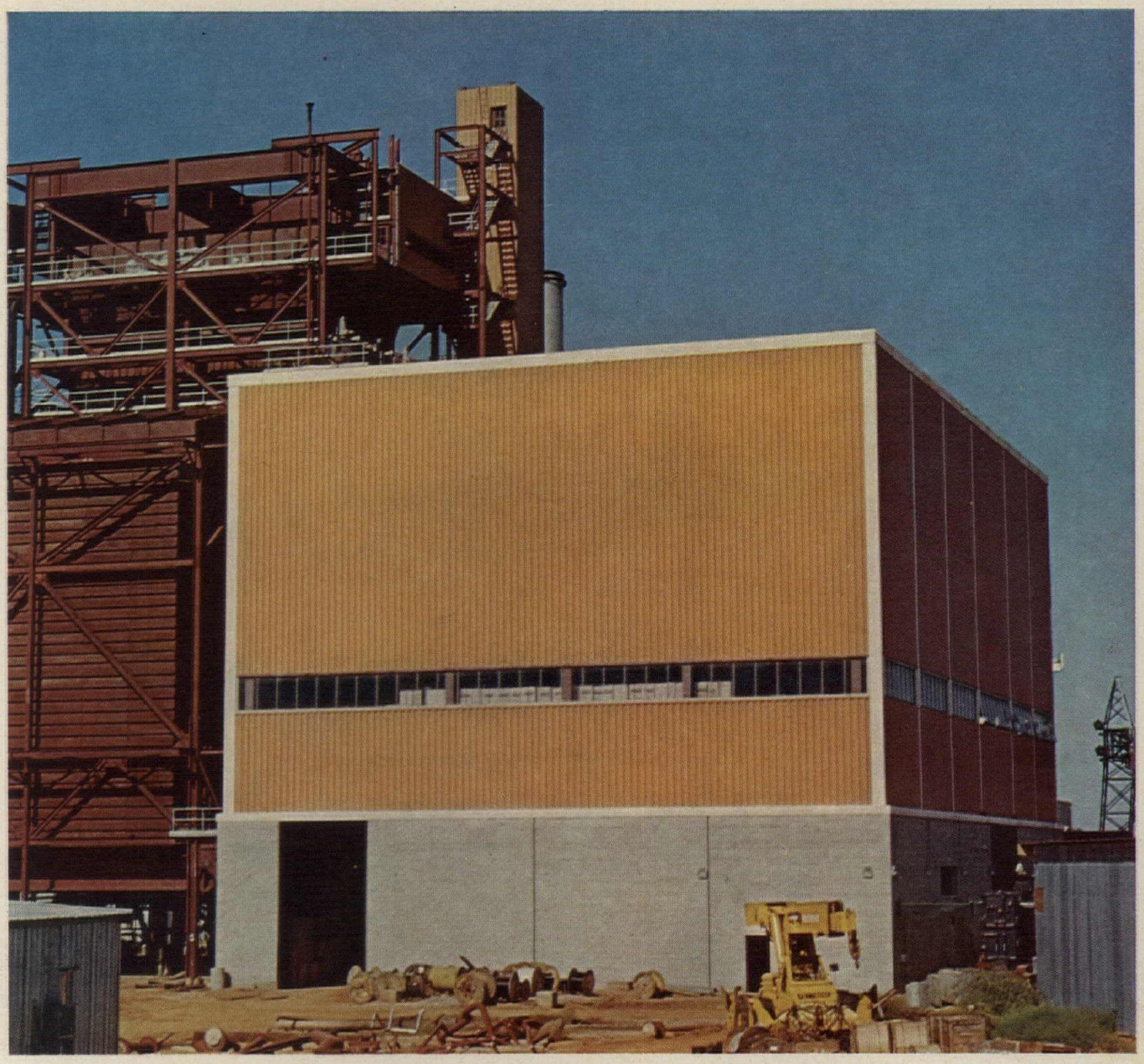

Building owners: Public Service of Oklahoma. Architects: Black and Veatch, Kansas City.
Metal walls finished with Fluropon*, made with Kynar 500®.

Metal walls cost less . . . stay colorful with finishes of Kynar 500®

Metal curtain walls cost ⅓ to ½ as much as masonry. They go up faster. They're movable . . . can be disassembled quickly for expansion or for access to equipment.

What's the best protection for the metal? Finishes containing Kynar 500, Pennsalt's fluorocarbon base for long-life coatings. They come in a wide selection of colors; assure perfect color match panel for panel. They're durable: won't crack or craze, take abrasion in stride. Accelerated tests by Pennsalt, plus years of exposure data project 30 years of maintenance-free life!

For your next industrial building, consider metal walls highlighted by a colorful finish containing Kynar 500. For more information, contact Plastics Department, Pennsalt Chemicals Corporation, 3 Penn Center, Philadelphia, Pa. 19102, LO 4-4700.

Make your base specification Kynar 500!

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FLORIDA PRESBYTERIAN COLLEGE, ST. PETERSBURG, FLORIDA

NOW...COLLEGES ARE GOING ALL-ELECTRIC...

Why did they choose All-Electric Design?

When these two liberal arts colleges decided to construct new campuses, their prime consideration was: how best to plan for rapid growth. Rivaling in importance was the more traditional consideration: how to stretch limited funds—both in initial construction and in annual operation.

On both accounts, studies indicated that the soundest choice was All-Electric design—with electricity as the single energy source for all needs, including heating and cooling.

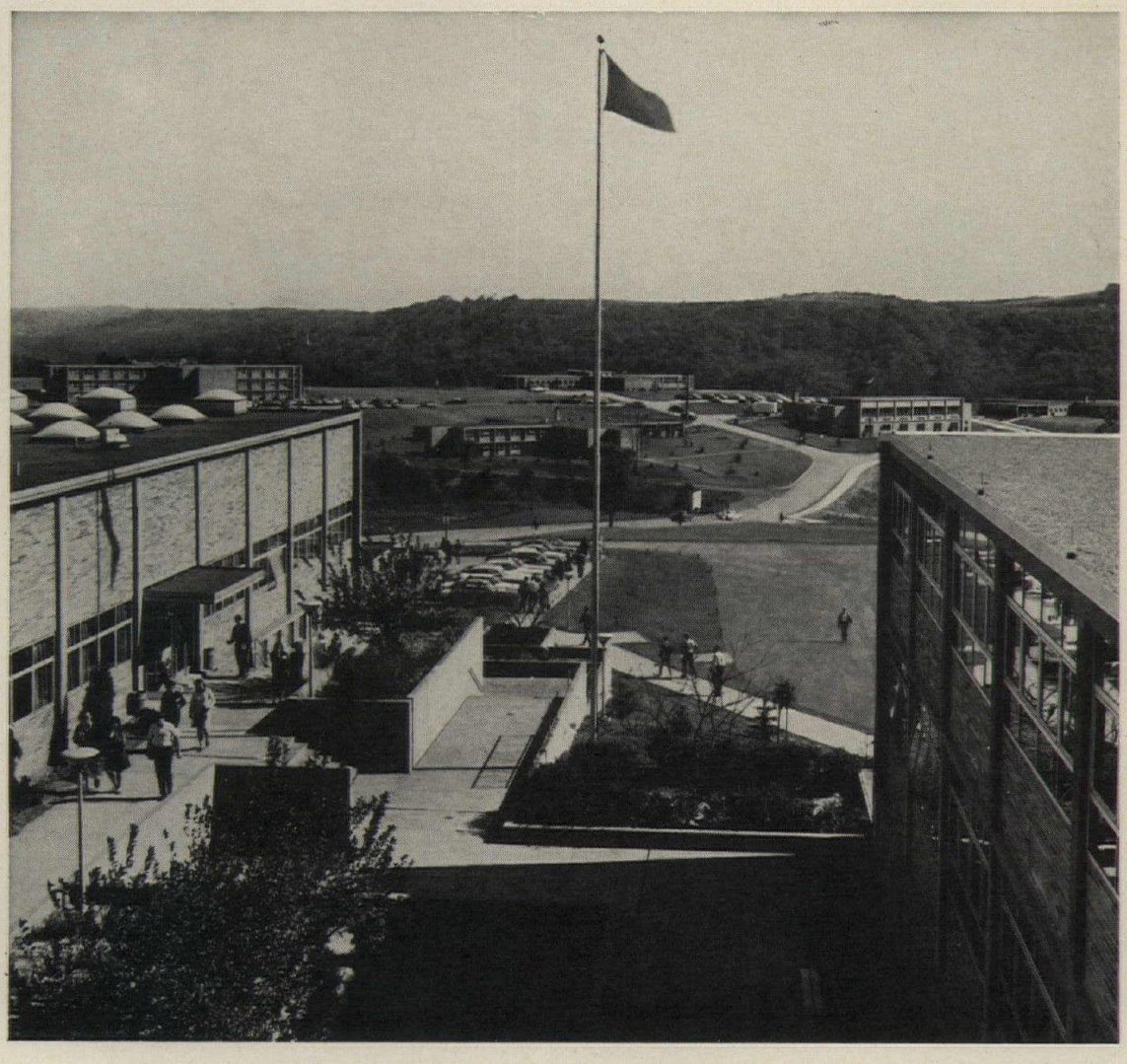
For many reasons.

Consider expansion. Each building on both campuses has its own individual flameless electric heating system. So, when new buildings are added, the schools will avoid the problems of tunneling from central heating plants. They will thereby also avoid the complexities of balancing the capacities of flame-fired boilers with existing and future heating needs.

Now consider economy. All-Electric design precludes costly boiler rooms, chimneys, trenching, piping and fuel storage. Consequently, construction costs for both colleges were much lower than with flame-fired heating systems.

And annual cost of operation? Also much lower at both schools. Because electric heating permitted savings in maintenance, operation of equipment, repairs and other operating factors. At Steubenville, for example, estimated maintenance time

• **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.)

There are many other advantages of All-Electric design. Call your electric utility company. They will welcome the opportunity to discuss them with you in connection with your next project.

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November 1967 **PROGRESSIVE ARCHITECTURE**

"Architecture is a spirit that can never be satisfied, and it is completely insatiable. It transcends all styles. . . . It knows nothing but simply its presence."

LOUIS I. KAHN

EDITORIAL

Nice and simple, that approbatory expression heard often in informal architectural criticism, might soon go out of use. Evidence is piling up that simplicity is not a virtue at all and clarity need not be—indeed, should not be—the architect's goal.

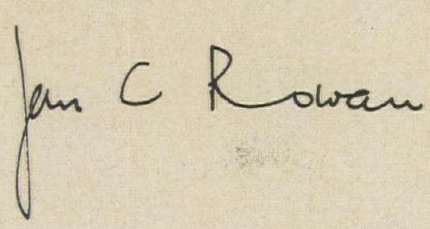
In an article published this summer by the *Journal of the American Institute of Planners*, entitled "Complexity and Ambiguity in Environmental Design," a research team composed of an architect and a psychologist reports on the effect of simplification on behavior and well-being. Besides discussing the growing body of design literature on the subject—Jane Jacobs' plea for "diversity," Robert Venturi's manifesto in praise of "complexity and contradiction," Aldo Van Eyck's interest in "ambivalent images" and "multiphenomena," and other writings, including those that deal with the obviously increasing professional interest in open-ended vernacular design—the paper calls attention to several experiments conducted on both human beings and animals. These experiments indicate a preference for environmental ambiguity and suggest that there may even be a quantifiable chemical and anatomical difference in the brains of those reared in different types of environment. In one experiment, three groups of rats were placed in surroundings with differing perceptional stimulations: visually impoverished, standard, and visually enriched. Result: "The rats in the enriched environment improved over the other two groups in brain weight and message capacity, in problem solving, and in learning. These results held even when mature rats were used instead of young ones."

So, next time you have a look at your drafting board, bear in mind that you might not only make people happy or unhappy—you might be actually determining the size of their brains! This is quite a power to have, a power much greater than any of us suspected when we first started to tinker with the design of buildings.

The above paper, which the authors offer as a starting point for future discussion and research, concludes that simplicity, that aim of contemporary architecture, often reduces sensory input to dangerously low levels. Although overcomplication can lead to sensory satiation (chaos), oversimplification leads to sensory deprivation (monotony). The trick, of course, is to find the ideal solution—one that will not be chaotic and yet ambiguous enough to permit more than one interpretation on the part of the viewer.

If future experiments prove conclusively that too much clarity in environmental design is detrimental to human welfare, we at P/A will be vindicated for publishing so many "controversial" items these last few years. Fragmentation and open-endedness of design discussed in our study of the third millennium, the report on the dancer-architect workshop in California, the various design "happenings" described on our pages, the many presentations of the somewhat "beat" designs by the younger generation of architects, the current experiments in various forms of mannerism, permissiveness, inclusion—and all other symptoms of the design turmoil that we show—they are all manifestations of a wide search for a way out of the designer's blind alley of sterility through simplicity.

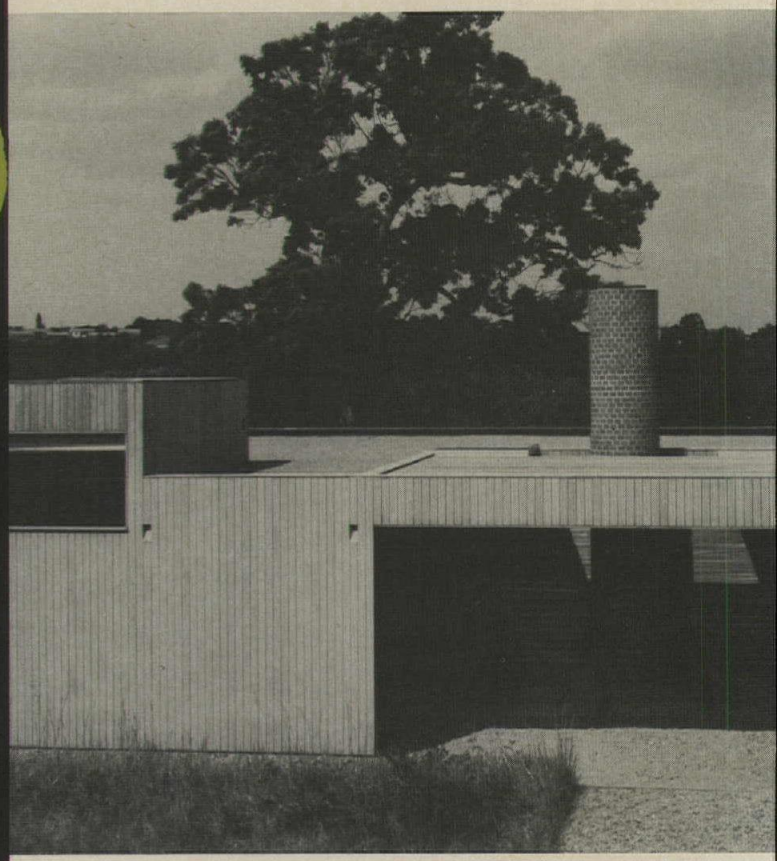
This search, especially when it is primitive or violent, is disturbing to many practitioners. Although it is not easy to be weaned from well-established professional ideals and precepts, a close look at new trends in design is in order. After all, it is the size of our brains that is at stake. ■



3 HOUSES 3 GENERATIONS

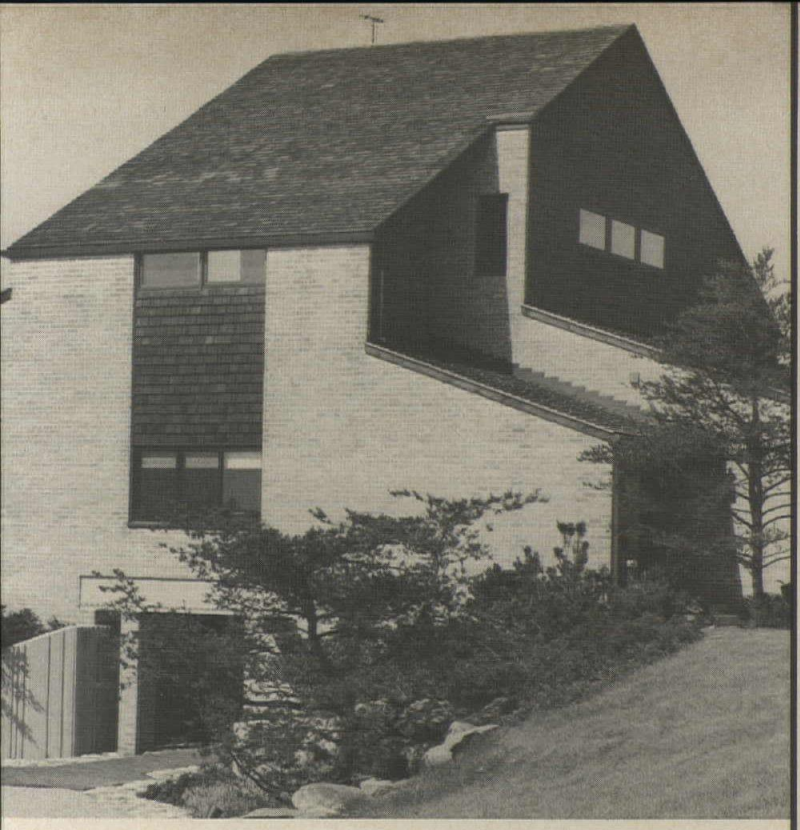
PAUL SCHWEIKHER

was born in Denver in 1903; his distinguished career has included the deanships of Yale and (currently) Carnegie Tech architectural schools. He reached his design maturity at a time when the most powerful contemporary force on architecture was emanating from Harvard, where Gropius and Breuer were producing a stream of graduates who profoundly affected the design of the 1940's and 1950's. The Americanization of the Bauhaus concepts and the "International Style" had taken strong root in New England, and Schweikher is one whose architecture reflected, and still reflects, the concern with manufactured objects and materials, the manipulation of surfaces, "interpenetrating" volumes and voids, and the desire to let buildings — the things they are made of and the way they are made — "speak for themselves," although with the sophisticated translation provided by the architect and his teammates, the engineer, industrial designer, the furniture and fabric designer, the sculptor and painter, and so on. That Schweikher continues to be one of the most accomplished practitioners of the design trends of his generation is shown by the house in Fox Chapel, Pennsylvania, discussed in these pages.



EDWARD D. DART

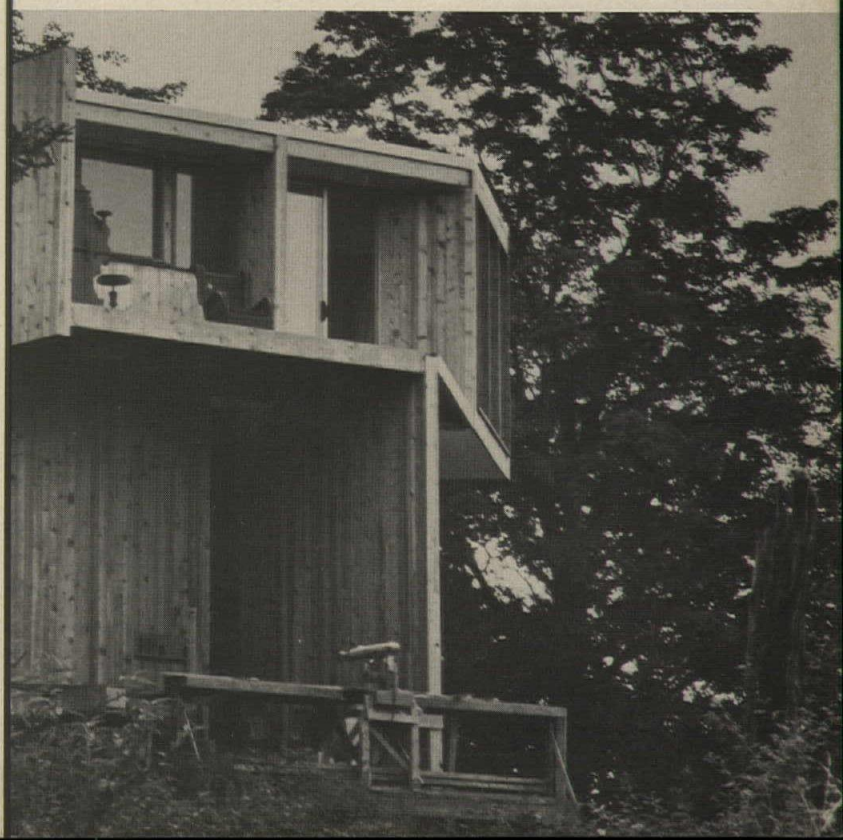
was born in New Orleans in 1922, becoming, on graduating from the University of Virginia and Yale (all three men under consideration here are from Yale, coincidentally), a member of the next design generation after Schweikher's. This was the generation that decided that the austere approach handed down by the Bauhaus and the Harvard group was no longer the universal panacea some of its adherents had so vehemently proclaimed it. A widespread search for more warmth, new forms, and, in Yamasaki's term, more "delight" in design took up the latter half of the 1950's and the be-



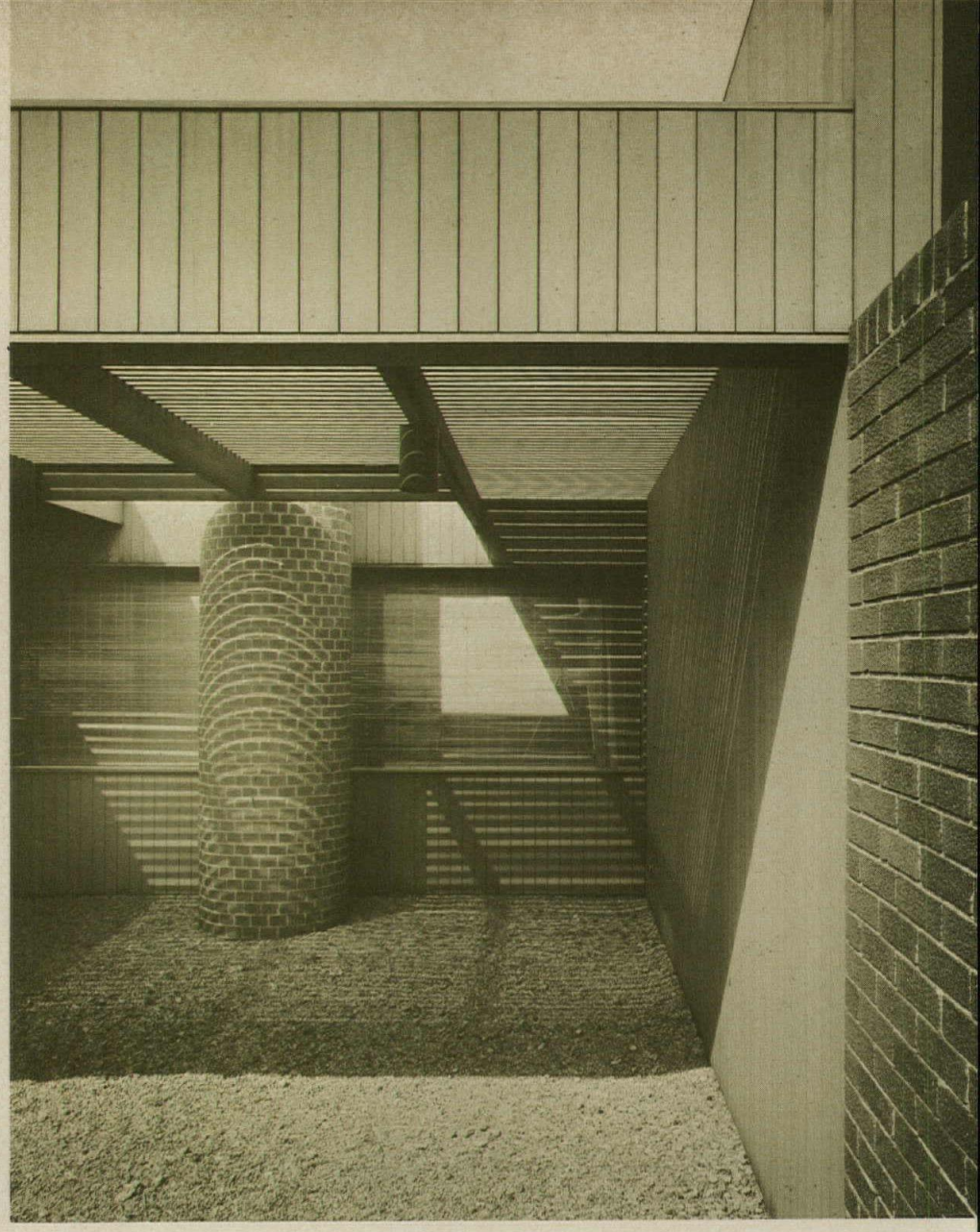
ginning of the 1960's. In many precincts, this search led up blind alleys to frivolous shapes, fluttery roofs, and pastiche translations of older — Gothic, Persian, you name it — architectures in unsympathetic materials for inappropriate uses. Experienced talents were swept up in the pell-mell hunt for "beauty." Edward D. Stone became probably the most famous victim, abandoning his previous meticulous, deservedly acclaimed variations on the International Style for an eminently saleable brand of bland gorgeousness. A number of designers, however, stuck to the quieter search for a "human" architecture, one that would reflect the purposes of buildings in what one is tempted to call a peculiarly North American way, because the precursors can be seen to be Wright, William Wurster, the Greenes, Bernard Maybeck, and even the tradition of anonymous, "honest" buildings that have always dotted our non-urban landscape. Edward D. Dart is one of these men. He designed as the head of his own firm for a number of years, investigating the humanity that can be wrung from wood and brick and metal and plaster in a number of quietly distinctive houses, churches, and other small buildings. When he felt that he wanted and needed to work with a larger palette, he became a partner of the large, respected Chicago firm of Loebl, Schlossman & Bennett (now Loebl, Schlossman, Bennett & Dart). But his taste for creating an individual, humane environment has not left him, as his own recently completed house indicates.

LOUIS MACKALL, born in Detroit in 1940, is not even out of Yale yet, but he signifies something that is going on in the architecture of the new generation in his design — more importantly, perhaps, his design *methods* — for his own vacation house in Vermont. It is easy to be patronizing about the earnest involvement of these young people in architecture and society; another architectural magazine recently called some of them "the brownies." But it is precisely because they want to see things in action — a building under construction; a community group to communicate with; an issue to be dealt with head on — in order to learn from them, decide about them, that they are different from the two previous generations. Schweikher's contemporaries had a full-time job in overthrowing an older establishment and establishing *their* vision of a new way of creating architecture. Many in Dart's generation were, and are, concerned about making architecture a freer and more domesticated thing; one that can be humane and evocative and beautiful, not machine-made or "unsympathetic" as they conceived that much contemporary work had become. Mackall and his classmates have thrown out (with the assistance of a cooperative administration) practically all preconceived notions of design or how to deal with the classic architect-client-contractor *ménage à trois*. To them, the important thing is the involvement; the design change on the spot because something else works better, or is more amenable to its future users; the unfettered shape; the dialog with any and all elements and personalities involved in a project. That their favorite line is the diagonal is significant, because their tendency indeed is to cut across other lines themselves, contributing here, picking up a detail there, and generally drawing the whole project ahead under the steam of their enthusiasm and, to use the term again, involvement. It is inevitable that locutions like "instant architecture" and "happening architecture" will be bandied about, generally disparagingly, but it seems inevitable, also, if the present attitudes and interests of these young designers prevail, that a lot of preconceived notions about the nature of the design process and the relation of the architect to those he serves and those who serve him will be emphatically altered.

Here, then, we have three works by three generations of architects — three generations of Yale-produced architects even. Each is almost a textbook illustration of the interests, desires, and disciplines of as many episodes in architecture in the United States in this century. They are not presented here side by side to invite invidious comparisons, but to show directions we have investigated and roads we have traveled, and are traveling, and where we might well be going next. — JTB



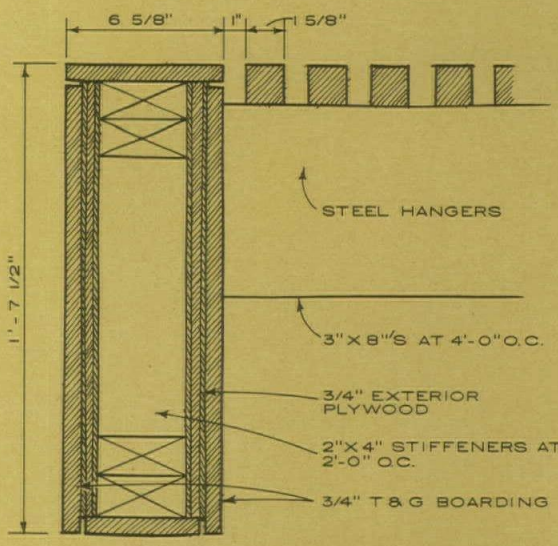
"a kind of sculptural box"



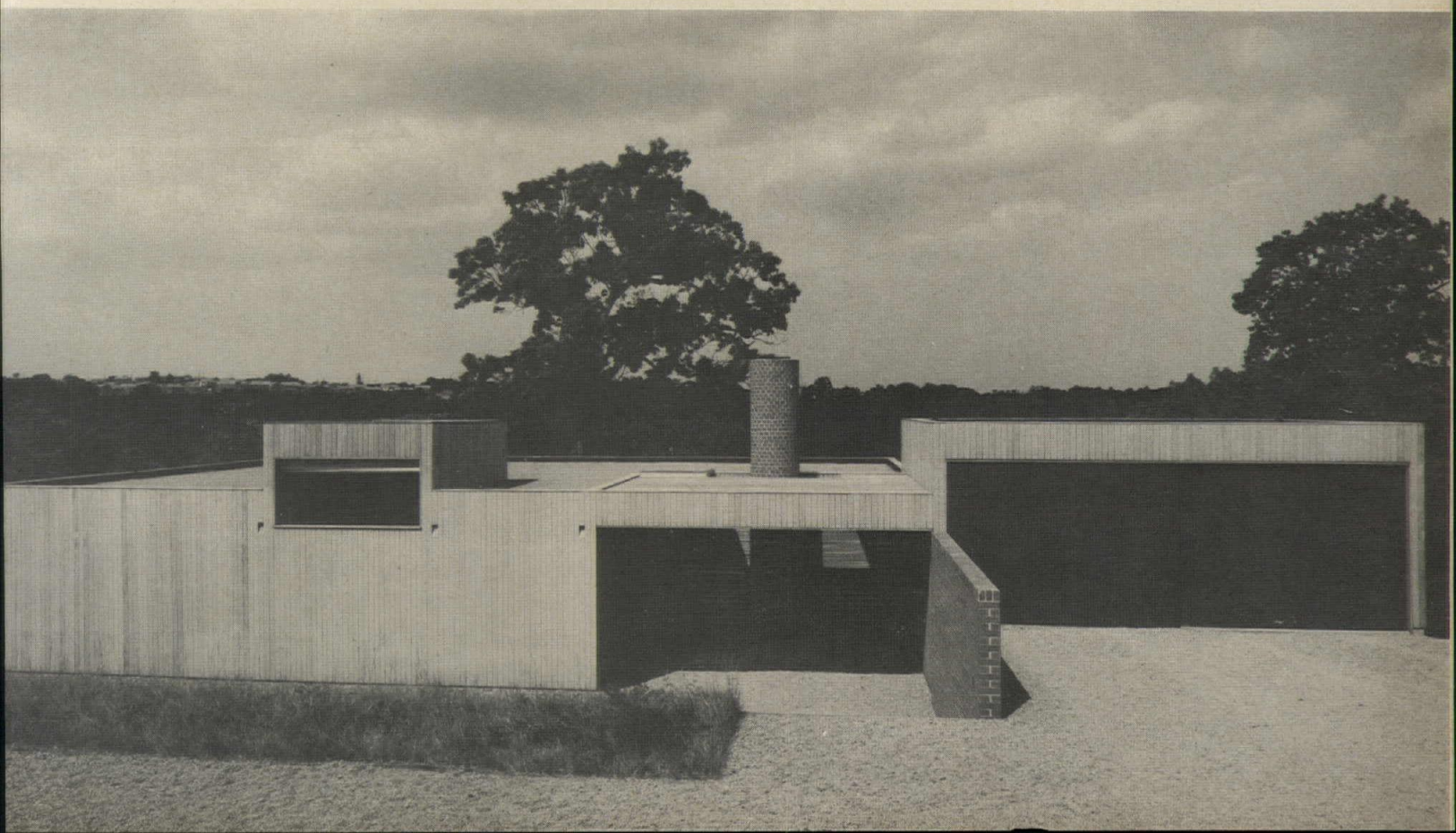
HOUSE FOR DR. AND MRS. CRAIG WRIGHT, *Fox Chapel, Pa.* ***Architects:*** *Paul Schweikher Associates.* ***Project Coordinator:*** *James H. Cook.* ***Site:*** *A steep slope in a hilly, wooded, suburban area near Pittsburgh.* ***Program:*** *To house a doctor, his wife, and their three young children. No doctor's office in house.* ***Structural System:*** *Balloon frame.* ***Mechanical System:*** *Forced-air perimeter circulation system with provision for future cooling.* ***Major Materials:*** *¾" x 3⅝" tongue and groove redwood boarding inside and out; brick.* ***Cost:*** *$48,220.* ***Consultants:*** *James R. Dodson, Mechanical. Richard Gensert, Structural.* ***Photography:*** *James H. Cook.*

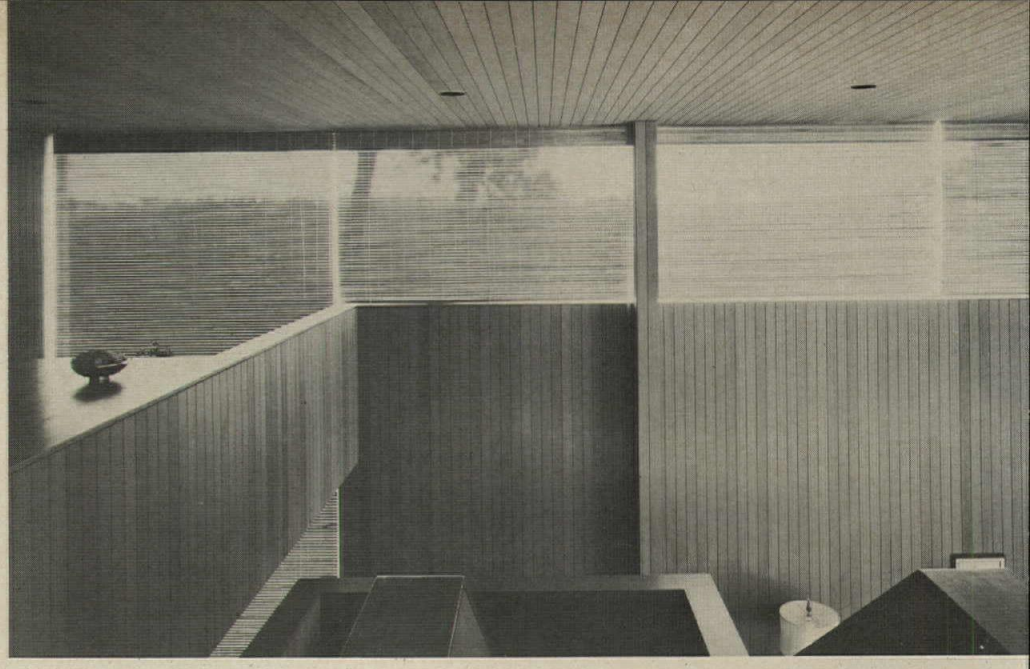
"A house of boards done in a rigid rectangle way, but with a plastic relationship between the solid wall and the transparent-reflective surfaces of glass; a kind of sculptural box." Thus Paul Schweikher describes the house in Fox Chapel, a Pittsburgh suburb bordering on rural areas. Although the house overlooks a valley, there is a row of tract houses bristling along the opposite ridge in the next township, so the architect turned the house's views in to the property's own trees and wild grass. With the exception of the driveway, some pebbled areas immediately adjoining the house, and ground cover at the entrance and (with wild flowers) on the downslope side, the site was left in a state of nature. Consequently, the architect's manipulation of planes and voids in a "cool" manner to create his exterior envelope gives more than a little recall of Corbu's Villa Savoie standing serenely in its field, or the Stein villa at Garches. Contrasts between materials, such as the interplay of redwood, brick, glass, and pebbled ground cover, moreover, bring to mind some of the Breuer houses of the 1940's and the 1950's where New England stone walls were brought into play against more "sophisticated" planar materials. The use of the slatted trellis over the entrance, casting its striped shadows over the flat wall surfaces and the round brick chimney bears a relationship to the play with light and shadow and shapes Neutra performed so skillfully in his desert houses.

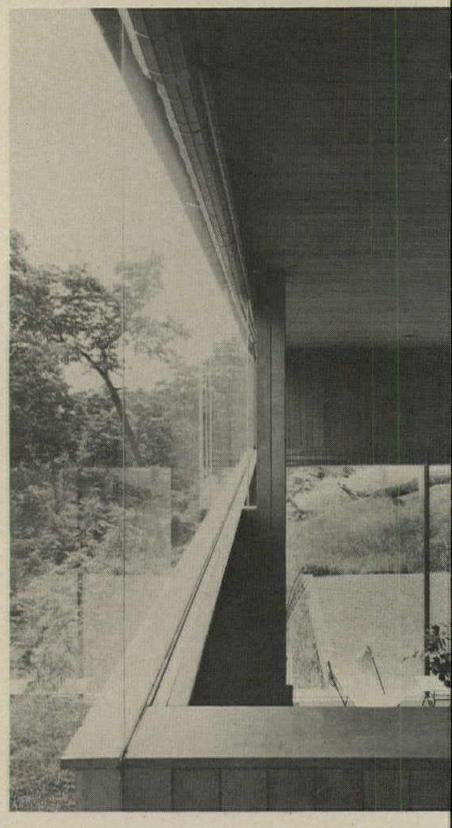
Within the house, the use of a single, large volume for the living area comes from the wish of most of the architects of Schweikher's generation that a building should be "perceived" as a whole — that there should be no secrets or surprises. He says that (because of the hillside site), "It seemed appropriate to make

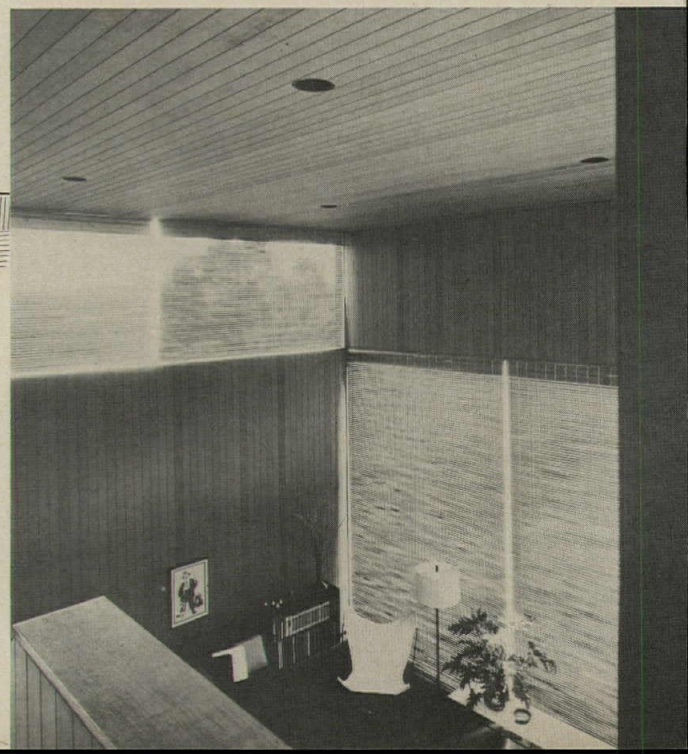


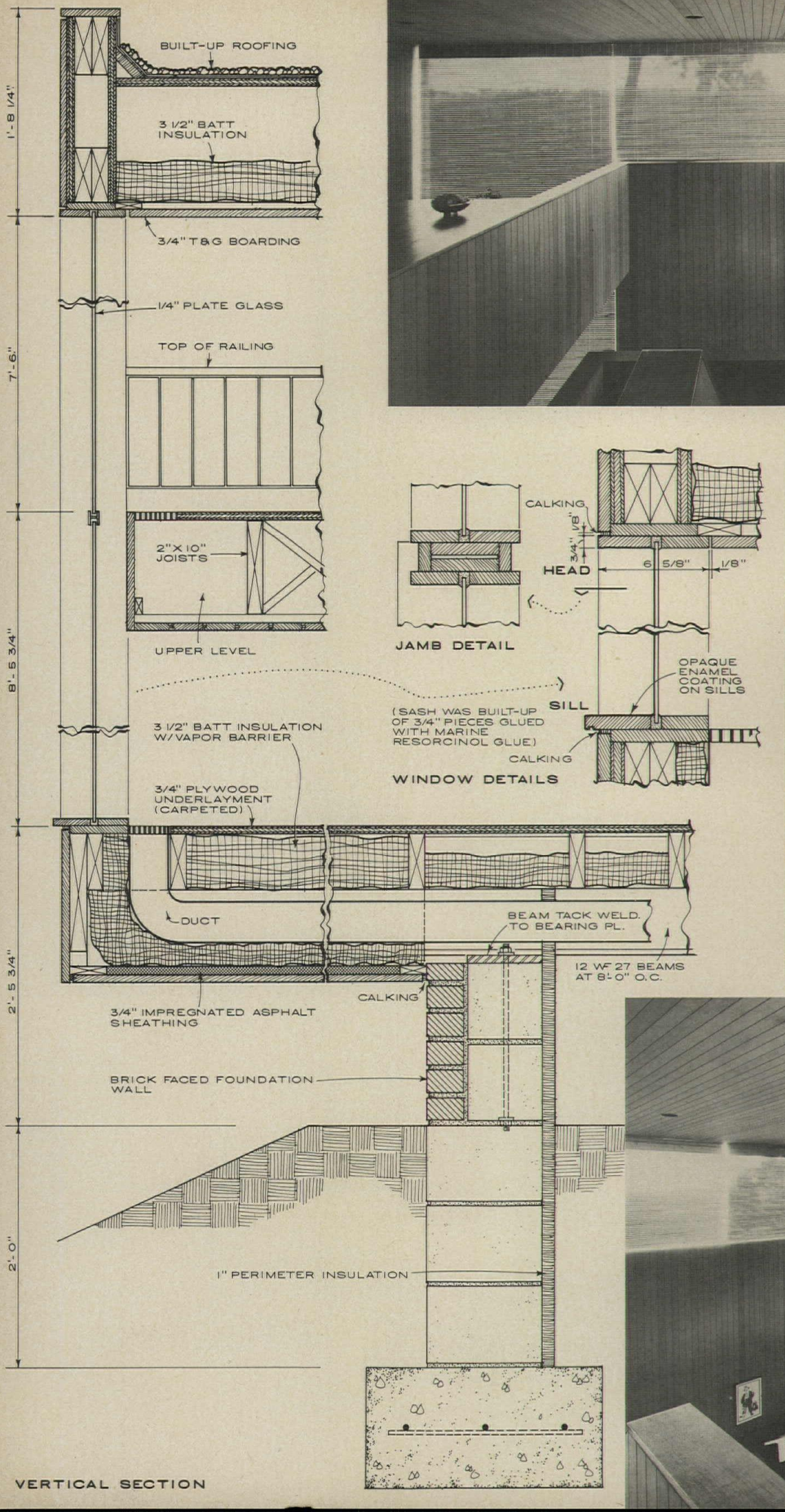
BOX BEAM AND LATTICE ROOF DETAIL



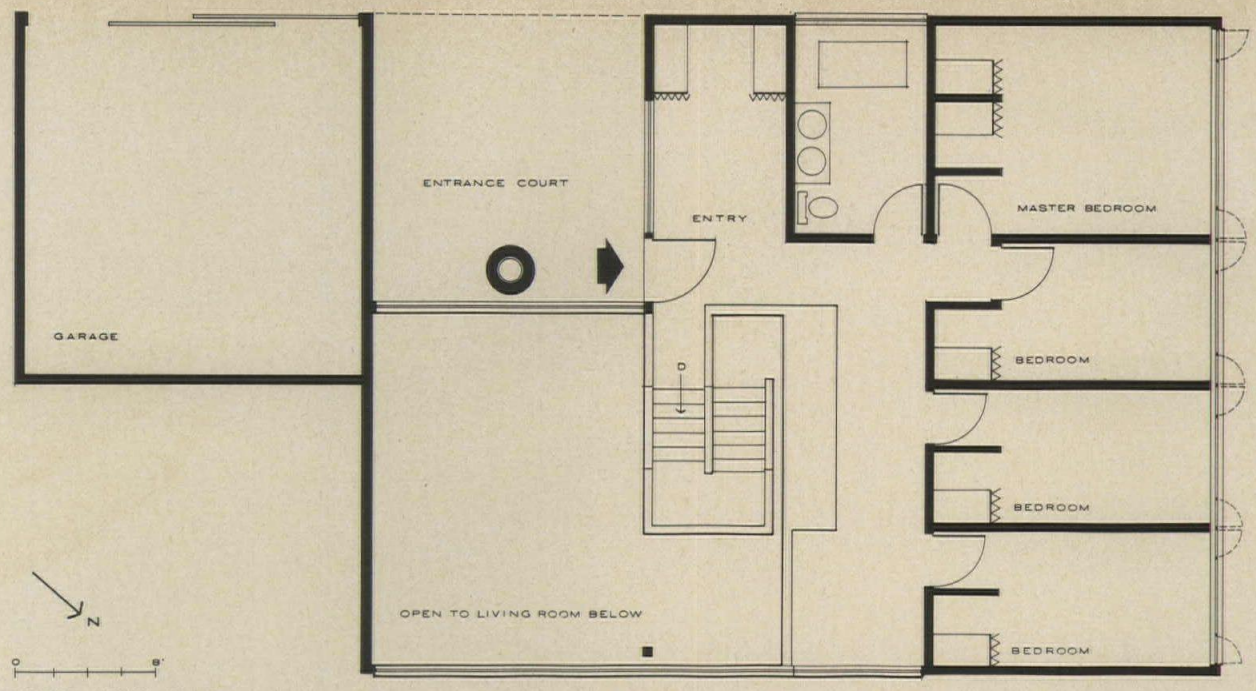




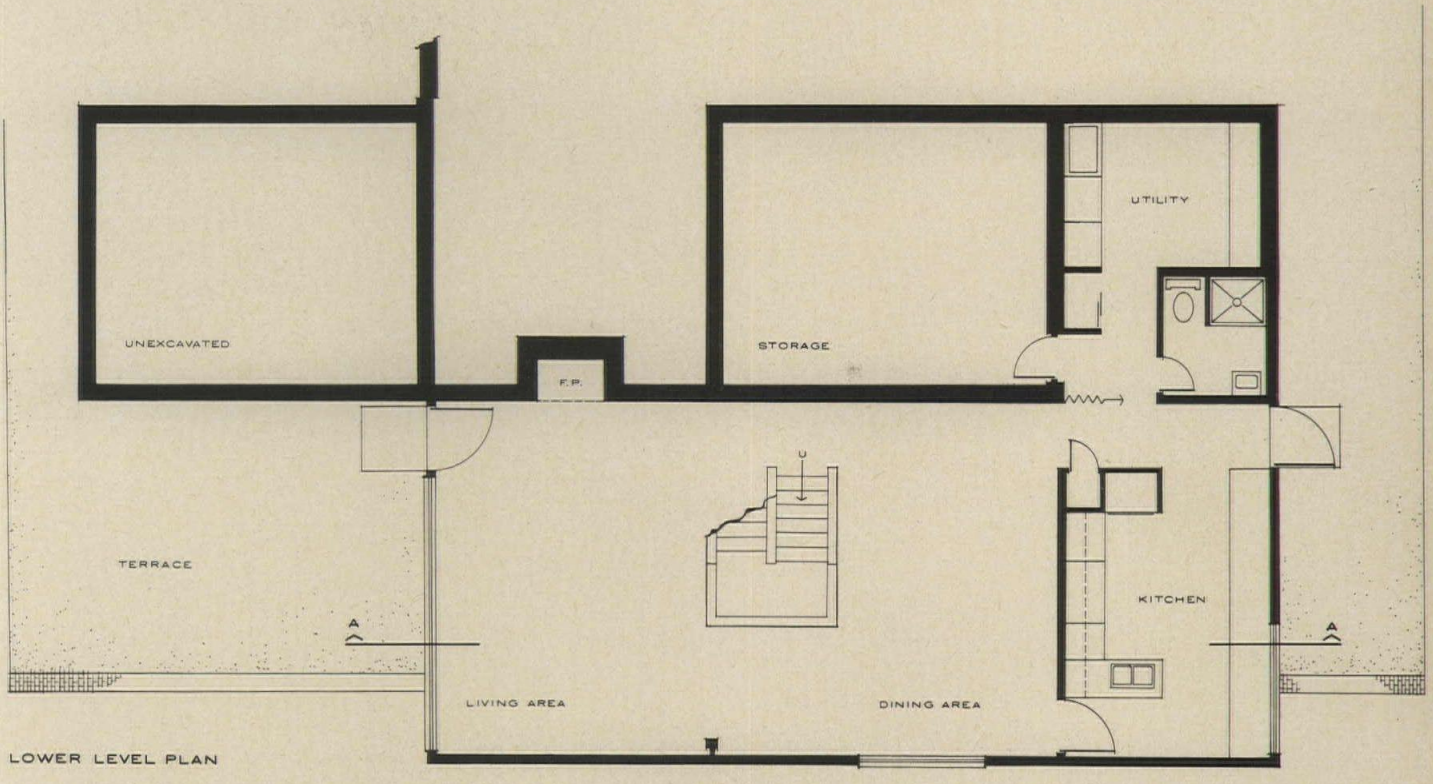




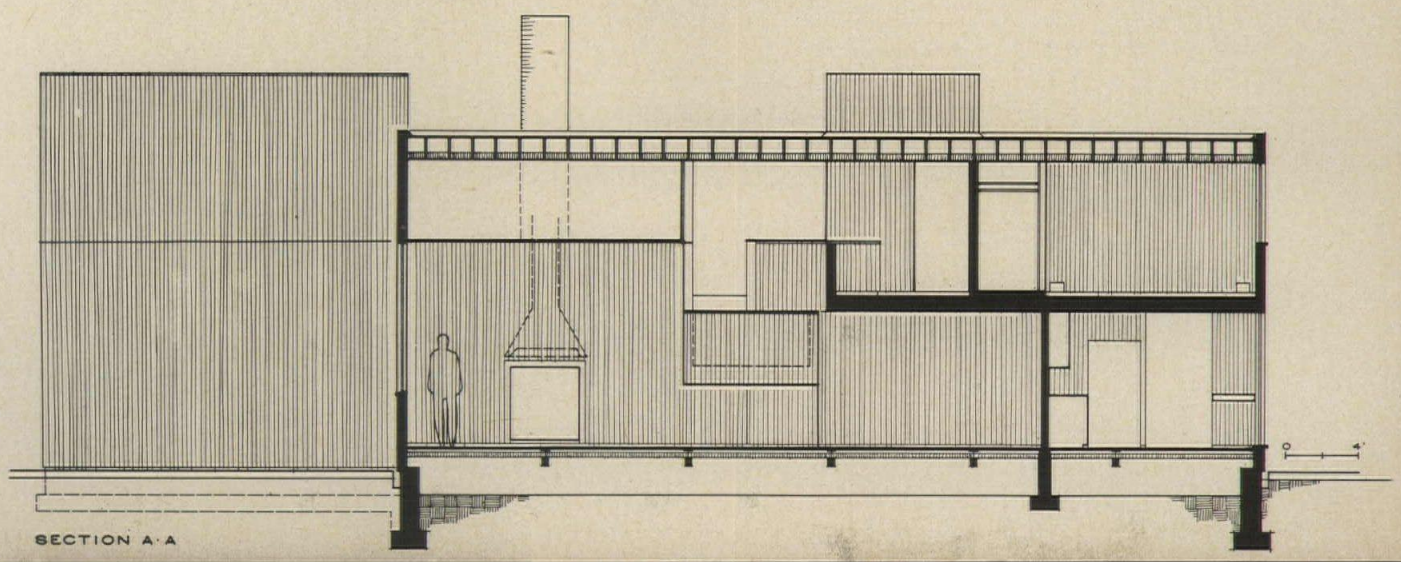
VERTICAL SECTION



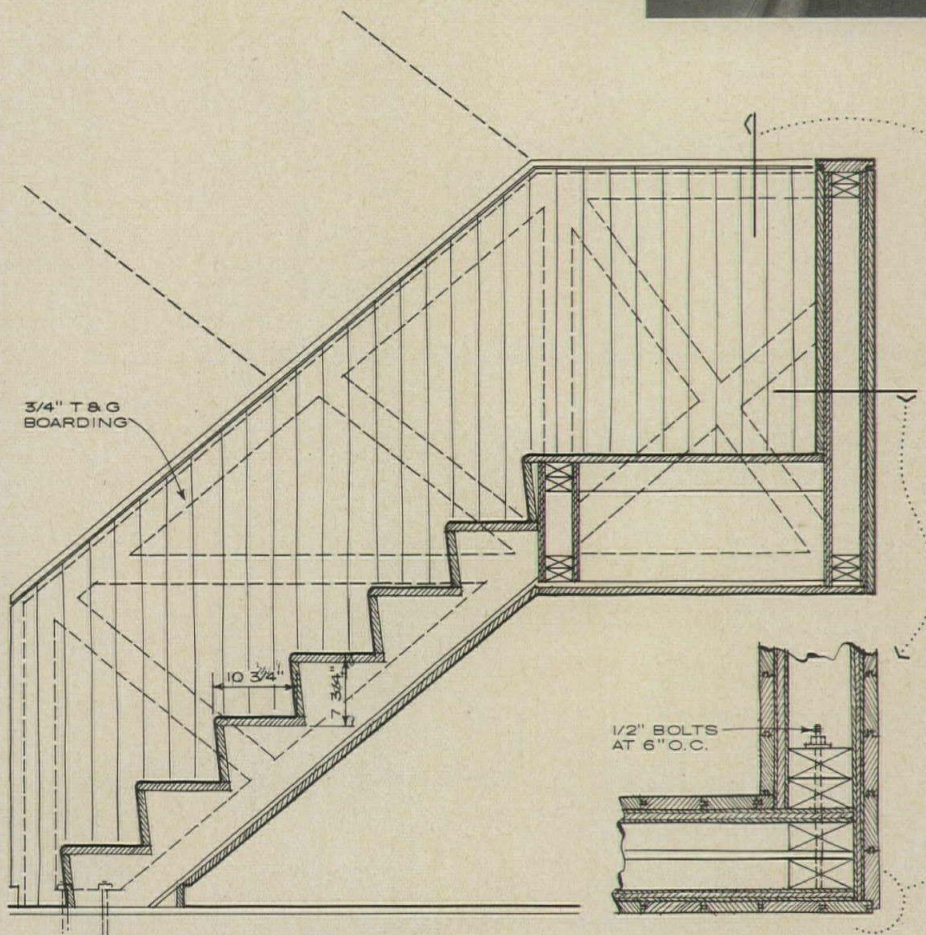
UPPER LEVEL PLAN



LOWER LEVEL PLAN

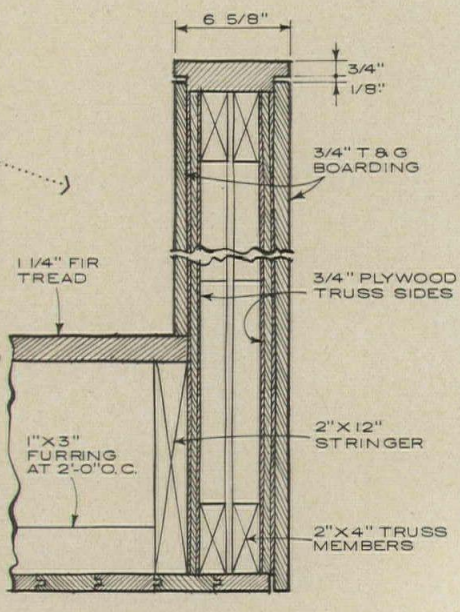


SECTION A-A

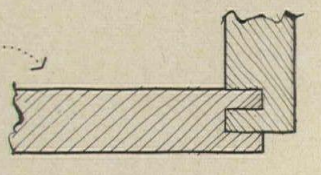


VERTICAL SECTION THRU STAIRCASE

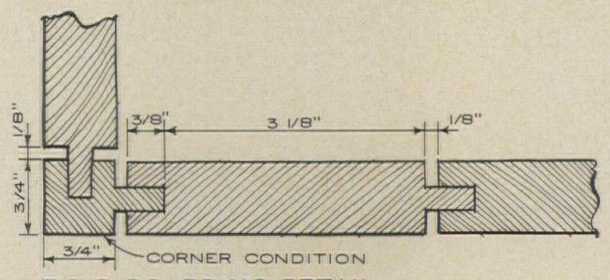
PLAN SECTION



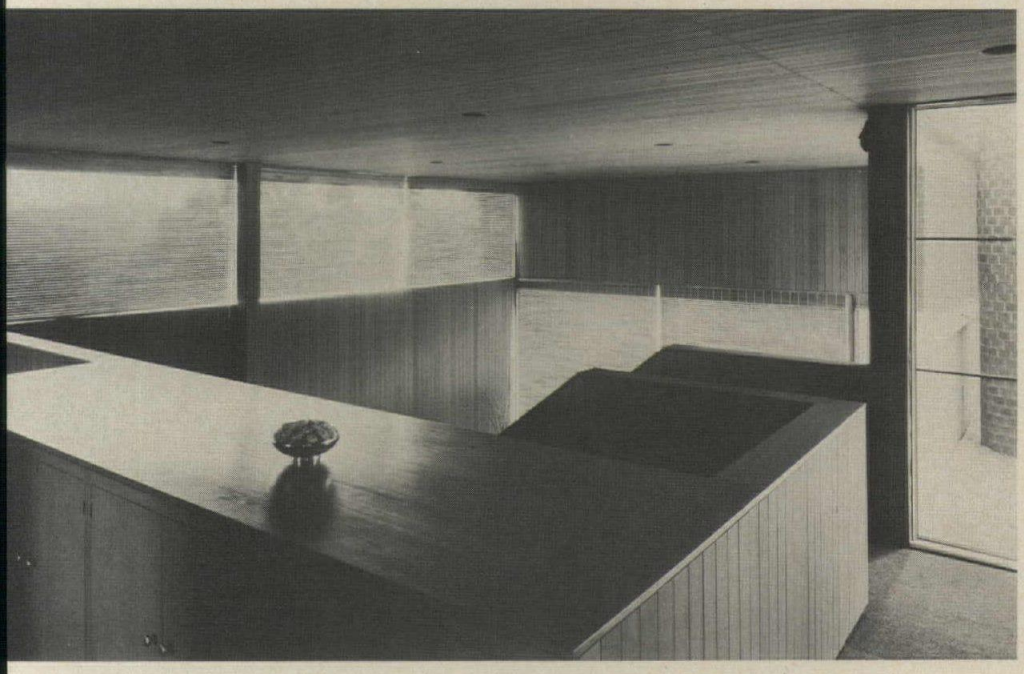
VERTICAL SECTION

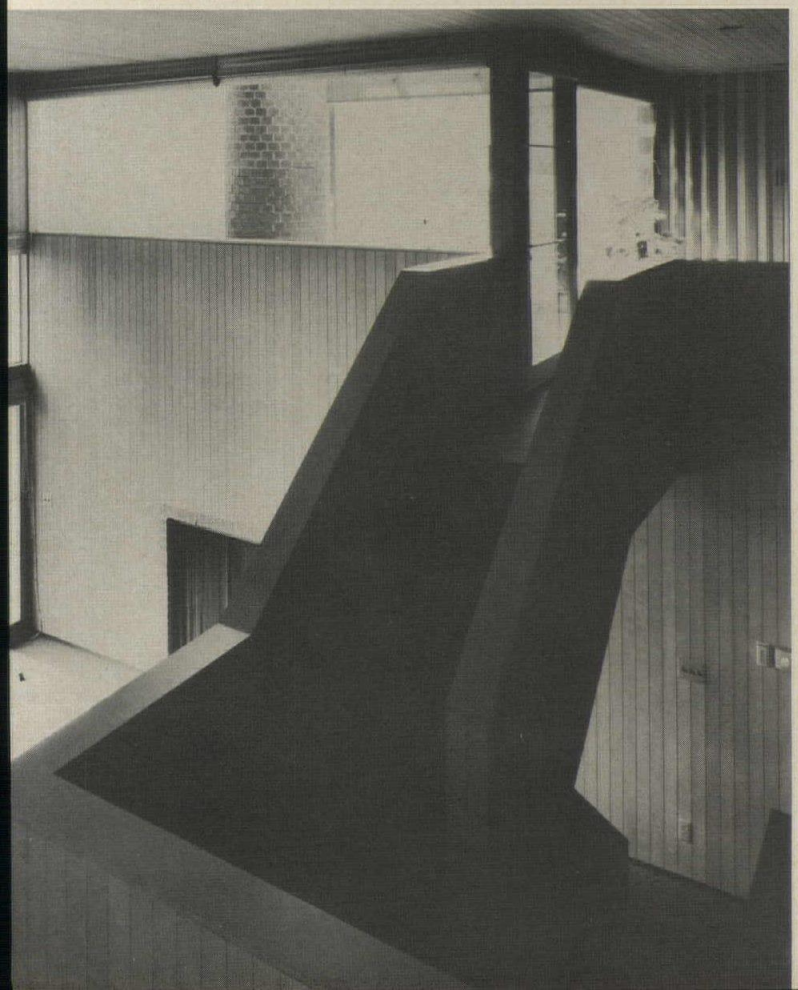


EDGE DETAIL



T & G BOARDING DETAIL





the house in two levels and to enter from the upper one. The two-story living room came directly from wishing to give the occupant the feeling of being in the whole house immediately upon entering. We merely combined this with glass areas that give an immediate vista upon entering."

The Miesian precision shown in handling the redwood siding *(see details)* came from a desire to treat the house as a series of striated or scored planes rather than announcing the balloon frame structure. The architect says the wall treatment was used on both the exterior and interior so that "the panels, or wafers, say the same thing inside and out, except as the weather affects the outside and not the inside." The reliefs from this austerity, the circular brick chimney, and the interior stairway that stands as a great sculptural element between the living and dining areas, are classic examples of the aims of International Stylists to make parts of the building function as separate statements within the over-all composition. Schweikher, who saw this house as an exceptionally serene design, says that he might even change the chimney were he to do it again: "I might have liked the chimney better if it were metal instead of brick. Brick seems a little shaggy — a little over homespun."

Also Miesian is the plan of the main space, its openness flowing around a spatial divider (the staircase) as in the Barcelona Pavilion or the Farnsworth house. Upstairs, on the entrance-bedroom level, the plan is more conventional, with the bedrooms in a row giving onto a balcony overlooking the living area. Downstairs, the kitchen and service areas occur logically behind the dining area.

Within the limited palette of materials and forms he chose, Schweikher created a quite evocative building, bearing the elegance and precision of design that characterizes all of the best architecture influenced by the Bauhaus-Harvard-International Style period. That architects of this persuasion can design buildings as convincing and admirable as the Fox Chapel house is a tribute not only to personal talent, but also to the durability of a design philosophy.

Photos: Harr, Hedrich-Blessing

a romantic solution

HOUSE FOR EDWARD D. DART, *Barrington, Ill.* ***Architects:*** *Loebl, Schlossman, Bennett & Dart.* ***Site:*** *A grassy slope in a wooded setting descending southward toward a small lake.* ***Program:*** *To house the architect and his family. No architect's office in house.* ***Structural System:*** *A concrete basement remaining from a demolished dairy barn, serving as main support for a brick and timber structure; timber roof.* ***Mechanical System:*** *Forced-air heating.* ***Major Materials:*** *Concrete (existing and new); Chicago common brick; stained and unfinished wood; shingles.* ***Consultant:*** *Landscaping: Robert Louden.* ***Photography,*** *except as noted: Warren Meyer.*

The Edward Dart house is one that unabashedly proclaims itself as an American place in the best sense. Sited in the same region that saw the birth of Wright's prairie houses, it is decidedly in that stream of national consciousness. One can trace its ancestry back even further to the Rhode Island shingle houses of McKim, Mead & White in the 1880's, or forward to the full development of the Bay Area Style begun by Maybeck and Greene & Greene and carried on by William W. Wurster and his coterie in the 1940's and 1950's. If there is a foreign reference here at all, it would be Alvar Aalto in his use of natural materials and his talent for anchoring his buildings unmistakably in their landscapes. The frank aim for a "homey" atmosphere in the use of natural, textured materials, and a plan that makes the most of interweaving but separate spaces is reflected in Dart's words: "I wanted the building to grow old gracefully and hope it will attain a certain patina which will add to its quality," he says. "The interiors are in this spirit also. I didn't want to

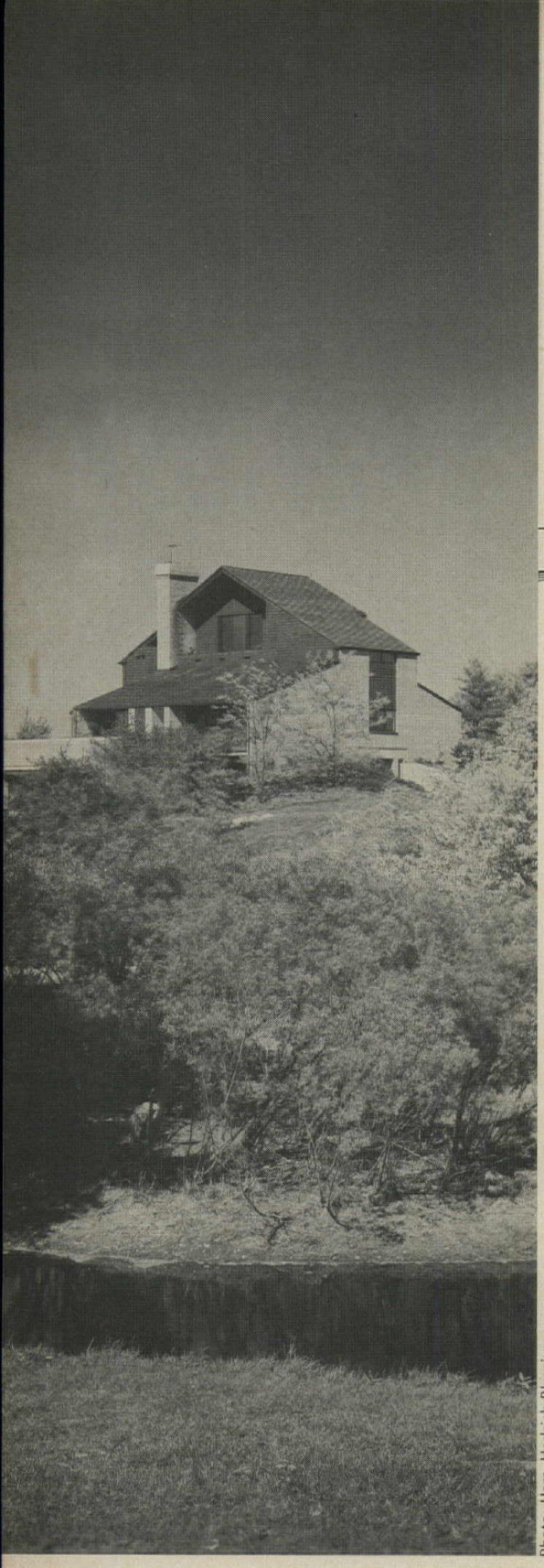
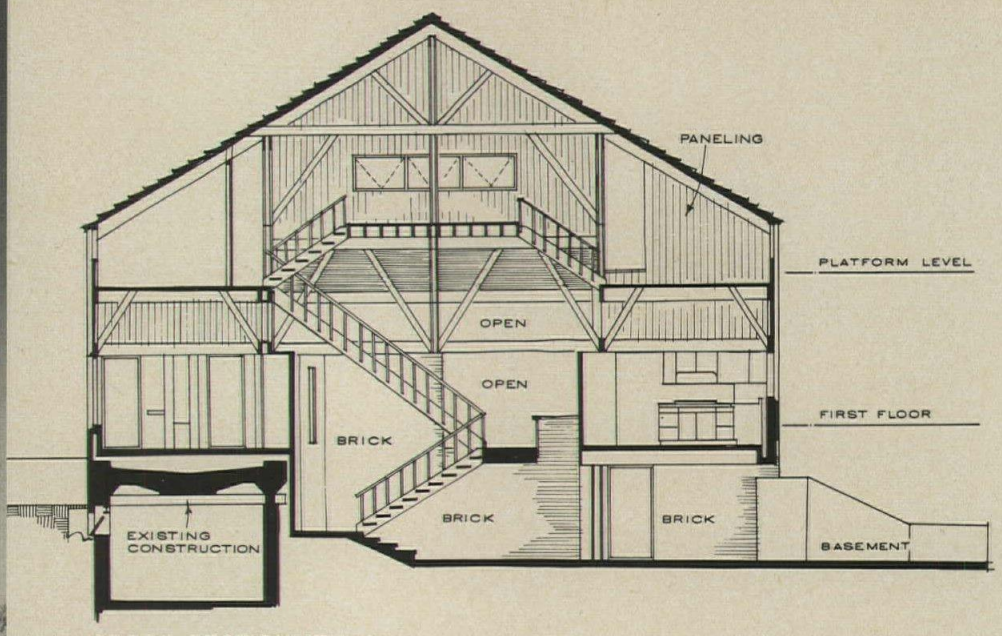
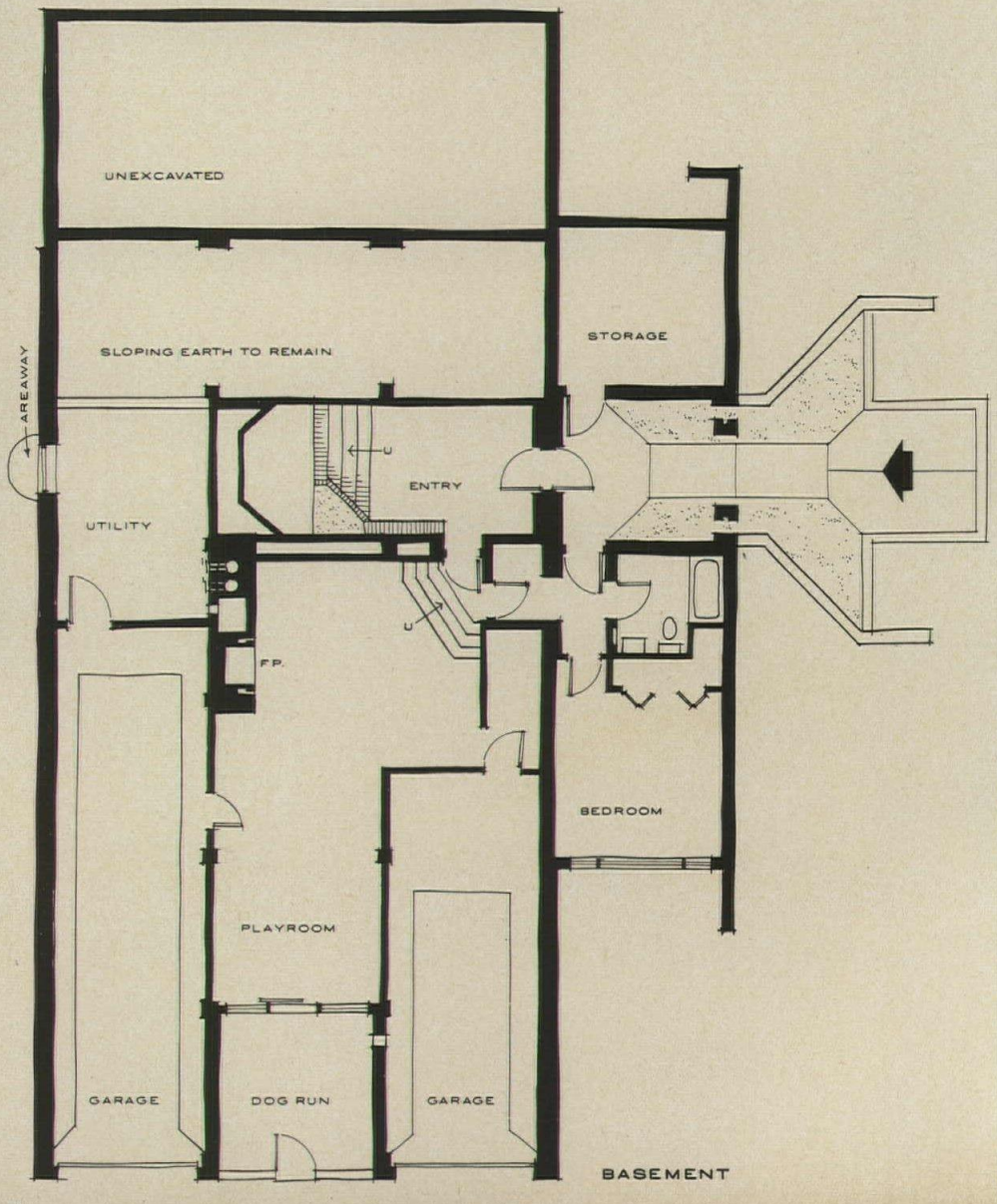


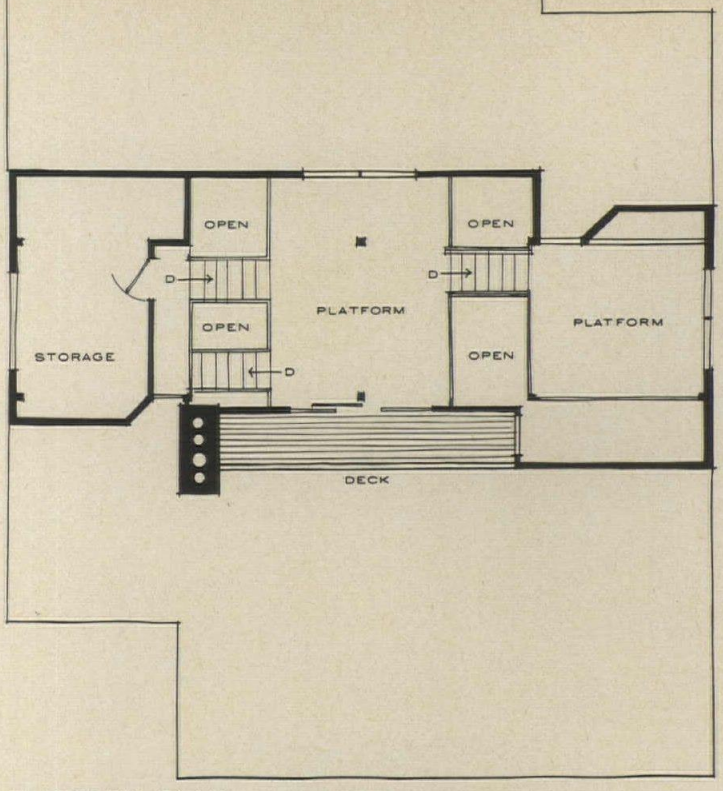
Photo: Harr, Hedrich-Blessing



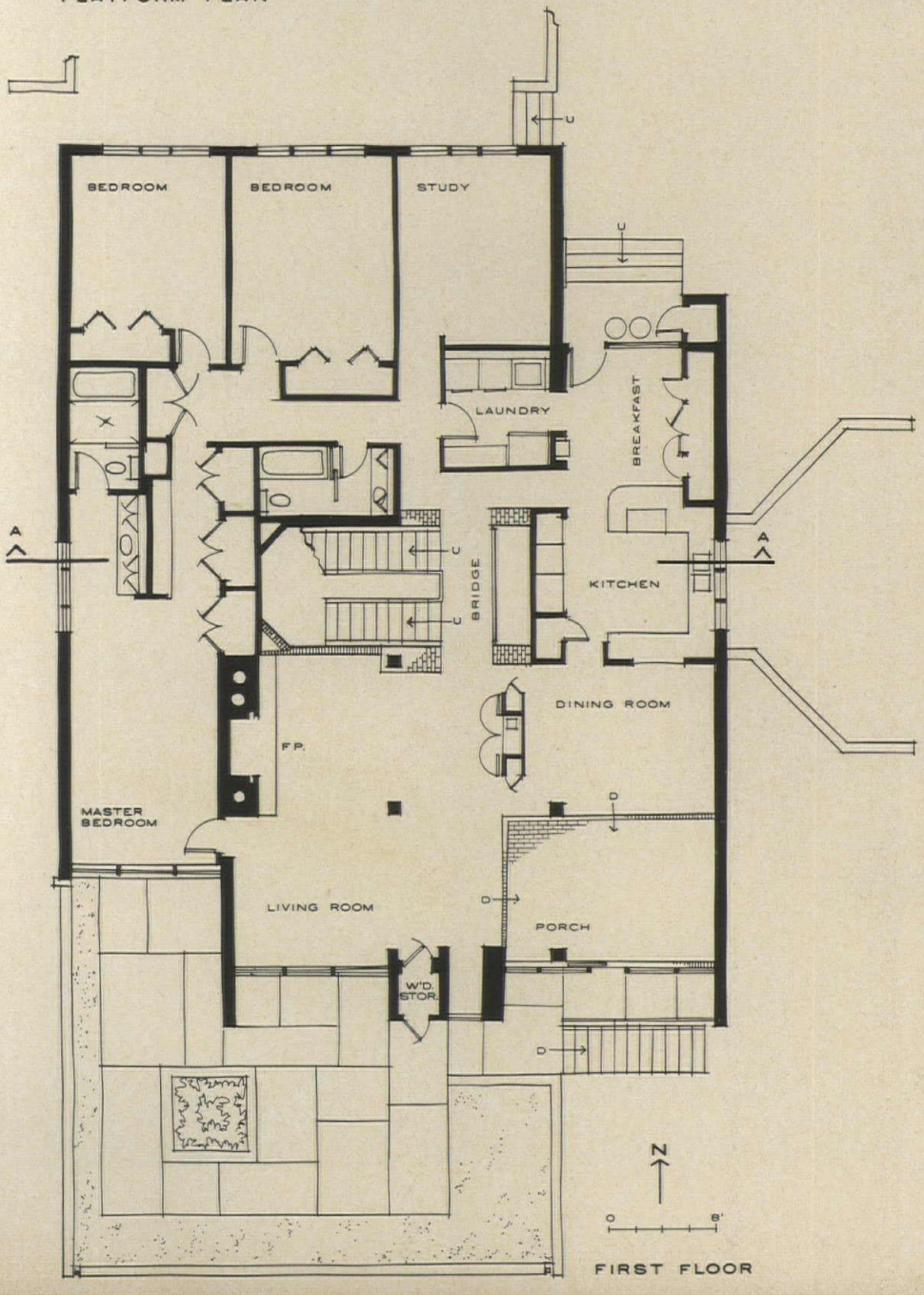
CROSS SECTION AT A·A



BASEMENT



PLATFORM PLAN

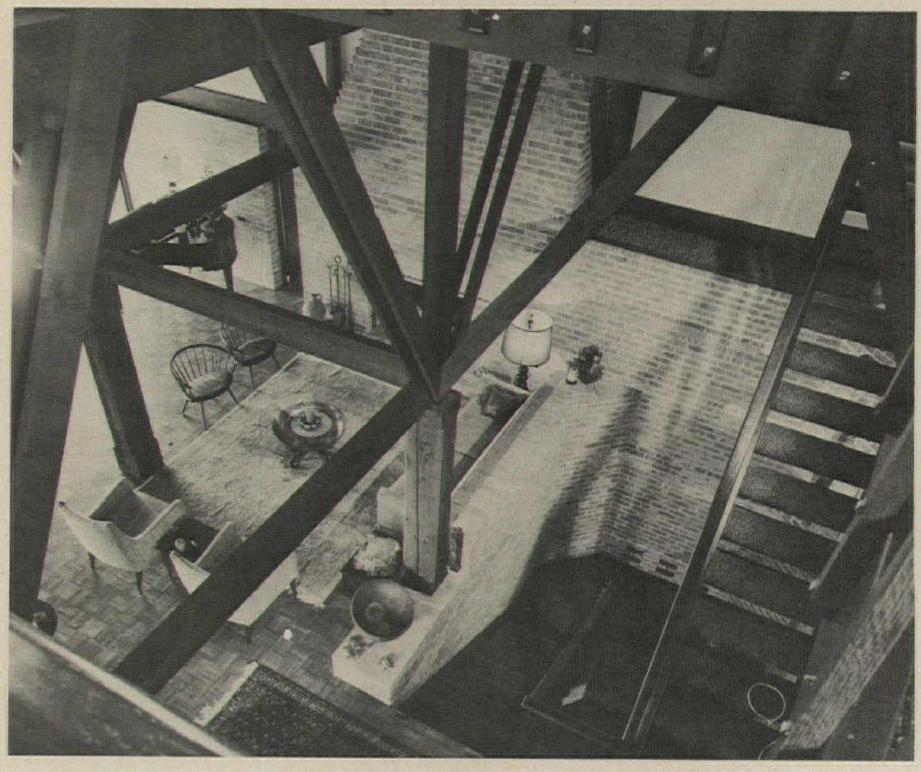


FIRST FLOOR

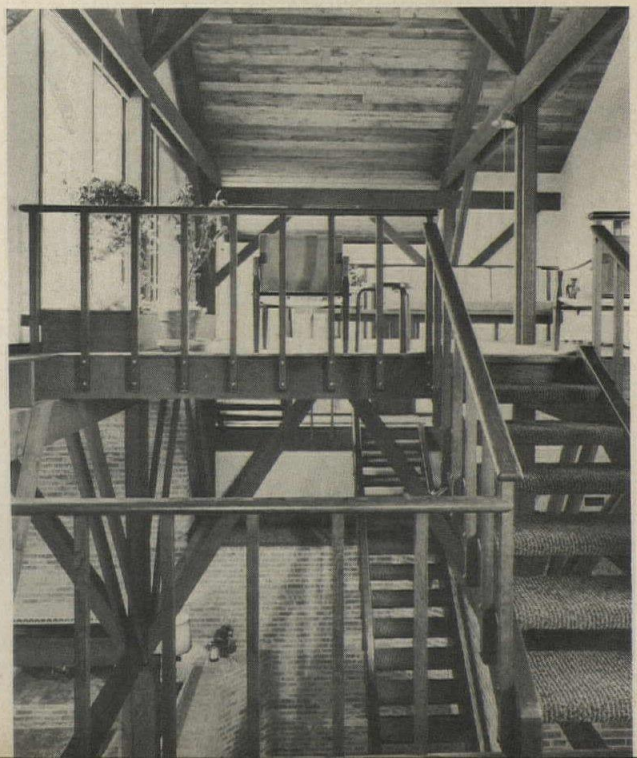
be stuck with fashionable furniture; consequently, all sorts of furniture seems to work here. We've mixed contemporary things with older pieces with oriental rugs or none at all."

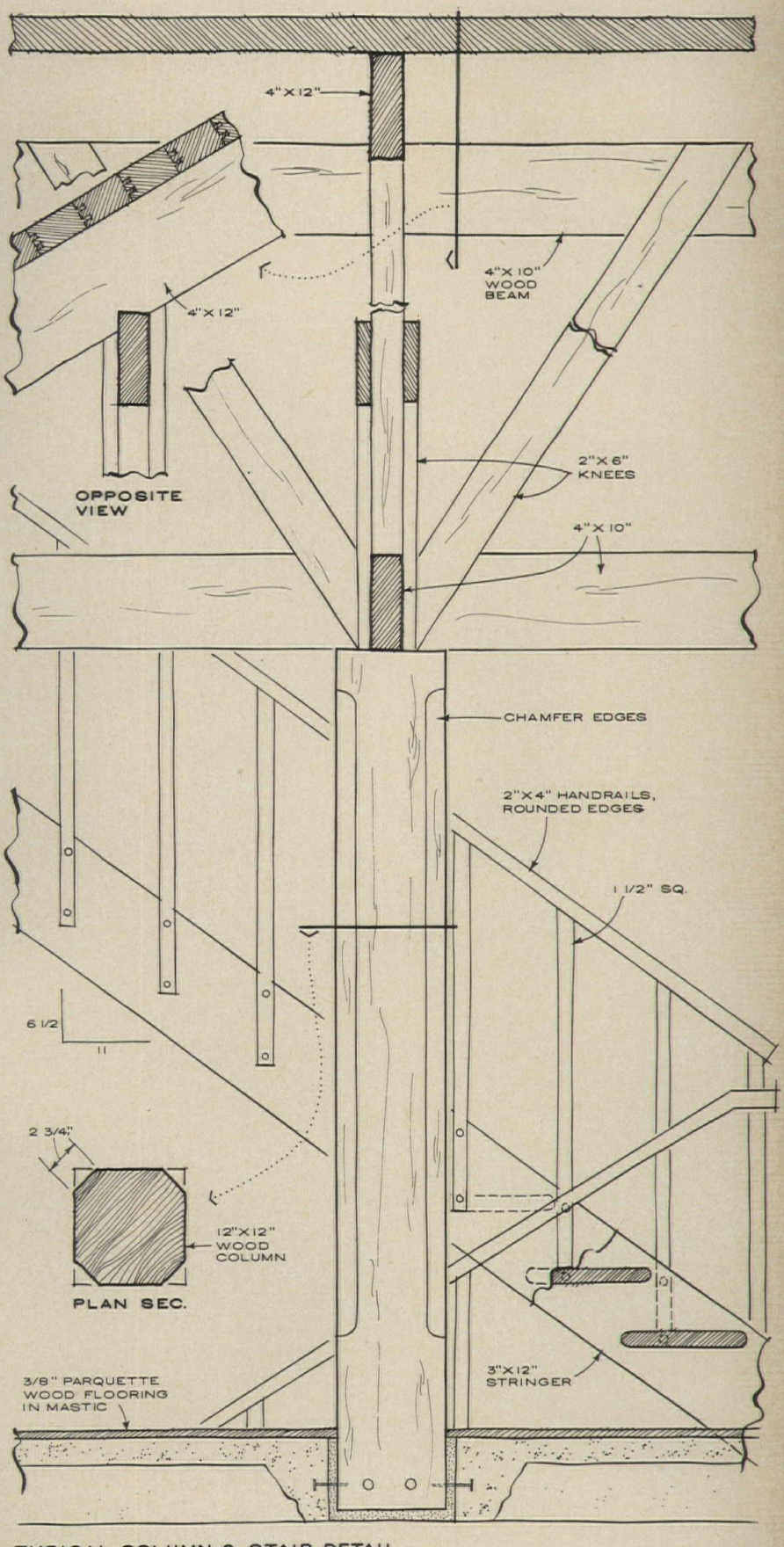
The Dart house, like the Schweikher house, emphasizes a great central area of space. Here, however, the space is not a serene flowing volume, but an exciting series of levels rising from the ground floor entrance (through the old basement wall) up a staircase to the living area, then up to three other platforms at the top of the house: a closed attic space, a "crow's nest" commanding sweeping views of the lake and beyond, and a balcony studio. Living, dining, kitchen, and bedrooms are on one level, the roof of the old foundation. The soaring roof and the platforms in the rafter space are placed on the beamed roof structure, which is extravagantly a feature of the interior design and structure of the house. At each beam and post joint, knee braces spring in four directions to support and strengthen the superstructure against winds on the hill. Bracing and supports are also expressed against the brick or cedar board walls. Structural timber is dark stained; the cedar boards are left unfinished. Most floors are oak parquet, but some, such as at the entrance, are dark brick. The interplay of vertical and horizontal spaces, the use of darkened structural members against lighter surfacing materials, and the detailing of items such as chamfered posts in the living area and the dramatic breakaway of the knee braces immediately suggest such Wright works as the Coonley house and even Taliesin West. Further explorations in exposed wood structure later on the West Coast also come to mind. Dart has, however, achieved something beyond simple or intuitive copying. As noted in the Introduction, he is one of a group that seeks for a *humane* touch in its architecture as opposed to the more precisely detailed and fine-honed products of the earlier generation. Where other architects of his age or slightly older might find "beauty" in eccentric forms or exotic contemporary translations of other architectures, he sees warmth and comforting beauty in the textures and shapes that can be produced by handling common brick, wood, and lumber. The elegant precision of the Schweikher house is not here, but neither is the glittery shape-making of the 1950's, when the move from the influences of the previous generation began. It is easy to imagine Dart's house growing old gracefully, as he wishes it to, for, although undeniably a contemporary creation, it nevertheless has its roots in a living past, and is therefore unlikely ever to become that uncomfortable architectural artifact, the "interesting" period piece.

Photo: Harr, Hedrich-Blessing



Chamfered piers and breakaway diagonal roof supports, extravagances frowned upon by the International Style, are reborn and reinterpreted by Dart in his individualistic and evocative house.





TYPICAL COLUMN & STAIR DETAIL

ADULT TREE HOUSE

HOUSE FOR LOUIS MACKALL, *Prickly Mountain, Warren, Vt.* ***Designer:*** *Louis Mackall.* ***Site:*** *A sloping mountain meadow in central Vermont.* ***Program:*** *To build a house for the designer's own occupancy in the summer, and for rental the rest of the year.* ***Structural System:*** *Part balloon frame, part Western platform frame.* ***Mechanical System:*** *Forced warm-air heating.* ***Major Materials:*** *Red cedar for walls; white oak for floors; plaster wallboard; tar and gravel roof.* ***Cost:*** *$22,000.* ***Consultants:*** *André Houston, Mechanical. Henry Pfisterer, Structural.* ***Photography,*** *except as noted: David Hirsch.*

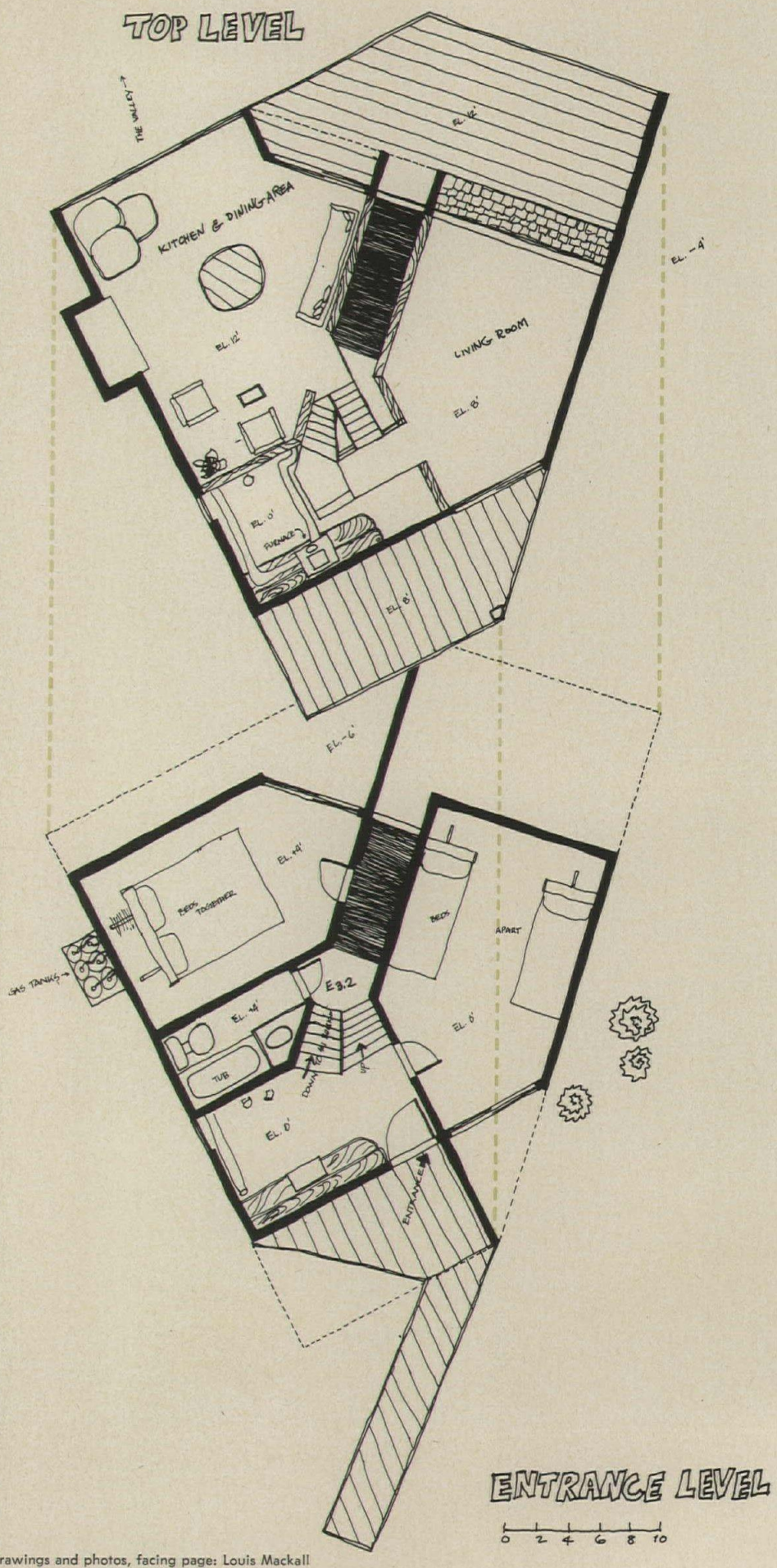
The house by Yale architectural student Louis Mackall (he gets his degree next June) at Six-one Potato Road on Prickly Mountain has little to do with the design philosophies of Schweikher or Dart, unless it is like an adult version of the tree houses all three designers probably built in their childhoods. If there are references here, they have to do with forms and volumes. The fondness of Yale Department of Architecture Head Charles Moore for the diagonal and the manipulation of a vertical interior space can be seen, and the experience of working long months in the multilayered atmosphere of Paul Rudolph's Art and Architecture Building must have had its effect, too.

What is interesting here, however, is not so much the design per se, but the way it was accomplished, so to speak, from the ground up. Prickly Mountain, as most readers know, is the site of a number of structures designed and built by past or present students at the Yale or Washington U. (St. Louis) architectural schools. The Washington students are doing

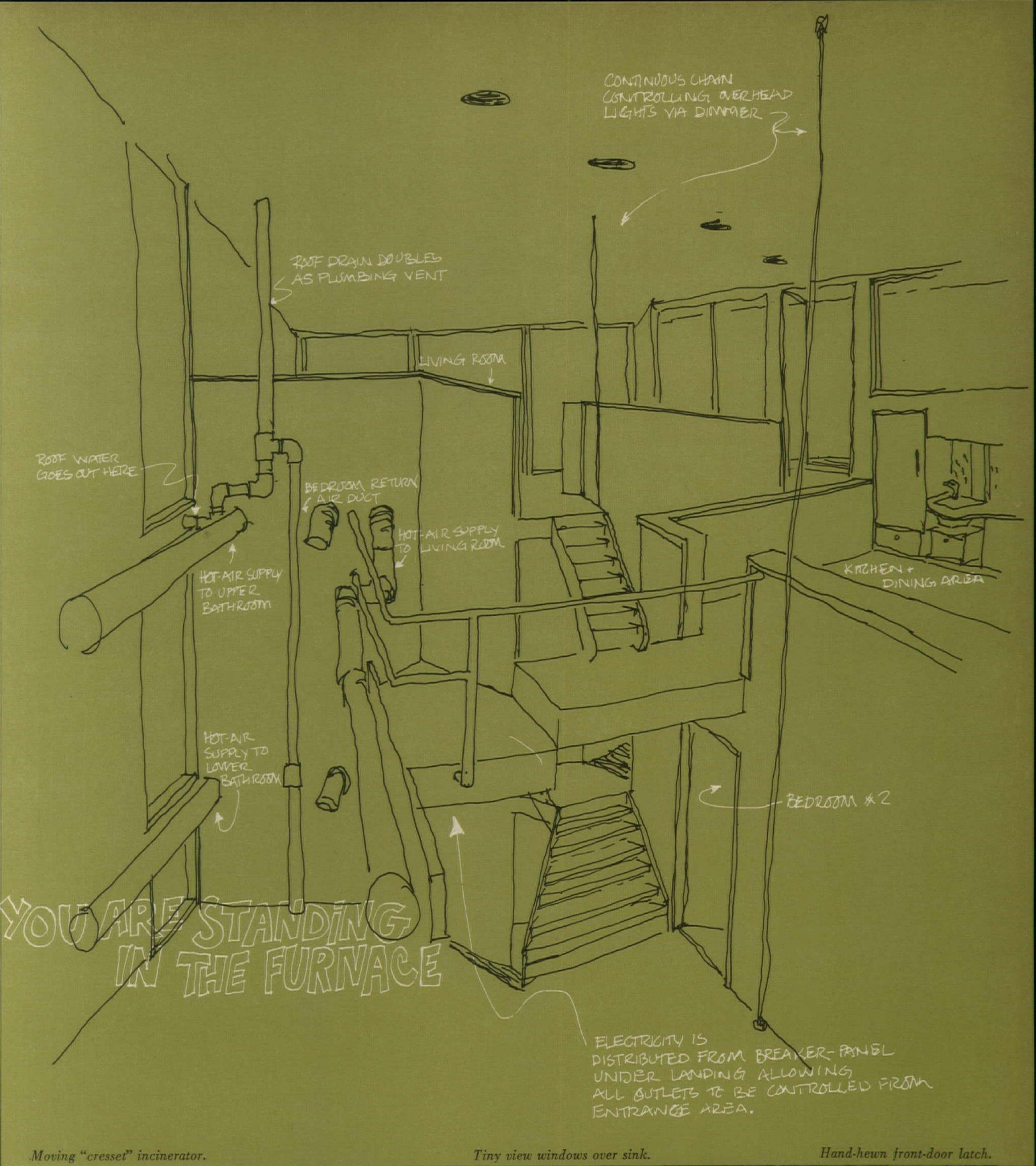
ON POTATO ROAD

theirs as thesis projects, the men from Yale as supplements to their education and because they want to — a sort of masterless Taliesin. If there is anything that characterizes this approach, it is spontaneity, the willingness to operate from few or no preconceived ideas in order to see what will happen in solving the problems of design and construction as they arise. Of his own house, Mackall says, "It took about two months to design the thing and when I got through all I had was a cardboard model and the only drawing I needed at the time was a foundation plan. I did all the form work for the concrete. The form ties were baling wire and the forms looked like they were lifted off some shantytown. The forming was rough-sawn local spruce plywood I intended to use again in the building sheathing. The foundation plan took only about an hour to do; the reason was that I think primarily in plan and that once the foundation was in the dimensions were pretty well established." Of the "program" for the house, Mackall says, "The house was generated primarily from site considerations (a 30-mile-long view of the Mad River Valley and of a meadow on one side), a desire to have a clear hierarchy of internal spaces, and the demands of a preconceived 45° angle. Of these, the last is the most interesting, but for reasons that in the end don't have much to do with one's experience of the building. It was solely a device that tended to collect forms around it in the plan — an excuse, in a way, very appropriate for a vacation house in the 1960's."

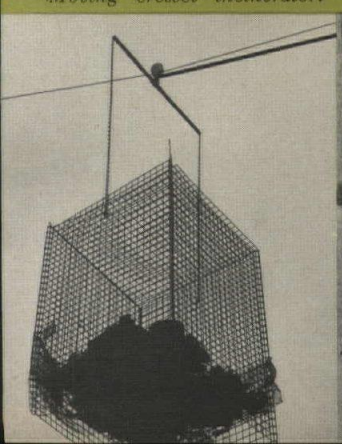
That this angular preconception proved to be the basis of the way the house "grew" is evident from what happened to the stairway. Originally, Mackall intended to put in a circular staircase, which would rise from the "mud room" after the visitor had walked up a diagonal plank walk to the front porch. But he says, "When you are traveling up, you want to make a right-angle turn; it turned out to be a nice kick to have a thing that sends you in the direction you want to go." In this manner, the angled stairs and levels that give onto the vertically arranged areas of the house dictated the way they eventually occurred (a lot of this was after the foundation was in and the framing was up). In the 12-ft height between the mud room level and the living room level at the top of the house (placed there for the best view) are a platform from which the furnace is suspended ("I put it there because it was more enjoyable to work on something up in the air and light than in the crawl space, and *I* had to do the work on it"); the master bedroom and bath; the kitch-



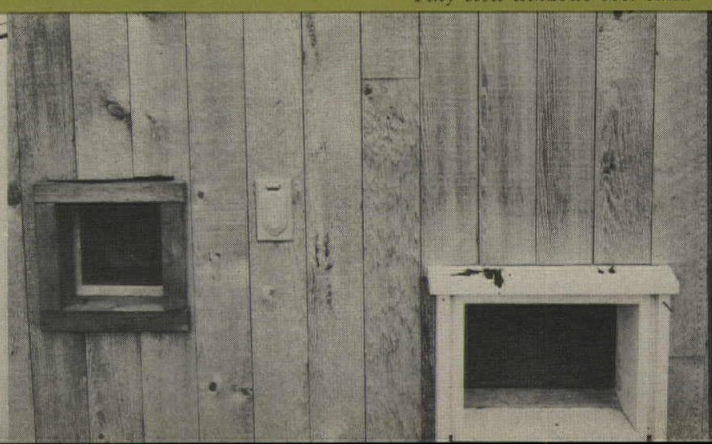
Drawings and photos, facing page: Louis Mackall



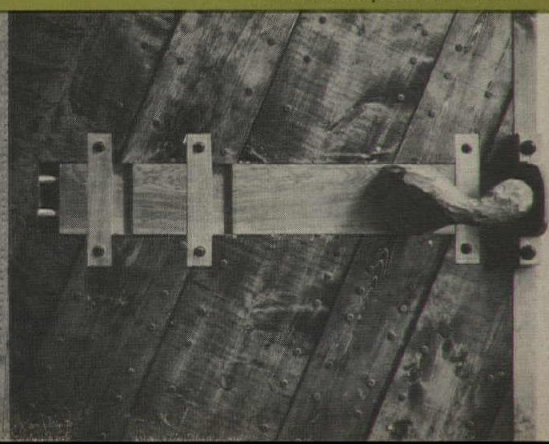
Moving "cresset" incinerator.



Tiny view windows over sink.



Hand-hewn front-door latch.



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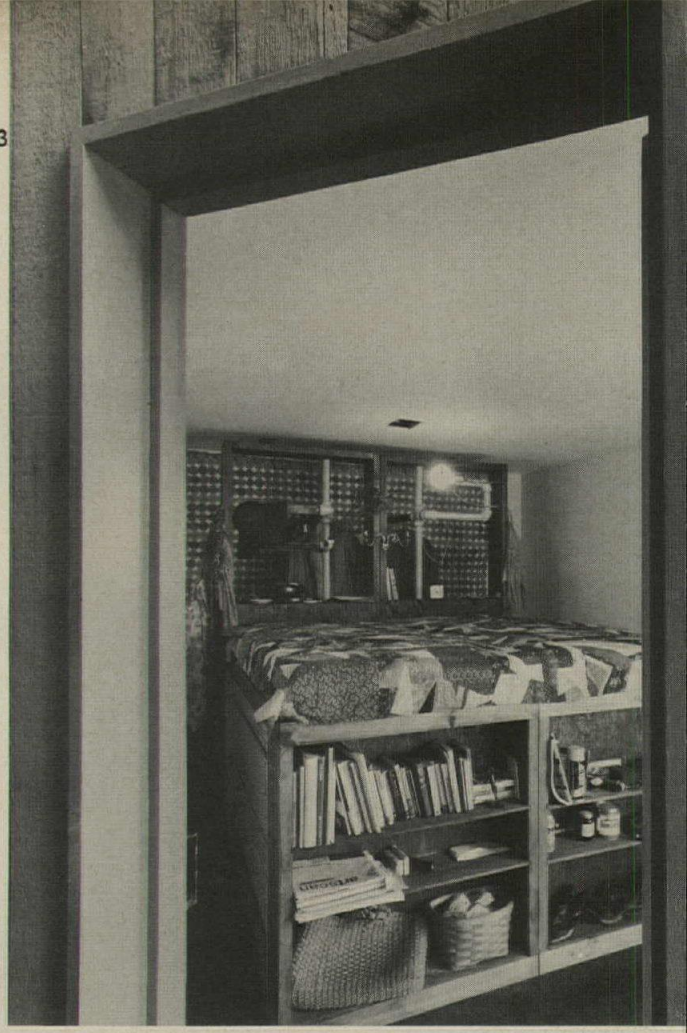

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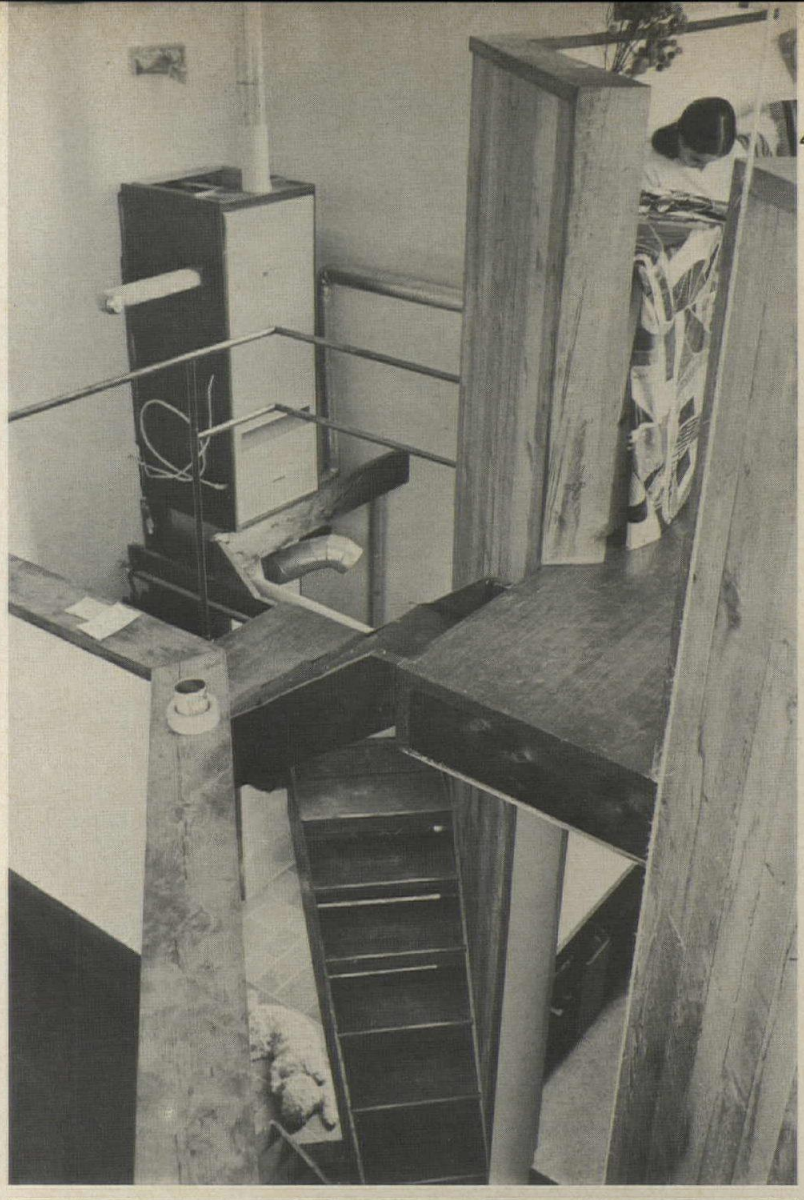

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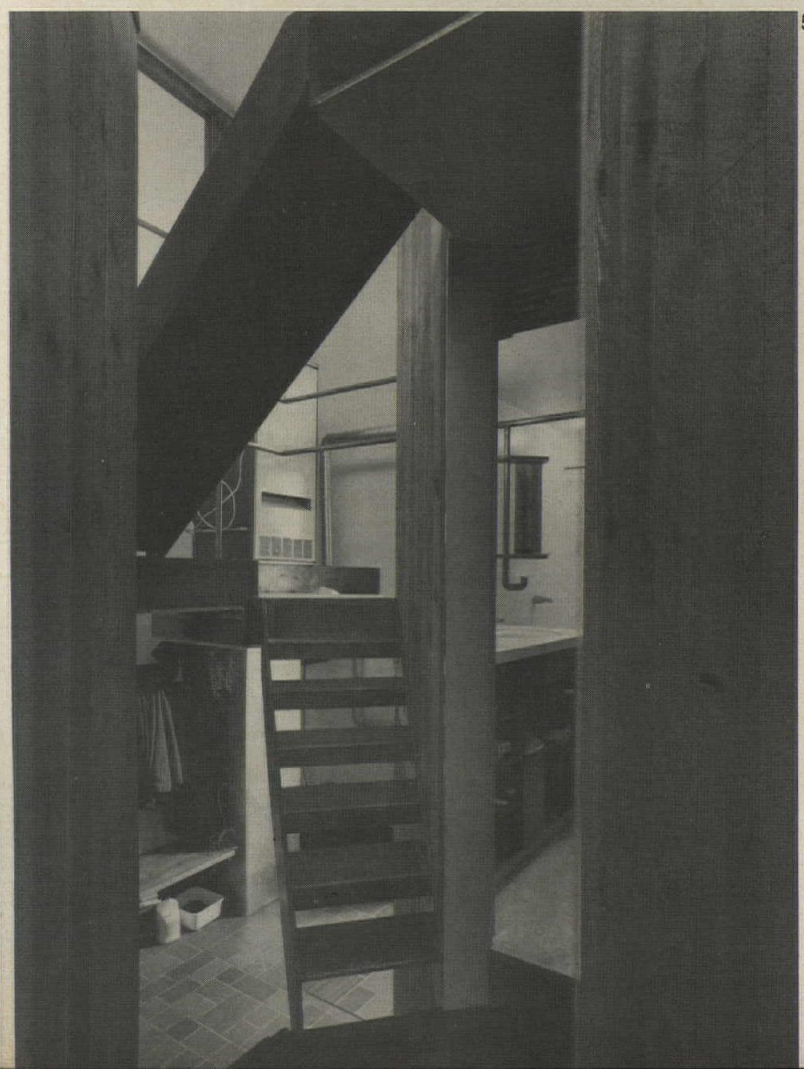
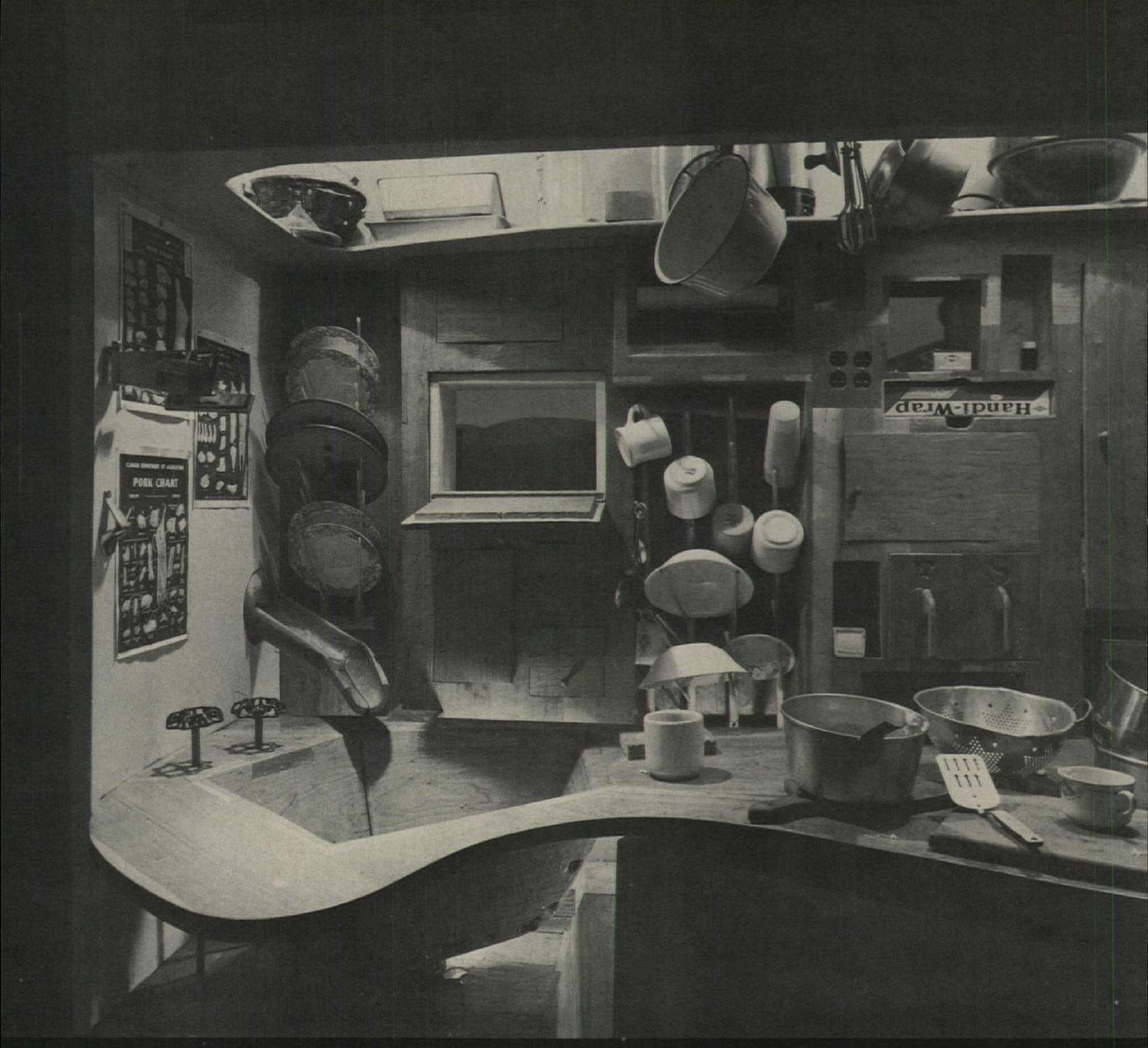


5

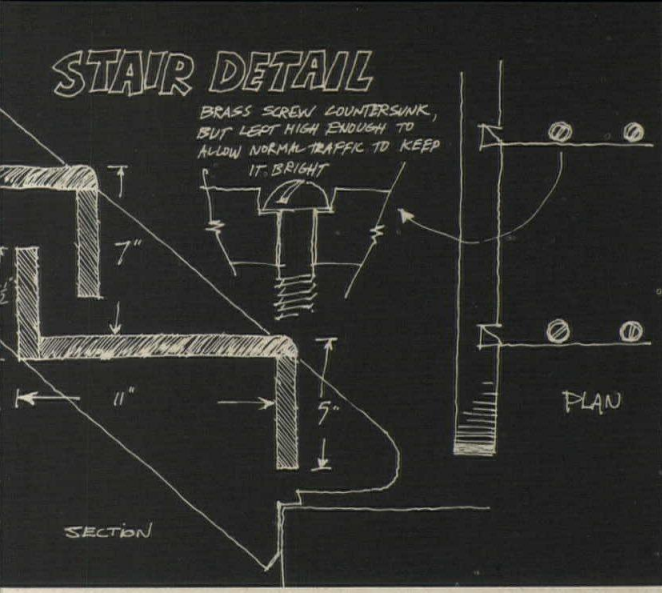
6

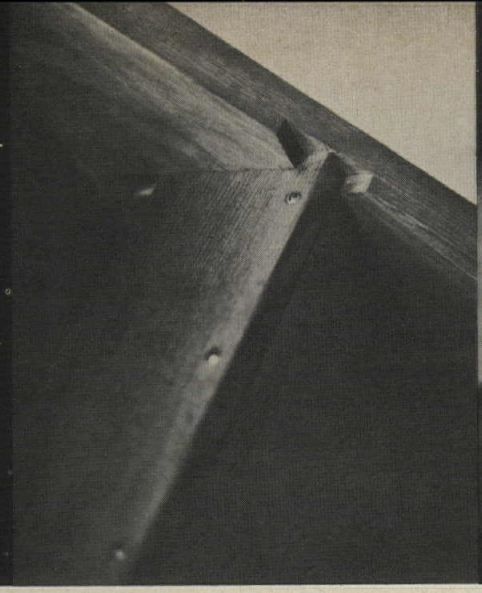
(1) View into dining room/kitchen. (2) Living room and view of the valley. (3) Master bed build over storage space, (4) Stair up to master bedroom and down to mud room and bunk room. (5) Looking down at mud room. (6) Bunk room; graphics by Nans Kelder.

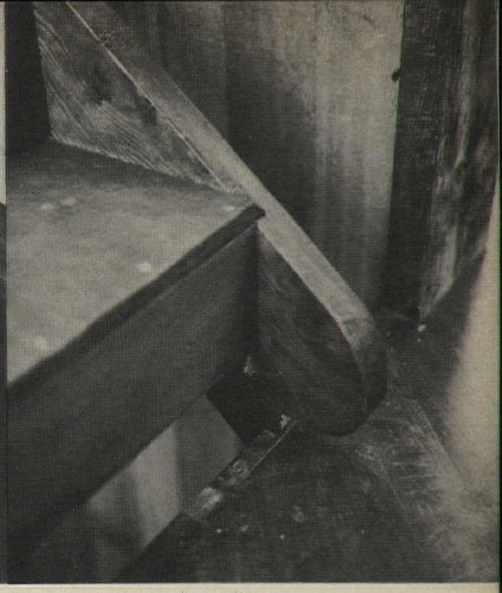


The kitchen was carved by Tom Luckey of Warren, Vt. Mackall says, "The tub is all black cherry, hand done; no reason other than the lumber company had some good planks. Just a personal thing Tom wanted to do."

Photos below: Louis Mackall







Photos above: Louis Mackall

en and dining level; and a terrace off the living room. On the bottom floor next to the mud room is a bunk room and bath, suitable for guests or for paying transient tenants.

Items in addition to the furnace arrangement that may raise some older eyebrows, but which seem to work in the code-free atmosphere of Prickly Mountain are overhead lights dimmer-controlled by a continuous rope pull passing by all five levels; circuit-breaker panel suspended under the first platform, enabling it to be the handy master control for all electric outlets in the house; venting directly into roof leaders with an inverted U (warm air from vents keeps leaders from freezing and the connection prevents backup; volume of water in the leader has not yet gotten large enough to cause a vacuum in the pipe and suck the traps); and extensively exposed piping (during the first winter piping burst because the pilot light went out; Mackall says he "charetted out a system since I didn't want to rip out the sheet rock. Since I already had the precedent for exposed pipes well under way, I just cut the pipes off, ran them outside the sheet rock and ran them back in again").

The Mackall house, like some of the other structures at Prickly Mountain, could be called instructional toys in the highest, most adult sense. The young people who are sweating away their summers there, designing and building all day and getting together to talk architecture and society half the night are learning in a way their fathers and grandfathers never did, and they seem to be having fun doing it. The tendency to get away from paper architecture and fictitious problems and into real building for real people has gotten into some schools already, Yale, Washington, and Carnegie Tech among them (pp. 166–169, SEPTEMBER 1967 P/A). It is a new way of learning architecture that may result in a new way of *doing* architecture — one no less worthy of respect than that of a Paul Schweikher or an Edward Dart.

DESIGN INNO

P/A presents a lively discussion among several young architects that took place at the Cambridge School of Architecture in Cambridge, England, on March 4, 1966. Christopher Alexander, the chief speaker, proclaims what may turn out to be a new brand of functionalism based on the preferences, desires, and behavior of people. He denounces as irrelevant most architectural solutions to environmental chaos via the single building as well as architects' traditional visual approach to design. None of the other participants, all practicing architects, agrees with him completely, although one of them makes a strong case for the superiority of Levittown over Park Hill, a widely publicized, architect-designed apartment project in England. The topics probed include the fee structure, Place des Vosges, Corbusier, and the scientific method.

The discussion was tape-recorded by Nathan Silver, American architect, author of "Lost New York," and currently Third Year Studio Critic at the Cambridge School of Architecture. Since the discussion took place, Alexander has further developed his ideas and changed his terminology. Rules and relations are now called patterns, and the newly founded Center for Environmental Structure in Berkeley has begun the task of constructing a complete environmental pattern system. Alexander is currently finishing a book to be titled "Environmental Structure."

PARTICIPANTS:

CHRISTOPHER ALEXANDER

Faculty member of the School of Environmental Design, University of California at Berkeley; co-author of *Community and Privacy;* author of *Notes on the Synthesis of Form.*

COLIN ST. JOHN WILSON

University Lecturer in Architecture, Fellow of Churchill College, Cambridge University; collaborating architect of Harvey Court, Cambridge, and for the new National Library, London; architect for the Civic Center, Liverpool.

LIONEL MARCH

Member of the firm of Sir Leslie Martin, collaborating planner on the expansion of the government center at Whitehall, London, and Assistant Director, Centre for Land Use and Built Form Studies, Cambridge University.

CHRISTIAN NORBERG-SCHULZ

Norwegian architect; Lecturer in Architecture at the Technical University of Norway; author of *Intentions in Architecture.*

MICHAEL BRAWNE

English architect, author of *The New Museum,* and Fourth Year Studio Critic, Cambridge School of Architecture.

ALEXANDER: Where does the environment get its organization from? Like most architects, we are apt to answer this question in terms of images and individual buildings. However, over the last 50 years or so, some architects, including myself, have come to the conclusion that in talking about the environment as a whole, you have to throw away completely the old concepts of images and buildings.

It is my contention that the environment gets its physical organization from a system of rules imbedded in the culture. These rules are not functional; they're physical, geometrical rules, which say, for instance, that there should be streets with sidewalks, and so on. None of these rules are followed 100 per cent of the time, but most of them are followed most of the time, they're widely shared, and, most important, they are understood by developers, contractors, and bankers as well as by clients and most people in the culture. Although he may try to vary these rules (and occasionally a valuable architectural innovation will present an entirely new rule that may then be accepted in the culture), most of the time architects themselves are working within this rule system. They design buildings according to the relations currently accepted as normal for schools, parks, houses, streets, apartment blocks, and so on. Minor variations in the way these rules are carried out when built have virtually no effect on the functional organization of the environment, although I don't want to diminish the work architects sometimes do — inventing new rules. But I do want to distinguish very sharply between innovation, which is the invention of new rules, and implementation, which is the carrying out of building according to the rules now extant. In the architect's normal view of his task, these two are totally confused.

This distinction raises the following questions for innovative designers: Under what circumstances is it necessary to invent a new rule (to invent a new physical relation for a specifiable condition)? How do you go about it? How do you get a new physical relation from your observations and investigations? The answer is this: There is only one kind of situation when it is necessary to write a new rule, a new relation; it is when there are conflicting tendencies at work — either in people themselves or in the social sys-

tem — and these conflicting tendencies need to be resolved.

The following is an example of conflicting tendencies; it occurs in suburban housing patterns. The problem: How far back is the front of the house from the street? In suburban areas where there's enough room, you find that houses are built with the front a long way off the street, farther than is demanded by law. And people persist in doing this. On the other hand, by and large they don't use their front garden to sit in. So there is this large, apparently useless, area in front that people insist on having. Why? Two conflicting tendencies are at work here: First, they want their door to be far enough off the street so that when someone comes to the door, it is quite clear that he is paying a visit. They don't want it to be possible for some stranger to loiter near the front door ambiguously, while actually on public land. And then people have a second tendency: They want to make an efficient use of their land. The two tendencies have contradictory consequences: The first implies that the house should be back off the street, and the second, if it were allowed to operate, would put the house forward on the street. The designer's job in this case is to point out that these two tendencies, even though they're in head-on collision, can, by reorganization, be made to slide past each other. He can point out that if the lot were very narrow, particularly in the front — lots could be wedge-shaped, instead of being parallel-sided — or just narrow and very, very deep. Either of these patterns would both allow the front door to be off the street and avoid wasting land in the front yard. So, to me, the designer's job is to create new relations in response to clear-cut observed conflicts like the one I've described. They occur all the time and on a much larger scale than the simple human desires I have described. Every time you see one of them, a new relation needs to be invented.

A second point is: If you are injecting new relations into the rule system, what guarantees have you that the system as a whole will be coherent? I'll give an example of the kind of breakdown that happens in the rule system — again talking about houses on suburban lots. As usually organized, the kitchen is on one side of the house and the bedrooms are placed

Photo: Nathan Silver

Christian Norberg-Schulz and Colin St. John Wilson.

"Do you really think images are taken out of the blue?"

on the other. With the advent of the automobile, new rules had to be formed — for instance, that the car had to come right up to the house off the street. This rule was so important that it was made into a zoning law and you got the characteristic pattern of the driveway being on the side of the house alongside the kitchen. Seemed fair enough. But, at the same time, a new imbalance was introduced, a new mistake, because that car was now located alongside the bedroom of the next house and was waking up the children. Thus, the problem of maintaining the coherence of the rule system as a whole is this: Each time a new rule is injected, the entire system must respond to that injection and other rules change to maintain the order of the whole.

Everybody is saying today that the environment we have at the moment is chaotic, and I think they're right. It's chaotic because the rules governing it are incoherent and uncoordinated. Mechanisms to insure coherence have to be developed at the level of metropolitan government so that new rules injected into the rule system can be coordinated with existing ones. This is the second problem that emerges when you take the attitude I'm taking.

My whole view of design, then, does not concern the architect, but, instead, the rule system as a whole. Therefore, if you're talking about the organization of the environment, it doesn't make sense to ask whether the city should be "imageable." This is a traditional kind of question that came out of architecture as it was practiced in the Renaissance and the 19th Century and is still with most architects.

CHRISTIAN NORBERG-SCHULZ: I have several questions. First, you maintain that the architect's contribution is irrelevant, but that there are situations where it may be necessary to change the rules. This I agree with. The architect always has the task of making a synthesis of conflicting factors. Isn't that, in fact, what the architect contributes in every single situation? To maintain the rules is a continuous process; the architect is always contributing. Secondly, you talk about images not making sense in the organization of the environment and yet you used images in your examples — the front garden, for example. And, if these are concrete physical rules, how do you define them without using some kind of images, some kind of form?

ALEXANDER: Of course I use images. But I think that the search to make the city "imageable," the way Kevin Lynch does it, and to lay down principles about how images ought to be constructed, are completely irrelevant enterprises. If you want to look at my geometrical rules as images, they are, but each one of them has tremendously powerful reasons behind it. They don't just come out of the blue because some architect or Kevin Lynch thinks that people appreciate such and such formal kinds of images.

NORBERG-SCHULZ: Do you really think images are taken out of the blue?

ALEXANDER: Some of them, yes. Lynch says that certain kinds of characteristics make a city imageable. They're not taken out of the blue in the sense that he has observed that those are the sorts of properties people remember. That's very

true. They're taken out of the blue, however, in a functional sense. Lynch wants, and specifically tries, to put edges, nodes, and paths into cities regardless of what they're doing. He wants a city to be made of **images.** He tries to place a highway so that the city will look nice from it, which is ludicrous. It's a concept not rooted in the nature of form as a functioning, operating entity.

Coherence and Cultural Development

MARCH: There are two points here. One is that Lynch will tend to define what Cambridge and Boston look like and then he will put his roads alongside the important events in these cities. But, instead, you could put a road down and events will happen. That's the more important thing to do. Secondly, about introducing new rules into the system and the problem of keeping the system coherent: Suppose it were possible to isolate problems. If you could, it's almost certain that the solution will not work coherently with the rest of the rules. Instead, you will create a new problem. For instance, imagine a primitive, closed society, whose problem is rain on their heads. You put thatched roofs up to solve it. Then rats get into the thatched roofs and so you burn the roof to get rid of the rats, but then the rain comes down, and so on. Then, along comes some wise chap who says here is some DDT, and it'll do the job very well, but then you get DDT all over the food. There's something important about cultural development here. You've got a closed cycle until something from outside comes along — a drought, an earthquake — when it is likely that something new will result. The Japanese made their houses light so they could throw them back up immediately after a disaster. Some other culture would say we'll make them so heavy they'll never be knocked down. Different solutions to the same problem arise. In an open society, we set off on something — say the motor car, a system of private transport — and after a time most of the problems we deal with have been created by this new innovation. Any solution at any time to a problem has to solve that problem and all the others that have been created since. So you still have the original problem — that is, private mobility. Certain architects say, Let's think this right through from the beginning; they'll say we don't have to have private cars at all. Instead, we can think of some kind of loop, or something, that will get people where they want to go. This is all right, but if you do it, you've only got to unravel problem-solution situations all the way down, and in doing that you're in danger of finding yourself unraveling the whole cultural situation as

Photo: Central Office of Information, London

Park Hill Apartments, Sheffield, England.

"Park Hill seems to fix a distinct social pattern into a building."

well. What you can certainly do is innovate from a given point, as we did in Whitehall for instance. It's impossible to reorganize the whole civil service to get a decently designed office building. You've got to start with the civil service itself as it stands at the moment — an accumulation of extraordinarily anachronistic rituals. You can't redesign the service and say now we're ready to put a building up because you've got a nicely designed organization here. You simply start with it and to some extent the design will suit it and in another way it will innovate as far as it can.

ALEXANDER: What usually happens, if you look at the history of modern architecture and the buildings that have proposed new kinds of solutions, is that the inventive architect seizes on opportunities to try and design something better than what would usually be built. This seems constructive and sensible. I, however, don't think it is. It makes more sense to innovate by inventing individual relations and complexes of relations than to innovate whole buildings. The reason is simple. Individual relations can be criticized and modified successfully. Whole buildings are too hard to criticize.

We've heard a lot of discussion in architectural circles recently about the analogy between design and science as Karl Popper described it in his book **The Logic of Scientific Discovery.** It used to be thought, Popper explains, that scientists observed facts and then by a process of induction extracted hypotheses and theories from them. What really happens is that the scientist, in a rough kind of way, makes guesses; he invents theories, guesses at hypotheses, and states them in such a way that they can clearly be shown wrong by new facts. He will then experiment to show his or somebody else's theory wrong. Theories, then, are always written in such a way that they can easily be shown wrong by ascertainable facts. This emphasizes the creative nature of science far more than the old picture. Architects love this explanation because the analogy put forward is that a new building is like a theory, an hypothesis, and one can criticize it as such. They love it, too, because Popper made it quite clear that the scientist's guess could be quite wild [laughter]. It's an interesting analogy, but it doesn't work for architects because the crucial point in Popper's idea was that when you put forward a scientific theory, literally one critical observation, which might result from a deliberate experiment, can knock it down. But this just isn't true of buildings. It doesn't make sense to say that if you put up a building as a hypothesis, it can be refuted in any sense. Obviously, you can't criticize a building in a clear enough way to destroy it. But Popper's analysis does show how science manages to move forward. And we need a way of moving forward in architecture, by creative jumps that can be criticized and refuted. One way is with the rules I've described: If you propose one new relation, like the one I gave about suburban lots, the tendencies that gave rise to the conflict are so limited and so clear that two things can be done. You can say either that this new relation is an adequate response to the conflicting tendencies, or that the tendencies weren't accurately described. Thus a **relation** can be effectively criticized, whereas an **entire building** cannot. That's one reason for saying that innovation should take place relation by relation, never forgetting that they are interlocked in complex ways, with good reasons advanced for each one. Another reason is more pragmatic; it is that the number of things going on in a building is so immense that it's really tough to have an adequate response to them. Even designers really can't be sure about what they're doing: Has he got the whole picture? Has he identified all the needs? He doesn't really know. Finally, I doubt that architects are

best for making these innovations because in their present professional setting they are always concerned with other things.

VOICE: Who is better equipped?

ALEXANDER: We need to start training people specifically equipped to innovate and other people to carry out implementation. I see very clearly in the future a fairly sharp split between these two kinds of activities.

WILSON: You were a little unfair when you said that architects say they build as an hypothesis because it enables them to be wild. Do you mean that invention isn't going to be the result of an hypothesis made sooner or later by reasonably informed people?

ALEXANDER: No. What I'm saying is that the idea of an hypothesis is that it can be effectively criticized. If a series of concrete facts are brought up that ruin it, it is chucked out. But you can't persuade anyone to chuck out the idea of a whole building, because it is so complex that you don't know what you're persuading them to chuck out. For instance, they won't discard the idea that it should have a roof.

What Do Architects Invent?

BRAWNE: Popper deals with only those processes that are clearly testable and he would never, as no sensible architect would either, say that all aspects of the problem, or of architecture, are testable. There are long chapters of Popper that deal very clearly with the demarcation between what is testable and what is not testable. So only very clear aspects of architecture could ever be tested or refuted and therefore only certain aspects of the hypothesis could come under your method. Furthermore, it seems to me that I can think of a large number of environments in which the rules are the same but the quality of the environment is drastically different. So your saying that it is only the rules that determine the environment bothers me. I think there is a whole set of qualities outside the field of relations and outside the field of strictly testable events.

MARCH: Could you give an example of two environments where the rules are the same and the organization differs?

BRAWNE: If we think of streets, pavements, and buildings of different types, Cambridge is a very different place from, say, Crawley New Town. Alexander's contention was that the rules exist in society and were outside the control of the architect. I would agree with Norberg-Schulz that it is the architect who creates these rules.

ALEXANDER: Oh, heavens, no. Let's take an example: Any bank in England. The counters have little windows in them — right? Did architects invent that rule?

BRAWNE: They invented the solution for that rule.

ALEXANDER: Of couse they didn't.

MARCH: Naturally, if you are talking about King's College Chapel, you're talking about the rules that were extant when that building was built. We're left with that. In an historic city, you have built-in rules. There's the example of the introduction into France of the indoor theater. The Place des Vosges was designed as a square, a beautiful architectural square, which we preserve today as a space. It was in fact an urban room with a market in one corner. In the middle were two theatrical groups; one of them decided that the weather wasn't consistent and they'd like to go indoors. So in the middle of the Place des Vosges there arose a wooden shack and that was the first indoor theater in France. It is difficult to know how that shack would have succeeded and become the grand opera eventually without there being a combination of function and form. The function of indoor theater succeeded, and the form that developed from it was created by the people who were creating that function. They didn't get an architect and say what should we do about it; they did it themselves. It was successful and from that point on architects were consulted and asked what should we do about this already established function. From the point of view of cultural development, architects and planners are in a very conservative position. We are able to give form to established functions but we are not able to generate the form — unless

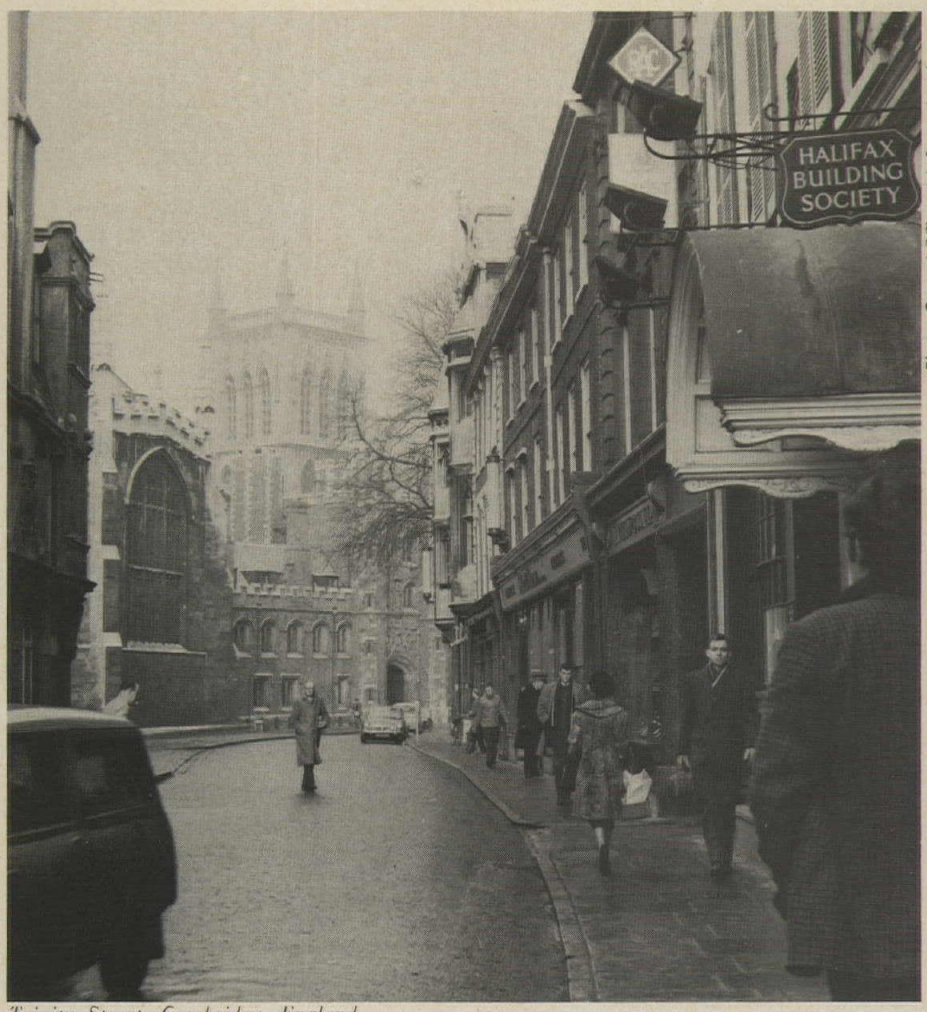


Photo: Central Office of Information, London

Trinity Street, Cambridge, England.

"Environments in which the rules are the same but the quality of the environment is different."

we are able to close our eyes a bit and produce flying bedsteads. The first functional thing is usually very ugly, but it works; and you've got to prove that it works before you can get the architect to give you a respectable form for it.

VOICE: Then form is added on?

MARCH: No, I didn't mean added on. I think an architect ought to be able to develop and create something that works.

NORBERG-SCHULZ: How about Palladio's theater in Vicenza? Did he hear about Place des Vosges?

MARCH: I don't know. Palladio put a roof over a Roman theater, perhaps.

ALEXANDER: In any case, we shouldn't bicker about whether architects invent things or whether other people invent them. Most architects are concerned with the problem of inventing new forms and that means inventing new relations and they are simply trying to do this. Under present conditions, however, they are forced to do that at the same time they actually put up buildings. This is not the best way to inject new relations into the culture at large. It often happens that great architects, like Wright and Corbusier, have attempted serious innovations in their buildings and they're copied entirely for the wrong reasons. If an innovation is embodied in a real building, and then it is photographed and copied, you've got to ask **what** is being copied. Is the significant relation going to get injected into the rule system as a whole? If the wrong things are copied, the building was just a one-off job and it may be years before someone identifies the important relation again.

NORBERG-SCHULZ: Architects are always trying new inventions at the wrong moment, if I understand you correctly, or else they are always going wild. If you now want to divide our general task into obeying the rules and breaking the rules on certain occasions, who decides when it is the right occasion to break the rules? If you can tell me, a simple architect, it would make my work much easier.

ALEXANDER: I'm not trying to make a dogmatic statement about that. It's probably a matter of personal judgment. I'm just trying to separate the two activities very clearly. For instance, take the Park Hill apartment project in Sheffield. In it, there are a number of new relations: the Y-shaped joint, three distinct kinds of levels inside the building, each with a characteristic and different relation to the outside, 10-ft wide corridors that change from side to side as you go down the building, doors clustered in fours, and one or two others. Now each one of these relations is either there for a good reason or it's not. If it is, it's worth repeating. It's possible that some are there for very local circumstances; possibly one of the three different levels has to do with the slope of the site. Any time one specifies a relation, one must specify the conditions under which it is appropriate, and why. If that were clearly and separately said, then the fact that a demonstration of these relations has been built at the same time the relations were invented is all to the good. They ought to be separated conceptually, because then people could come back at them and say, look, the Y-shaped knuckle seems a bit off. Is it important what angle it should have, or doesn't it really matter? And this could be discussed, and maybe it will turn out it should be a four-way joint, or a five-way, or perhaps as much as daylight permits. Under these circumstances, we'd begin to get a mature attitude in the design profession and the evolution of relations in the environment would begin to grow progressively instead of the architect each time throwing himself into the task as though he were starting from zero.

NORBERG-SCHULZ: You said that we could never reject a building, that we had no criteria for doing that. Haven't you just explained criteria for accepting or rejecting a building?

ALEXANDER: I didn't say we couldn't reject a building because we have no criteria. I said it's because buildings are too complicated. Relations should be isolated and examined one at a time, because you can't criticize them all at once.

NORBERG-SCHULZ: How would you isolate one relation in a building? Even in your example of the front versus the back garden, you said that maybe you weren't giving the right reasons for why people persist in wanting the house back off the street. Perhaps it is not possible to get clear, defined, exact relations. Perhaps in the very simple cases there is still some choice between reasons. Some people like flowers, and others just don't.

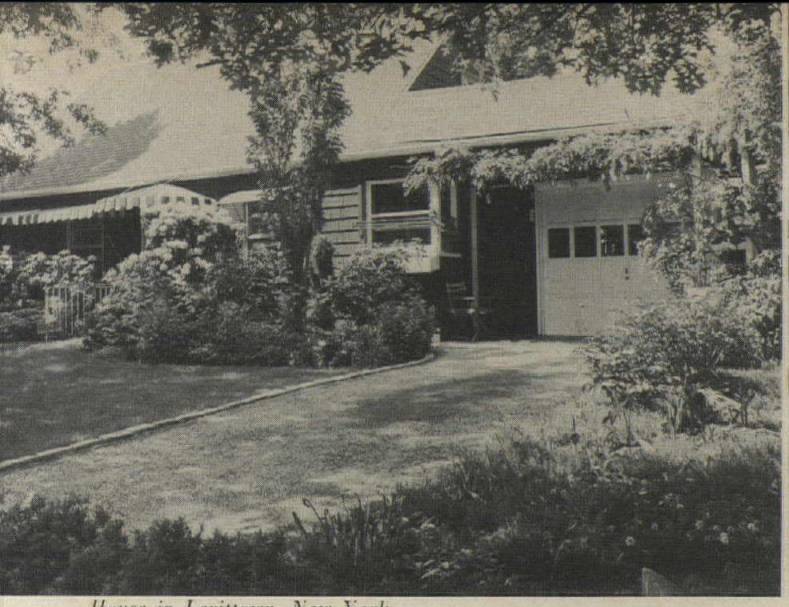
Architecture Versus Social Patterns

MARCH: I agree. And Park Hill worries me for somewhat the same reasons. One is the Popper analogy: He tries to draw a very definite difference between the physical sciences and the social sciences. In the physical sciences, one can expect that nature will reveal itself fairly simply and that you can therefore make very simple hypotheses about how it's working. Then you test those and see how it comes out. Nature won't look down and say, Aha, now they've found me out so I will change the rules. Society, unfortunately, isn't like this. It's likely that society will say, well, here's somebody who's telling us what to do so we'll do the opposite. And this is what worries me about Park Hill. You say that Jack Linn [architect of Park Hill] formulated the problem clearly. Corbu said you must formulate the problem clearly and the solution will follow. I just don't believe that we can ever formulate the problem clearly.

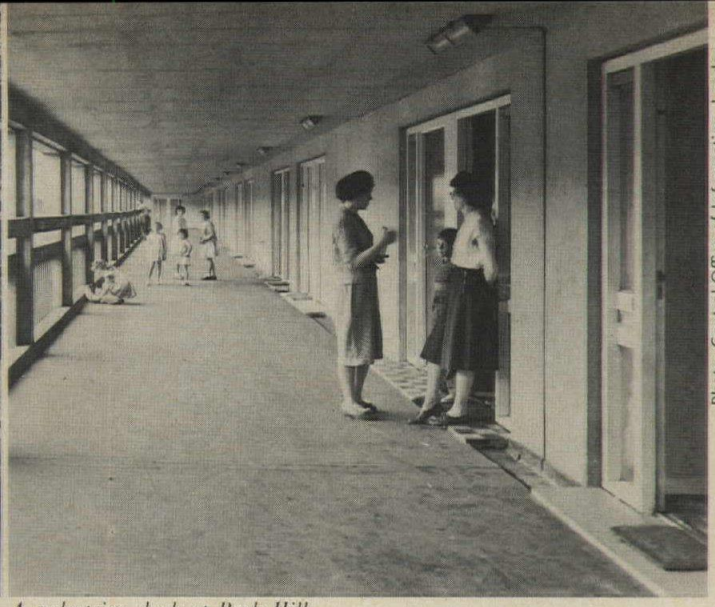
Photo: Central Office of Information, London

The Boardwalk, Crawley New Town, England.

"Cambridge is a very different place from, say, Crawley New Town."



House in Levittown, New York.



A pedestrian deck at Park Hill.

Photo: Central Office of Information, London

"The houses have been changed, not like Park Hill where everyone has just 1'-6" of self-expression."

ALEXANDER: I didn't say we could formulate the problem clearly. I do think we can identify relations and rules.

MARCH: An example of what I mean is Levittown, which I prefer to Park Hill because it has a certain kind of "you come and get it" quality about it. The GI's took it and made it something of their own. Park Hill, on the other hand, simply seems to fix a distinct social pattern concretely into a building.

VOICE: What are some of the ways Levittown permits freedom of action?

MARCH: Dobriner [**Class in Suburbia,** by D.M. Dobriner] has done a study on Levittown over a 10-year period. When it started, it was desolate — the same kinds of houses and carports. An homogeneous society of GI's, more or less all the same age and from the same income and class backgrounds, moved in. Ten years later, the society is heterogeneous: There are definite factions; the political situation is pretty hot over education; there is a Catholic-Protestant split — things like that. The houses have even changed: Bits and pieces have been added, the brick or stone is out on asphalt rolls; they are strongly differentiated — not like the pathetic little bit of linoleum that appears outside the doors of Park Hill where everyone has just 1'-6" of self-expression before you reach the public way.

WILSON: That isn't really an interesting distinction because you're talking about patterns of desirable existence lived by two different tribes. What sort of choice do those in Sheffield lack because they don't have four site positions for the car? What you're implying is that a form at Sheffield was invented and people have rejected it. But Levittown is a swinging situation for one tribe and Park Hill is another swinging situation for another tribe. Most of us have built housing that wasn't swinging for any tribe.

VOICE: The people who live in those places are prisoners.

MARCH: Architects and planners are responsible for making us prisoners more than we need to be by trying to tidy up the environment, but the things that are alive are very often not tidy. Levittown was not tidy, and people protested about that "monstrous eyesore on the landscape," as well as "agricultural country ruined."

ALEXANDER: To answer your basic objection that it is impossible to identify the problem specifically, I repeat that I've only been drawing an analogy between design and what Popper said about science. Of course, we as architects can't put up propositions that state matters of fact and subject them to tests, like scientists. The testing would be slightly different. What the innovative designer must test by observation and discussion with people is: Does this relation, as described and specified, resolve a conflict between tendencies that can be shown to exist in people, economic structures, or larger institutions. It doesn't make sense to say that relations themselves can be tested, but you can find out whether certain specific tendencies exist in people. They can be discovered by observing what people actually do.

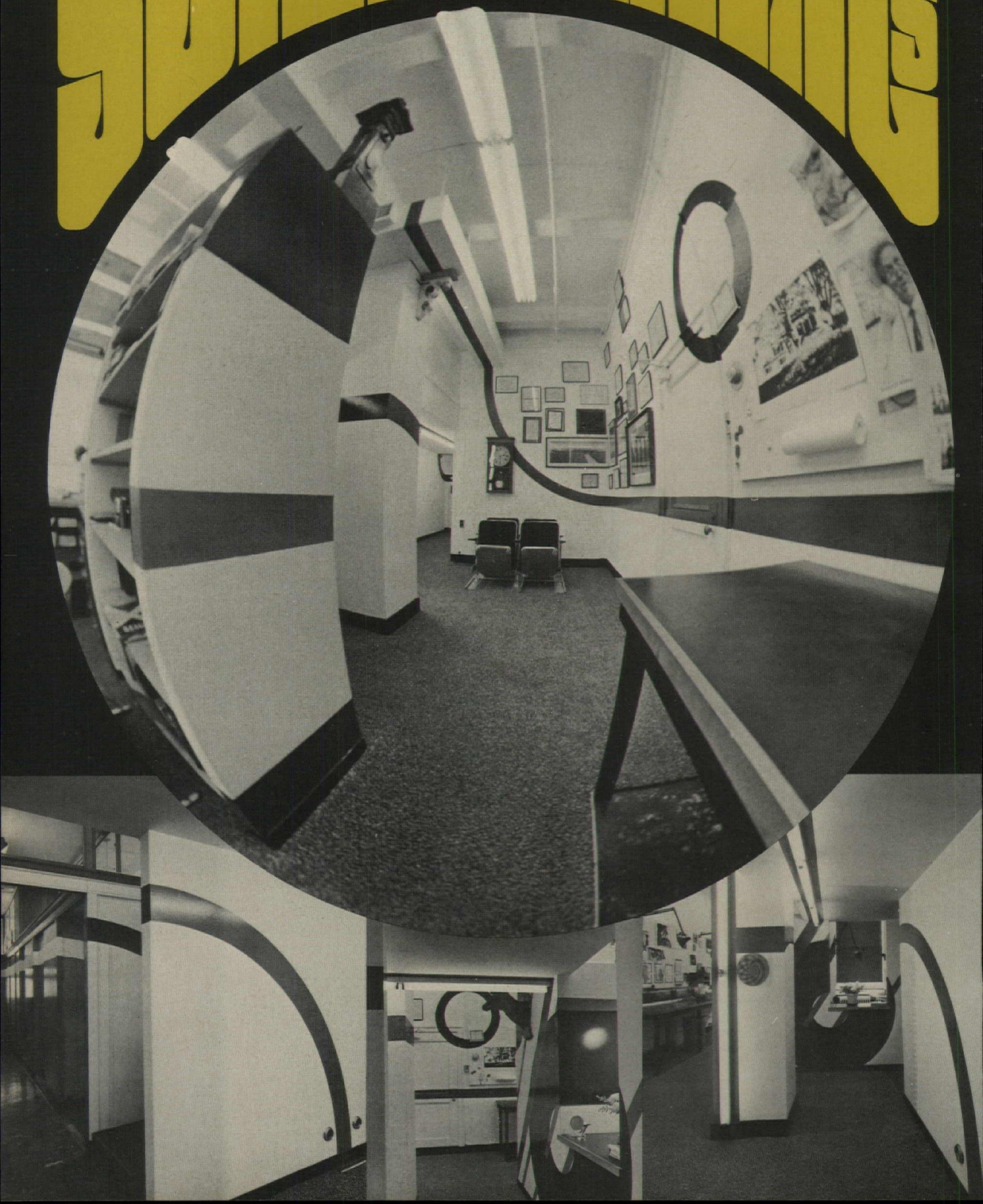
One thing that should be mentioned is the architect's fee structure [laughter]. A serious matter. The invention of new relations is an extremely expensive business; it takes months and months of painstaking work to come up with one or two. If you recognize the colossal number of relations that need modification and improvement, you realize that within the normal fee structure architects just don't have the opportunity because of money to do this job properly. Incidentally, although the two examples I've given have been of small-scale relations, smallness is not a characteristic of them. Some deal in miles instead of feet.

WILSON: Do you claim that your ideas about rules and relations constitute an out-and-out functionalism?

ALEXANDER: Right. If the environment doesn't get this kind of treatment, it's not going to be all right, and since it can't be done within the existing fee structure we'd better work out another way. It means that some people will be paid for designs that aren't going to be built just once, but hundreds and hundreds of times over, because they'll be injected into the relation system and then adopted by many other builders.

To sum up: The critical issue is not whether you give certain work to architects or not, but whether new relations become imbedded in people's minds — people at large. If people want buildings with certain characteristics and they develop an idea of what these buildings should look like, they'll get them. They'll go and demand them. At the University of California, as we begin to build up complexes of relations, we shall go onto the national TV network and explain why certain forms are necessary — forms that do not exist now. One thing I've found in my short experience with architecture is that people at large are incredibly willing to understand the consequences of functional thinking. Architects are sometimes unwilling to, but people at large are always willing. They understand it, it's wonderful, they love it; they really see the point of it because it has to do with their lives. They are the people who have been carrying the images of what the environment should look like in the past; it's just at this present period that the responsibility for the environment has been taken away from them and put in the hands of a small profession. I'm convinced that people at large are willing and anxious to carry this responsibility again **in their heads.** The population as a whole will become the carriers of the relation structure that determines our environment. That's the way I intend to work.

SUPERGRAPHICS



Not a decorative device — repeat — *not* a decorative device, the Supermannerists' use of bold stripes, geometric forms, and three-dimensional images at a super scale is, emphatically, a spatial experimentation.

These Supergraphics "start with a two-dimensional thing that becomes a three-dimensional overlay," says Doug Michels, who executed Charles Moore's interior designs for the Sea Ranch condominium in the winter of 1965. (As far as can be determined, these were the first such graphics in the new idiom.)

In this technique, architectural surfaces are painted or applied with such gigantic forms as two-dimensional typefaces and signs or flat outlines of geometric solids. Generally, they produce abstract effects. Three-dimensional photomurals made with billboard advertising have also come into the picture.

The aim in using such graphic devices is to produce optical effects that destroy architectural planes, distort corners, and explode the rectangular boxes that we construct as rooms. Supergraphics ultimately blast the inhabitant into an outer space. They carry him out beyond the space he is in, giving him the giant vision of an extraterrestrial observer, as if he were Superman in orbit. In that way, Supergraphics make Superman of us all.

Discordant scale is the fundamental force of this graphics technique: It juxtaposes to the room in which they appear images at a scale that is out of context — grossly.

Always, Supergraphics are so gigantic that they cannot be contained within the frame of a single architectural plane. Either they extend onto adjacent planes — from wall to floor or ceiling if their forms are painted in toto — or they appear as fragments of an over-all graphic image.

In both cases, the space extending process of this super scale induces one man to infer that the gigantic graphics are part of a world beyond the one he is in. Patterns overlapping from one plane to another imply a place where they might fit on a single surface. Fragmented graphics imply a form that the viewer completes by gestalt or that the architect implies by the use of mirrors. The implication is that the graphics continue beyond the plane of wall or floor, beyond the room, and even beyond the volume of the building.

Arcs on a wall, for example, can suggest huge wheels somewhere outdoors (see Charles Moore's house, p. 158, MAY 1967 P/A). Billboard photomurals make a man feel he is as big as the fragmented human image he sees on his wall. Diagonals indicating section cuts through a room suggest that the room is the size of an architectural model and that a bigger architect somewhere beyond the section cut is studying it.

For ages, architects have been looking down onto plans and into models, but the layman seldom shared this private, lofty view. Today, the fragmented superscale graphics of the Supermannerists make a superarchitect of even the layman.

As Doug Michels says, "These are space trips."

In addition to this vision of an astronaut, the normal earthbound view of the interior is still apparent. This is the double, almost polarized vision that the Supermannerists provide through their use of scale.

Not all large graphics, however confusingly similar in appearance, are what we call Supergraphics, since some of them derive from different objectives. For example, the hard-edge school of painting has also brought recognition to the use of abstracted signs, symbols, and typography. Also, the work of graphics designers has found its way into interior decoration — most prominently the work of California's Barbara Stauffacher at the Sea Ranch atheltic club in the winter of 1967 (see MARCH 1967 P/A).

"There is an inherent need for decoration of one sort or another," says Thomas Geismar of Chermayeff & Geismar, graphic designers. "And a lot of large painting today is good only because it is large."

Hugh Hardy adds, "We like to see those great big letters blown up on walls till they become fragments and look abstract. But many of these designs start and end with the two-dimensional surface."

"Some of the graphics people are not concerned with space," says Doug Michels. "Mostly they are interested only in scale and color. And many of their things just look faddy — too pat, too In."

Supergraphics sometimes are too Out, however. Often they seem like literary ideas and intellectual exercises rather than spatial effects. In these cases, the biographical concept or intention of the design is stronger than the affective response. On the other hand, as with most optical tricks, once the intention is known, the graphics usually can be seen in no other than the intended way.

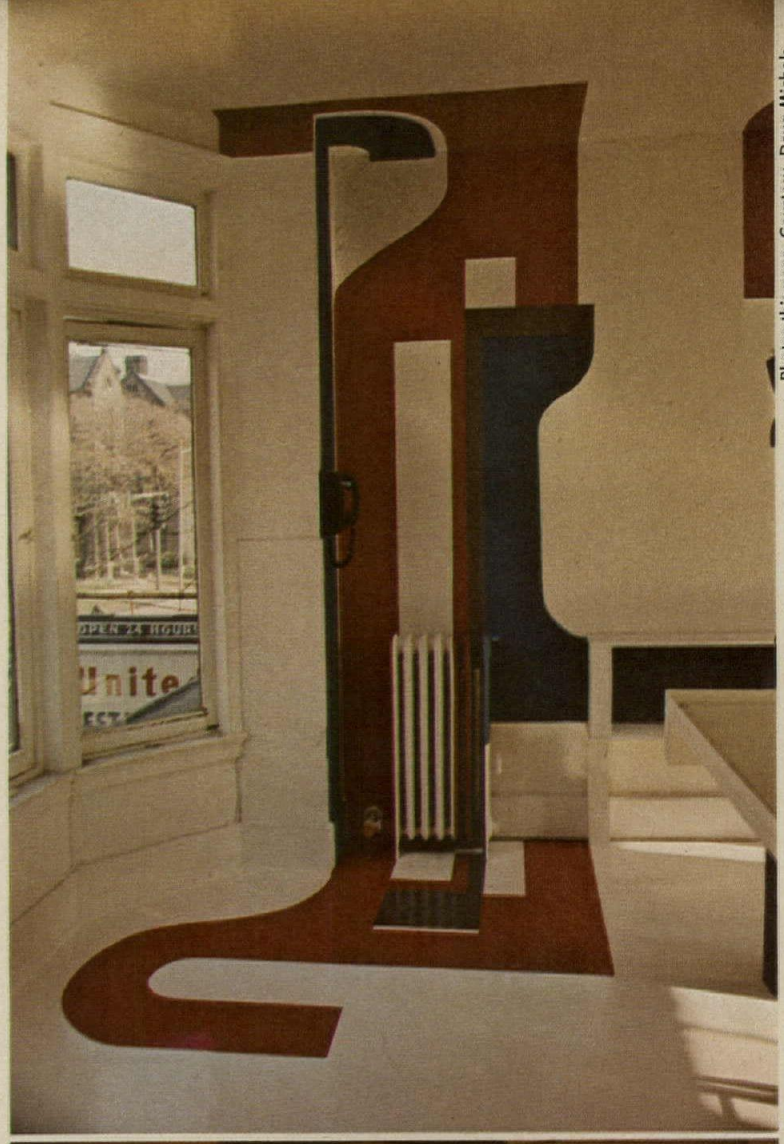
"When Moore started the whole thing off with his interest in painting big circles and squares on the walls of the Sea Ranch houses," Doug Michels recalls, "it wasn't so clear as it is now that you could just paint on the ceiling and on the floor as a continuation of the wall. But the idea was to extend the space." (For Moore's own words, see p. 159, MAY 1967 P/A).

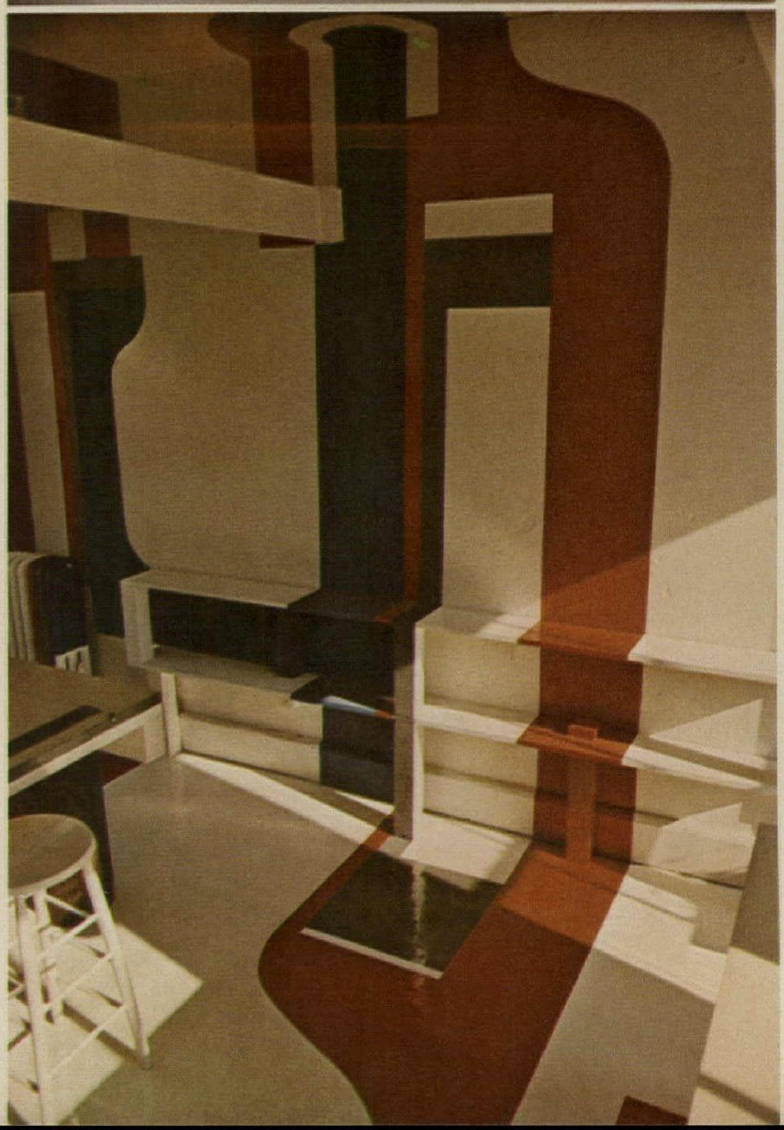
The latest and most electrifying manifestation in this direction is probably not the flat abstract graphics, but graphics made from highway billboards, which are used as super murals. Not only do they derive from bringing the freeway indoors (see OCTOBER 1967 P/A), but they are also an extension of the Supergraphics technique with three-dimensional elements from our popular human experience, and makes the viewer feel almost as large as Gulliver in Lilliput.

This going into a world beyond our own is what distinguishes graphics from Supergraphics. — CRS

What started Hugh Hardy & Associates on the Supergraphics kick, Hardy says, was "passing imaginary geometric planes and solids through a room so that each irregular plane of the room is cut through. This describes the forms wherever they touch the room surfaces and they get patterns that are more prominent and often more pleasing than the original conditions." Looking down the hallway of their office (painted in the winter of 1967), one sees a cylinder that cuts through the entire length and implies that it goes on forever, Hardy explains (facing page, bottom left). Another cylinder swings through the reception area in a different direction (fisheye view), and a bold green one blasts open the reception desk (bottom, center); a red fourth cylinder at the entry has fluorescent tubes fixed onto the cut line (bottom, right). Diagonal planes also bisect the entry, some of them implying diagonal sections of the room, like those in Hardy's own apartment done in the fall of 1966 (see May 1967 P/A).

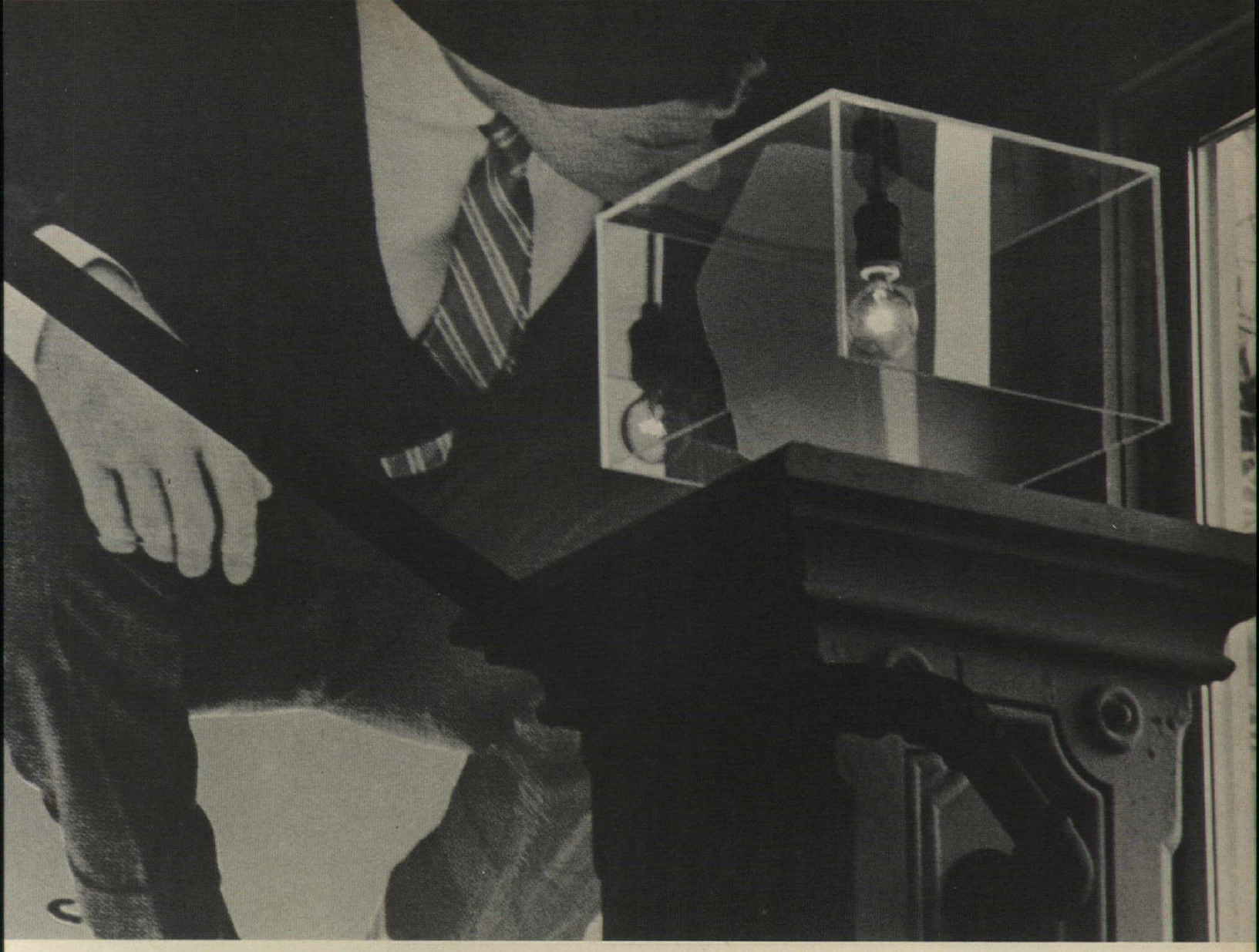
Photos facing page: Louis Reens

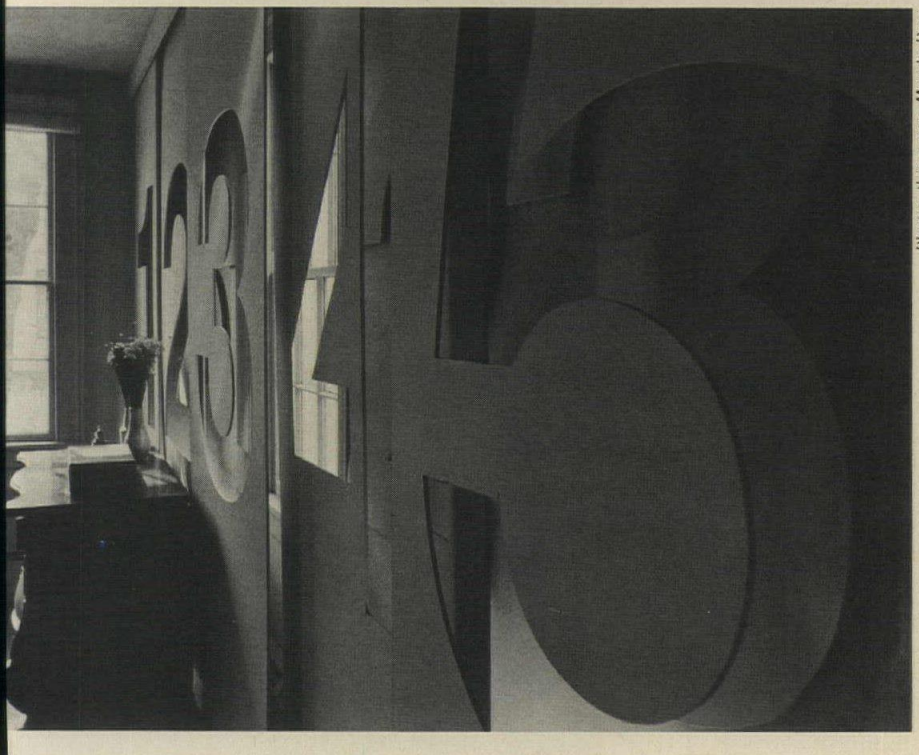




Photos this page: Courtesy, Doug Michels

Doug Michel's Supergraphics for Charles Moore-William Turnbull's drafting room in New Haven (designed in September 1965) are the most intricate examples of interwoven painted planes. Michel's red, blue, and green stripes pass over floor, walls, and ceiling and also over, under, and through the radiator (above) and bookcase (right). Glossy red paint and glossy gray paint offset the matte blue and set up reflections that produce other dimensions. Michels calls these "space trips." "For a while nobody would step on it because it was Art," he notes mockingly.





Photos this page: Maude Dorr

Charles Moore seems to have originated billboard Supergraphics in his New Haven house, which was executed by William Grover. On the wall of the staircase leading down to the kitchen, a photomural of a superscale man is placed so as to make him seem to look out the back door or into the light over the newel post (below). Actually, the man is the left side of a billboard advertisement for Volkswagen in which he is inspecting his automobile. Since the billboard man's left hand, as well as the VW he is looking at (the right side of the ad), are installed on the wall of Doug Michel's apartment (see October 1967 P/A), which is 3 miles away in New Haven, Moore's billboard is probably the biggest space extender of them all. It also combines Supergraphics with bringing the freeway indoors. Of course, Moore's wall of oversize, cutout numbers on superimposed sliding panels (left) is portable Supergraphics.

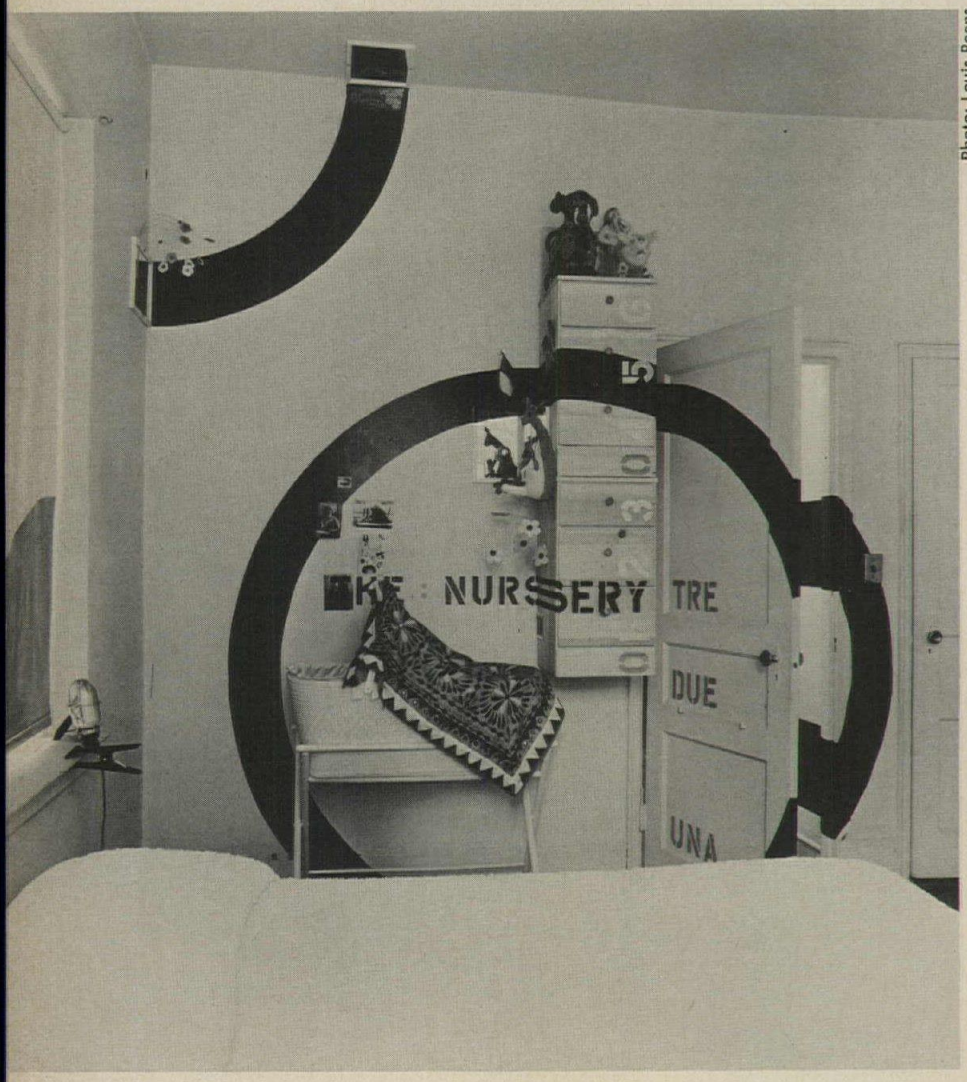


Photo: Louis Reens

Photo: John Hill; Courtesy, Doug Michels

"Minigraphics" might be the more appropriate term for the symbolic cylinder that carves out a nursery for Hugh and Tiziana Hardy's newborn son, Sebastian (above). The circular section of the imaginary cylindrical form is complete when the door is closed; when the door is open, the cut line is seen to continue out along the hallway. This same three-dimensionality is apparent on the suspended chest of drawers, where both the circle and the letter "S" read in depth. Segments of circles are also on the window shade and on the ceiling; the latter has mirrors on adjacent planes to prove that it continues out beyond the room into a larger world.

When Beatle-browed Doug Michels was a student in New Haven in 1966, he painted a big black arrow pointing to the telephone in his apartment and big black phone numbers so that both would be easy to find (right). He also did it because he was conscious of the prominence of the telephone in our culture. He painted them with blackboard paint so that the sign could be used as a memo pad for chalked-on numbers. (No more hunting around for paper. Telephone booth designers please take note.) He also drew the thinnest ink outline across the ceiling to connect the solid base of the door to the head of the arrow on the opposite wall. It was a discontinuous Supergraphic.

Photos this page: Courtesy, Willlam H. Grover

Yale-Architecture student Bill Grover has designed a playroom with "perspective distortion" as the energizing principle. The hallway to the basement room is 30-ft long, but by broadening a stripe as it goes along the hall, the perspective is inverted and the hallway shortened (above). The stripe comes down from upstairs. Inside the playroom, the stripe continues along the wall, turns a corner, goes up over the ceiling and down the next wall, where it broadens to the width of a piano (below, right). "It is a way to change architectural space without punching holes in walls," Grover says. The piano that the stripe envelopes is orange with green contour lines; they make it rise up — or is the phrase "blow its lid"?

REDWOODS AND SHED ROOFS SET PACE FOR NEW COLLEGE

ADLAI E. STEVENSON COLLEGE, UNIVERSITY OF CALIFORNIA AT SANTA CRUZ, *Santa Cruz, Calif.* ***Architect:*** *Joseph Esherick & Associates.* ***Site:*** *13.2 acres of wooded slopes.* ***Program:*** *To build a compact residential college.* ***Structural System:*** *Academic buildings are concrete frame; residence halls are wood frame.* ***Mechanical System:*** *Hot water with mechanical ventilation, excepting smaller rooms where natural ventilation is possible.* ***Major Materials:*** *Stucco exteriors, ceramic roof tile, and exposed aggregate courts. Interiors are gypsumboard walls and ceilings. Residence halls are carpeted; academic buildings are vinyl tile.* ***Cost:*** *$2,418,638; $15.20 per sq ft for residence halls; $23.40 per sq ft for academic buildings.* ***Consultants:*** *Lawrence Halprin & Associates, Landscape Architects; Rutherford & Chekene, Structural Engineers.* ***Photography,*** *except as noted: Peter Dodge.*

Clusters of angles and bits of cantilever, lights and shadows on white stucco walls, thrusting fragments of red roof — a sprightly jumble of shapes makes itself at home on a virgin site dominated by California redwoods.

"To a greater extent than any of us have faced heretofore, the buildings are less important in the visual composition than the trees," Thomas Church observed in his capacity as master landscape planner for California's new super campus at Santa Cruz. However that may be, Joseph Esherick's Stevenson College is anything but a quiet retreat into anonymity. The informal style, which makes the campus a good neighbor to its natural surroundings, has a kind of spirit that should enliven the academic life.

Set free by its views down the sloping site toward the Pacific Ocean and Monterey Bay, the campus is, at the same time, sequestered in groves of sequoia, bay, and oak. And the close grouping of residence and academic buildings around courtyards lends a sense of friendly intimacy.

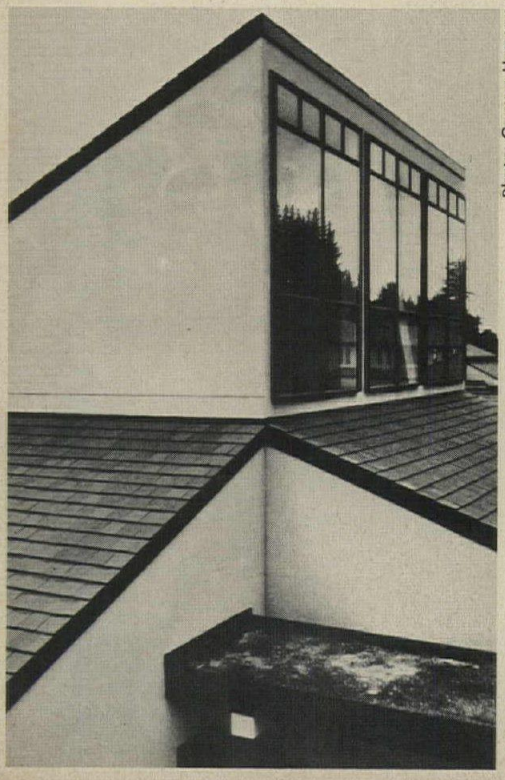


Photo: George Homsey

The Groves of Academe

Three years ago, the only man-made structures on the 2000-acre tract gathered together for the University's Santa Cruz campus were a few weathered ranch buildings. Starting about 300 ft above sea level, the land stretched up in a series of unspoiled meadows, forests, rugged knolls, ridges, and deep ravines to an elevation of 1190 ft — a clean slate for the master planners and many architects designing individual colleges.

By 1995, the University expects to have some 27,500 students registered in 15 to 20 liberal arts colleges and 10 professional schools (e.g., engineering) — a loose confederation of semiautonomous residential colleges served by a central core of facilities, such as library, science labs, and administrative offices. Enrollment in individual colleges will range from 250 to 1000.

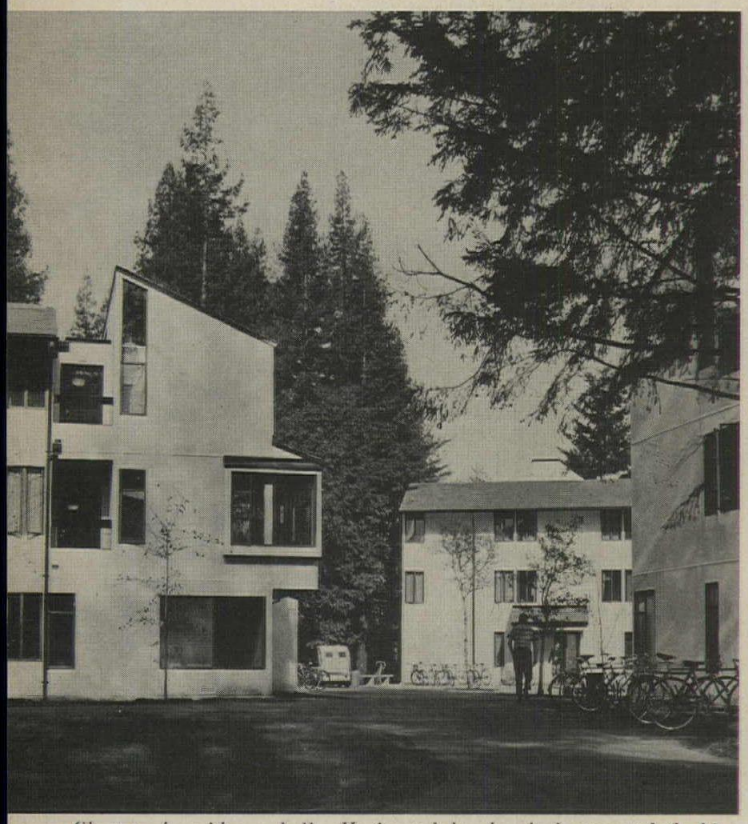
The site, situated partly inside and partly outside the city limits of Santa Cruz (population 26,000), is less than 5 miles from city center, beaches, bay, and ocean, and some 75 miles south of San Francisco. It was considered ideal for the kind of academic program the University had in mind, providing a certain isolation from the world and enough land to create separate campuses for each college. Housing, athletic fields, and possibly commercial areas will someday share the sloping site with the colleges and central buildings. They will tumble down the hillsides among Monterey pine, redwood, Douglas fir, oak, maple, and manzanita, skirting open meadows where native grasses and western wild flowers thrive. To date, three colleges have been completed. Of the central buildings, the library, administration building, heating plant, and one science building are in use.

The master planners, a team headed by John Carl Warnecke & Associates, quite naturally place prime importance on the architects' careful stewardship of this spectacular piece of nature. General guidelines are also laid down for maintaining both a feeling of architectural cohesiveness among the various colleges, and of giving each one a distinct identity. "Over-all architectural unity is to be achieved by use of similar materials, similar roof forms in most cases, and similar base treatments." Roofs are particularly recognized as an important element of the landscape that will be seen from higher elevations on the site. Campuses are to have some of the protected aspects of a walled city, although casual in style, and take all possible advantage of views. The decision to give each college its own architect is probably the best assurance of individuality.

Among many fine proposals mapped out by the master plan is an intracampus transit system. Already some half-dozen nonpolluting electric buggies, with capacities from 8 to 25, ferry students between colleges.

The Goals of Academe

Legend has it that the educational philosophy and academic organization at Santa Cruz were an outgrowth of the postgraduate student days' friendship



Cluster of residence halls. Horizontal bands of sheet metal flashing cover joints that allow for shrinkage of framing.

Giant redwood shades entrance to the college. Covered walkway leads visitors into the courtyards of the academic complex.

SITE PLAN

between UC's ex-President Clark Kerr (who initiated the planning) and Santa Cruz's Chancellor Dean E. McHenry. As graduates of Swarthmore and UCLA respectively, they dreamed of combining the advantages of student-faculty contact at small colleges with the wide choice of faculty and generally superior facilities of a large campus — a university that "seems small even as it grows large," as Kerr described it.

Santa Cruz is unique in California's higher educational system, and probably the only public institution in the country planned to develop as a "collegiate" university. An experiment in closing the gap between teaching and learning processes, it places great importance on intense student involvement, and on the intellectual leadership of a quality faculty. Governing provosts, along with their faculties, are given generous leeway to develop curricular patterns and set academic programs. Within a loose framework of campus-wide requirements, the personality of each college is left free to evolve out of its students, its faculty, and its architecture.

Students will take about half their undergraduate courses at the parent college, chosen on the basis of its strength in a particular field, and the remainder under teachers in other colleges, ideally within the nearby cluster. A broad view of the world is stressed, and independent work is generally encouraged or required, together with concentrated seminars.

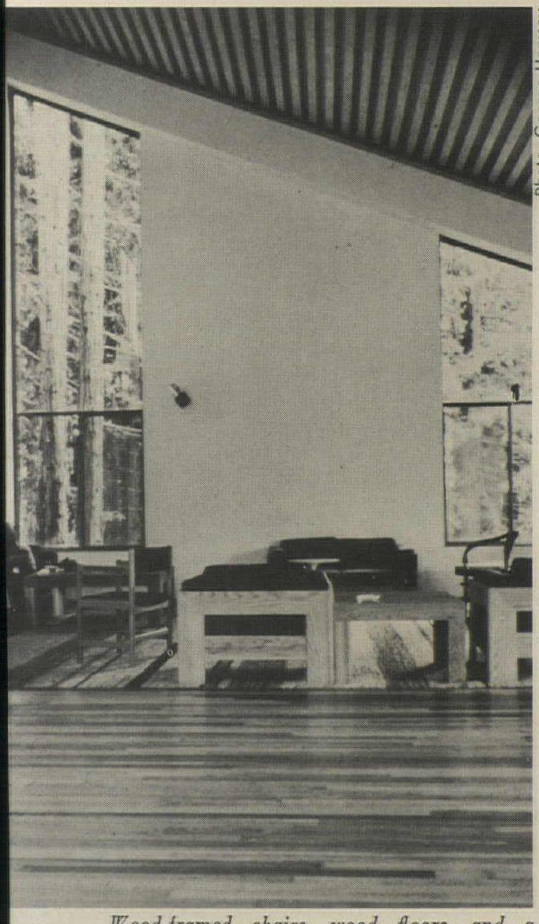


Photo: George Homsey

Wood-framed chairs, wood floors, and a fireplace (not shown), make this student commons room a warm gathering place.

How It Works at Stevenson

Opening its doors in the fall of 1966, Adlai E. Stevenson College was the second of the three colleges now in business at Santa Cruz. It started out at full capacity with a coeducational enrollment of 700 students who study under a faculty of 43 Fellows, heavily loaded with PhD's. Some dozen teaching assistants supplement the staff, and the three top administrative posts also carry teaching assignments in their fields.

Each freshman is assigned to a Fellow advisor who guides him through his college career and helps plan the development of a major course of study. Residence halls also have their Fellows or Resident Preceptors, thus providing ready access to the faculty.

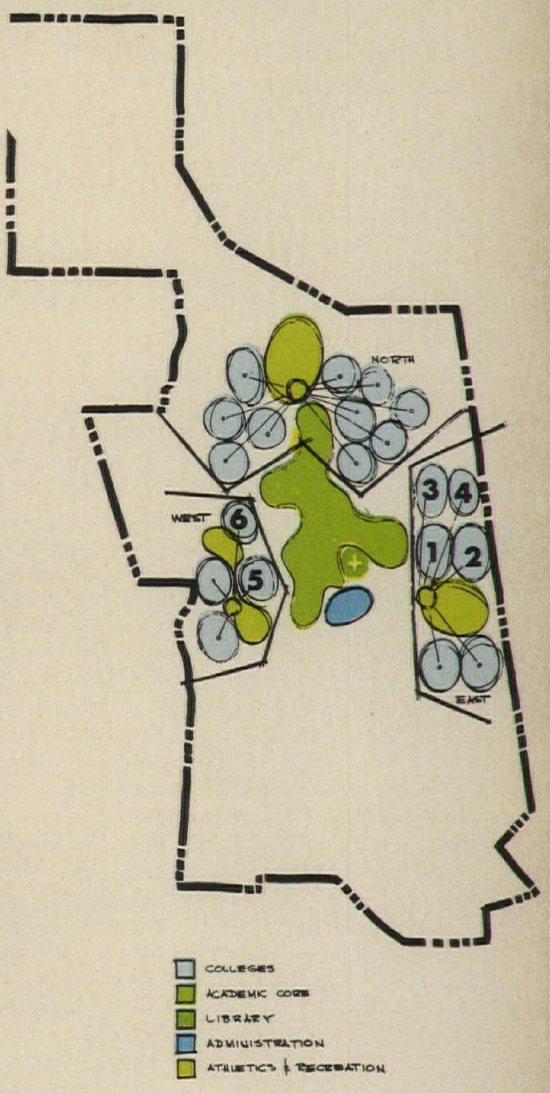
Stevenson's liberal arts curriculum, slanted toward the social sciences, is carried on through seminars, large lectures combined with small teaching sessions, and independent study under a tutorial system. Grades are either "pass" or "fail," as is true in all the colleges, although some letter grades may be given in students' major subjects.

Sophomores pursue their major studies in seminars, and juniors and seniors are "strongly encouraged" to pursue independent studies and "to incorporate in their program off-campus field experience in this country and abroad." Student-faculty contact, considered so important in the experimental program, is indeed what's happening. As Charles Page, provost during the first year, observed, "It works. There's no question of this. Students and faculty eat, play, and talk together."

To provide a congenial and stimulating environment for these intellectual and social activities, Joseph Esherick was allotted 13 hillside acres just at the tree line. Ten acres were buildable, and of these he used seven, grouping buildings into three complexes — campus center (classrooms, recreation, administrative offices, and dining hall), and the two close-by groups of residence houses, or dorms. The provost's house has been completed and other faculty housing is planned. Thoughtful attention to landscaping and preservation of trees wherever possible serves to enhance the campus and separate Stevenson from the neighboring college just to the west.

Perhaps the most important unbuilt

Conceptual Diagram



Schematic drawing of entire Santa Cruz campus shows the relationship of colleges to central buildings and athletic facilities. Stevenson is No. 2 of the first three colleges to be completed. Under the short range plan, Nos. 4, 5, and 6 are scheduled for staggered completion by 1970.

structure is a gift-funded library, to be sited just east of the central buildings. As a satellite of the main Santa Cruz library, it will contain basic reference works and supplementary volumes, and, if the architect's plans are approved, will also be a kind of comprehensive communications center not only for books, but also for lectures, recitals, group, studying and so on.

Parking is neatly fitted in here and there in small clearings among the trees, and special slots for bicycles are provided in the courtyards.

Scholars' Village Square

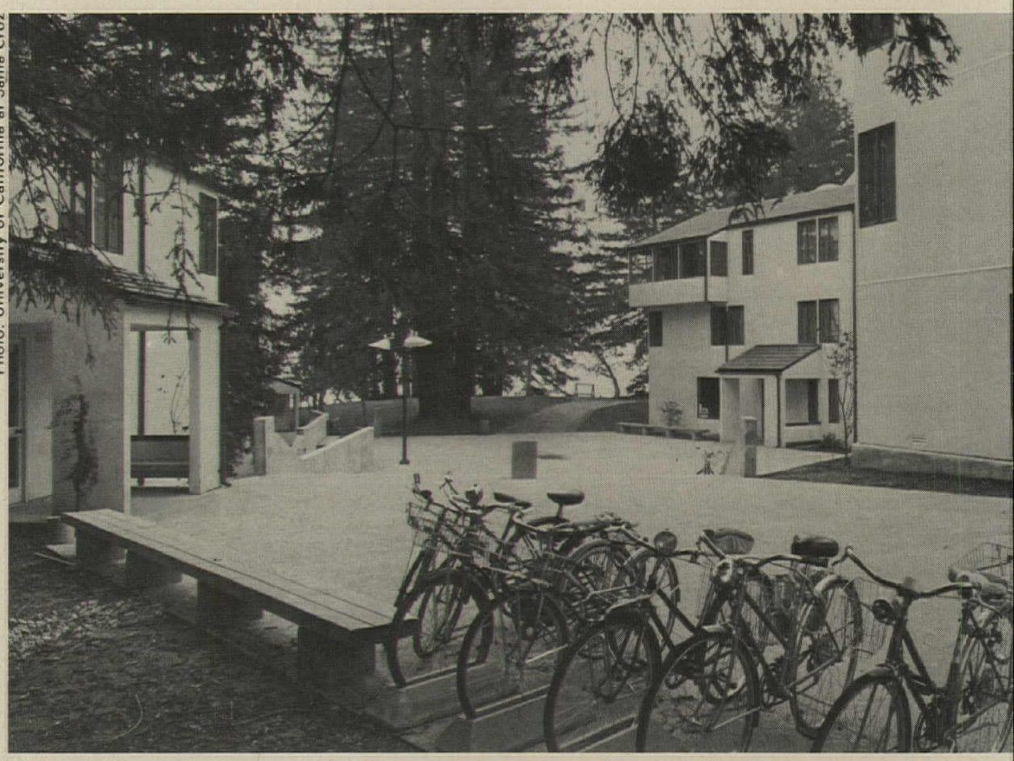
Stevenson's academic-social complex revolves around a large court broken into two irregular spaces by a pair of generally U-shaped buildings. Visitors approach up a series of steps and enter under a covered walkway drawn between two low wings. The shadowy walk opens onto a bright semienclosed courtyard, and confrontation with the massive face of a jutting shed roof, glazed in three enormous clerestory sections. This dominant architectural shape, covering the central portion of the dining hall, looks up toward the dominant natural shape — a cathedral (small stand) of redwoods preserved within the court.

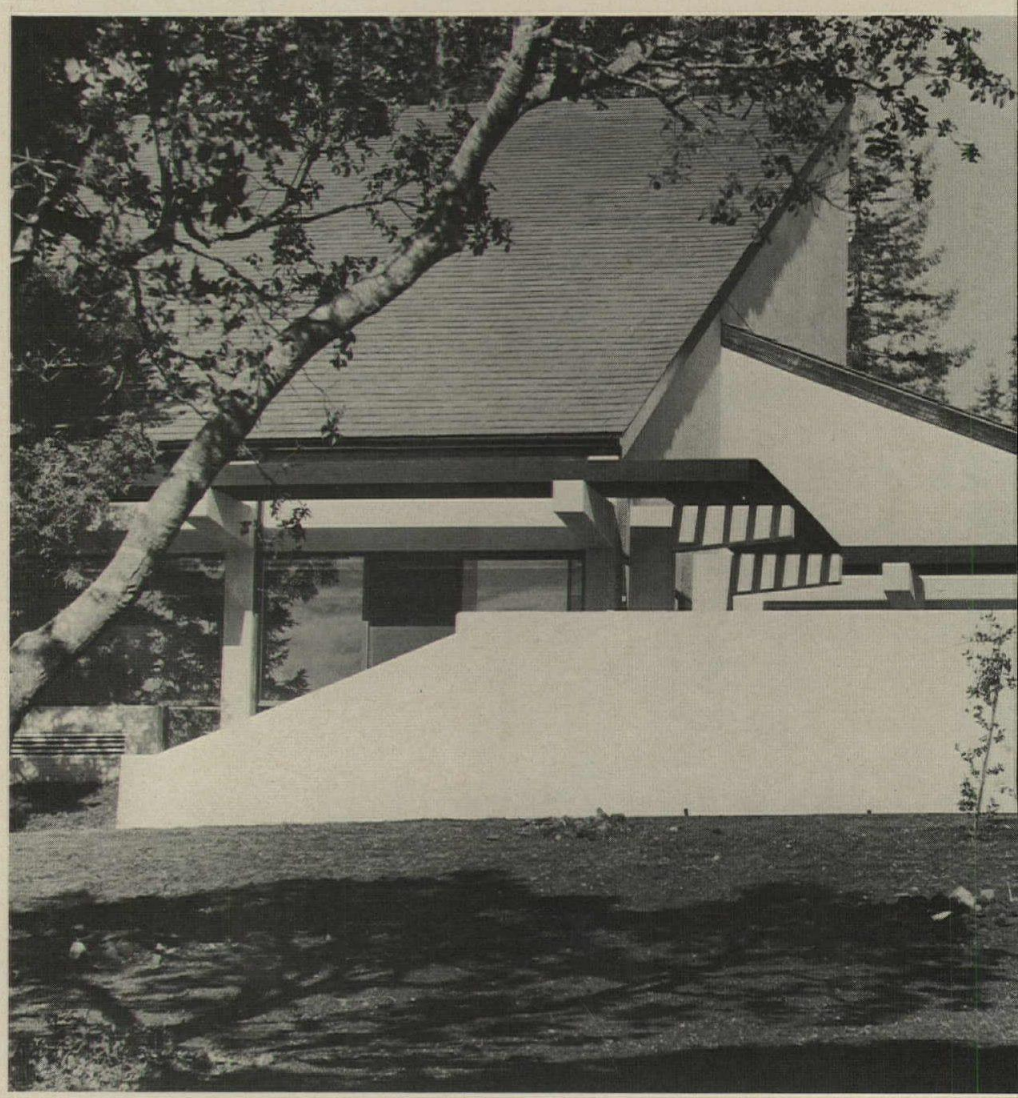
The covered walkway continues along the side of a building and turns east below a second-story section, forming an open-sided arcade that frames views in each direction and pulls the eye toward a final large space open to the south.

Around the two court spaces, paved in exposed aggregate, Esherick sets up a counterpoint of shed roofs playing against one- and two-story sections, breaking up long, low buildings into smaller units. A change in height and/or direction of roof pitch generally, but not always, signals a change in the activities being housed. Most one-story sections are covered with a straight-forward shed, and longer two-story wings are roofed with a double shed that lets clerestory light into a building on both sides of a central hallway and also accommodates skylights and vents, leaving roof surfaces uncluttered.

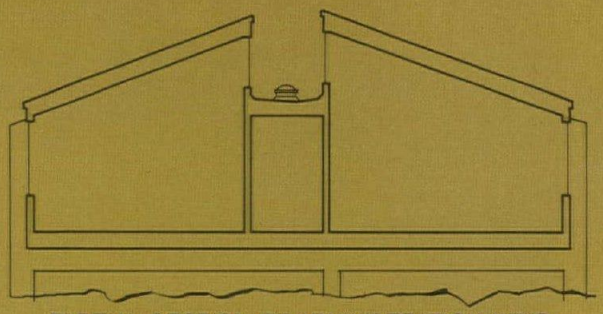
Classrooms, student commons, and administrative offices, which appear to be four separate structures on the site plan, are actually part of one building, tied together at the upper level by a U-shaped

Photo: University of California at Santa Cruz

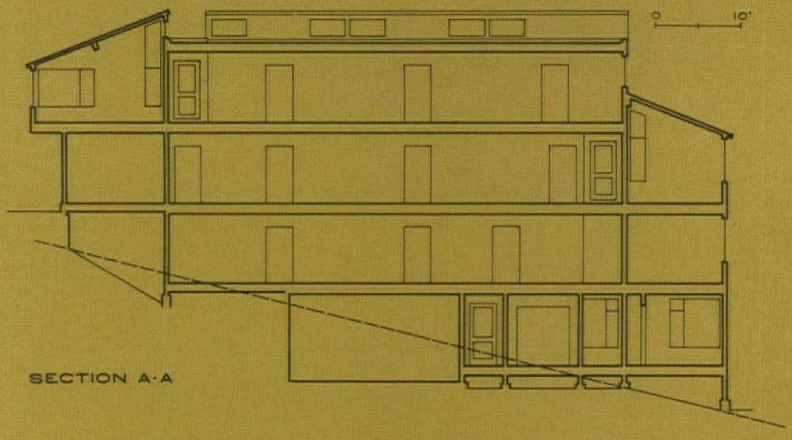




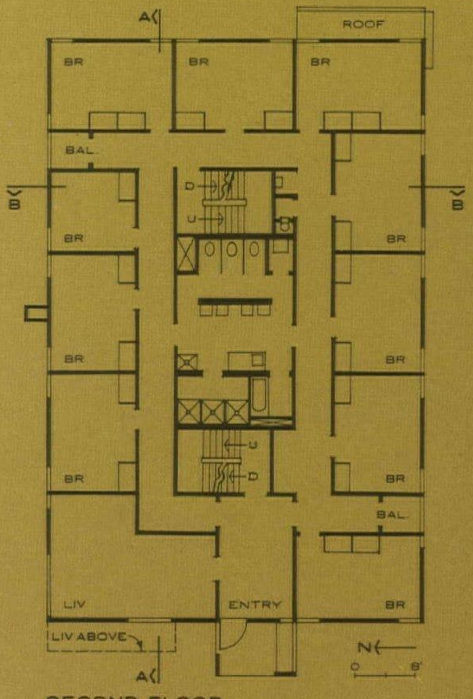
Residence hall courtyard provides special parking places for popular student mode of transportation (top). View of dining hall from the south reveals large expanse of roof over college's one major space (right), which is also used for lectures.



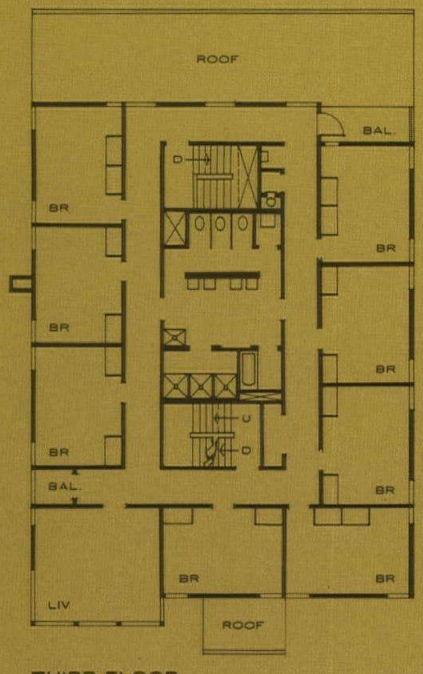
PARTIAL SECTION OF ADMINISTRATION WING



SECTION A-A

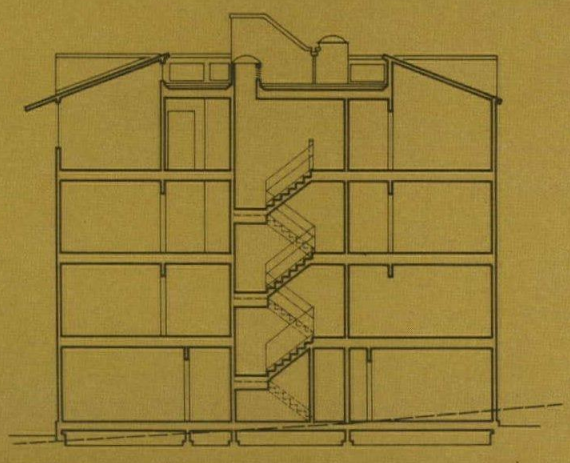


SECOND FLOOR



THIRD FLOOR

PLANS AND SECTIONS OF TYPICAL DORMITORY



SECTION B-B

second story that contains faculty studies, or offices, seminar rooms, and music listening rooms. It covers the classroom wing, cuts east over the walkway, and then north over administration, leaving the student commons rooms to form a one-story wing along the east side of the main courtyard.

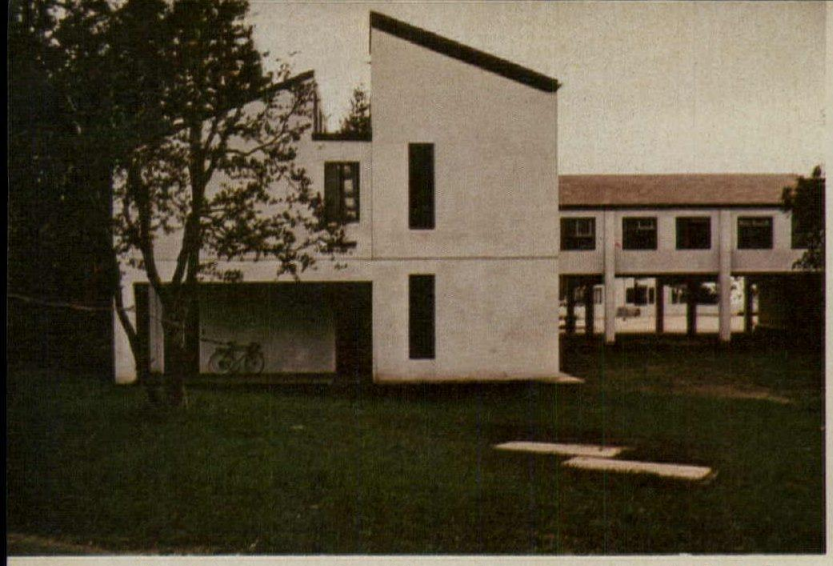
Several generous meeting places and recreation rooms are provided for students who are often thrown on their own resources by the isolation of the site. For noisy gabbing, students congregate in the recreation room, dubbed the "Jolly Room"; they play ping-pong, cards, and billiards in the student commons game room, and relax next door in the "Quiet Room," warmed up by wood floors, a fireplace, and colorful upholstered chairs and sofas.

Each faculty member has a study where individual tutorials are held, and smaller rooms accommodate seminar groups. The dining commons, which shares the kitchen of neighboring Cowell College, is also used for large lectures.

The slightly skewed siting of these main buildings and also of the residence halls, is the result of changes made in the original plans. "Our original site plan for all the buildings was strongly rectilinear," Esherick explained. "Not because we had any conviction that this was necessary, but I couldn't see any reasons why it shouldn't be. At that time, we were working with rather inadequate survey information. When more precise site information was available and the buildings were staked out, it became evident at once that by moving off the rectilinear system we would greatly enhance views, get a greater variety of views and develop a much more sensitive relationship to the new site."

Of the over-all design problem, Esherick remarked wryly, "Perhaps the largest and certainly one of the most interesting problems in the entire project centers around the fact that the college was designed before there was a provost or any large faculty group. The academic plan was skeletal and there was no one to go to for specific answers to the kinds of hard questions that come up. Much was done by guesswork and a great deal of the original program was changed in the course of design because it was found to be either impractical or impossible from a cost point of view." The college ad-

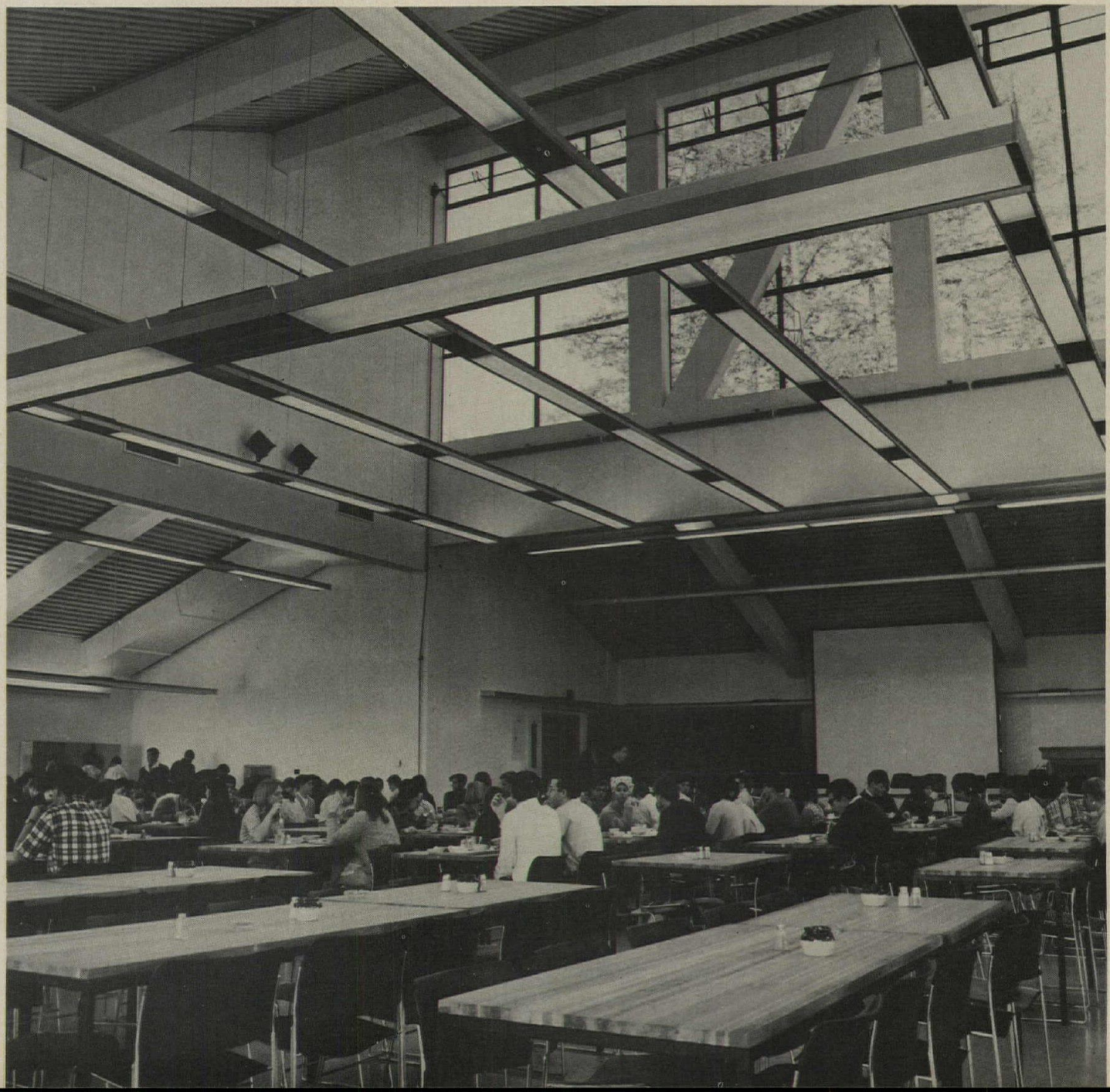
Partial section of administration wing shows double shed roof with center trench that accommodates skylights and admits clerestory light into the middle of the building. Dormitory sections and floor plans illustrate roofing style, cantilevers, tiny balconies, and bathroom core surrounded by student rooms.



Classroom/student commons wing with second-story connecting wing beyond.

Southernmost part of the academic court. Dormitories in the background.

"...a greater variety of views and...a more



Windows of second-story seminar rooms overlook the Pacific Ocean.

Color photos: George Homsey

Student commons wing. Recreation room is defined by the shed roof in profile.

sensitive relationship to the site."

ministration, however, feels it has a very workable plant, and spaces are generally functioning as they were designed.

Casual Quads and the Unhipped Roof

Two clusters of four dorms each house 450 students — about two-thirds of the total enrollment. Last year, they were conventionally segregated by sex, but this year's classes returned to find two men's and two women's dorms in each group, a change that may have been influenced by a student body encouraged to think independently and outspoken in defense of its modern freedoms.

Buildings house 60 to 65 students in rooms strung around the perimeter of each floor. Stairs and a group bathroom occupy the center, and there is also a small living room on each floor. Structures are limited to three stories above grade by the master plan.

Esherick felt that the state requirement of not less than 80 sq ft for singles and not more than 120 sq ft for double rooms was too much and too little respectively. This, plus budget restrictions, forced a change from pairs of single rooms with adjoining baths, to the central bath plan and a majority of double rooms. However, furniture components have been chosen to allow students a certain variety of choice in arranging their rooms, and dormitories are carpeted.

In order to take advantage of views and fit residence halls into gentle hills on the site, Esherick designed each dorm a little differently. Some have below-grade spaces, some do not; and the layout of interior spaces changes slightly from building to building. Interiors generally depart from a stacked plan, each floor being a variation on the one below and above it. Sometimes a living room falls above a student bedroom; the designer gets the extra space needed for the community room by cantilevering out a few feet, or stepping out just enough to hold a window seat. Although this adds interest to the elevations, it also raises a few doubts about students trying to sleep or study with a late bull session in progress overhead.

Roofs again play a major role in setting the character of groupings. Fragmenting the hip and eliminating the ridge beam, dorms are covered in four shed sections, which, as in the academic buildings, conceals the central portion of the roof and admits natural light into both sides of student rooms.

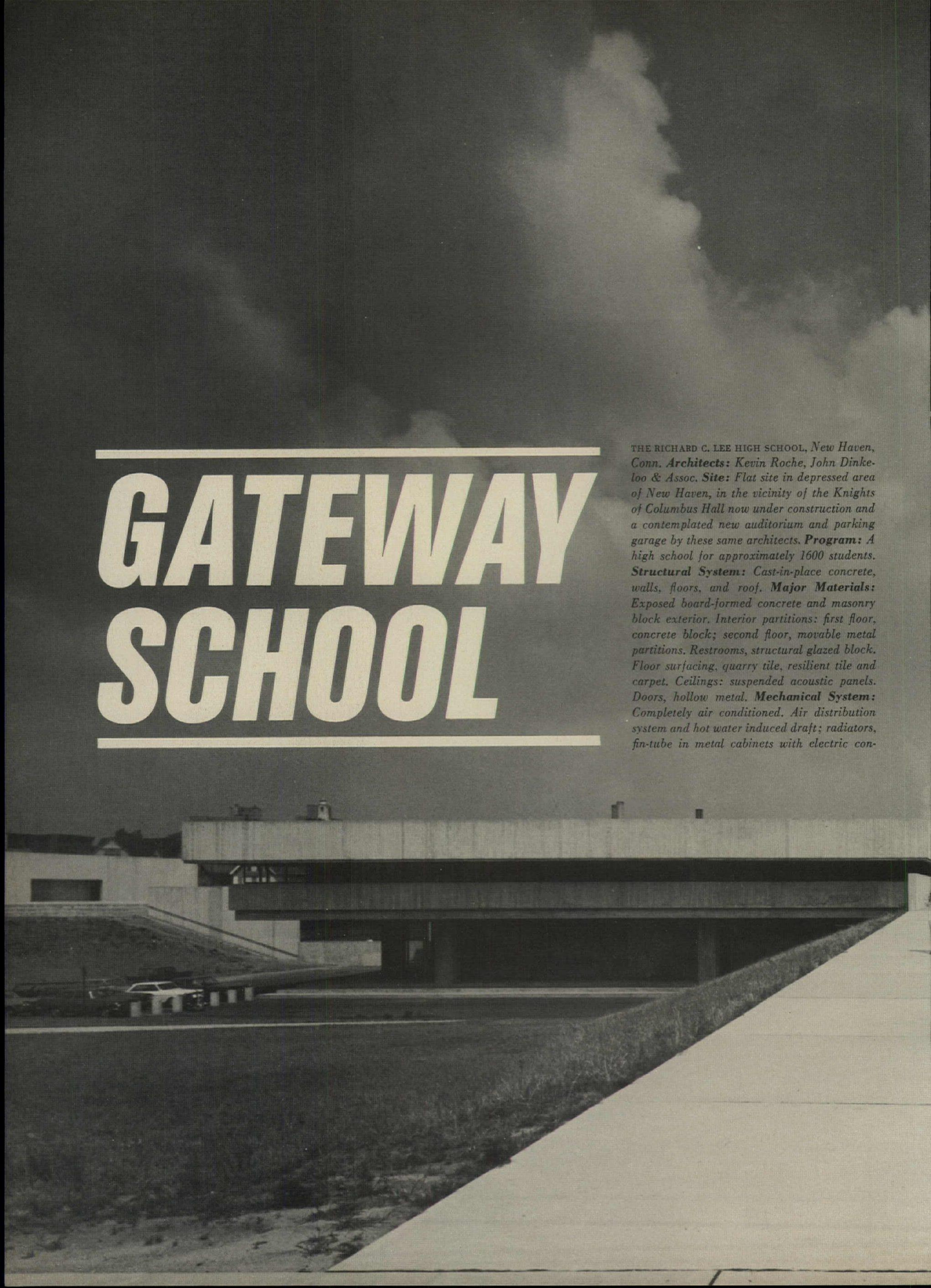
Architectural vitality comes from the in-and-out movement of small cantilevers and inset "mini-balconies," from the multiple shed roofing and jaunty fenestration. Ornamentation is strictly functional — black sheet metal scuppers and downspouts to carry off the 28 in. of annual rainfall from gutters on all the various bits of roof.

Photo: University of California at Santa Cruz

Redwood court, beside dining hall, is a pleasant spot to stop and read. Facing page: Clerestory windows of dining hall look up toward redwoods.

GATEWAY SCHOOL

THE RICHARD C. LEE HIGH SCHOOL, *New Haven, Conn.* ***Architects:*** *Kevin Roche, John Dinkeloo & Assoc.* ***Site:*** *Flat site in depressed area of New Haven, in the vicinity of the Knights of Columbus Hall now under construction and a contemplated new auditorium and parking garage by these same architects.* ***Program:*** *A high school for approximately 1600 students.* ***Structural System:*** *Cast-in-place concrete, walls, floors, and roof.* ***Major Materials:*** *Exposed board-formed concrete and masonry block exterior. Interior partitions: first floor, concrete block; second floor, movable metal partitions. Restrooms, structural glazed block. Floor surfacing, quarry tile, resilient tile and carpet. Ceilings: suspended acoustic panels. Doors, hollow metal.* ***Mechanical System:*** *Completely air conditioned. Air distribution system and hot water induced draft; radiators, fin-tube in metal cabinets with electric con-*



trols; ducted air distribution system; refrigerant, chilled well water. **Cost:** *$4,390,000. Equipment: $700,000 additional. Estimated landscaping cost: between $35,000 and $50,000.* **Consultants:** *Henry A. Pfisterer, Structural Engineer. Hubbard, Lawless & Osborne, Mechanical and Electrical Engineers. Warren Platner, Interior Furnishings.* **Photography,** *except as noted: David Hirsch.*

Three Challenges

The design of the Richard Lee High School presented the architects a threefold challenge: one, to meet the changing demands of a rapidly growing educational system; two, to give a feeling of permanence and express the dignity of learning; three, to design a building that would create a pivotal point for future redevelopment of the entire area relating to future site planning.

Planning

They were enthused over the educational philosophy that specified a "house plan." This concept divided the population of 1600 students into four separate areas of classrooms. Each group has its own identity, with shared common purpose rooms such as library, cafeteria, and auditorium.

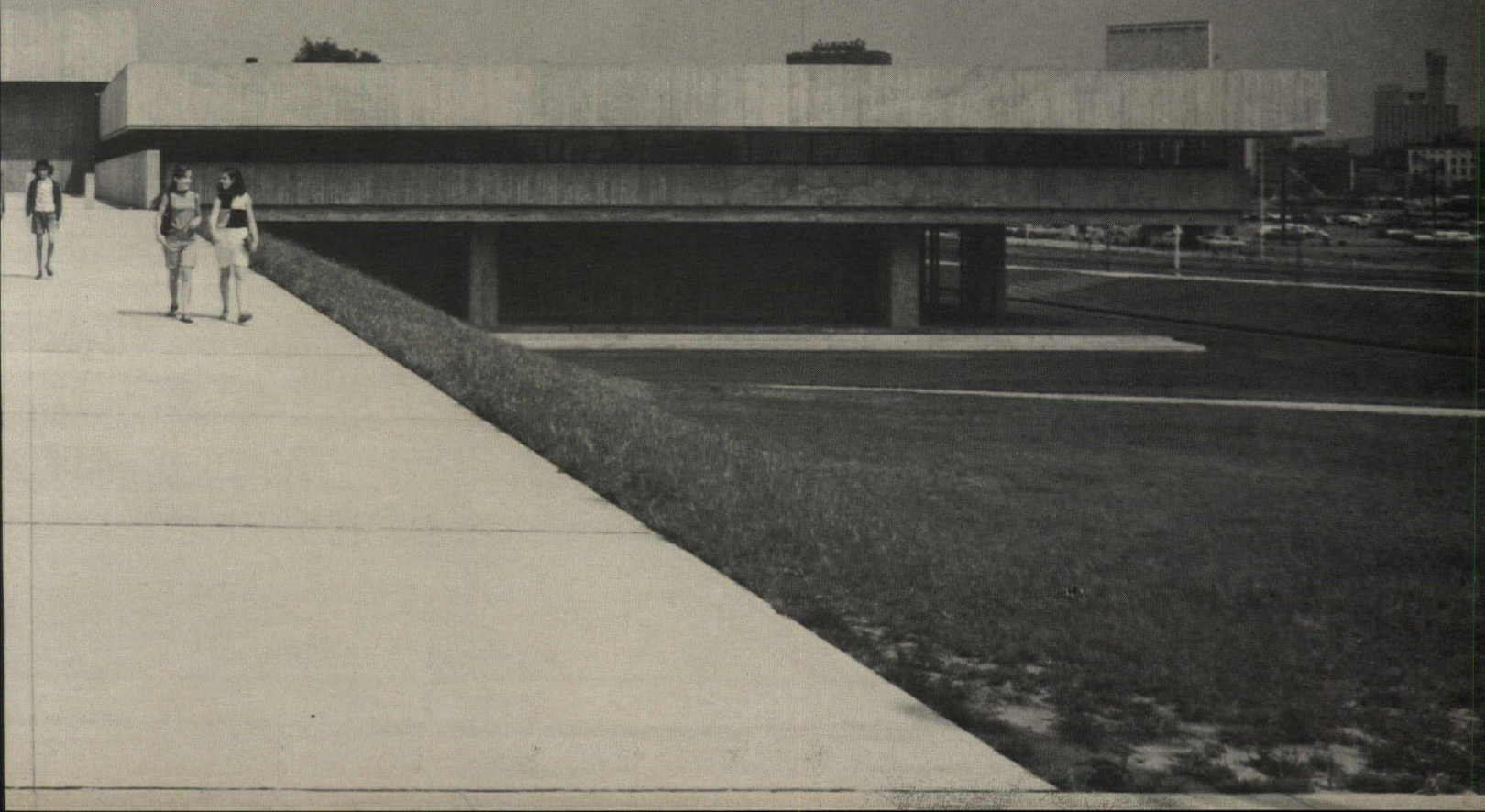
The four house units were made as flexible as possible, enabling the school to grow as educational methods developed. The "loft" plan is used for the four house units. Each of these is a 136' x 140' long-span modular building in which partitions can be moved to produce a great variety of differently sized rooms.

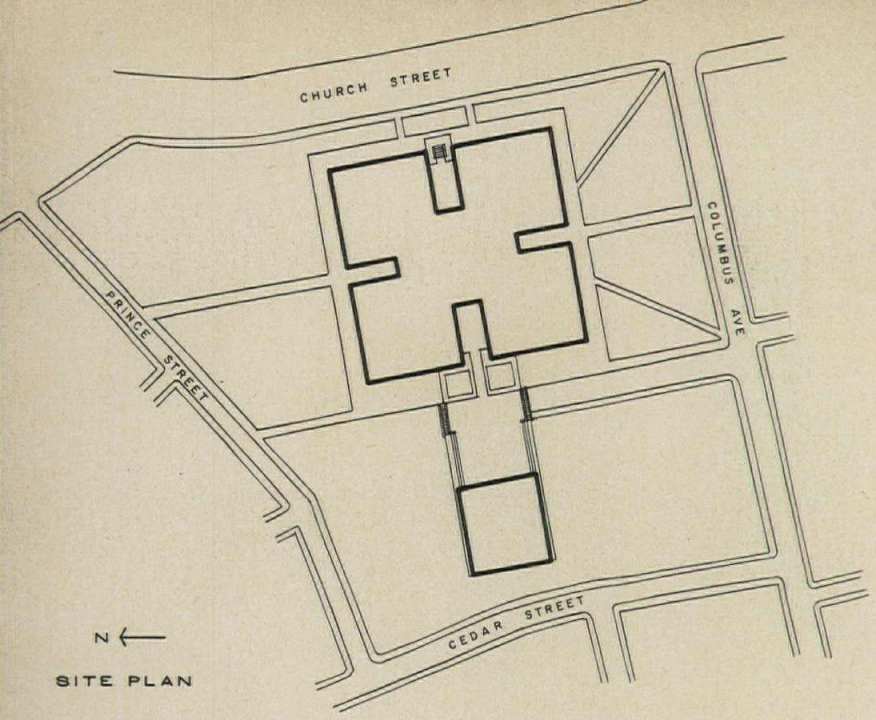
It was the architects' opinion that air-conditioning and controlled artificial lighting produce the best working space. They arranged the house units for flexible inner classroom space with peripheral corridors.

These have continuous windows above a lower bank of 4-ft-high lockers. They serve relatively little traffic under the house plan and in a sense become an extension of the classroom space as well as providing a view of the landscaping surrounding the school.

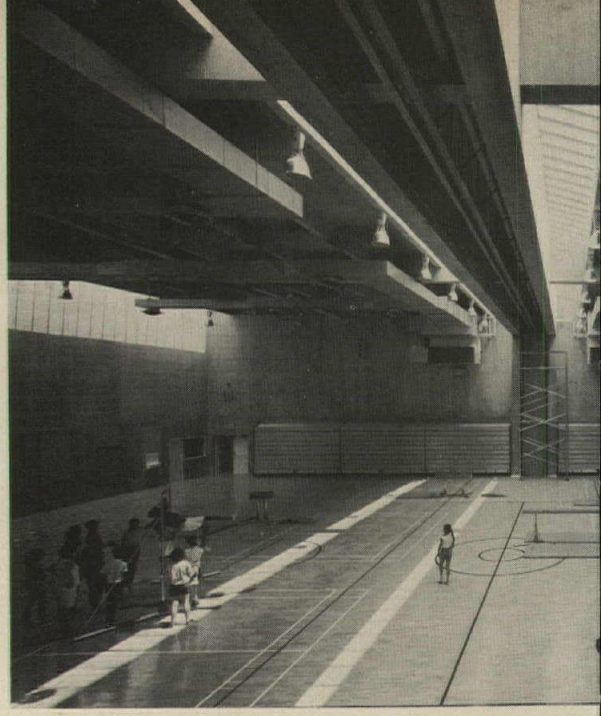
The glassed-in corner areas are multipurpose spaces serving a variety of functions, shop space, flexible seminar rooms, and art workshop studios.

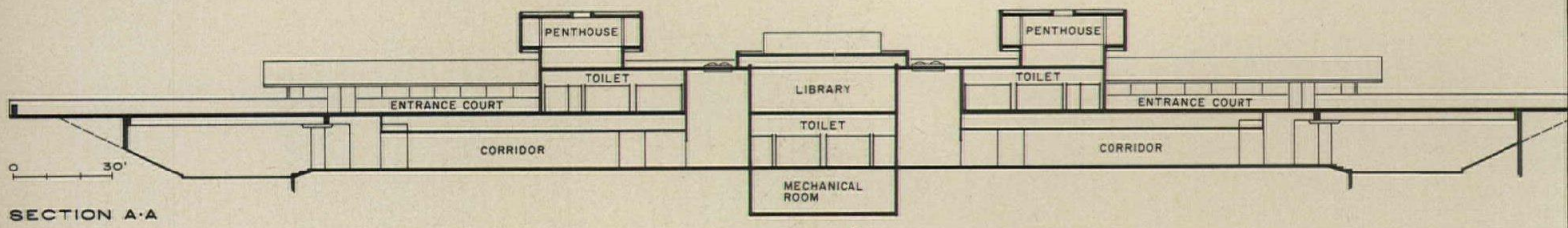
The building's wide overhang shades the glass so that no sun-shading devices are necessary against glare. They also





SITE PLAN





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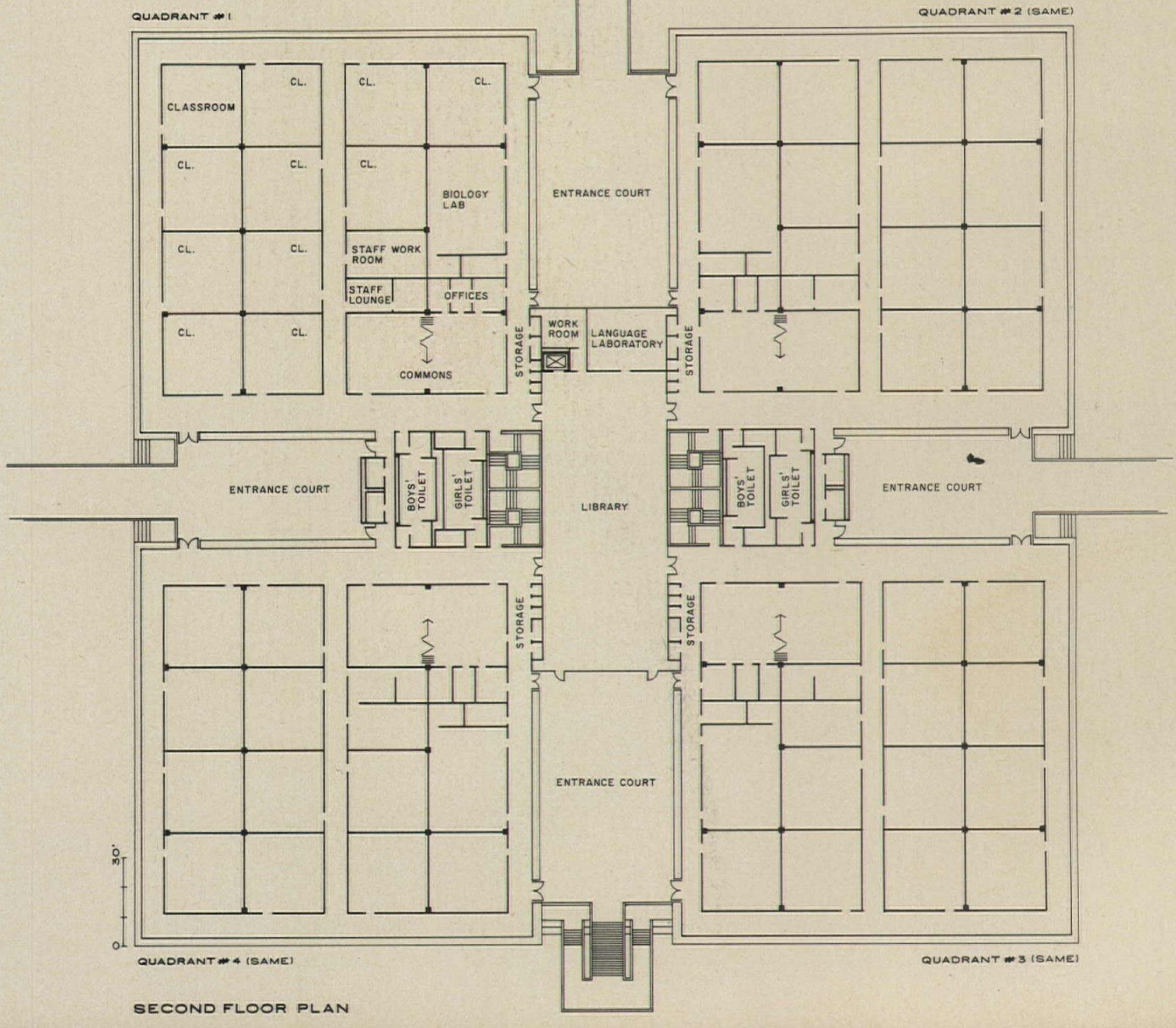
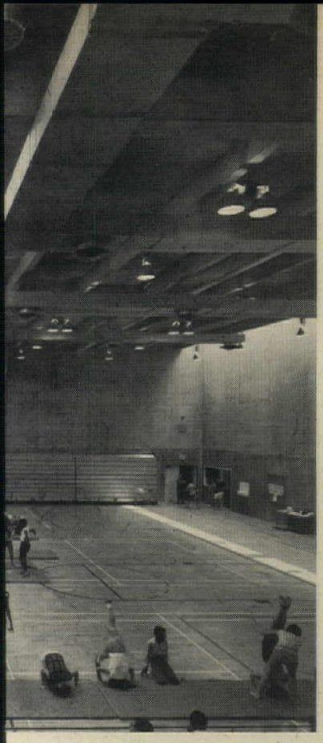


SECOND FLOOR PLAN



PHYSICAL EDUCATION
STORAGE
PHYSICAL EDUCATION
STORAGE
BOYS' GYM
GIRLS' GYM
BLEACHERS
OFF.
OFF.
BOYS' LOCKERS
GIRLS' LOCKERS
POOL
PLANTING
COURT
PLANTING
QUADRANT #1
QUADRANT #2
VEST.
STORAGE
STORAGE
VEST.
SHOP
DRAFTING
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DRAFTING
SHOP
GRAPHIC ARTS
STORAGE AND WORK AREAS
CAFETERIA
STAFF DINING
STAFF LOUNGE
FOOD PREPARATION
OFFICES
CUSTO-DIAN
STOR.
STORAGE
NURSE
ARTS AND CRAFTS
ARTS AND CRAFTS
STORAGE AND DISPLAY AREAS
A
A
BOYS' TOILET
GIRLS' TOILET
SHOP
CLASS-ROOM
SHOP
OFFICE
OFFICE
SHOP
OFFICE
OFFICE
STORAGE AREAS
#2
#3
LECTURE HALL #1
#4
TYPING
BUSINESS MACHINES
STENOGRAPHY
TYPING
PHYSICS
PHYSICS & CHEMISTRY
STORAGE AND OFFICE AREAS
BAND ROOM
CHORUS ROOM
PRACTICE ROOMS
VEST.
STAGE
STORAGE AREAS
VEST.
30'
0
QUADRANT #4
QUADRANT #3
B
B

FIRST FLOOR PLAN

SECTION B-B

0
30'
GYMNASIUM
POOL
COURT
CAFETERIA
ENTRANCE COURT
PENTHOUSE
LANG. LAB
TOILET
LIBRARY
PENTHOUSE
LECTURE HALLS
ENTRANCE COURT

insure the maximum efficient use of air conditioning as well as providing a sheltered outdoor space at the school's perimeter for use during inclement weather.

A special feature of the auditorium is that the large multipurpose room can be used as a single space in which seats are arranged to accommodate a variety of events, conventional stage, theater-in-the round, or, with seating removed, a dance floor. A system of soundproof folding partitions divides the auditorium diagonally from corner piers, creating four triangular-shaped rooms ideally suited for group lecturers.

Design

In design, the school is essentially a two-story building, which, because of an arrangement of ramps that allow entrance on both levels, has the ease of a split-level system.

The lower level becomes a visual platform for the four clearly articulated separate houses. These in turn are joined to the crowning library block. Colonnades of square piers support the wide overhanging roofs and add to the monumentality of the building. The open courts, as well as the area surrounding the school, will be landscaped, bringing trees and planting into a presently dreary greenless area of the city.

It is a design dependent upon clarity and careful adjustment of its proportions, deliberately formal and symmetrical. It seemed important to the architects to express the seriousness and dignity of education and, particularly in a community of dilapidated structures, to give a sense of permanence. They sought to conceive a formal building that was unexhibitionistic and classic in feeling so as to be an amiable neighbor to future architecture built in the area, which they see as the gateway to New Haven.

P/A Comments

Changes are imposed on school design by population growth, electronic devices and changing educational philosophies, but the basic problem remains that the most important single unit of the teaching system is the teacher. The design of the Richard C. Lee High School expresses full knowledge of this fact.

Teachers colleges do not seem capable of training teachers in the use of new equipment and the new spatial possibilities that are the product of today's educational research and architectural planning. The Richard C. Lee High School takes into account not only the problems of change and team teaching in its design, but the gestation period necessary to hatch a working-teaching team. The plan begins with walls and interior closed spaces but gives glimpses of its inherent structural flexibility at the windowed corners. Some teachers have apparently seen the light, for these spaces are being used in flexible planning by the present teaching staff.

It is inevitable that the teachers will awaken to the further realization that the walls themselves are not permanent and that the entire building itself is a flexible instrument.

The advisability of using interior windowless space has been argued more emotionally than rationally both pro and con. The University of Michigan and School Environmental Research Project studies on the effects on elementary school children of windowless classrooms are inconclusive as to positive student reaction. They do highlight, however, that there is a marked advantage in additional wall space and that present-day school fenestration should be rethought and redesigned.

This school offers the potential of an excellent laboratory for unbiased observation of the effects of windowless spaces. The architectural design of the building, by not imposing either one or the other system on its occupants, as did the Michigan experiment, offers the possibility of voluntary rearrangement.

Most importantly, the people who live on its perimeters feel comfortable with the building, which is uncommon with such formal structures. There were numerous indications of communal acceptance. First was the intelligent use by the parks department of the swimming facilities during the summer months. The pool was jumping. The only vandalism noted was a marked wall indicating that some adjacent neighborhood gallant had invaded the school's turf and marked his name and gang affiliation on the school's wall to prove it.

A neat children's garden occupied part of the schoolgrounds temporarily. The plot had been lent by the school custodian's at the request of some of the local parents. The open platform over the

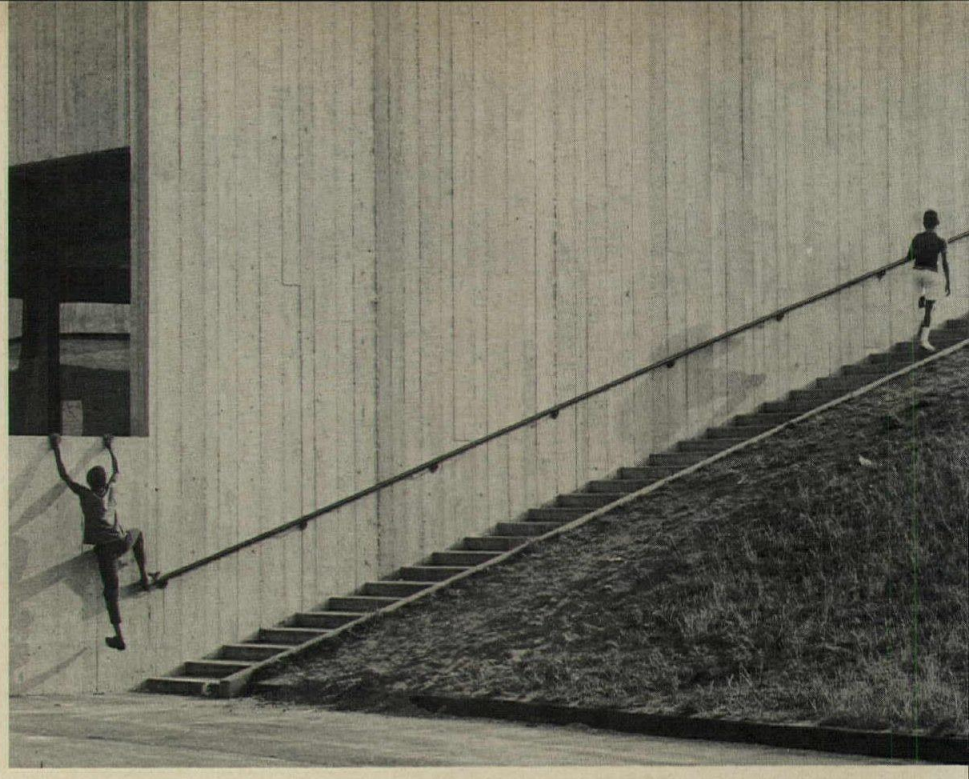
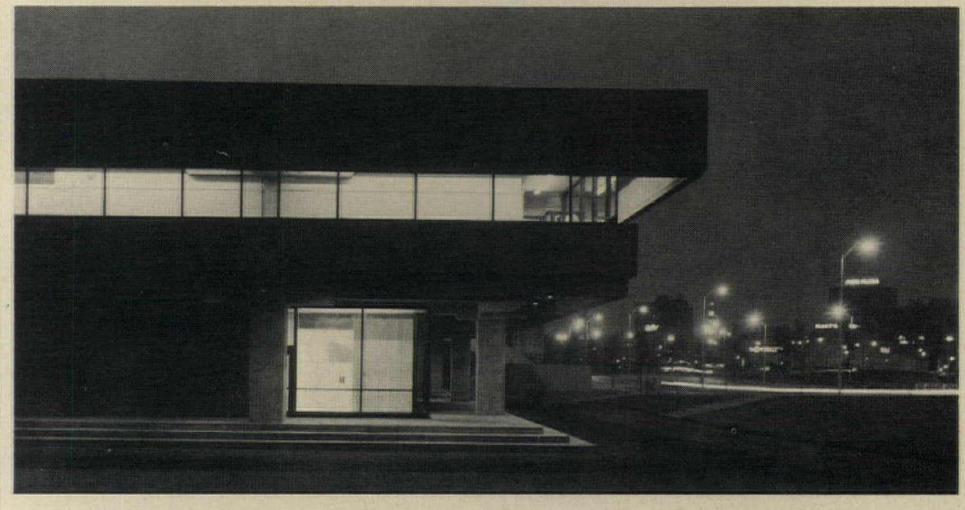


Photo: Forrest Wilson



gymnasium and pool was used for outdoor neighborhood movies. Some of the local residents of Puerto Rican extraction asked for and were granted permission to set up beach umbrellas for street watching during the summer on the school pavement.

This is a type of community acceptance that no architect can design into a school nor a mayor even as energetic a generator of municipal activity as Mayor Lee, who gave the school his name, can plan. It is a condition that everyone can hope for and do their best in planning and design to encourage.

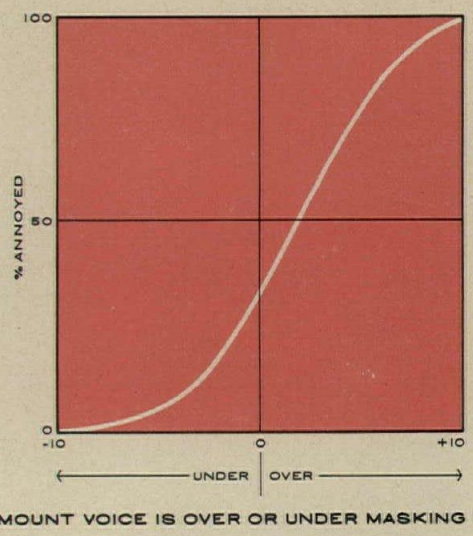
Design, augmented by happy circumstances, has produced an impressive space at the Richard Lee school. The two gymnasiums are combined without division of the sexes, creating one grand communal space. We were informed that this was an expedient allowed by the school before the traditional dividing partition was operable. The result has been so gratifying that they are contemplating leaving the space undivided. Whatever implication this sublimation of teen romantic urges has for the school psychiatrist is secondary in its implication for school architecture. The combination of the two major school athletic spaces is somewhat reminiscent of Penn Station.

The passer-by on his way to downtown New Haven will see the school as part of a monumental entrance to New Haven, but the people who live around it find it a great succession of platforms and useful areas. The severity of the school's forms is reduced and humanized by the board-textured concrete. A polished marble façade would have been more fitting for a monument but would probably have deprived the school of its garden and its windows.

The architects have created a monumental school, as was their stated intention, but it is an accessible monument. It fits well architecturally into the Roche, Dinkeloo gateway idea for New Haven and makes education a very special function of the community.

MASKING NOISE:

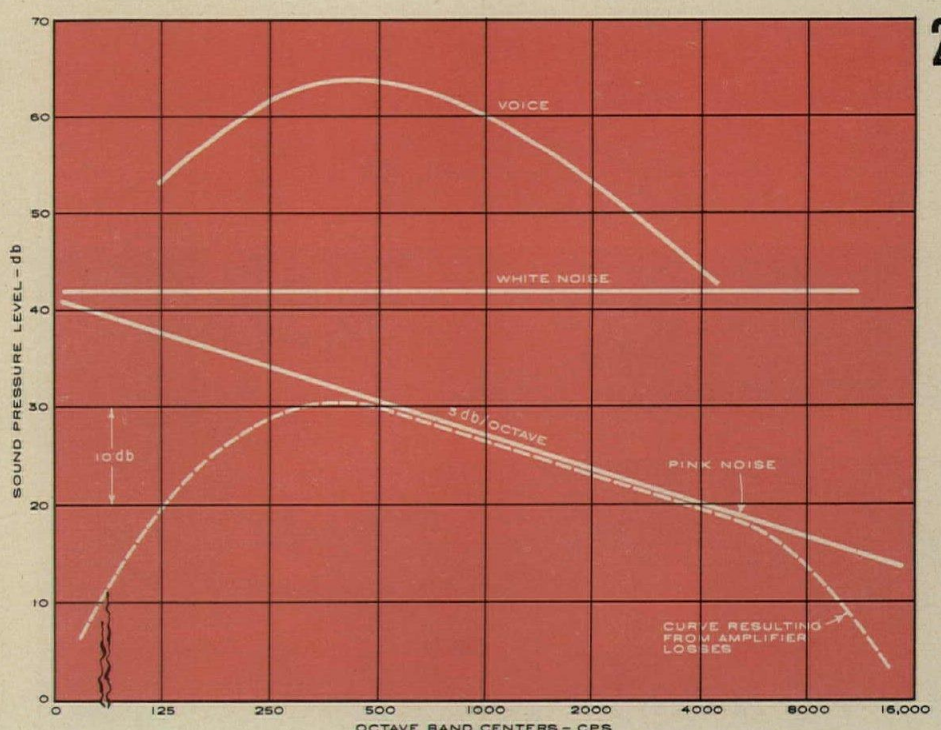
Silence Is Golden, Privacy Is Pink



1

An unobtrusive sound, whose acoustic spectrum is analogous to the optical spectrum of pink light, can be deliberately introduced into architectural spaces to mask annoying, low-level noises.

By Ranger Farrell, who heads his own firm, Ranger Farrell & Associates, at Irvington-on-Hudson, New York.



2

The term "masking noise" crops up increasingly in discussions among acoustical consultants and architects. The phenomenon itself is not new, since masking occurs all the time in our day-to-day life to varying extents. The masking noise that is talked about today is sound that is electronically generated and distributed throughout buildings to provide acoustic privacy or to cover up other unwanted sounds such as plumbing noises, door slamming noises, or even outdoor traffic.

To some, masking noise is something of a "dirty word" and is believed by others to be immoral. I do not concur with this opinion except where an objectionably high level of masking noise is intentionally used to permit the use of shoddily constructed partitions between adjacent rooms. I also avoid the use of the term "acoustic perfume," which has become so popular, because of its obvious implication of covering up something bad with something worse.

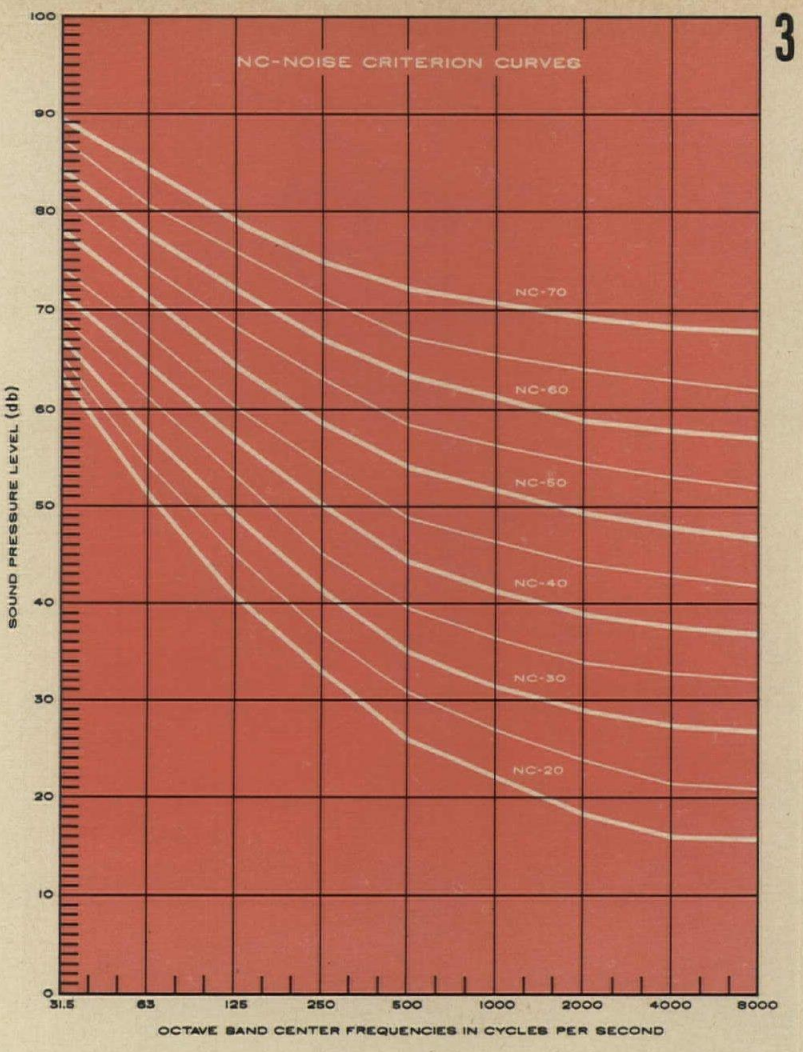
Masking is a simple physiological, almost mechanical, phenomenon that occurs in the ear when the ear drum is subjected to two noises. It can occur at very low or very high noise levels. For example, many people living in houses with forced, warm-air heating systems having intermittent fan operation are aware of no extraneous noise when the fans are operating; nor, for that matter, are they aware of the fan and air-motion noises themselves. When the blower stops, however, even very small noises, such as dripping faucets, creaking pipes, or creaking floor boards, become so intrusive that a person of an anxious nature may perhaps even get up to see if there is a burglar in the house. It is important to note that the fan noise was not even noticed by the listener, even though it was loud enough to completely drown out the quieter but more disturbing sounds. The disturbing quality of the sounds of pipe and faucets was not then a function of their loudness, but rather of their information content.

What Annoys an Oyster?

People respond with annoyance to transmitted speech sounds not as a function of how loud those sounds are, but as a function of how much in excess of the ambient noise they are transmitted. In a quiet room, voice transmitted at a level of say 20 db or 25 db at 1000 cycles will prove annoying. On the other hand, if the background noise is 30 to 35 db (in the same frequency range) the transmitted speech will be inaudible and no one will be annoyed.

Graph **(1)** shows that, regardless of the level of ambient or masking noise, more than half of the listeners will indicate annoyance if the transmitted speech level is exactly equal to the ambient noise. If the transmitted speech levels are 5 to 8 db above the ambient noise, everybody is annoyed. Thus, if a masking noise is to satisfy most of the people most of the time, it must be 5 to 10 db above the transmitted speech signal.

For our purposes, I will distinguish among various kinds of sounds: intermittent, steady state, broad band and



narrow band. Most useful sounds — voice, music, and signals — are intermittent in that they vary with time. On the other hand, many machine noises — fan noise, for example — are continuous with time; they are steady state noises. Besides time characteristics, sounds have different frequency characteristics. A flute makes very nearly all its sound at a particular frequency dependent upon the finger position, a pure tone. Pure tones are the exception rather than the rule in the sounds we hear. More often, sounds have some energy over a wide frequency range; to describe this requires a table or graph showing the spectrum of the sound. Graph **(2)** shows several such sound spectra. Spectra represented by a relatively smooth and continuous curve are broad band sounds.

The voice spectrum at the top of **(2)** requires some explanation, since it is well known that voice sounds vary both in frequency and level, as a function of time. The curve shown is an average of sound levels attained during a long period of conversation; it is within 1 per cent of the highest levels reached in the normal conversation of a representative sample of men.

A Noise Annoys an Oyster

The words "noise" and "sound" have traditionally been differentiated by defining sound as any audible sonic energy, and noise as any unwanted sound. Thus, if we purposely generate sound for masking, it is incorrect to call it noise. On the other hand, the term "masking noise" has become so widely accepted it would be pedantic to change it now to "masking sound."

This is not the only case where terminology is loose. The term "white noise" has been commonly and inaccurately used in place of the term "masking noise." Specifically, "white noise" is defined as having equal energy at all frequencies and is thus represented on a frequency-sound level graph as a horizontal line. (The term "white" is obviously derived from the optical analogy.) A similar sound, one in which the sound level is reduced by three decibels every octave, is in common use by clinical psychologists and others; this has somewhat facetiously been called "pink noise," although again the optical analogy of a preponderance of energy at the long-wave-length, low-frequency end of the spectrum makes the term appropriate.

Graph **(3)** displays a family of curves called Noise Criterion curves (or, amongst acousticians and mechanical engineers, simply NC curves). These have been developed to serve as a definition of levels that people feel are comfortable for various types of building or room uses. The very lowest curves such as NC 20 and 25 are based on:

- The lower sensitivity of our ear to noise at lower frequencies than at high frequencies.
- On comfort.
- The audibility of speech or quiet passages in music as heard in concert halls.

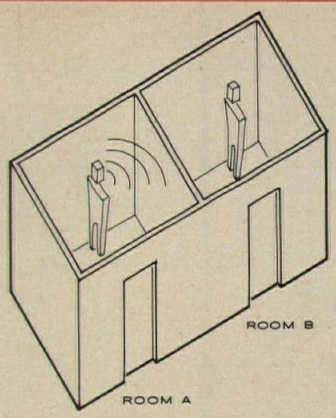
In the vicinity of NC 25 to 35, the NC curves are based primarily on comfort for typical activities such as business offices. Levels above this have their application primarily in industrial noise control problems where a top limit must be set on allowable noise, primarily to allow speech communication between workers at various distances from one another.

If one excludes such specific sounds as voices, ringing telephones, typewriters, or unit air conditioners, ambient noise measured in most of environments will have approximately an NC curve shape. This is true of rural areas on a quiet wind-free night, most urban business offices, school buildings, and so on. The significance of this is that the characteristic NC spectrum is the one we are most accustomed to hearing and, therefore, find least distracting.

It is extremely rare to find any environment as quiet as NC 15. This is a very rural area with no traffic and no wind, indoors and with all windows shut tightly, and all mechanical equipment in the building turned off. NC 15 also happens to be very close to the average person's threshold of hearing of broad band noise. In some experiments conducted a number of years ago, loudspeakers were concealed in a number of private offices and executives of major corporations were asked to come into the rooms, sit down and evaluate the noise level conditions. The noises had an NC spectrum and were variable in 2 db increments from approximately NC 25 through NC 45. The question put to the executives was: "Would you indicate when the level of noise has reached a level that you feel would just exceed the level you would consider comfortable and acceptable in your own office?" Starting at a low noise level, the noise was raised. At NC 25, few were even aware of the existence of the noise. By the time NC 30 had been reached, less than 10 per cent had indicated displeasure. At NC 35, approximately 50 per cent had objected, and a few hardy souls even held out through NC 40 and NC 45.

I recently conducted an experiment in which I set up an experimental masking noise demonstration system operating at a level equivalent to NC 35. I invited subjects into the room and chatted for approximately 10 minutes with them about masking noise. When asked to start the experiment, the noise was turned

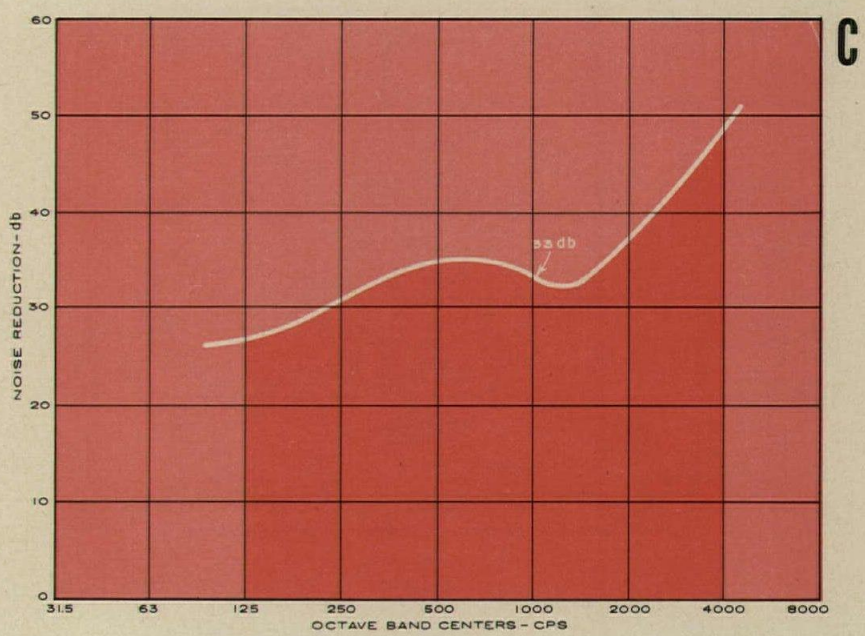
How Much Masking Noise?



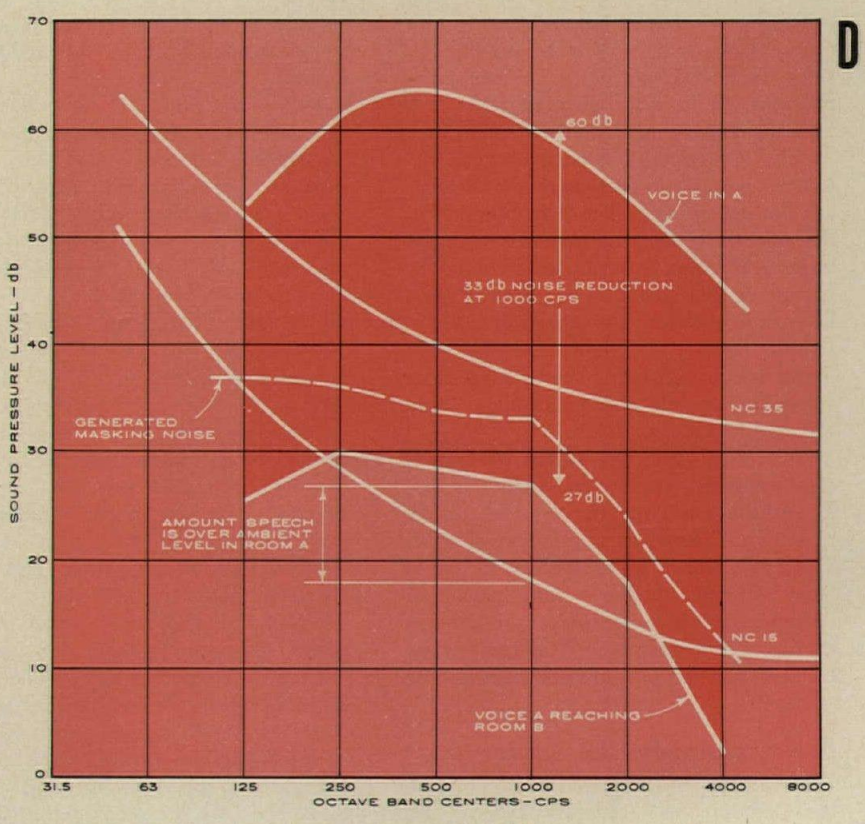
Assume two bedrooms, A and B, separated by a 2½-in. solid plaster partition on metal lath (**see isometric**). Assume further that these rooms are in the country and have hot-water convectors for heating. A low background noise can be anticipated. Noise reduction provided by the partition and absorption in the room is shown in Graph **(C).** The noise reduction is the actual amount by which the voice levels in the source room will be reduced before entering the receiving room. The top curved spectrum, Graph **(C),** is representative of near peak voice levels of the average male. In each frequency band, subtract the noise reduction values (in Graph **C**) from the speech levels (in Graph **D**) to determine the lower curve, which represents the level of speech being transmitted into the receiving room.

To illustrate, the noise reduction at 1000 cps is 33 db; voice level at 1000 cps is approximately 60 db. Subtracting 33 from 60 reveals that the levels traveling into the receiving room will arrive at 27 db. Knowing the location of the motel and the nature of its heating system, we can predict that noise levels, at least on quieter nights, will be extremely low, possibly in the order of NC 15. From this it can be seen that the voice will be as much as 10 db higher than the background noise, which should annoy just about everybody **(1).** To remedy this situation it would be possible to induce electronically a broad band masking noise over a loudspeaker, possibly installed beneath the convector cover. The steady broad band noise level, then, could be raised to somewhere between NC 25 and NC 30 to provide the required masking. To be confident that the vast majority of occupants felt they had complete privacy, it would be necessary to raise the masking noise levels to approximately NC 35. One would be concerned, however, if the masking noise itself proved annoying to an excessively large number of people. Nevertheless, this would still be quieter than most urban situations with air conditioning.

In an actual installation, the goal of the designer is to adjust the frequency spectrum to provide the most pleasing sounding noise while providing masking in the frequency range or ranges where it is required. As an example, the dash line (in Graph **D**) shows the masking noise spectrum required to resolve the motel problem. Here, substantial energy was provided in the 250 and 500 cps frequency bands to prevent the sound from having a hissing, unpleasant quality and to make it similar in sound to an NC curve sound. In the range where masking noise is required, a slight hump is provided in the spectrum and finally, at the high frequency end we have rolled off sharply to minimize "hissiness."



NOISE REDUCTION THRU 2 1/2" SOLID PARTITIONS ON METAL LATH



ACOUSTIC DATA FOR EXAMPLE THIS PAGE

4

MINIMUM NOISE LEVELS*

Frequency in cps	63	125	250	500	1000	2000	4000	8000
No Ventilation: Rural	48	36	30	25	15	15	15	15
No Ventilation: Urban	58	49	41	35	31	29	28	27
Low Velocity Diffusers: Rural	48	36	30	25	20	19	15	15
Low Velocity Diffusers: Urban	58	49	41	35	31	29	28	27
High Velocity Diffusers: Rural	48	36	30	25	30	29	24	17
High Velocity Diffusers: Urban	58	49	41	35	31	29	28	27
Induction Units: Rural	48	36	30	29	30	29	24	17
Induction Units: Urban	58	49	41	35	31	29	28	27
Fan Coil Units: Rural	48	36	32	34	35	33	29	27
Fan Coil Units: Urban	58	49	41	35	35	33	29	27

* These noise levels are typical values to be used for design purposes only when specific data on manufacturers' equipment is not available.

off to the great surprise of the subjects, who throughout our previous discussion had not been aware that it had been on. On the other hand, when it was turned back to NC 35, several of the subjects, now aware of the existence of the noise, felt that it was noisier than they would wish in their office.

When to Mask

When may electronically generated masking noise legitimately be applied? Hopefully, it will be restricted to remedial situations where the cost of modifying or reconstructing partitions would be a prohibitively expensive way of solving an existing acoustic problem. In new construction, masking noise should be considered only when absolutely necessary because of extraordinary problems.

- Very stringent budget.
- Abnormally low anticipated background noises.
- Excessively loud source noise, as might occur in music practice areas.

In any event, the first effort should be directed toward achieving adequate isolation between the rooms by proper selection of partitions, ceilings, and other room dividers.

When conditions suggest the need for artificially generated masking noise, the designer must predict what the natural ambient noise level will be to determine whether or not the combination of the ambient noise and the selected partitions will provide the required privacy. Theoretically, this should be possible by analyzing all of the mechanical equipment that will operate continuously and calculating the resulting noise levels. Not only is this time-consuming, but, because of the complexity of mechanical equipment in modern buildings, virtually impossible.

Actually, in air-conditioned buildings, the noise level in the frequency range within which the transmitted speech most often exceeds the ambient noise is generated by the air-conditioning terminal equipment. Data on some terminal devices are available from the manufacturers; when they are not, one can substitute values from Chart **(4)**, which shows noise levels that can be anticipated in various types of spaces when there is no activity in the space.

It is important to note that if one is relying on fan coil units for masking noise, their operation must be continuous rather than under the room occupant's control. If the fan coil unit has a low, medium, and high operating speed, the masking noise should be based on its noise generation at the lowest speed.

Typical manufacturer's literature gives the most optimistic estimate of operating noise. (For example, most diffuser data are given as a function of cfm and pressure drop with the diffuser damper wide open.) From a masking noise point of view, these are probably the best data, because these are quietest at which these units can operate at the specified cfm.

In an actual installation, the goal of the designer is to adjust the frequency spectrum to give the most pleasing noise while providing masking in the frequency range or ranges where it is required (see box, facing page).

Noise Generators

White and pink noise have applications in various professions. Psychologists use them as a source of energy for experiments in subjective loudness reactions, communications experts use them in testing the fidelity of their equipment, and otolaryngologists use noise for experimentation on the causes of hearing loss. Thus, there are on the market quite a large number of electronic noise generators.

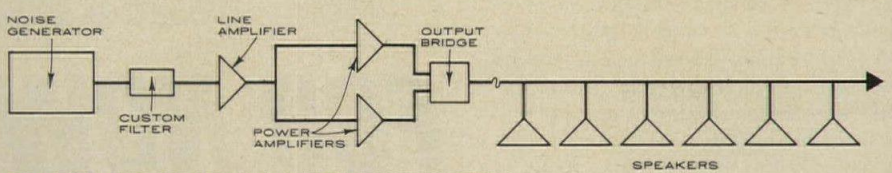
Electric white noise is often fed through filters to convert it to pink noise because the pink noise, being more like an NC noise, is more pleasant than white.

The application of electrical pink noise in acoustics requires amplifiers and a loudspeaker. Each of these to some extent degrades the spectrum. Turning back to Graph **(2)**, the dotted line indicates how, typically, the pink noise would be changed by the amplification equipment (particularly the loudspeaker).

The Component Diagram **(5)** indicates the basic components of a masking noise system. The noise generator is fed into either one or two power amplifiers and then out into the loudspeakers in the various rooms. In a large installation, it is desirable to employ at least two amplifiers that are connected together at their output by a bridging network, because if one amplifier fails there will still be masking noise though it will be 3 db down from the level generated by the two amplifiers. The critical part of the design is the frequency shaping filter. This must be tailor-made to fit each situation depending upon the relationship of the source spectrum, the noise reduction between the spaces, and the existing ambient noise. Although variable frequency spectrum shaping filters are available, they are extremely costly, and it seems more sensible to obtain the required acoustic data and make up a simple nonvariable shaping filter for that particular situation. The design and construction of such a filter can be handled by most competent sound engineers, given the required noise spectrum.

In cases where the loudspeaker is installed behind an acoustic tile ceiling or within some form of heating or air conditioning enclosure, it is usually necessary to install the loudspeaker system and then measure the frequency spectrum of the modified spectrum, because the losses through the acoustic tile or within the enclosure are extremely difficult to predict. Thus, one must determine the spectrum of the noise as it has been mechanically modified by the various components of the installation, and determine what changes in the shape are required. These changes would be provided by the custom filter.

5



COMPONENT DIAGRAM-WHITE NOISE SYSTEM

A TWO-MILE HIGH TOWER ?

Photo: Lois M. Bower

Tower studies proved construction technically possible (scale model photo shows Eiffel Tower in background) but economically unfeasible.

An entrepreneur from Japan presented a trio of design firms with a proposal for an observation tower so tall that, if it were built, would certainly discourage any others with the ambition to own the world's tallest anything, if, indeed, it would not extinguish their hopes altogether. The objective of the structure envisioned was to provide an observation point that would overtop Mount Fuji, which, at 12,389 ft above sea level, is the highest point on the island of Honshu. For the site selected, this would have required a structure that itself would be 12,250 ft high, just over two miles.

The scale of the tower contemplated exceeded the boundaries of known structural parameters so far as to require the consultants to prepare a 100-page report just to decide whether it was practicable to prepare a feasibility study. The answer was no, but, in arriving at that answer, they uncovered some relationships between height, cost, and life at the top that are interesting in themselves, and, incidentally, may shed some light on any schemes planners may have for buildings substantially taller than the 100-story structures now under construction.

Among the problems faced by the designers that are not normally encountered in the design of buildings or even, for that matter, tall towers of the size that have been built to date were: icing, high winds, high ratio of structural weight to loads supported, and the need for pressurization of the occupied space at the top.

From the best available data, the designers were forced to assume that all structural members might accumulate as much as 12 in. of ice; moreover, in any lattice-like arrangement of structural members, spaces between members less than 5 ft apart would have to be considered as completely plugged with ice. Not only would the mass of ice add substantially to the gravity load imposed on the tower and its foundation; the encrusted ice would also increase the effective area exposed to wind, and because of its rough surface, the drag coefficient would be increased, too.

Exact data on wind velocity at the elevation contemplated was not available, but the designers suspected it might possibly be as high as 300 mph. The effect of high wind velocity at high altitudes is offset somewhat by the lower density of the air at those elevations. Nevertheless, the lateral forces imposed by wind loading became "the single most important determinant of [the tower's] safety and economy," according to the engineers.

FOR NOW, FORGET IT!

For the comfort of most airline passengers, and for the very health and well-being of some, the cabins of most aircraft cruising at altitudes above 10,000 ft are pressurized to correspond to an altitude of between 5000 and 8000 ft — about 10 psi. Similarly, the pod atop a 12,250-ft tower would require pressurization, as would the elevators serving the pod.

Quite aside from the problem of providing air locks for the elevator doors at both top and bottom terminals, pressurization of the capsule at the top of the tower adds considerably to the structural requirements of the shell of the capsule. The negative air pressure induced on the leeward side of the capsule at design wind velocity, when added to the positive internal pressure, would create unit pressures of 700 to 800 psf, much higher than the unit pressures encountered by conventional building wall systems.

Indeed, the design of the occupied observation and recreation facility planned for the top of the tower would not be unlike the design for an aircraft fuselage intended for cruising at 300 mph at an altitude of 12,250 ft. Unlike an aircraft body, however, the tiny, porthole-like windows that serve well enough in airplanes would be wholly unsuitable for an observation tower, since a wide, unobstructed view of the surrounding countryside would have to be one of the tower's most important features.

Structure

Two types of configurations were considered: a free-standing tower and a guyed structure. Also, two constructional materials were considered: type T-1 steel (minimum yield point 90,000 psi), and type 7075-T6 aluminum (minimum yield point 60,000 psi).

- Free-standing tower configuration with three hollow legs with tubular horizontal and diagonal was selected as having the best potential for further study by structural optimization.
- A computer program was developed to assist optimization of dimensions and weight for above free-standing tower configuration.
- Computer program permitted optimization of weight and dimensions and substantial study of parameters such as magnitude of wind load, weight supported at top, and height of tower.
- A similar approach was used for guyed tower. Basic configuration with three sets of guys, one at each of three corners of triangular central tower. A computer program was developed to determine the optimum guy slope, the optimum number of guy levels, and weight of structure.

Free-Standing Cantilever

The most economical free-standing tower 12,250 ft high turned out to be a three-legged structure with hollow, circular legs spaced about 1000 ft apart at the base. It would weigh about 3200 million lb, which, at an estimated cost of $500 per 1000 lb of erected steel, would be $1600 million (excluding foundations), very much more than the $300 million the sponsor of the project had originally envisioned. (A similar tower of aluminum would weigh about 30 per cent less, but the erected cost of aluminum is nearly twice that of steel.) Curves plotted from the computer printouts show how extremely sensitively the total weight, and hence the cost, of the structure reacts to relatively small changes in the design parameters. By cutting the height from 12,250 ft to 10,000 ft, the weight of the structure drops by 46 per cent. Changing the arbitrarily assigned wind velocity from 300 mph to 200 mph cuts the weight by 61 per cent.

Stayed Mast

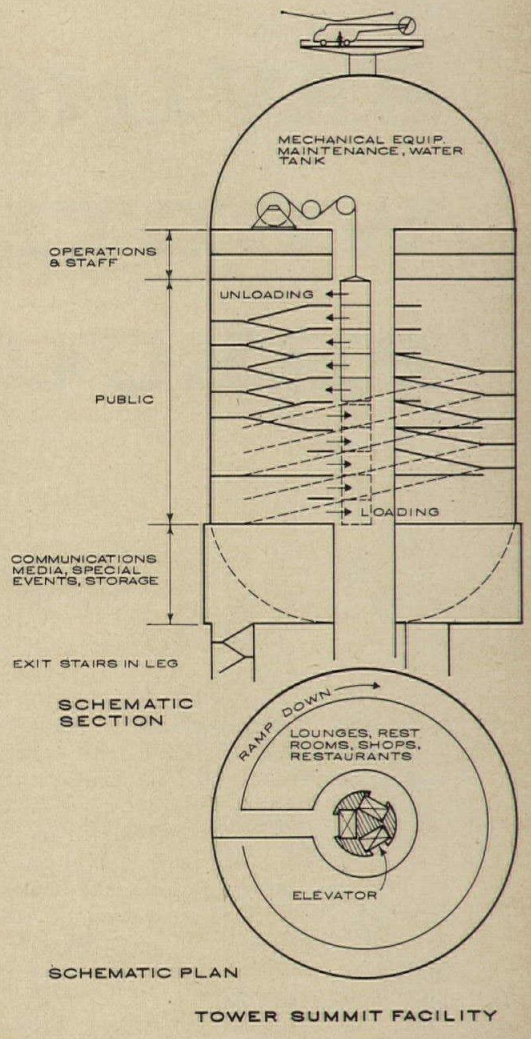
An analysis of a guyed tower 12,250 ft high disclosed that this configuration could dramatically reduce the weight of the required structure. The optimum design would weigh just 700 million lb, just under 22 per cent of the comparable free-standing tower. Of the 700 million lb, the shaft accounted for 570 million lb, at an estimated $500 per 1000 lb erected, and the guy cables for 170 million lb at $750 per 1000 lb erected, a total of $400 million (excluding foundations), which of course is much closer to the sponsor's original expectation.

However, the longest of each of the three sets of guy wires (spaced 120 ft apart) would have reached out over 10,000 ft from the base of the mast. The vast amount of land beneath the three sets of guy wires posed a severe problem; to acquire the land outright would be costly, and it is doubtful if acquiring air rights alone would be practical in view of the hazardous conditions that would occur under the cables when they shed accumulated ice during a thaw.

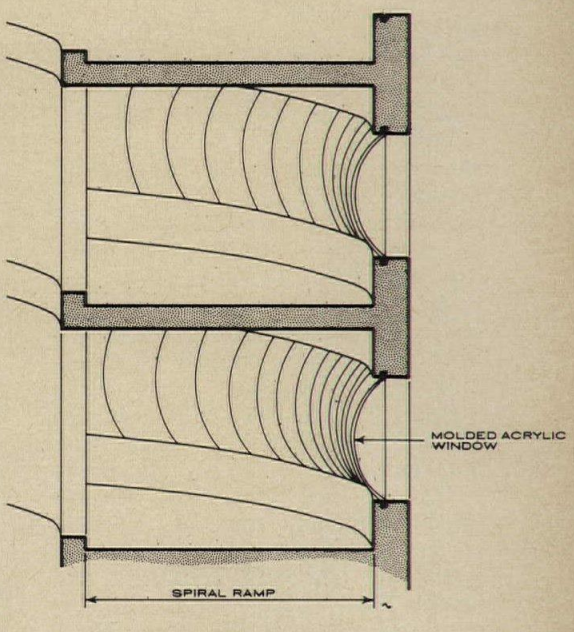
Since the guyed tower with its attendant real estate problems exceeded the cost for which the sponsor was prepared, the designers proposed an alternative. They recommended an 8000-ft, semi-guyed structure, a model of which is illustrated. Limiting the height to 8000 ft eliminated the need for pressurization; by adding three massive structures around the base of the mast, the designers not only provided solid anchorages for the short guys that stay the lower section of the tower, they also generated space that could be turned to revenue-producing activities that would help to amortize the cost of the tower.

Because the preliminary study ruled out the economic feasibility of extending the tower above the height of Mount Fuji, the sponsor felt that the project would have sacrificed its greatest potential for attracting visitors; the project is now indefinitely deferred.

Participating in the study were: Fuller-Sadao/Geometrics, architects and engineers; and Simpson, Gumbertz & Heger, Inc., consulting engineers.



TOWER SUMMIT FACILITY



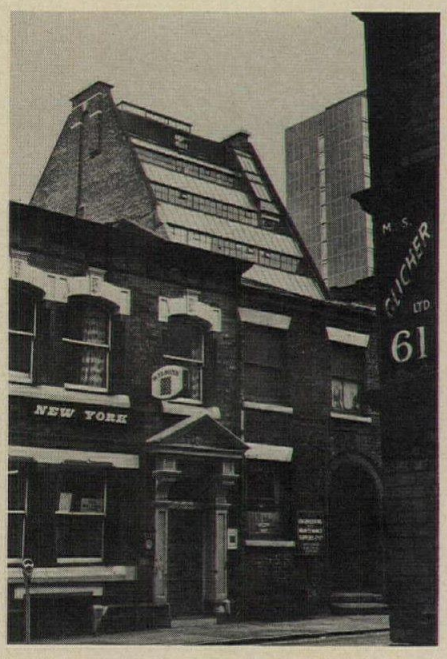
SCHEMATIC SECTION

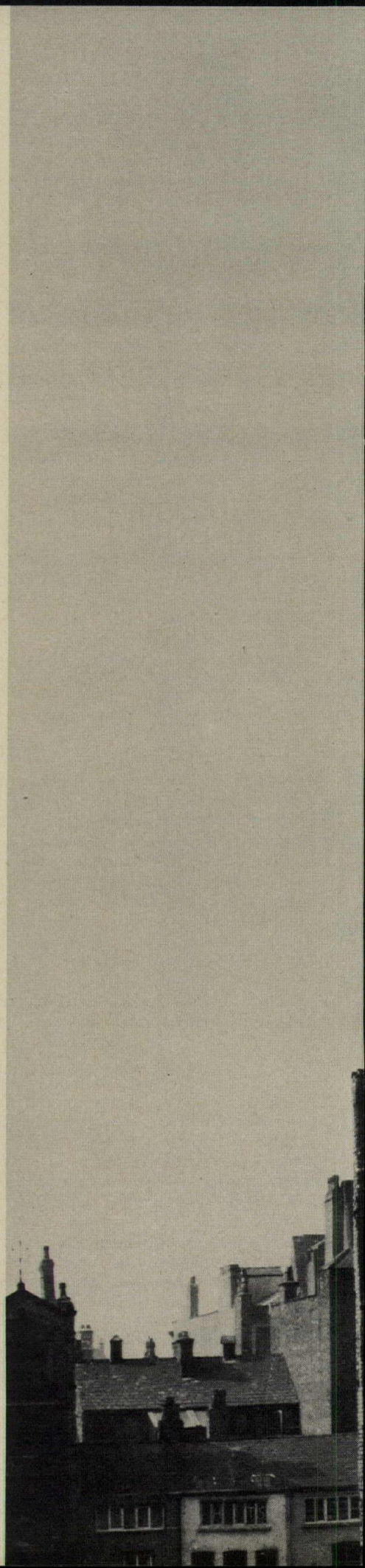
SAVING A WORTHY PRECURSOR

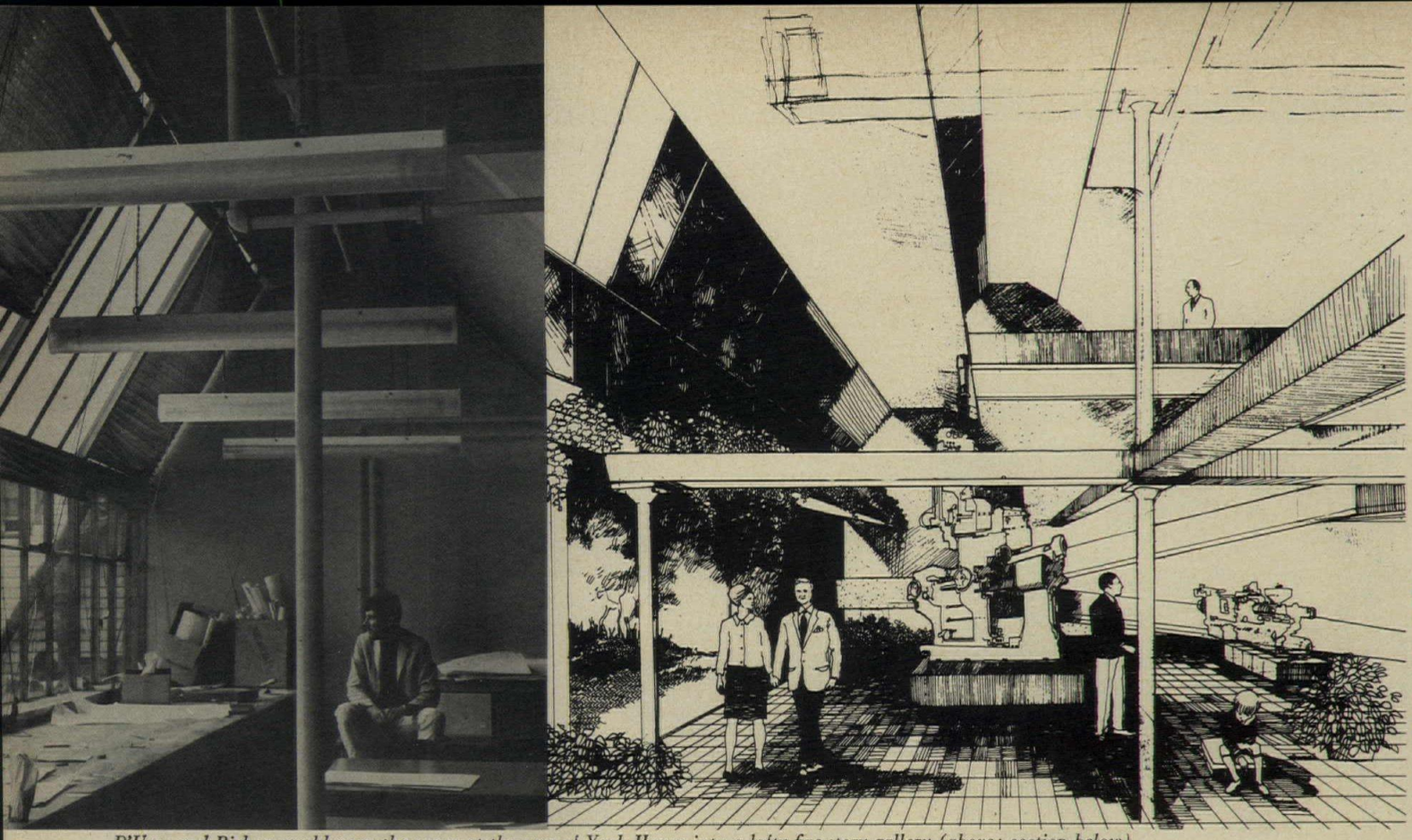
When Harry S. Fairhurst & Son designed York House, an office-warehouse building, for the cotton factors Lloyds Packing Warehouses Ltd., in 1911, they caused to be built one of the most original and exciting glass and cast iron walls in many-warehoused Manchester, England, or almost anywhere else. The rear wall, admitting natural light into the innermost nooks of the warehouse section to make possible optimum inspection of cotton samples, has been exposed as York House became a free-standing entity due to World War II bomb damage and latter-day commercial demolition. Where the accustomed solution for letting light into warehouses was usually vertical, stepped-back wall sections, Fairhurst hit on an angled top section that admits the light at a 90° angle, and creates a multifaceted façade that was to be recalled in some of the 1920's projects of the Constructivists, and, more recently, in the work of James Stirling at Leicester and Cambridge (he knows and admires York House).

As in most cases of this sort, when an admirable artifact of architectural and technological history turns up in a fast redeveloping commercial city such as Manchester, York House is in peril. Oddly enough, it stands in an area tentatively zoned for a complex to be called the Museum of Science and Technology, celebrating Manchester's role as a cradle of the Industrial Revolution. But because the building and some of the land around it belong to a private "developer," and the city architects and planners would have to go through some negotiations to secure York House, they have consequently proposed other older buildings for this use, noting that York House is not on the Ministry of Housing and Local Government's list of buildings worthy of preservation (that's simply enough remedied — the Minister should put it on right away).

All is not lost yet, however. Thanks to two young graduate fellows at the Manchester College of Art and Design, architectural student John P. Bishop and American Joseph P. D'Urso, a product of the Interior Design and Architecture Departments of Pratt Institute, Brooklyn, suggestions for the re-use and revitalization of York House have attracted nationwide coverage and prestigious support in England. The Bishop D'Urso proposal, eminently feasible, logical, and easy of execution (qualities not likely to recommend it to civic planning boards) is to make the building the cotton industry part of the proposed museum complex. The





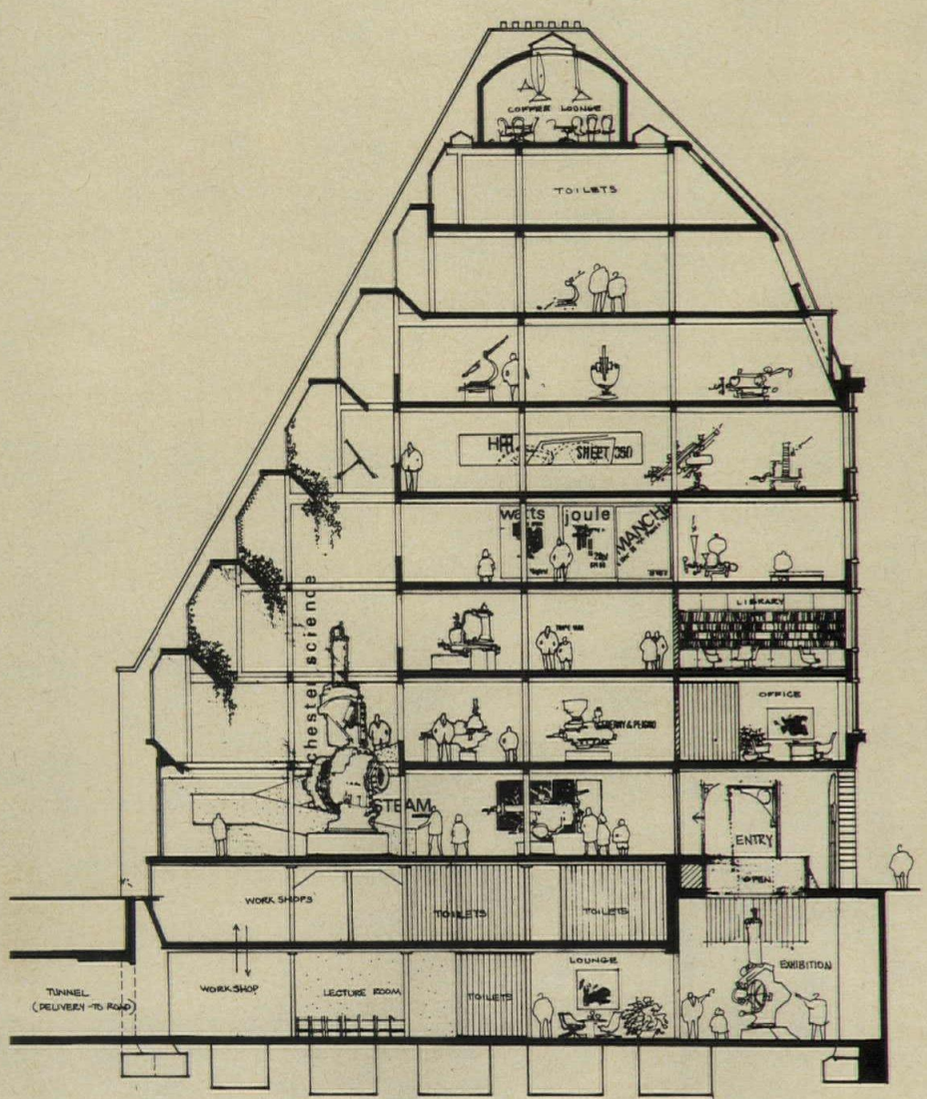


Illustrations: Courtesy, Joseph D'Urso

D'Urso and Bishop would open the space at the rear of York House into a lofty five-story gallery (above; section below).

major structural change proposed is to pull five of the floors back from the slanting glass walls to create a dramatic vertical space for the exhibition of large looms and machinery. In other changes, the loading bays at the front of the building would become grand entranceways, the area around York House would be landscaped to permit outdoor activities and exhibition of machines and other items of industrial history, and there would be a café and terrace at the top of the building. It is estimated that the conversion would cost in the neighborhood of $145,000, considerably less than providing a new, and possibly less appropriate building for the same use.

D'Urso and Bishop immediately got widespread support for their suggestion from people like Nikolaus Pevsner, Sir Hugh Casson (who appeared on BBC-TV with the two), James Stirling, prominent museum authorities, and the architectural commentators for *The Sunday Times* and *The Guardian*. We add our trans-Atlantic good wishes for the success of the plan. If a reportedly recalcitrant Manchester planning board can be persuaded that a significant example of industrial architecture is just as worthy of preservation — particularly when reawakened with such an apposite use — as machines and inventions, the future development of that city might take a more creative turn.



SECTION THROUGH YORK HOUSE

TO PAINT OR NOT TO PAINT

"Paint your building and you will be exhibiting not only a total lack of taste but of spine as well. At present you are fortunate to have one of the few architecturally exciting large buildings in Los Angeles."

"I suggest it be painted a light smog blue so that it blends with the atmosphere and becomes invisible. Without a doubt it is the ugliest building to be perpetrated in Los Angeles in the last 50 years."

"The whole edifice seems to me to have a grandeur and strength about it as well as uplifting grace and beauty. I believe it to be a unique piece of sculpture as well as a building . . . I feel it would be a grave mistake to castrate the uniqueness and artistry of your new building by painting it."

"A paint job it surely needs, but a light color; dark brown certainly would make it look like a great big pile of manure."

These and many other man-in-the-street architectural critiques came forth after the well-read *Los Angeles Times* columnist Art Seidenbaum started up an aesthetic hornet's nest by reporting on a local controversy surrounding the new Liberty Savings and Loan Association Building by Kurt Meyer & Associates. The building is indeed a gutsy performance in exposed concrete — striated on elevator and stair towers, board formed or smooth on other surfaces. In many another city, of course, it would have been accepted on its own merits, but, as Seidenbaum noted, "Almost without exception, recent concrete buildings [here] have been white-washed or dyed . . ." Angelenos have been historically more hospitable to the theatrical and glossy than to anything that reminds them that there was a yesterday and may even be a tomorrow. Norman Sanoff, the president of Liberty, writes that "We were adamantly against the carbon copied glass screen buildings that have sprung up throughout the country. We wanted an efficient building, which looked substantial, with low maintenance and moderate cost."

Architect Meyer describes the structure as consisting of three elements: the main building, with vertical columns connected by horizontal eyebrows acting as sun visors; large spandrel beams spanning from column to column and making a turn of 18–in. radius to become the ceiling at the bottom chord; and a free-standing elevator-stairway tower. Column and sunshade framework was poured in lightweight concrete, as were the floor slabs and the spandrel beams. The elevator-stairway tower was poured in a hard aggregate concrete containing medium and large-size aggregates. Liberty occupies part of the building and the rest is for rental tenants. (Sanoff says, "The type of tenant is apparently quite sophisticated and is drawn to the building.")

We are happy to report that, despite the small architectural tempest (which, as far as we can see, was generally in favor of the building), Sanoff and Liberty have no intention of chickening out. "At no time," says Sanoff, "did I ever contemplate painting the building. We did, however, soften some of the harshness by planting some extra areas on the ground floor and adding additional greenery within the building for warmth."

Meyer describes his view of the material: "Concrete is often treated as a structural material only. We believe that it is a noble finish material, if it is used as concrete and not to imitate Gothic arches, columns, or pseudo-Venetian façades."

Ed Mitchell, creative director of an advertising agency, wrote Sanoff what was probably a definitive statement: "There are two things in our world, it seems to me, that don't need the aid of cosmetics to justify their existence.

"One is a beautiful woman.

"The other is a beautiful building.

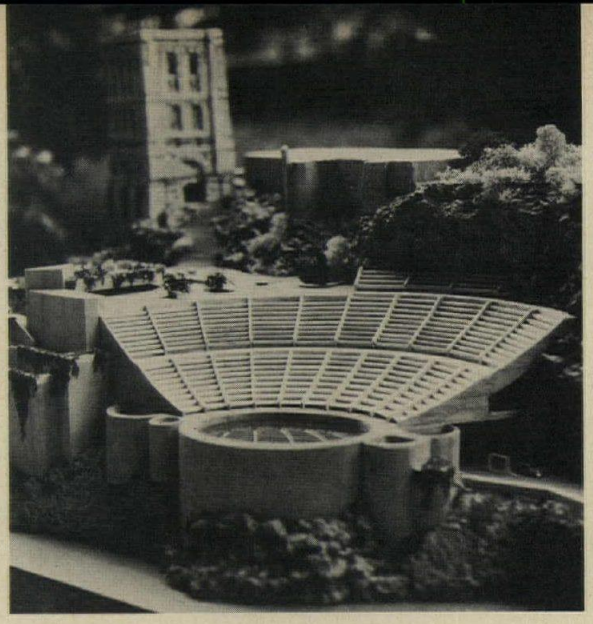
". . . In a time that already has more than its share of concealed motives and camouflaged emotions, it will be encouraging to see an architect and client resist the vogue for fatuous façades and vacuous veneers — despite the cry for a cover-up by those who are blind to the beauty of what comes naturally.

"If some people accuse you of sponsoring an architectural affliction, remind them of what Jefferson said: 'The disease of Liberty is catching.'"

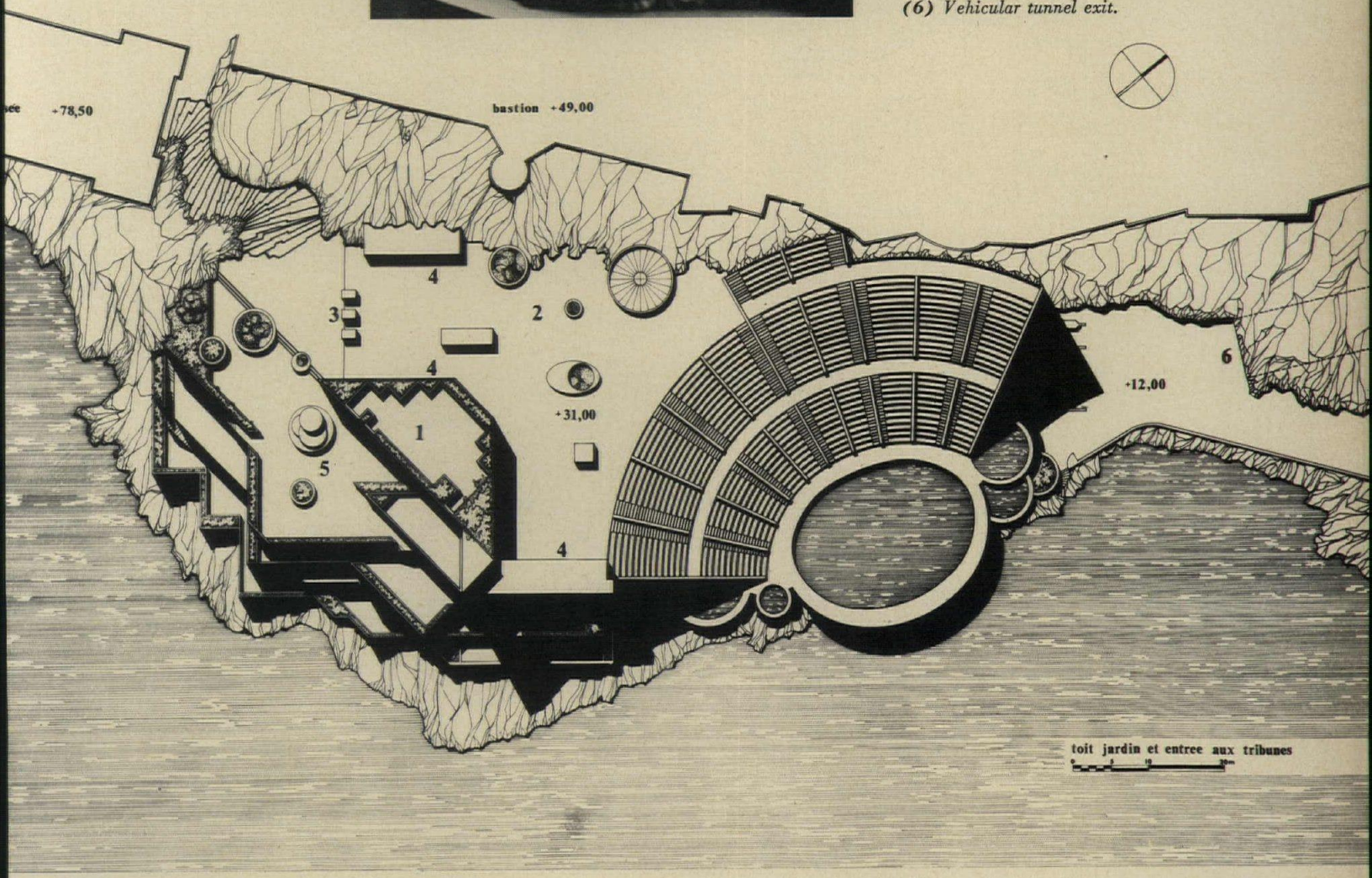
Photo: Robert Cleveland

P/A OBSERVER

MORE FOR MONACO

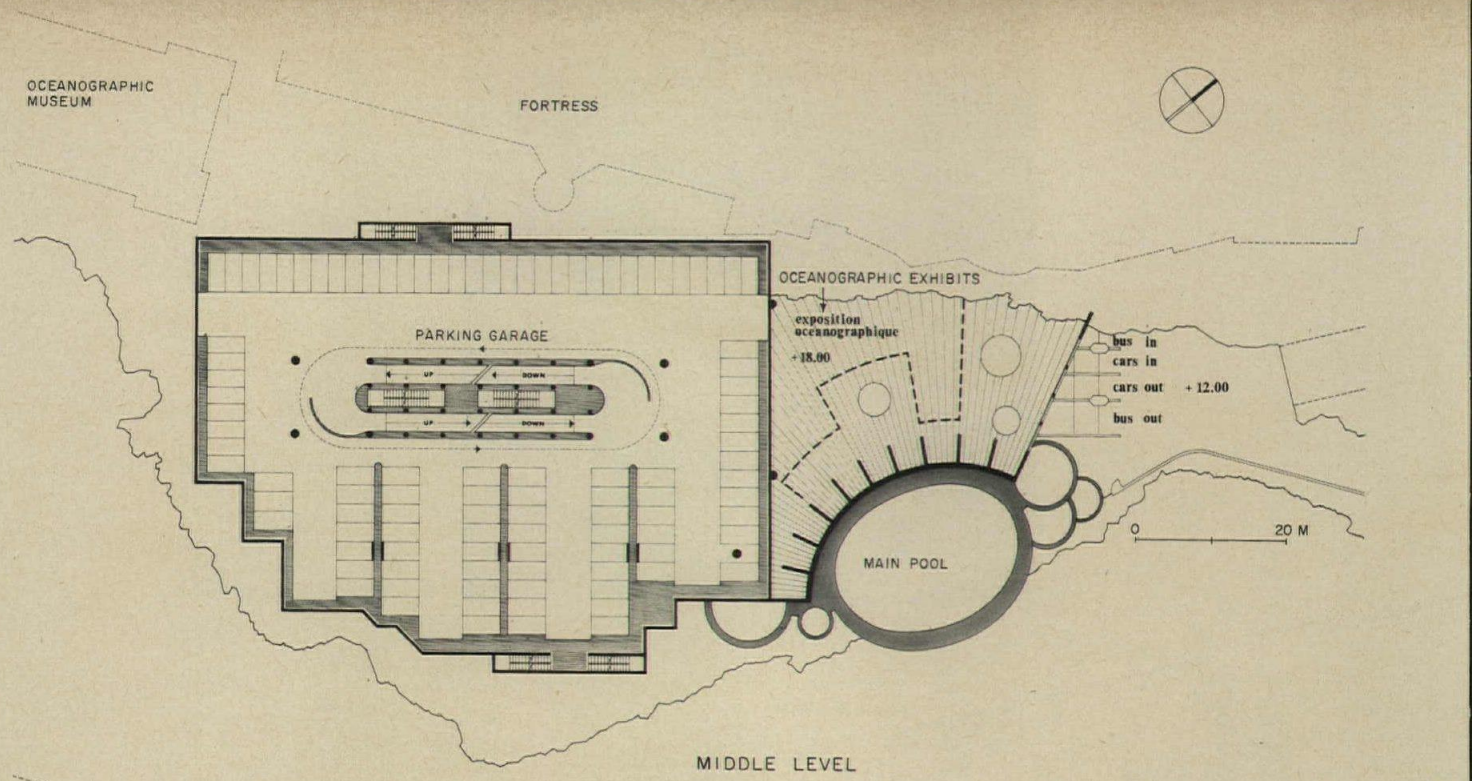


(1) Restaurant roof garden.
(2) Botanical promenade.
(3) Ticket booths.
(4) Escalators and elevators to garage.
(5) Café terrace.
(6) Vehicular tunnel exit.

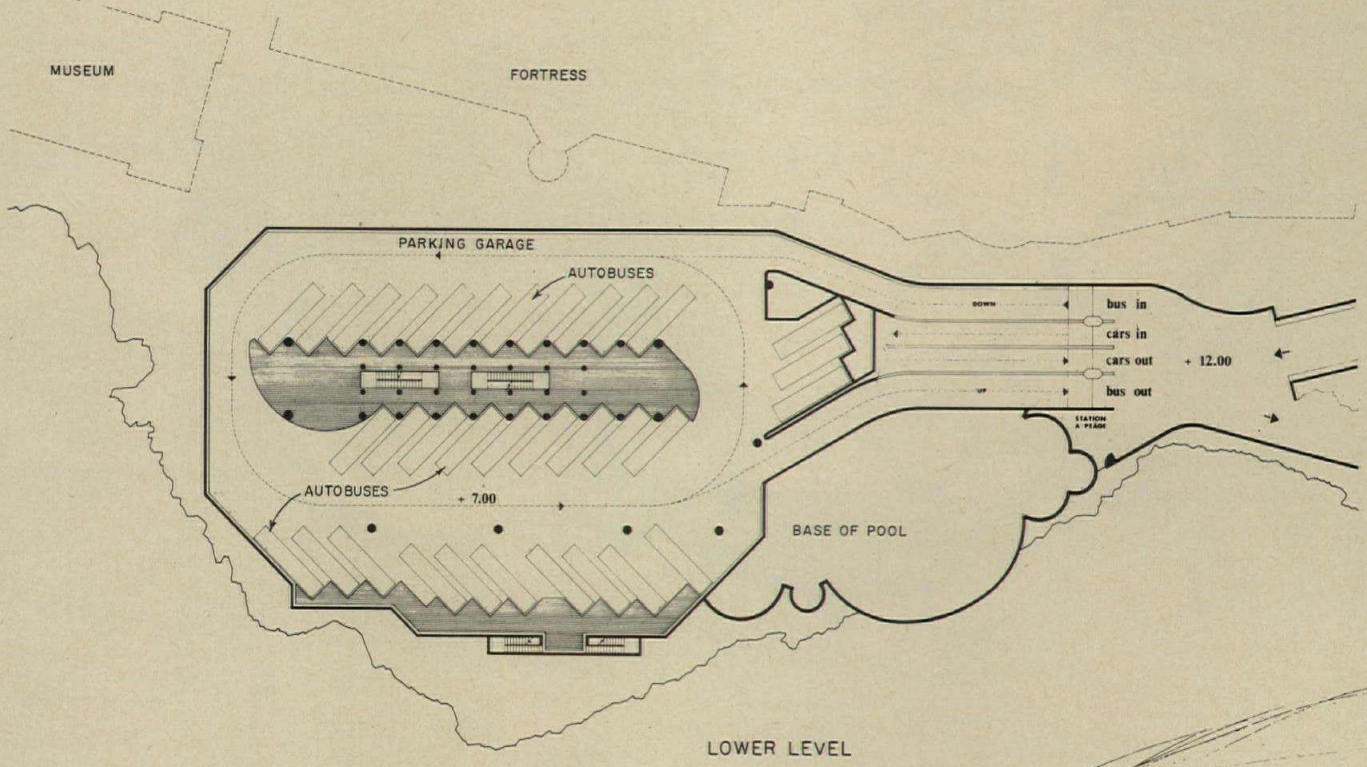


For a tiny principality, Monaco is having an architectural binge comparable to New Haven's, but all by the same architect. In Monaco, it is a Roman architect, Manfredi Nicoletti, not a local boy, who is responsible. We have told you about the megastructure being constructed next to Monaco's historic "Rocher" (pp. 154–157, DECEMBER 1966 P/A) from Nicoletti's plans. Now he has been commissioned to build a chapel in Monaco's main park and a major addition to the world-famed oceanographic museum, both on the Rocher.

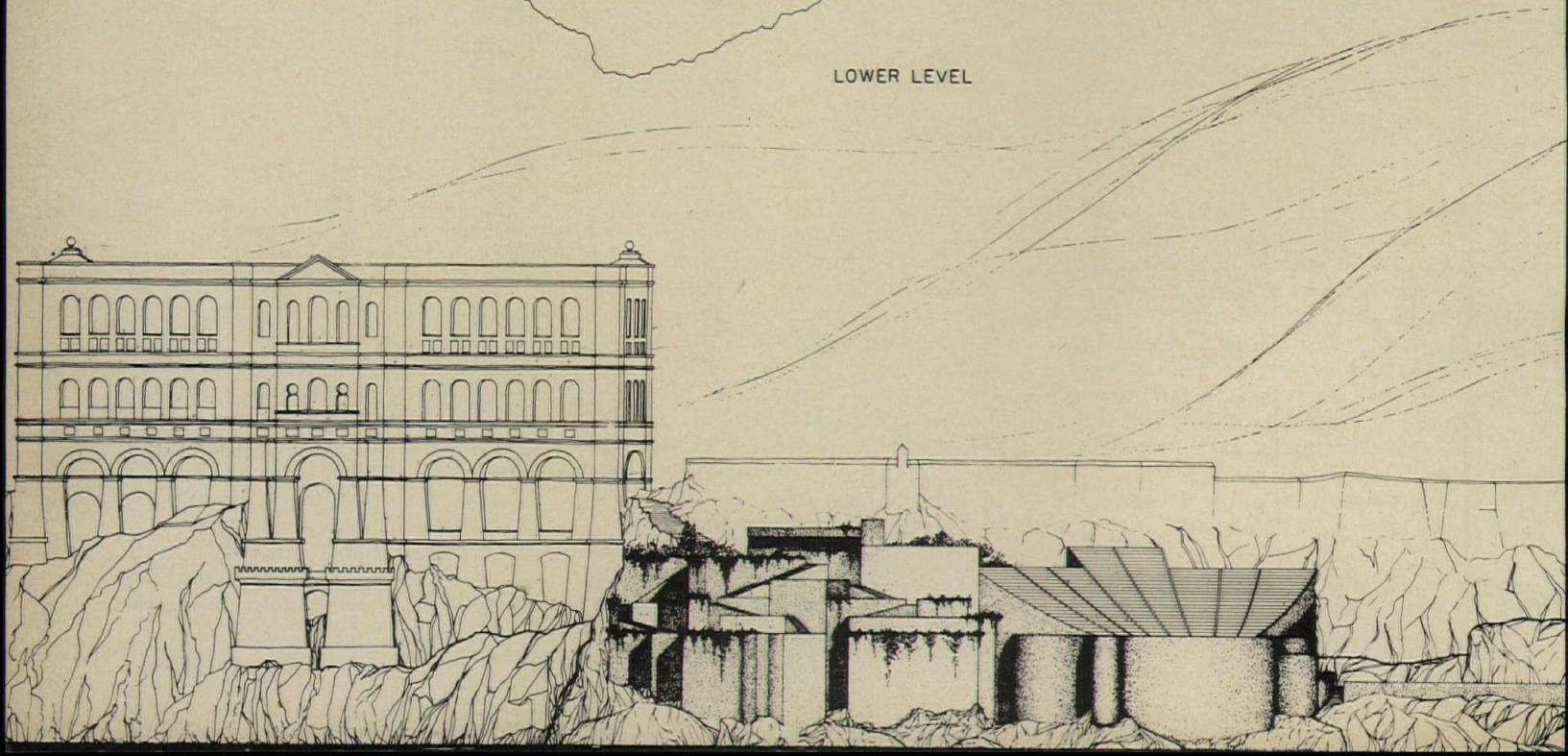
The latter project is a marinarium consisting of a 1500-capacity amphitheater overlooking the Mediterranean past a main pool where shows will be staged using the oceanarium's marine population, and a series of secondary pools where the various teams of aquatic actors will be separated before doing their turns in the main pool. Beneath the amphitheater will be vehicular access from a tunnel to a multilevel parking garage for 500 cars and 50 tourist buses. As in the megastructure development, Nicoletti here uses what he calls "artificial geology" to coordinate the garage and marinarium structures with the cliffs, rocks, and terraced gardens and walks of the Rocher. From the sea, the garage will evidently be the more interesting looking of the two, descending the cliffs next to the old museum in diagonal and horizontal levels on which there will be botanic and marine exhibitions, a restaurant, and an open-air café. One level beneath the amphitheater, which the architect says will be white benches "inserted in the natural stone," will be a marine-life exhibition with several aquariums. Entrance to the amphitheater will be from the upper



MIDDLE LEVEL



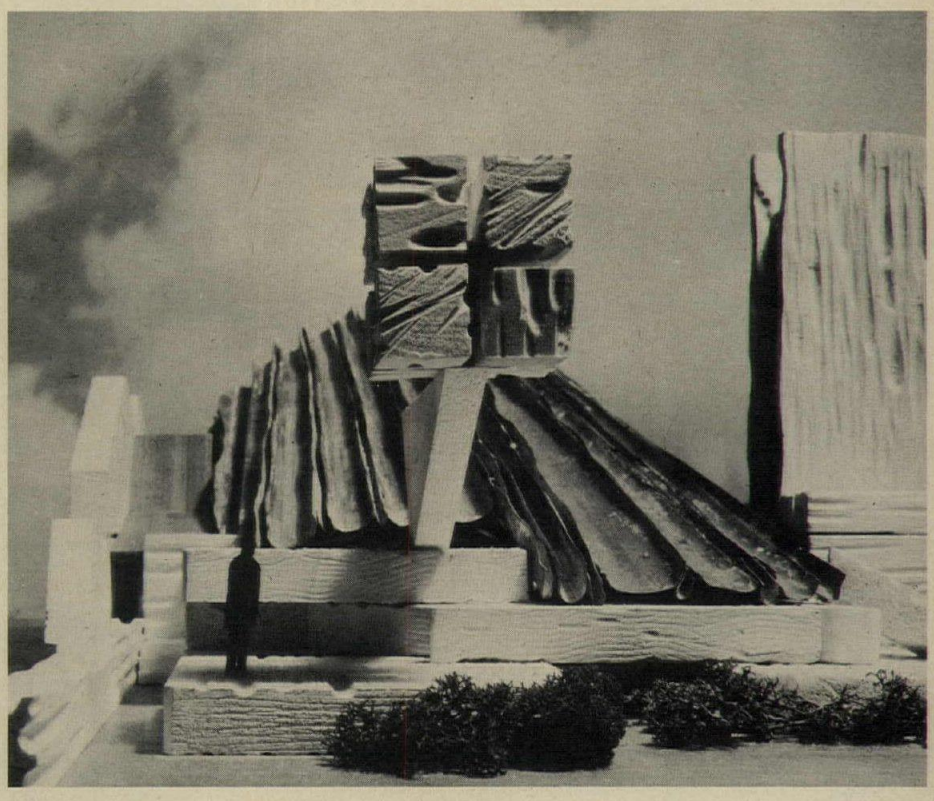
LOWER LEVEL



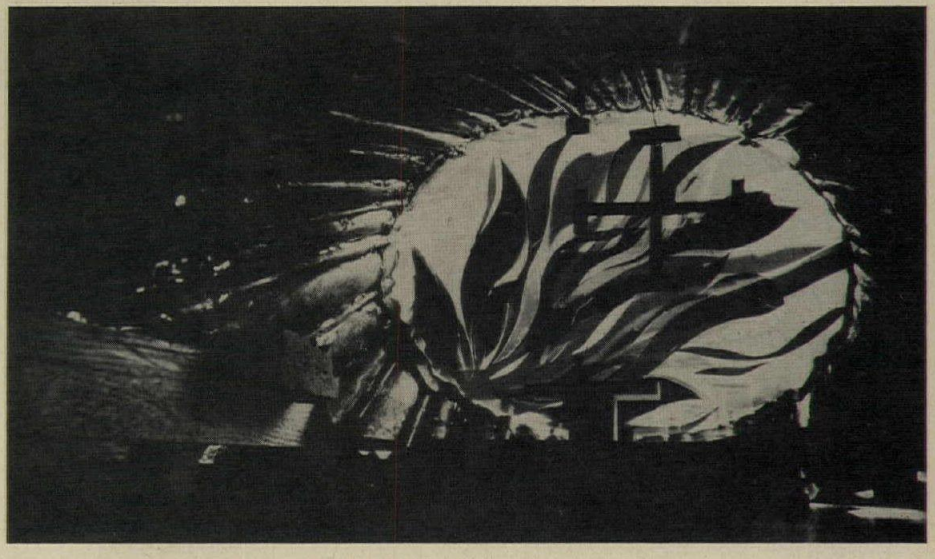
level, giving, Nicoletti hopes, "an effect of surprise that reminds one of the approach to the Roman theater of Fiesole." The view from here will place the marine show against its natural element, the sea, removing many of the unfortunate carnival-like aspects most of these shows have.

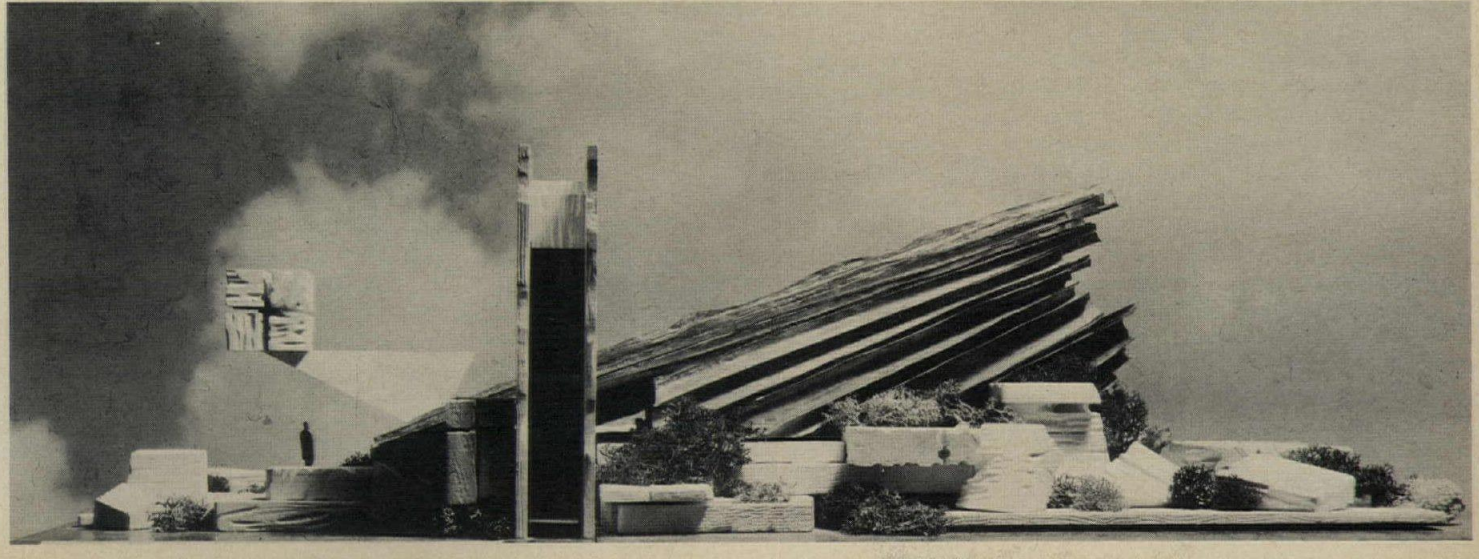
Just inland on the small peninsula of the Rocher is the site of an old chapel formerly belonging to a hospital that stood there. The chapel was allegedly dedicated to peace at the turn of the century, and a new chapel on the same parklike site by Nicoletti will be called "La Chapelle de la Paix." The small building will abound in symbology: a harsh truncated cone of bronze will rise from a base of broken and strewn stones, representing the devastation of war; within, the chapel will be sumptuously washed with light streaming in through a great east window at the sawn-off apex of the cone. The architect sees the immateriality of light as the symbol of peace, and intends no other strong element in the interior to undercut its effect. On the exterior will be a free-standing cross incised into a great stone, lifted on a wing of steel. This is to stand for "the heaviness of the Saviour's sufferance as won by His love for humanity," in Nicoletti's words.

The architect from Rome has created three powerful, intense designs in the marinarium, the chapel, and the megastructure. One wonders whether such a tiny place as Monaco can stand such a heady architectural experience. But, then, it welcomed the lady from Philadelphia and Hollywood graciously and has managed to maintain somewhat cordial relations with its big sister, France, something not all larger powers can do without biting the bullet. We suspect that the designs from Italy will take on their own Monegasque patina as the years pass.



LA CHAPELLE DE LA PAIX

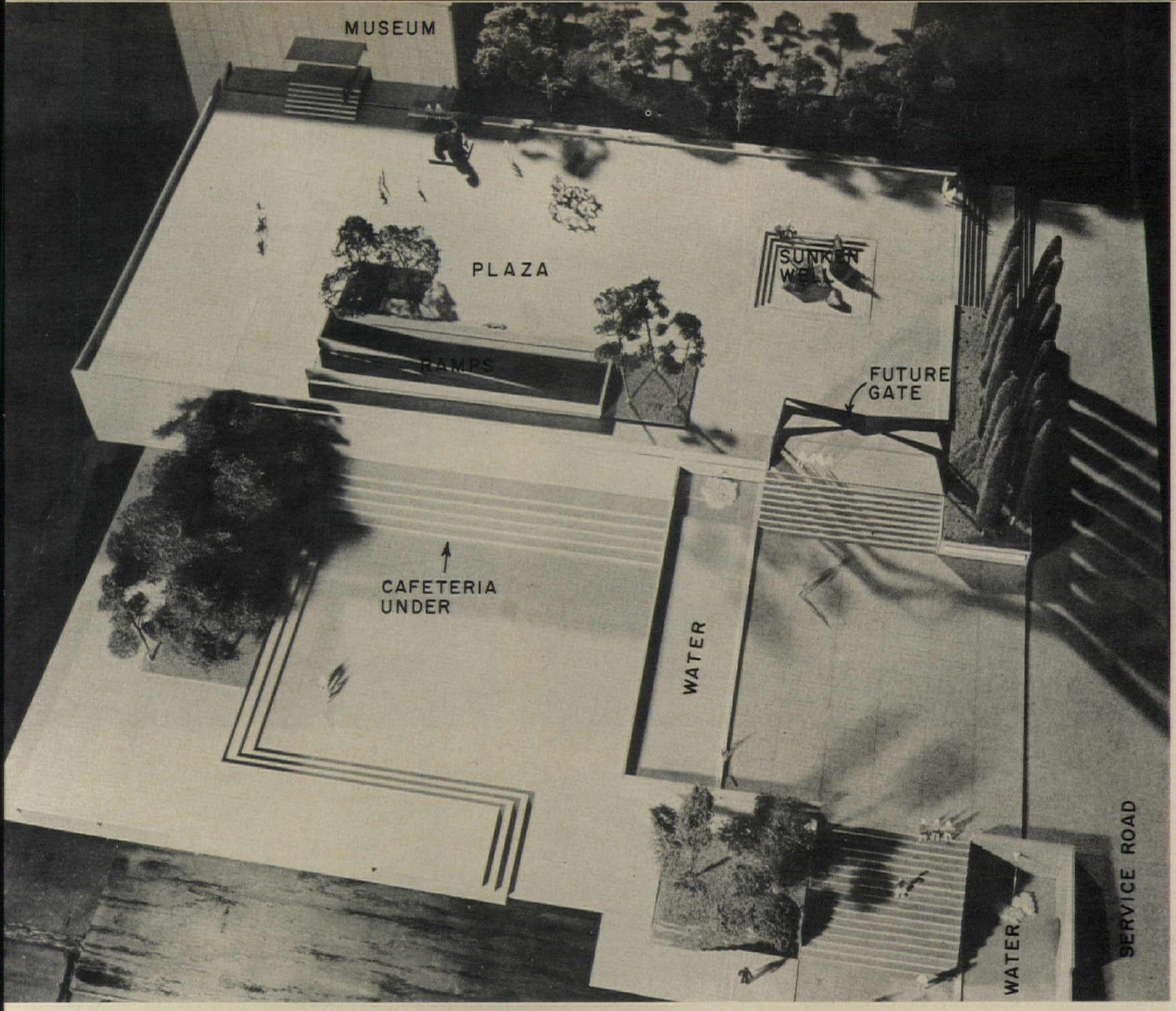




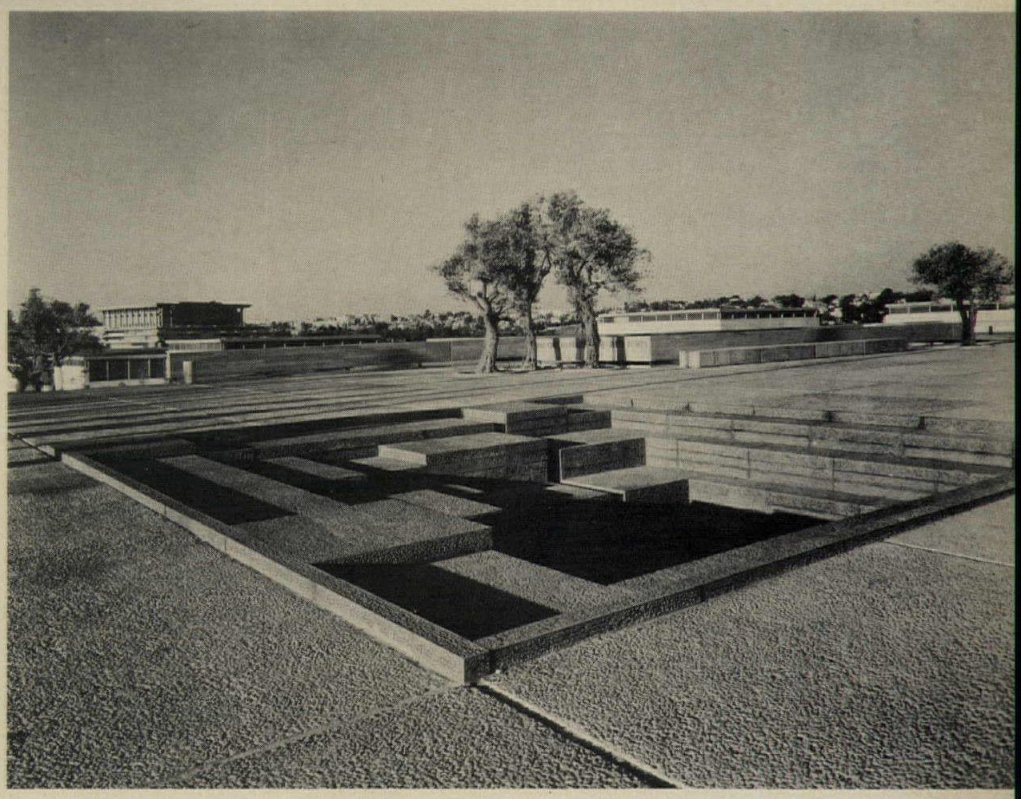
WATER IN THE

When the Israel Museum was built from the winning designs of a 1959 competition, the results were notable and were generally acclaimed in the world architectural press and elsewhere (pp. 180–187, SEPTEMBER 1965 P/A). The Kiesler & Bartos design for the Shrine of the Book and the Isamu Noguchi landscaping for the Billy Rose Sculpture Garden were not part of the scheme assigned to the original design team, but the museum buildings and the adjoining "Valley of the Cross" were. However, when Henry Crown of Chicago (he is Chairman of the Board of General Dynamics) decided to donate the main entrance plaza to the memory of his mother, he selected Lawrence Halprin & Associates of San Francisco as landscape architect.

Halprin's design, now about 85 per cent complete (a gate structure, some sculpture, and some native rock forms in the central well space are to come) evokes a sort of microcosm of the landscape in that part of the world—generally stark and multi-leveled, but occasionally bursting into verdure and splashing water around a well or an oasis. Severe concrete retaining walls and stark slabs of black basalt aggregate concrete underfoot seem to recall the sun-drenched vastnesses and hills of Israel, while carefully placed olive, cedar, and other indigenous trees, plus the ingenious use of water in a system of wells, jets, and cascades, symbolizes the more inviting aspects of the countryside. The whole area can be dramatically illuminated at

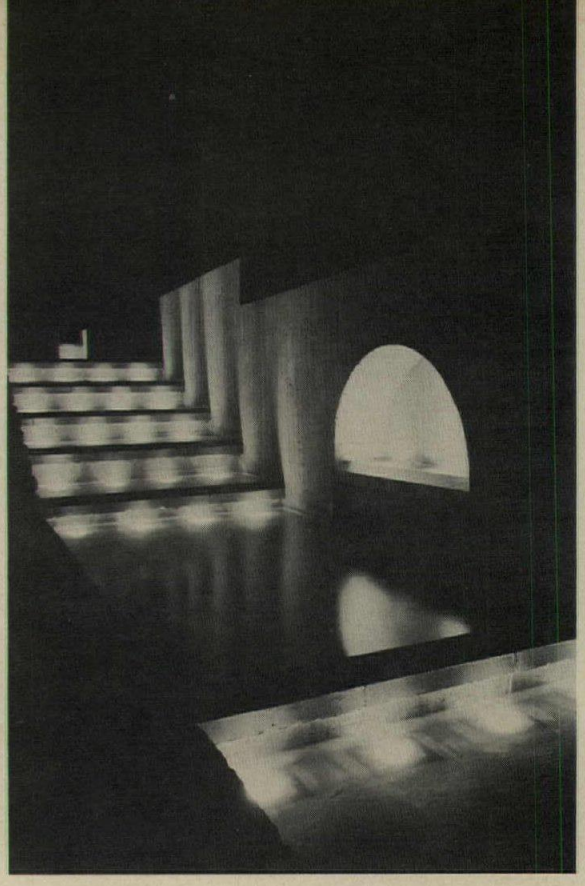


DESERT



night, making the museum complex stand as a beacon stretched across the brow of its hill.

The use of water is perhaps the most interesting of the plaza's aspects. According to Halprin, it appears and disappears and reappears just as it does in the generally thirsty terrain of Israel. On the plaza, it first seeps up in a depressed well that will eventually be marked with monolithic boulders selected from the nearby hills. It appears again in a jet at the top of the terraced stair-



way leading up from below, vanishes again, to be seen again across the stairway in the plunging watercourse that can be said to recall little rivers and drainage systems.

All has not been sweetness and light about Ida Crown Plaza, unfortunately. The museum's architects are not in agreement with the appropriateness of the design, writing P/A that "Most of the 'additions' mentioned by Mr. Halprin and their detailed design were, in our opinion, alien to the spirit of our initial design." The landscape architects of the winning team also voice reservations, particularly concerning the use of water. In a letter to the directors of the museum, they stated: "(1) Water does not belong to the general character of the top of the Judean Hills. (2) Maintenance is expensive and requires special and frequent attention. (3) Previous experience with similar installations in Jerusalem demonstrates that shortly after completion they are in a general state of neglect."

Whether the characteristics of a specific site should dictate a design that seeks to evoke a national landscape might be questioned, as might also whether a world-famed museum will let its front yard fall into neglect as some commercial client in downtown Jerusalem could. However, it all takes on the aspects of an academic argument, since Halprin's designs were executed, and it looks to us from these photographs and from this distance as though they will be successful.

Photos (except for model): Hillel Burger, Jerusalem

SENTRY-GO

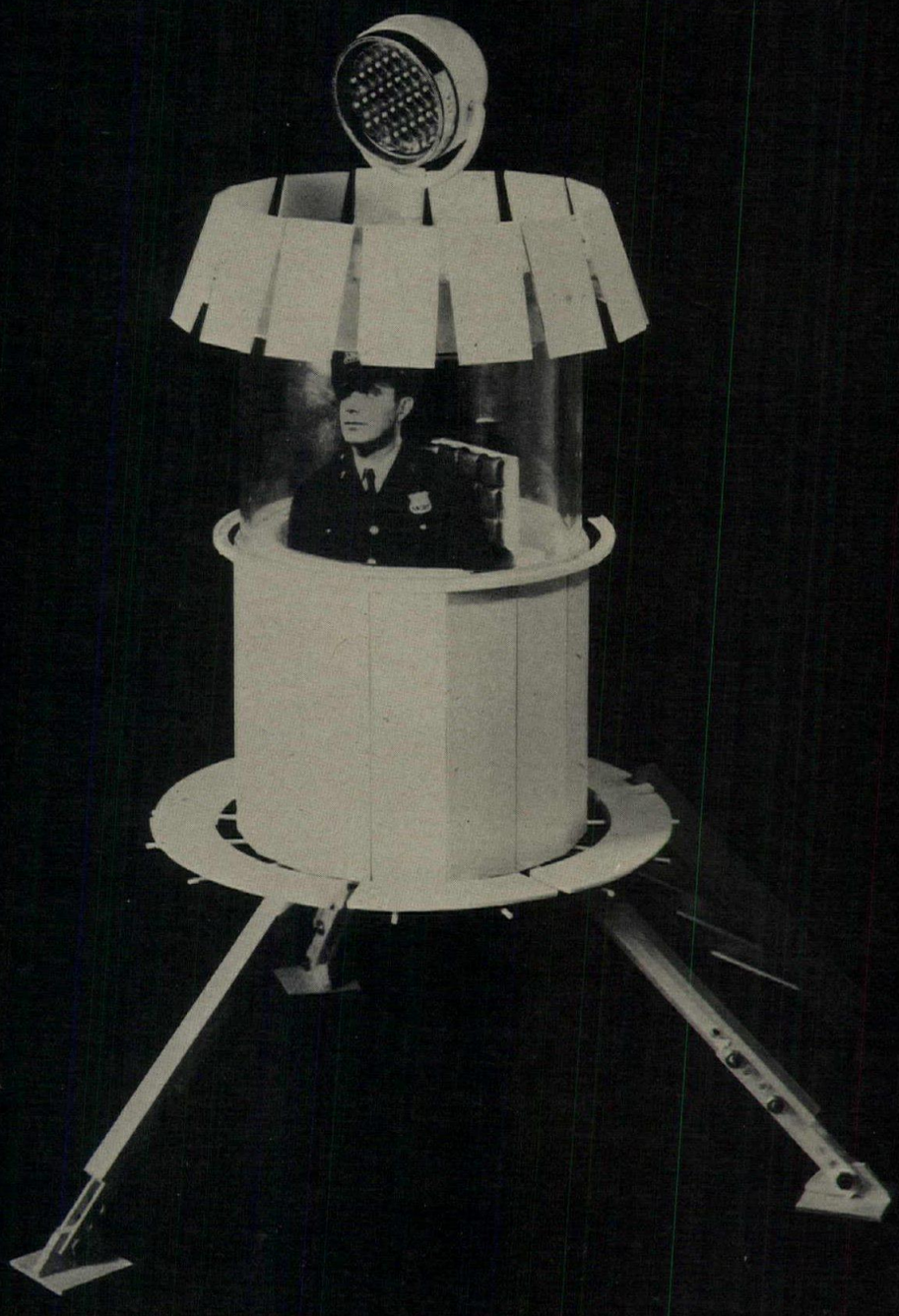


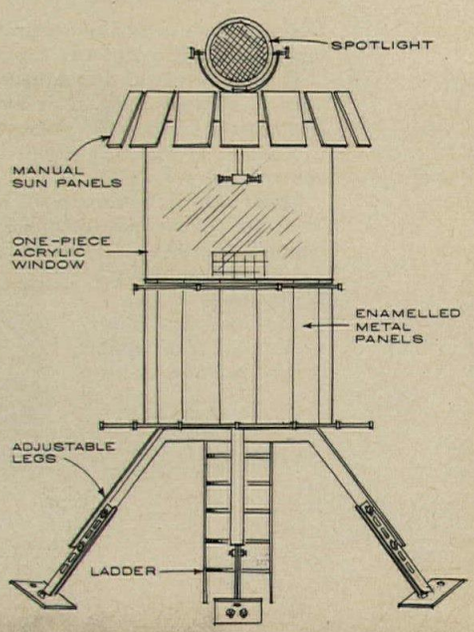
Photo: Ann Douglass

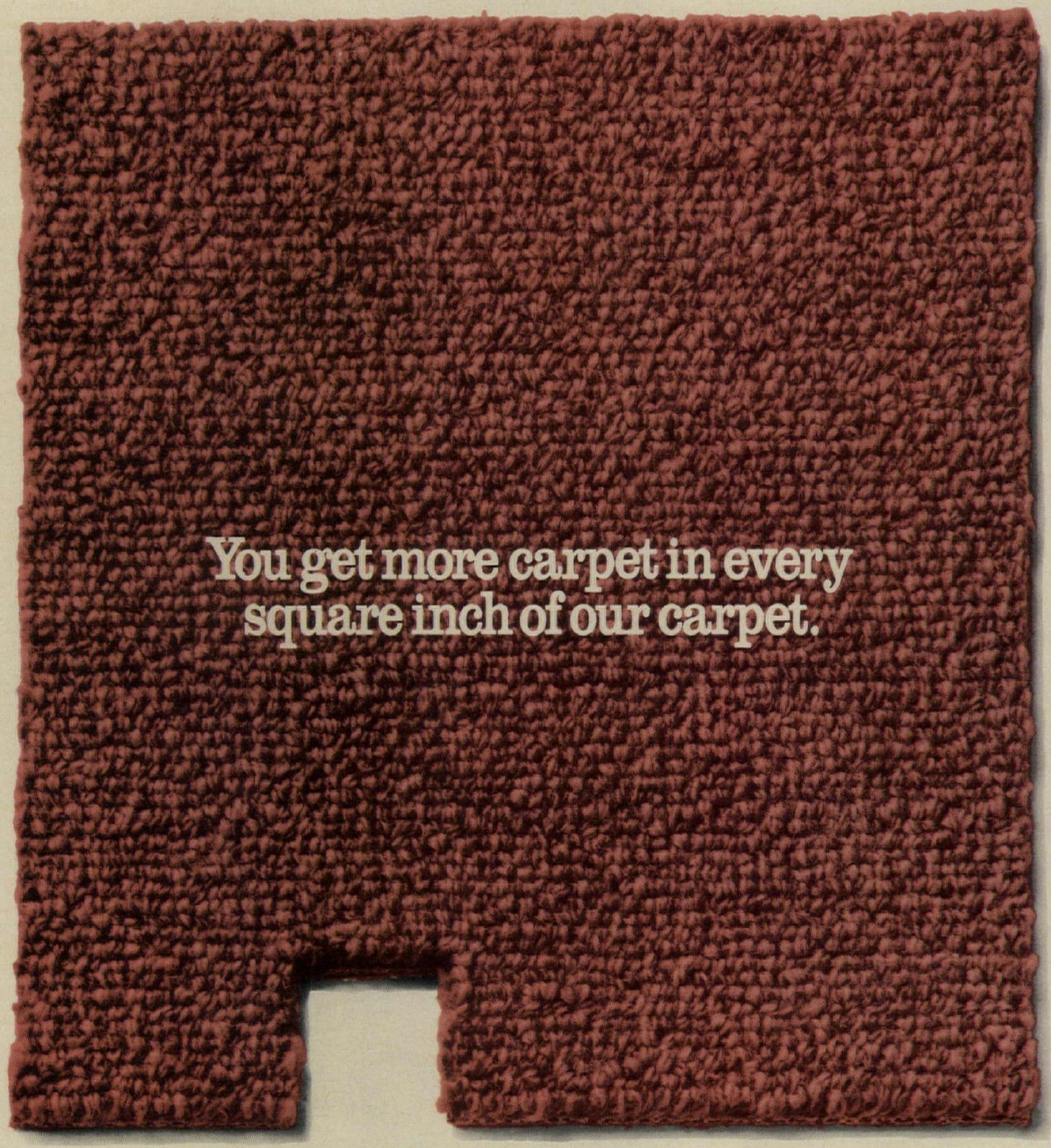
"All right, you guys, this is the warden talking!" We can almost hear Pat O'Brien's immortal lines as we contemplate the design by McMillan, Griffis & Mileto for a prototype guard house for the New York State Mental Hygiene Facilities Improvement Fund to use in its extensive new system of narcotics withdrawal facilities throughout the state.

Fund director Dan Sullivan told M-G-M to come up with a design that would be flexible and functional without appearing ominous or "Big Brotherish." Whether a pothead needing a fix will be able to view the moon-rocket result with as much amusement and equanimity as we do remains to be seen. The thing seems to us an admirably crazy (but workable) pop version of the old O'Brien control towers. With a white body, orange sunshade panels, and a bright red ladder, the tower will seem more playful and less menacing.

The structure will have adjustable legs to level it on uneven terrain. It will be easily transportable and will be plugged in to a utility line after positioning, ready for action. Circumferential vision will be provided by a single piece of ½-in. formed acrylic plastic that also will support a roof sporting a series of manually-operated sun control panels. The searchlight is to be operated from inside by a connection through the ceiling. A pivoting, floor-mounted chair will be surrounded by semi-circular console, telephone, wastebasket, and "a place for a Coke and an ashtray." An electric panel below the console and a three-speed defrosting unit that washes air down the plastic will provide heat and dehumidifying. In warm weather, two registers in the floor will be opened and the defroster reversed to pull air up and out of the capsule.

Junkies might think the idea of this guard house is junk, a bad scene. Being unlikely to experience its grimmer side, we think of it in more lighthearted terms.





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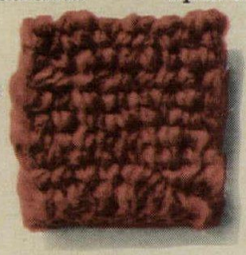

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MECHANICAL ENGINEERING CRITIQUE

PLASTIC PIPE FOR PLUMBING

BY WM. J. McGUINNESS

Although some plastics have been around for three decades, most of those used for piping are relatively new and are being increasingly used for plumbing in new buildings. The principal trends and most satisfactory types of application are discussed by a practicing engineer in New York City.

Although the use of plastic pipe for plumbing is often considered a very recent innovation, 30-year-old installations of drainage, waste, and vent (DWV) have been re-examined to find that they are undamaged, free of deterioration, and are functioning satisfactorily.

Plastics are, of course, a relatively new and rapidly developing family of materials. Pipe made of these materials has been perfected and is moving to take its place successfully for plumbing in buildings.

In the past, flexible polyethylene (PE) found many and diverse uses for fluid handling in such fields as industry, farming, and mining. Now, in a turn-about, plastics are being engineered, modified, and adapted to the needs of specific systems such as plumbing. Polyethylene, now in two semi-rigid grades, is used with four other kinds of plastic pipe in buildings *(see table)*.

Some information frequently sought by architects and engineers is summarized in answers to the following questions:

Q. For potable water distribution, does the use of approved plastics pose any problems of odor, taste, toxicity?

A. No. These fears were dispelled in 1955 by an exhaustive study at the National Sanitation Foundation with headquarters at the School of Public Health, University of Michigan, Ann Arbor, Mich.

Q. Do vibration, impact, and temperature change imperil plastic plumbing?

A. Its use in mobile homes for many years has shown its durability against shock, movement, and extreme change in climate. Mobile home plumbing is commonly 90 per cent plastic.

Q. Temperature affects plastic. Can it be used for domestic hot water?

A. Polyvinyl dichloride (PVDC) will handle water in the usual 140–180 F range with no difficulty.

Q. Is plastic pipe acceptable under code regulations?

A. The National Plumbing Code, in a revision now in draft form awaiting ratification, approves it, as do the three United States regional associations of plumbing officials. The successful use of PVDC for hot water is so recent that there may be some lag in its inclusion in codes.

Q. Has plastic plumbing been installed in houses and is its acceptance increasing?

A. Installations using plastic DWV numbered 100,000 in 1965; in 1966 there were 300,000. *Over-all* use of plastic pipe including industrial applications increased from 600 million linear ft in 1965 to 800 million ft in 1966.

Q. Will plastics entirely replace metal plumbing?

A. Not likely. Ferrous metals, nonferrous metals, and plastics each have their advantages and shortcomings. There are many applications where plastics can serve as well as metal, and some, involving contact with aggressive waters, where plastics are preferred.

Q. Aren't these materials all quite new?

A. Many of them are. However, the first commercial plastic, celluloid, was developed in 1860. Bakelite, also a familiar product, was first used in 1905. Research and development have had a long and productive history.

Q. Are plastic pipes free of the problem of electrolytic corrosion that sometimes affects metal pipes?

A. Yes.

Q. Since there are several kinds of plastic material available, does the use of plastic pipe involve more care in selection than is needed for metallic types.

A. Yes. Plastic pipe is a specially engineered material and knowledge of the characteristics of the several kinds of plastic is essential.

Q. Are there inherent qualities of plastic that need special consideration?

A. Yes. One of them is expansion. Appropriate coefficients of expansion per degree Fahrenheit are as follows:

Ferrous Materials	.000006
Copper/brass	.000010
Plastics (average)	.000050

It will be seen that plastics expand about five times as much as copper or brass, and about nine times as much as iron or steel. These motions can be accommodated, but often need special study.

Q. What are some advantages?

A. Its lightness makes it easy to handle. Many consider its installation faster, easier, and less expensive than that of other materials.

Q. How can one be sure of the quality and performance of selected plastic?

A. Federal publication of commercial standards for each kind of material is made by the Department of Commerce. Publications can be obtained from the Superintendent of Documents.

Q. Are the pipes tested and certified?

A. The National Sanitation Foundation, founded in 1944, tests and certifies plastic pipe. Pipe suitable to carry potable water bears the nSf identification. When intended for drainage waste and vent, it is marked nSf DWV.

Q. Where can information be obtained in addition to that available in the U.S. Department of Commerce "Commercial Standards" and the publications of the National Sanitation Foundation?

A. From the Plastics Pipe Institute, a Division of the Society of the Plastics Industry.

Suitable Choices of Material for Various Functions

Material		Use			
Type of Plastic Pipe		Cold Water	Hot Water	Drainage Waste Vent DWV	Sewer
PE	Polyethylene	√			
ABS	Acrilylonitrile-Butadiene Styrene	√		√	√
PVC	Polyvinyl Chloride	√		√	√
PVDC	Polyvinyl Dichloride	√	√*		
SRP	Styrene Rubber Plastic				√

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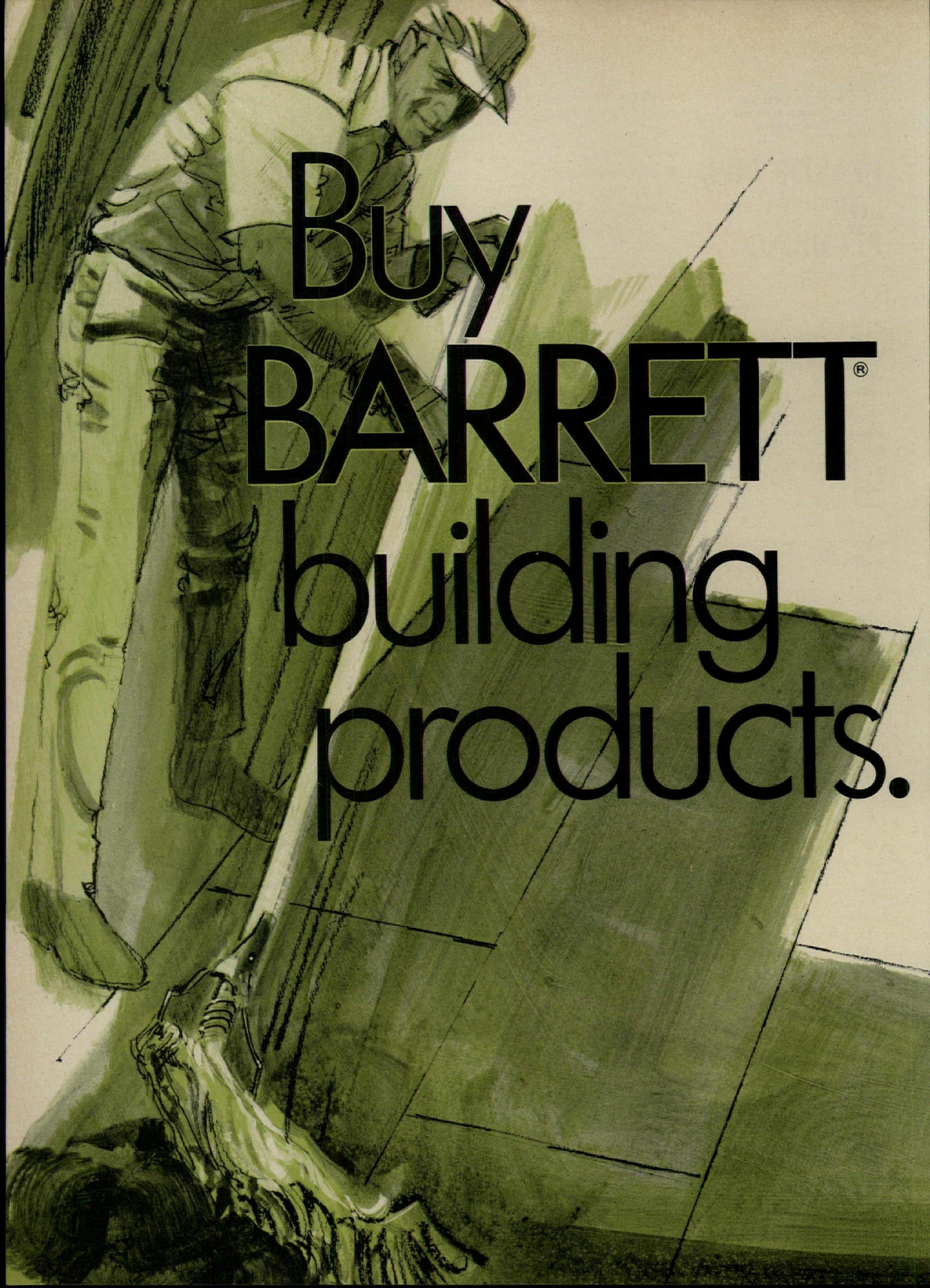
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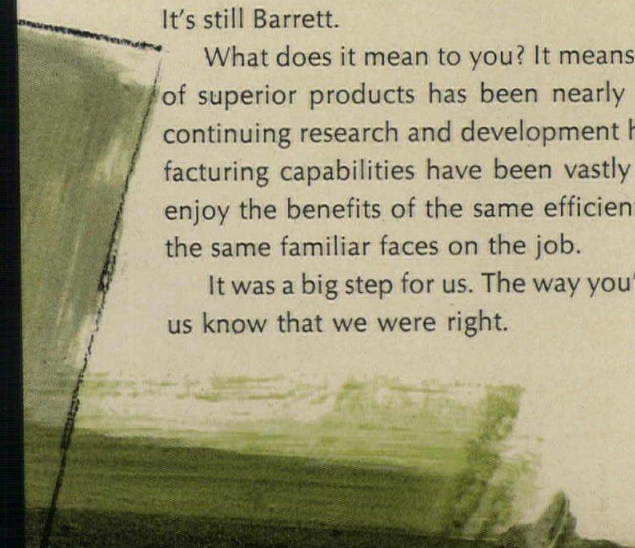

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SPECIFICATIONS CLINIC

FACTORS INFLUENCING SELECTION OF MATERIALS

BY HAROLD J. ROSEN

To help architects explain to salesmen how they select materials, P/A suggests that photocopies of this page, and the sequel next month, be handed to building product salesmen. The author is Chief Specifications Writer of Skidmore, Owings & Merrill, New York City.

The selection process engaged in by architects to determine what materials, products, and equipment they ultimately specify is of considerable interest to the manufacturers of these products, who spend countless dollars in market surveys and analyses in an effort to help understand this process. A problem so complex, involving so many variables, may seem truly insoluble. There are, however, some rather broad generalizations that can be made concerning this selection process that may be of benefit to the manufacturer.

There are a number of individuals in the architect's office who do have some influence in the choice of the product specified. The designer usually is responsible for influencing the selection of the visual materials — those making a significant contribution to design and aesthetics. The specifications writer usually is responsible for selecting those materials not bearing primarily on design, those that are hidden or incorporated in details that permit execution of design and engineering. Yet both individuals work as a team, with the designer questioning the specifications writer during the preliminary studies to ascertain whether certain materials may be used beneficially and economically. The job captain and project architect play a less significant role, but to get involved when budget estimates start to climb and reductions are in order. When this occurs, reappraisals are made.

The designer and specifications writer, however, are likewise influenced by a number of factors. The type of structure and the elements within it have an influence on their decisions. Hospitals, schools, apartment houses, banks, and offices, to name only a few building types, impose certain requirements based on traffic, use and abuse. Common elements within these types may not necessarily require the same treatment. Corridors, toilets, storage areas, and similar spaces may have varying requirements in these different structures, and consequently will affect the selection and choice of materials. Similarly, building designed for long-term use, as opposed to one with a short-term life, will influence the choice of products and equipment. A building designed for an owner-operator will require the selection of more maintenance-free products than will one designed for the speculative client who operates on a quick turnover of the property.

Weather and construction hazards may influence the choice of a material. Although a material may have the proper characteristics to perform satisfactorily in the completed structure, it may not be able to withstand the onslaughts of weather during the construction phase, nor the abuse of subsequent construction trades that follow its installation. It is therefore necessary to narrow the choice of materials to those that can resist the effects of these conditions as well as provide for the functions they must perform in the completed structure.

Occasionally, corporate clients who build regularly may require their architects to specify products manufactured by themselves or by their customers. If the product meets the architect's requirements, the product finds its way into the specifications. If, on the other hand, the suggested product does not satisfy the design requirements, the client is informed and the matter quietly disposed of.

Literally hundreds of materials, products, and items of equipment must be selected for a structure, and the method of specifying these products may be diverse. There are many instances when several competing products may satisfy the architect. In this case, he may specify a product by ASTM or Federal Specification reference, leaving to the contractor the choice of supplier who can meet this requirement. In other situations, a reference standard may not be available nor satisfactory and the architect will compare manufacturers' products. Where they appear to have similar characteristics and costs, he may name them by brand name, leaving to the contractor the option of which product to use. Where the architect finds that only one material or product or piece of equipment will solve a particular requirement, he will limit his selection, and specify a closed brand item that the contractor is obliged to submit and use.

Some manufacturers seem to think that because a particular office has specified their materials for one project, all subsequent specifications emanating from that office will contain their product name. Such an assumption is not always true, since the factors leading to the selection of a material are variable, and what may have been satisfactory in one situation may not necessarily be valid for another.

It is natural for some manufacturers to seek and advocate exclusive closed specifications for their own products. Yet some of these manufacturers will be the first to attempt to break a closed specification that does not contain their product, which has been specified by the architect through this selection process.

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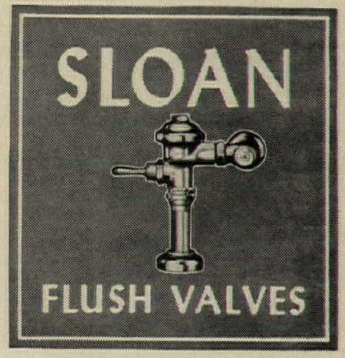

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IT'S THE LAW

INDEMNIFICATION PROVISIONS

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses the danger to the architect and engineer in problems arising from compromises in 1967 form contract documents concerning indemnification provisions.

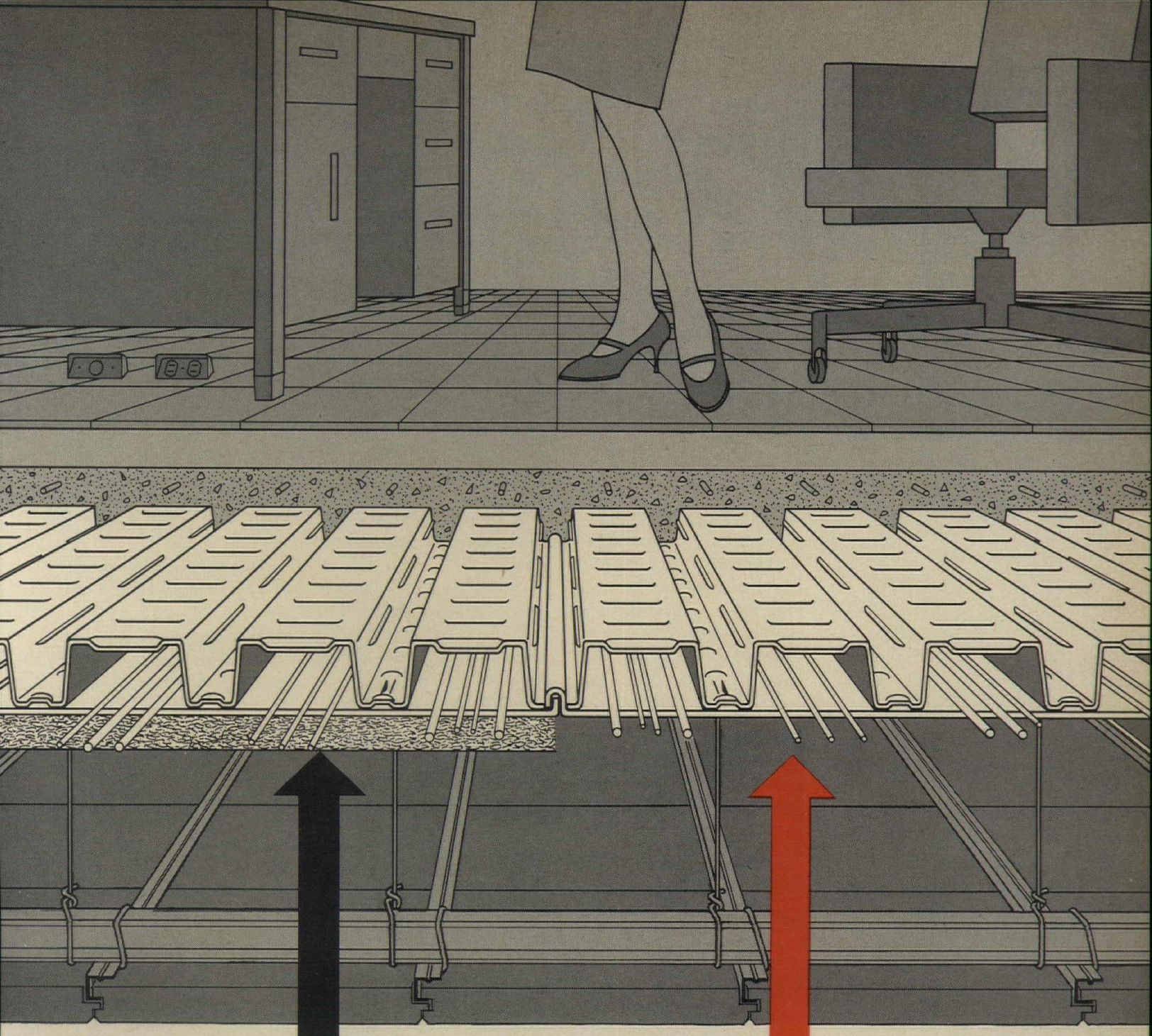
New form contract documents for the professional engineer were published in 1967 by the Contract Documents Committee of the Professional Engineers in Private Practice, a functional section of the National Society of Professional Engineers. These documents reflect — as did the construction contract forms issued by the AIA in 1966 and modified in 1967 — compromises that were made after negotiation between the professional associations and the Associated General Contractors of America, Inc. These compromises are reflected in the indemnification provisions contained in the respective general conditions of the AIA and of the National Society of Professional Engineers. In view of the increase in liability claims asserted against professional architects and engineers, particularly in the personal injury field, it is important to analyze the extent of the protection afforded by the indemnification provisions of the form documents of the respective associations.

The most prevalent type of claim now being asserted against architects or engineers is for personal injury sustained by employees of contractors who are injured at the project site through the negligence of their employer. Since such employees are barred by workmen's compensation laws from instituting legal action against their employer, the tendency is for the employee to commence third-party suits against the architect or engineer and the owner, which may result in a much higher recovery than the benefits that may be secured under workmen's compensation. The basis of these suits is the alleged failure of the architect or engineer to supervise the project properly and thereby to prevent the negligent action or creation of a hazardous condition by the contractor. In the absence of indemnification provisions in the construction contract, the right of an architect or engineer to secure indemnification from the negligent contractor for liability assessed against the architect or engineer in the employee's action is quite uncertain, since the legal principles involved have inconsistent application in the various jurisdictions of the U.S.

In general, where the act of negligence of two parties has caused injury or damage to a third party, neither of the parties causing the injury has the right to indemnification from the other. On the other hand, if one party is "actively" or primarily negligent and the other is "passively" or secondarily negligent, the "passive" wrongdoer may recover indemnification from the "active" wrongdoer. The courts differ, however, in defining "active" and "passive" negligence. Traditionally, it had been considered that the failure of an architect or engineer to take some action during the construction contract administration stage of his services to avoid the consequences of the "active" negligence of a contractor was, at worst, "passive" negligence, entitling the architect or engineer to indemnification from the contractor for any liability assessed against the architect or engineer. However, recent judicial decisions have cast doubt upon this rule (see IT'S THE LAW, OCTOBER 1966 P/A, NOVEMBER 1966 P/A, and JANUARY 1967 P/A), thereby increasing the importance of an appropriate contract of indemnification.

The indemnification provisions contained in the 1967 edition of the standard general conditions of the construction contract issued by the National Society of Professional Engineers provides that the contractor "shall indemnify and hold harmless the owner and the engineer . . . against all claims, damages, losses and expenses . . . arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease, or death, or to destruction of tangible property . . . and (b) is caused in whole or in part by any negligent act or omission of the contractor . . . regardless of whether or not it is caused in part by a party indemnified." However, it is further provided that the obligation of the contractor to indemnify the engineer or owner shall not extend to the liability of the engineer arising out of errors in the plans or specifications, or arising out of "*the giving of or the failure to give direction or instructions by the engineer . . . provided such giving or failure to give is the primary cause of injury or damage.*" Similar provisions are contained in the general conditions of the contract for construction issued by the AIA. Earlier editions of the form construction contract of the National Society of Professional Engineers provided a much broader indemnification provision. It was not, for example, limited to claims arising out of personal injury and property damage and did apply to claims for damage to the work itself. On the other hand, earlier editions of the form contract of the AIA contained no indemnification provisions whatsoever.

It is apparent that, in seeking to work out a satisfactory indemnification clause, the professional associations and the Associated General Contractors of America, Inc., did not agree on how to handle the situation where it might be claimed that both the contractor and the professional were at fault in respect to a resultant personal injury or property damage. It is this very area that is the most significant with respect to securing protection for the professional. More questions are raised than answered by the compromise language, which excludes from the coverage of the indemnification provision liability based upon instructions by the architect or engineer. For example, is liability based upon the failure of an architect or engineer to instruct a contractor to stop work because the method or procedure of the contractor is creating a hazardous condition outside the application of the form indemnification provisions? The answer may come in future litigation. Given the lack of understanding of the architect's and engineer's true function, this answer may not be a happy one for the professional.



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WHAT IS PAST IS PROLOGUE

SHAKESPEARE,
The Tempest

BY JAMES T. BURNS, JR.

LOST NEW YORK. *By Nathan Silver. Houghton Mifflin Co., 2 Park St., Boston, Mass., 1967. 242 pp., illus., $15. The reviewer is Senior Editor of P/A.*

I hereby nominate Nathan Silver, his publisher, his editors, and his photograph-gatherers, for this year's awards from the Municipal Art Society of New York, the City Club of New York, the National Trust for Historic Preservation, and any other organization of people devoted to the plausible conservation of our urban resources — namely, buildings and neighborhoods and the life that goes on in them. As Silver no doubt is aware, those organizations sometimes bear within them the seeds of their own retrogression: people dedicated to a blind worship of the past — culturally, sociologically, and architecturally — and even to a resurrection of the past in physical terms today. The author of *Lost New York* is having none of that. His is not the vaporizing over the fact that the New York of Edith Wharton and Henry James, or even O. Henry, is no longer with us (Louis Auchincloss to the contrary), or the petulant foot-stamping that *everything* should remain as is and even take on the coloration of some kind of "American Renaissance" *à la* Henry Hope Reed, Jr., whatever that might be. It is a reasoned, dispassionately passionate argument for *conservation* of what we have, not Williamsburgy reconstruction or hit-or-miss, exteriors-only preservation such as that provided for under the New York Landmarks Preservation Commission's rules. Of course, such conservation takes measures that are not on the books in New York, or very few other cities in the world, for that matter. Even under a benign city administration, the last word is most often that of the "developer," the real estate operator, the Port of New York Authority, Robert Moses and his Triborough Bridge and Tunnel Authority, and similar powers that are not answerable to the public weal. It is never the devil who takes the hindmost when these forces speak, but the city and its people.

"And why not urban conservation?" Silver writes in his knowledgeable Introduction. "We recognize the need to conserve every other aspect and resource of our environment. Ultimately, a stand of Douglas Fir or Redwood is more easily replaceable than the forms that evoke a bit of human history. Conservation is not necessarily an act practiced by conservatives. It is concerned with the search for best use as well as thrift. It calls for active perception and timely and imaginative decisions if anything is to pay off. If the best use is to be made of urban resources, there has to be endless vigilance by city planners. It is, in a way, the opposite of preservationism, where a law is passed in a moment and then the constant job of holding back change begins. In urban conservation, the work to use things to best advantage is continuous. Only the rewards are simple and self-accomplished."

Lost New York is a beautiful and poignant book. Its record of lost chances for civic amenity, overlooked bits for urban joy and liveliness, ruthlessly destroyed ties with a living architectural tradition (by both public and private interests), and areas, streets, and neighborhoods that have had the life "planned" out of them is cautionary not only to New York but also to the smallest hamlet in the vastnesses of the Rockies. Silver unfortunately — and understandably, since more knowledgeable experts than he have failed — offers no cure for the urban wasting disease, no panacea in the form of a miracle measure, and not even a favorable prognosis for the future. But if city officials throughout the country — those who can — will read this book and look at the beautifully displayed gallery of what "the world's greatest city" has flushed down the drain, perhaps they might be stricken with just enough terror about their own surroundings to try and make them human. Looking out across Park Avenue as I write this at a by-the-square-foot speculative office building with bits of the insulation being blown on the G. M. Building frame six blocks away floating hazily by in the air, I am pessimistically inclined. I hope I'm wrong.

New York's City Hall — nothing's impossible.

The Deadly Arts

By WALTER KIDNEY

DESIGN FOR DEATH. *By Barbara Jones. The Bobbs-Merrill Company, Inc., 3 W. 57 St., New York, N.Y., 1967. 303 pp., illus., $10. The reviewer is an Associate Editor of P/A.*

Miss Barbara Jones is an Englishwoman who takes an interest in such backwaters of the visual arts as the making of fireworks, taxidermy, grotto building, and the decoration of canal barges. In her present book, she concentrates on the funeral arts, beginning with

Continued on page 180

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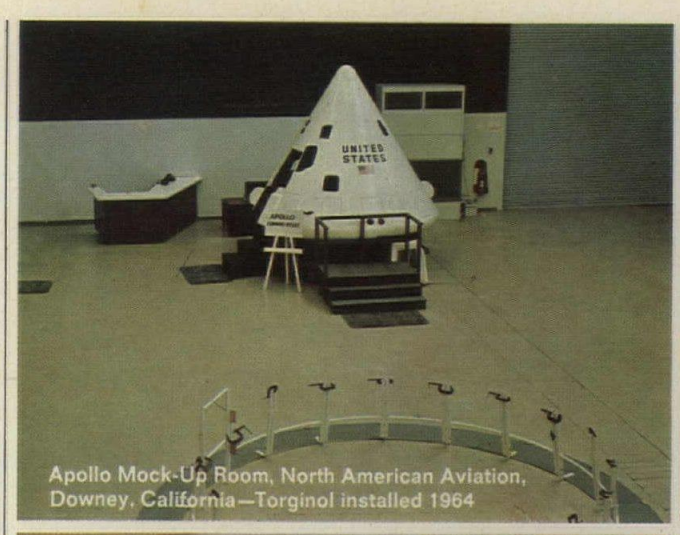
Continued from page 178

the artistic "medium" of the undertaker, namely The Corpse, and going on to deal, chapter by chapter, with The Shroud, The Coffin, The Hearse and the Undertaker's Shop, The Floral Tribute, Printing and the Word (which has a nice selection of epitaphs and a glossary of undertaker's euphemisms), The Procession, The Cemetery and the Crematorium, The Tomb, Relics and Mementos, Where Death Gets You (anecdotal), and Loving Death (necrophilic).

All this adds up to a ramble through the cemeteries and undertaker's establishments of many places and times, with a great deal of amusement and information to be picked up along the way, but with no thought of treating the subject exhaustively. What you are in for appears from an examination of the dust jacket, where, on the front, Miss Jones has drawn a skull made from shrouds and various funeral ornaments within a filligreed border and, on the back, has placed a photograph of her face within a similar border. Of particular interest to architects will be the descriptions of cemeteries, columbaria, and tombs. The mausoleum, which could arouse the interest of Louis Sullivan, is now nearly extinct as an architectural problem, and it is curious to look at some of these drawings and photographs, and realize the variety of forms in which it once appeared. How good a patron of architecture death once was appears in other ways: a photograph of a sunken street of Egyptian-style columbaria in a London cemetery of the 1830's, or another of a pyramid under which an English rake of the 18th Century rests, "hopefully with a bird and a bottle." And, not least of all, in the descriptions of the grand architectural cemeteries of Italy, carefully landscaped and paved and walled to create an effect of chill elegance. Death as a patron of the interior decorator gets some mention, too. A sketch (why not a photograph?) is given of the famous Capuchin vaults in Rome, where the bones of the departed brethern are laid in the stucco to form rosettes and garlands, very gay.

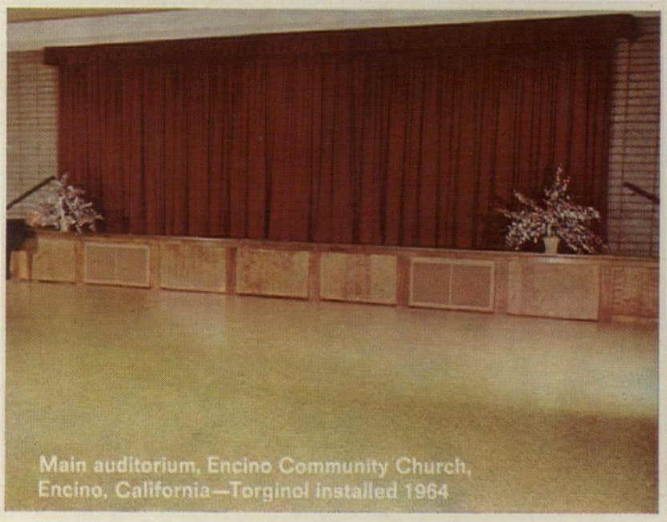
Included as well are such things as "progress" drawings of a natural death, a drawing of adjoining tombstones (husband and wife) from which emerge arms joined in an eternal handclasp, advertisements from undertakers' trade journals, animal epitaphs ("One Eye, She lived to love/Go to sleepies boy") and anecdotes such as the following: "On the afternoon of October 22nd, 1963, the City of London Cemetery and Crematorium could show a beautiful piano 4 ft

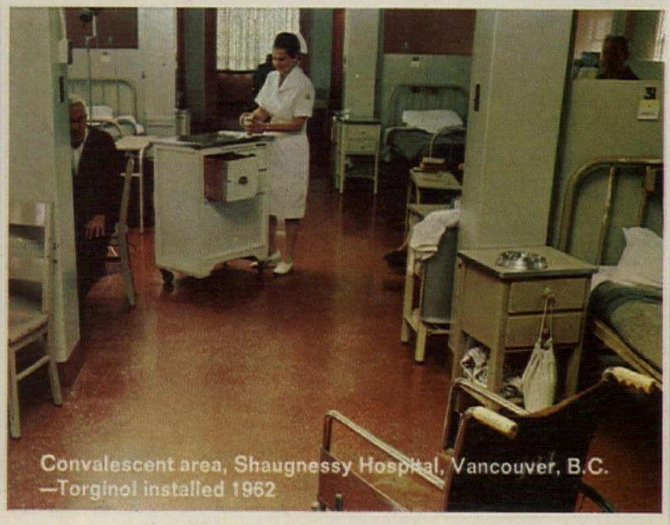
Continued on page 190



Apollo Mock-Up Room, North American Aviation, Downey, California—Torginol installed 1964


Class 100 Clean Room, Fairchild Space & Defense Systems, El Segundo, California—Torginol installed 1966


Main auditorium, Encino Community Church, Encino, California—Torginol installed 1964


Convalescent area, Shaugnessy Hospital, Vancouver, B.C. —Torginol installed 1962

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Continued from page 180

long made with white chrysanthemums outlined with pink ones. The keyboard was scarlet carnations and the pedals and sharps were silver paper. In silver on a paper ribbon: GOOD NIGHT POP. On a card: In Loving Memory of Dear Dad. On a sheet of writing paper:

Around a Piano we have
Gathered through the Years
A Legacy of Happiness and
Laughter that Shines
Through our Tears."

The book is lavishly illustrated, with many of Miss Jones's own sketches ("Stalin's coffin./Undertaker selling preneed, United States, present day"), and a number of photographs.

Annual Rigidity

BY JEFFREY ELLIS ARONIN

TOWARDS INDUSTRIALIZED BUILDING. *American Elsevier Publishing Co., 52 Vanderbilt Ave., New York, N.Y., 1966. 493 pp., illus., $41. The reviewer is an architect practicing in New York City.*

It is surprising that not more has been said about this volume and its reportage of the Proceedings of the 3rd CIB Congress in Copenhagen, 1965. It is, in effect, a white paper for the construction industry, an important document that should serve as a guideline for the future industrial development of the world.

Perhaps other countries are giving this the attention it deserves. It does not seem so in the U.S., at least in the architectural profession. In fact, many papers presented by delegates from abroad suggest that they are far ahead of us in industrializing the building industry. This is indeed a curious phenomenon in our nation, which is otherwise the most industrialized of all.

Thomas Edison was one of the pioneers in industrialized building techniques, and he failed. But now it seems that some progress *must* be around the corner, if we are to surmount the huge problem before us. Suffice it to say, the world's population, now 3 billion, will double in the next 30 years, and 6 billion people will inhabit the earth by the year 2000.

The construction industry must take the bull by the horns. Why architects did not pursue and did not get their own Government-sponsored international organization, as, say, the FAO, after World War II is questionable, but whether we have an international organization or not, we must do something about a situation the seriousness of which has not really sunk into the minds of those responsible.

At present, the construction industry has insufficient capacity. We need mass production on the scale seen in the auto industry. We need continuity of operation, discipline of composition of demands, and research and development.

In the Western countries, perhaps, there are too many product types. In the socialist countries, there is too much standardization, but with standardization has come great building industrialization. The point reached today in the Western countries is only equivalent to that of the gasoline-driven horsecart at the turn of the century.

While we are improving our awareness of the links between the changing structure of society and the necessary changes in the structure of the building industry, it should be noted that improvements in technique and industry are not always manifested in improved living conditions. Architects and engineers need retraining, to bring about a better understanding of one another's problems; research must relate to the problems of *tomorrow*, not yesterday.

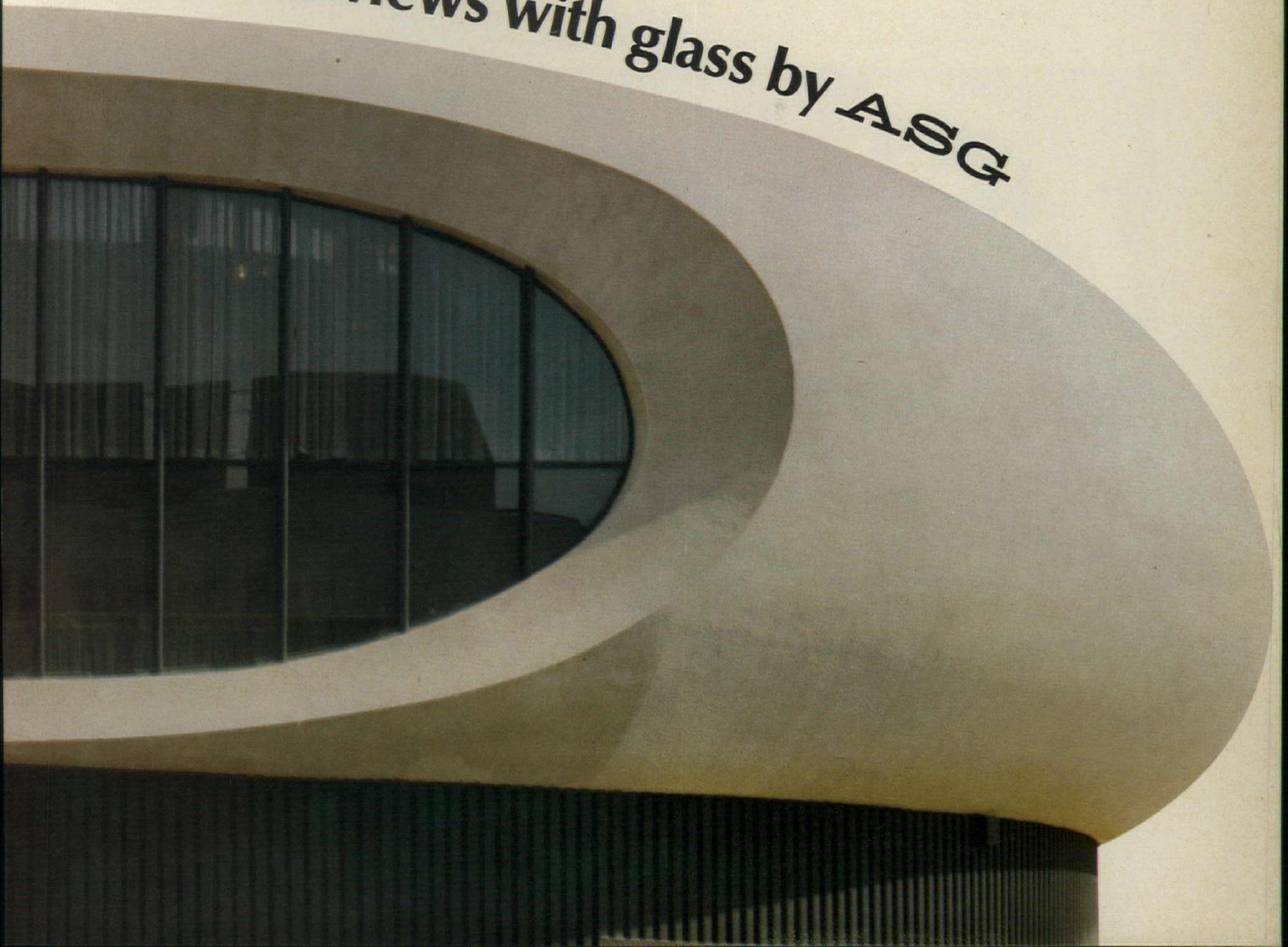
Building regulations must be changed, too, to enhance the advantages of industrialized construction. Yet it was interesting to note that the delegates to the CIB Congress felt that the human being should be taken as the mutual reference point. Dimensions should be standardized for international coordination, and there should be an efficient unification of regu-

Continued on page 194

ASG Bronze plate glass and Starlux® clear plate glass serve functional roles in futuristic bank. • Denver architect Charles Deaton conceived this striking building as a free-form sculpture. After modeling the basic spiral shape in clay, he sliced off part of the shell with a knife to create a large oval window. A twist of the modeling loop produced a small "V"-shaped window on one side. Still another cut, and a curving soffit took shape over the entranceway. • When the building was realized in concrete, the oval aperture (below), because of its southern exposure, was glazed with ASG Bronze plate glass. Its subtle hue significantly reduces glare and brightness and adds warmth and richness to interior colors. • The rest of the building is glazed, inside and out, with ASG's clear Starlux twin-ground, polished plate glass. Walls of Starlux two stories high follow the curve of the concrete shell and bring natural light to the main banking floor. Interior offices on the main and upper levels are walled with Starlux, creating an unexpectedly light and airy look in this sculptured building. • If you would like complete information on Starlux clear plate glass, ASG Bronze plate glass and the complete line of architectural glasses manufactured by ASG, write: Department E-11, American Saint Gobain Corporation, P.O. Box 929, Kingsport, Tennessee 37662.

Glass by ASG
CREATIVE IDEAS IN GLASS

light and views with glass by ASG



Continued from page 190

lations. The principles of safety in buildings should be the same anywhere in the world. Regulations should be as flexible as possible and frequently reviewed by teams of specialists.

All these above thoughts were continually brought up at the Congress. The 170 papers presented touched a variety of subjects, divided into 10 groups: The Changing Structure; Integration of Design and Production; Planning of Operations; Regulations; Modular Standardization; Production Methods; Materials Development; Functional Requirements; Developing Areas; and Communicating the Knowledge. While some of it is heavy going for the average architect (I did not find those long sets of formulae too enticing), there is enough variety to appeal to everyone. I did find one mistake: An engineering diagram was printed upside down, and the author, a Swedish manufacturer, just happened to come into my office as I was reviewing the book.

Some problems that were posed in my mind from reading this book were: We need to improve communication between designers and production people. (Would it not be ideal if we could translate blueprints directly into a building?) Does the architect consider sufficiently the methods of erecting a building? Can we code and data-process specifications, quantities, and construction documents? Will architects be able to design for living on the oceans and in the skies as well as on the earth?

Most readers will find something in the book that will be of inspiration to them. Perhaps the need for such inspiration is illustrated by one paper, "Dissemination of Knowledge to Busy Professional Men," in which it is said: "Acquired knowledge and capability developed during an education do not last for a lifetime. It is asserted that the professional knowledge of technicians becomes obsolete at a rate of up to 10 per cent annually. When we add to this a man's progressive mental rigidity as he gets older, the prospects of mankind seem sinister. Every man should, regardless of his intelligence level, constantly try to renew himself in his profession and in life as well."

Urban Heroes

BY EDWARD K. CARPENTER

CITIES IN RACE WITH TIME: PROGRESS AND POVERTY IN AMERICA'S RENEWING CITIES. *By Jeanne R. Lowe. Random House Publishers, 457 Madison Ave., New York, N.Y., 1967. 601 pp., $10. The reviewer is an Associate Editor of P/A.*

Urban problems are expanding faster than the cities that produce them. And although we are beginning to do a lot about these problems, even our best efforts are often really failures. This summer's riots in New Haven, for example — which many had described as a "model city" — pointed up the fallacy of believing that urban renewal alone is the way to men's hearts, or a path to civilization.

Miss Lowe's book is unlike most books that chronicle urban renewal. It is not so much concerned with the results of the renewal as with the persons who made it possible. "They have made," she writes, "an important beginning in this new phase of our country's development — the gradual maturing of the United States into an urban nation." She takes five cities: New York, Philadelphia, Pittsburgh, Washington, and New Haven. All have made more or less successful attempts to save their city centers from the decay and blight of haphazard growth as commerce and residents rush to the suburbs. Each is seen through the personalities and trials of the persons who fought to save them. No story is the

Continued on page 200

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Walk·Ease by Flintkote is a cushioned sheet vinyl flooring made with a unique reinforcing layer of fiber glass. This distinctive, modern flooring combines the luxury of carpeting with the unsurpassed practical advantages of gleaming sheet vinyl.

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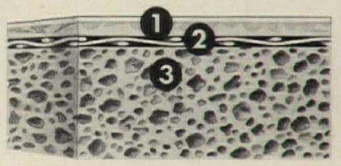

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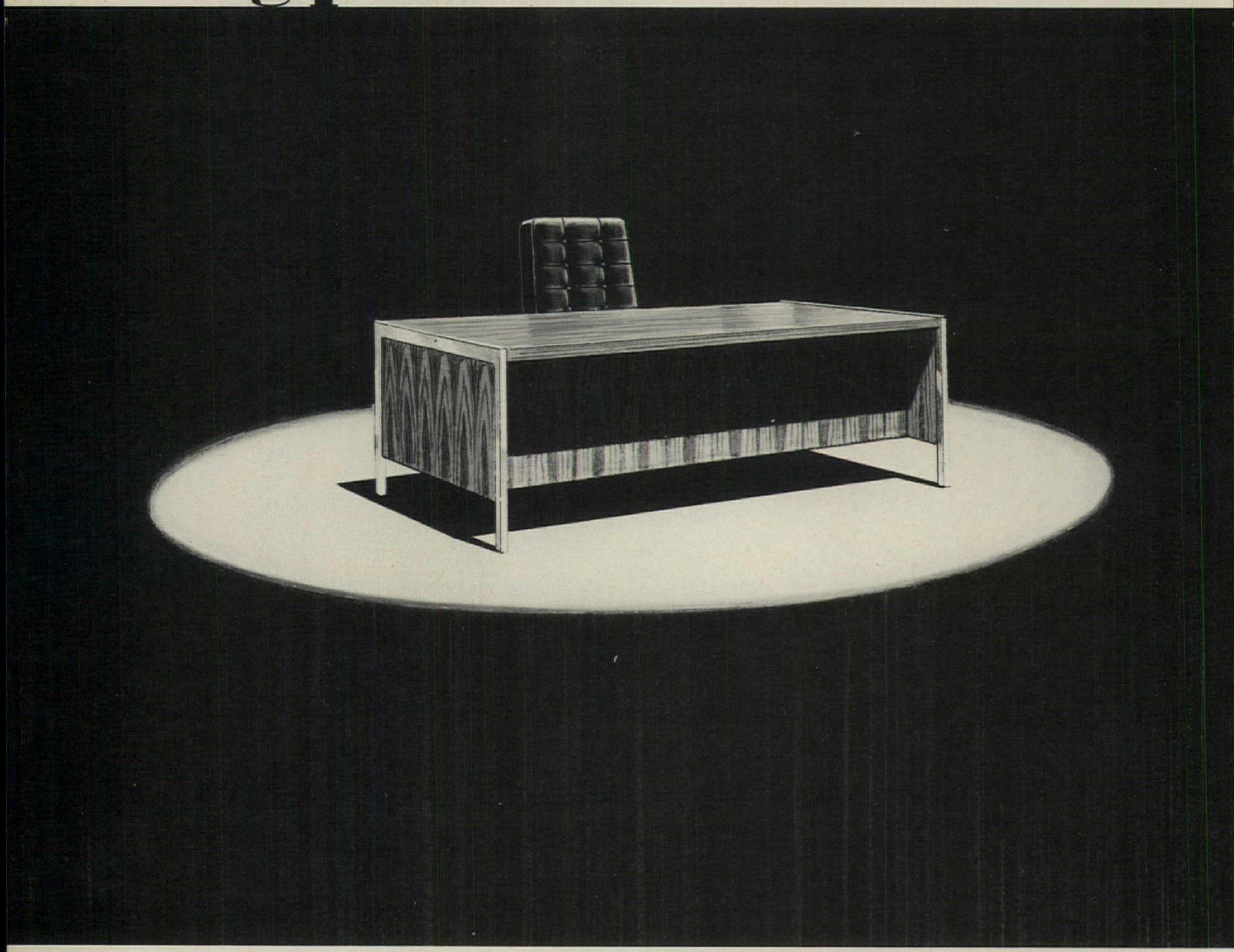
Big production



Take our new 900 Executive Desk, for example. Whether it's in the wings or in the spotlight, it's a big production . . . a hit! Starring hand-rubbed walnut and supported by mirror chrome accents, the cast includes Executive Desks, Secretarial Units, Service Units and a complete line of correlated seating.

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The 900 Series shows contemporary design can be way ahead of the times in craftsmanship. So far ahead, in fact, that the 900 will undoubtedly have a longer run than "Hello Dolly."

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But, then, at Mrytle Desk, that's furniture biz.

Pictured here, the 974F Executive Desk from the 900 Series. Write for catalog and full details: Myrtle Desk Company, Dept. P117, High Point. N. C. 27261.

Showrooms: CHICAGO, 1162 Merchandise Mart, Telephone 527-2540 • HIGH POINT, Taylor St., Telephone 885-4021 • 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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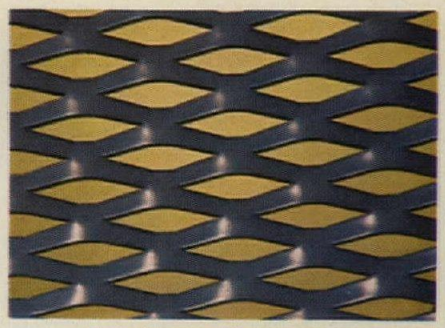

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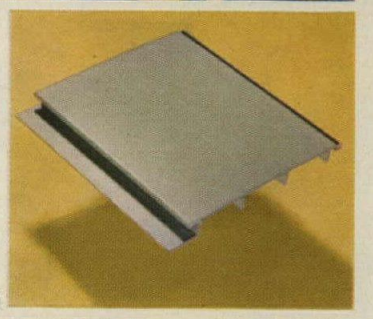

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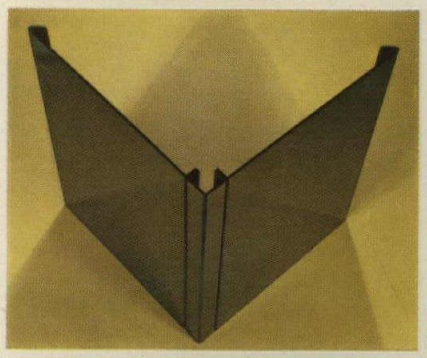

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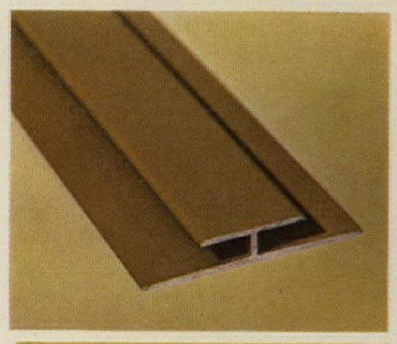

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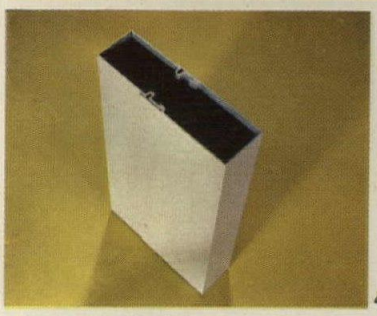

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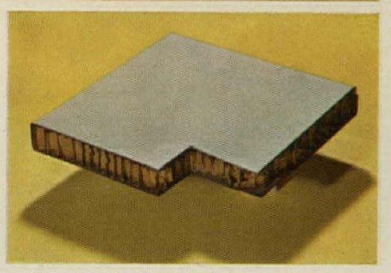

8

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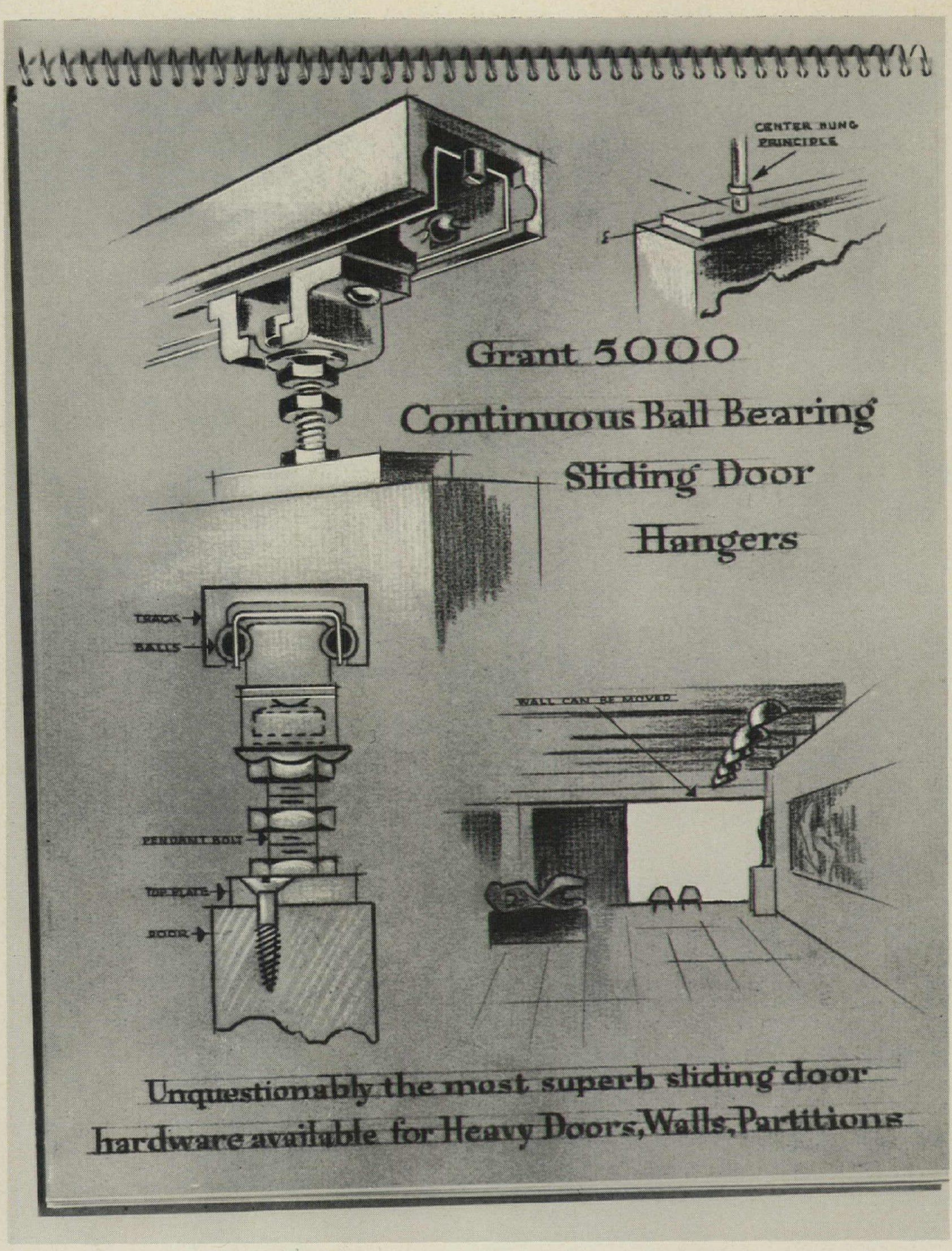
48



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□ Howard Johnson Motor Lodge, Joliet, Illinois. Architects: Boettcher & Simmon, Rockford, Illinois

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Continued from page 194

same. But a pattern emerges. Where a city has been successful in turning the tide of blight, there have been, almost always, a strong mayor and an aroused, determined group of business leaders working together.

Miss Lowe's heroes are persons who get things done. In New York, it is Robert Moses, "the superman who got big things built for the super city." While acknowledging also that "no single person contributed more through his works and his methods to New York City's problems," Miss Lowe catalogues Moses' works, detailing the style in which he carried them through — the arrogance, the autonomy, and the efficiency.

Occasionally, the behind-the-scenes story that emerges with the tales of personality reveals that popular opinion is misfocused. For example, in talking of New Haven, Miss Lowe gives a large dollop of the credit for New Haven's renewal, with its many miseries and delays, to Roger Stevens, the developer. The popular legend gives it to Mayor Richard Lee and his redevelopment administrator Edward Logue. Stevens hung onto a financially disastrous project just to see it through. "That New Haven's downtown redevelopment actually went through seems to be a commentary on Roger Stevens' unusual character," writes Miss Lowe. But she also points out that many of New Haven's problems came from a lack of business leadership. Some of the leadership there worked against the redevelopment; none worked for it.

Because it is approached through personalities, *Cities in a Race With Time* has much of the drama of a successful television series. But what emerges is a textbook of urban design, with none of the stigma or dryness that usually goes with textbooks. It can and should be read profitably by anyone who wants to know the story behind the statistics of the emerging cities.

NOTICES

New Addresses

ALBANO & OLENCKI, Architects, 320 S. Main St., Ann Arbor, Mich. 48108.

JOE BOEHNING, Architect and Engineer, 2005 Carlisle Blvd., N.E., Albuquerque, N.M. 87110.

MICHEL FORNALLAZ, Architect, 56, chemin de la Mousse, 1225 Chêne-Bourg, France.

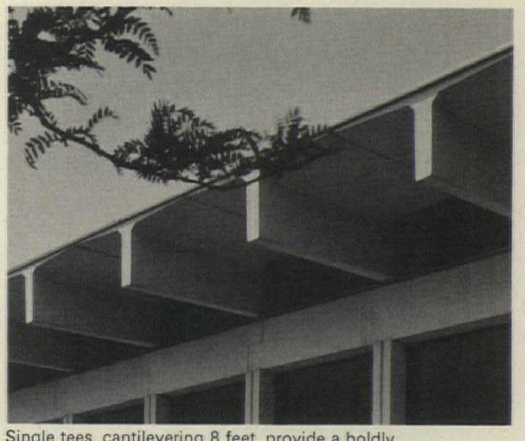
HARRY L. GRAY, Consulting Engineer, Room 216, Parker Square Bank Bldg., Wichita Falls, Tex. 76308.

Continued on page 202

Medical Merchandise Mart, Lincolnwood, Illinois
Owner: Moss Corporation · Architects: Fridstein & Fitch, Chicago · Structural Engineers: George A. Kennedy & Associates, Inc.
Prestressed Concrete Fabrication: J. W. Peters & Sons, Inc., Burlington, Wisc.

Prescription for economy: Concrete tees that combine mechanical and structural functions

At the Medical Merchandise Mart, a one-stop shopping center for doctors, prestressed single-tee units span the 96-ft. wide showroom and cantilever beyond. Only prestressed concrete could combine the long spans and striking appearance within the budget limitations of this project.



Single tees, cantilevering 8 feet, provide a boldly modern roofline.

Contributing to its economy was the ability of the tees to perform beyond their primary structural function. Their very shape reduced the cost of air distribution and made practical the use of inexpensive light fixtures.

Again, the undersides of the tees require no weather protection outside and only a coat of light-reflecting paint inside if desired.

The structural system is a combination of prestressed concrete tees and precast framing. The high white ceilings and freedom from columns give the feeling of an open-air display that enhances the building's function—the display of medical equipment.

The Medical Merchandise Mart is typical of structures being built today for new reasons and new functions; an excellent example of how total thinking and cooperation between owner and architect can create a structural answer that is both aesthetically pleasing and commercially functional.

For the full story on design and construction details of the Medical Merchandise Mart, write for free literature. (U.S. and Canada only)

PCA PORTLAND CEMENT ASSOCIATION
DEPT. A11-25, 33 WEST GRAND AVE., CHICAGO, ILLINOIS 60610

An organization of cement manufacturers to improve and extend the uses of portland cement and concrete

Continued from page 200

New Firms

ADLER ROSENTHAL, Architects, 200 N. Fairfax St., Alexandria, Va. 22314.

ARCHITECTURAL DESIGN ASSOCIATES, 1 Elm St., Keene, N.H.

ARSENICOS, UPTHEGROVE, Architects, 321 Northlake Blvd., North Palm Beach, Fla. 33403.

AVTECH, Airline and Industry Consultants, 7735 Old Georgetown Rd., Washington, D.C.

CARLTON, TAYLOR & CLARK, Architects, 206 E. Cary St., Richmond, Va. 23219.

DOBER, PADDOCK, UPTON & ASSOCIATES, Planning Consultants, 12 Arrow St., Harvard Square, Cambridge, Mass. 02138.

DORMAN/MUNSELLE ASSOCIATES, Architects and Planners, 113 N. San Vincente Blvd., Beverly Hills, Calif.

ROY A. EUKER, Architect, 132 W. 15 St., New York, N.Y.

REMER & WEBER, Architects and Planners, 26400 Southfield Rd., Lathrup Village, Mich. 48075.

SIEMS & NEPF, Architects, 65 Champlin Ave., East Islip, N.Y. 11730.

New Partners, Associates

CAUDILL, ROWLETT, SCOTT, Architects, Houston, Tex., have named DAVID C. BULLEN, RALPH C. CARROLL, JAMES FALICK, LOUIS E. FINLAY, DRAWLEY M. KING, JACK W. SMITH, WILLIAM T. STEELY, CHARLES B. THOMSEN, and MICHAEL H. TROWER associate partners in the firm.

CHAN/RADER & ASSOCIATES, Architects and Planning Consultants, San Francisco, Calif., announce the appointment of JAMES A. BABCOCK as associate in the firm.

FORREST COILE & ASSOCIATES, Architects, Newport News, Va., announce the election of L. DUANE DE BLASTO as associate.

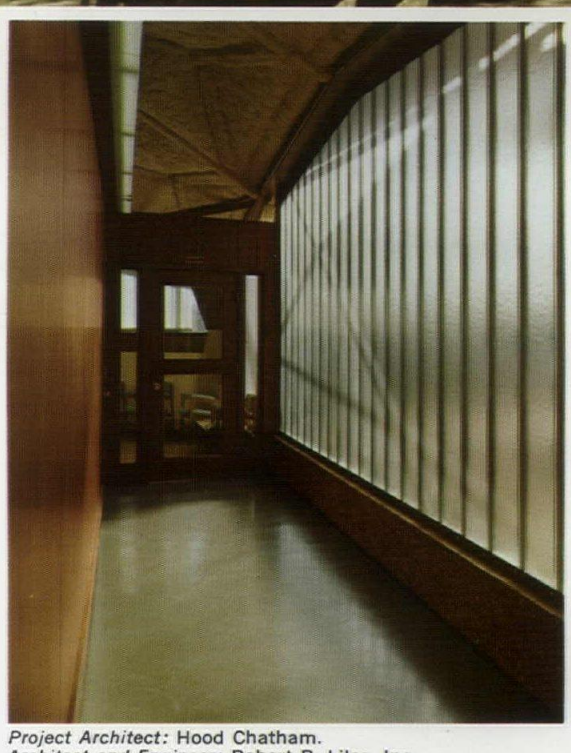
GARFINKEL, MARENBERG & ASSOCIATES, Consulting Structural Engineers, New York, N.Y., announce that LOUIS J. NACAMULL has become an associate in the firm.

HUNTER, HEIGES & ASSOCIATES, Architects and Engineers, Sharon, Pa., have appointed CHARLES E. ROGERS, WILLIAM J. DOUGLASS, JR., and SAM L. MILETTA as associates.

WILLIAM B. TABLER, Architect, announces the promotion of YOSHIRO HASHIMOTO to the position of associate.

WURSTER, BERNARDI & EMMONS, INC., Architects, San Francisco, Calif., have made ALLEN ROSENBERG and RALPH BUTTER-

Continued on page 212



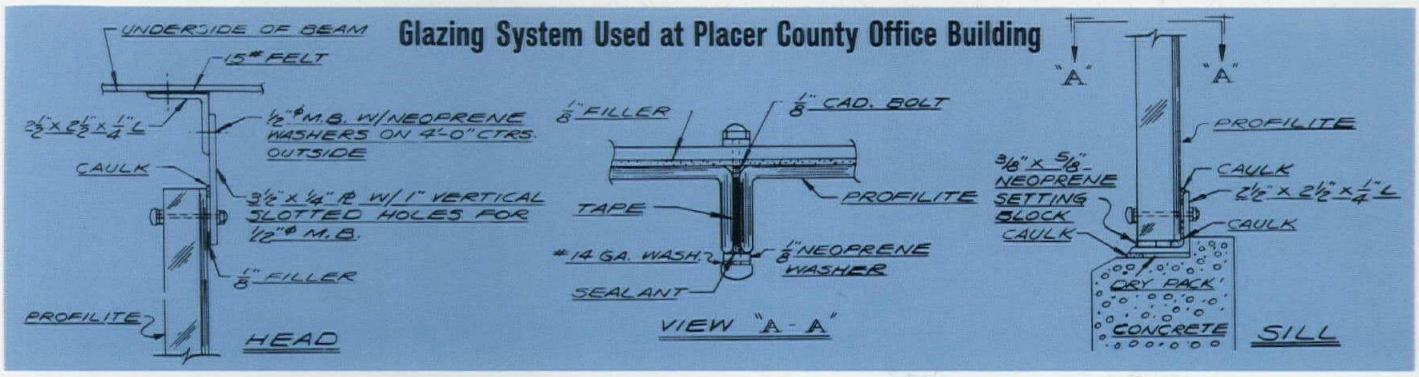
Project Architect: Hood Chatham.
Architect and Engineer: Robert B. Liles, Inc.
Glass Installation: Sacramento Metal & Glass Company.

Imaginative use of PROFILITE GLASS in geodesic dome complex

Five gold anodized aluminum geodesic domes comprise the new Placer County Administration Center, Auburn, Calif., in which daylighting walls of PROFILITE, translucent trough-shaped glass, contribute beauty, strength and utility (see partial installation at left).

Open, uncluttered appearance achieved by PROFILITE construction through the elimination of mullions was a primary factor in the selection of this versatile product. For with PROFILITE no limit has been imposed on the horizontal length of the glazing area that can be filled without the need for intermediate construction. PROFILITE is available in standard stock lengths of 8, 10 and 12 ft. Width: 11-13/16". Weight: 4.34 lbs. per linear foot. See your nearby Mississippi distributor.

Glazing System Used at Placer County Office Building



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Consulting Architects: Carroll Grisdale & Van Allen

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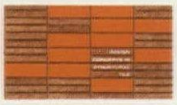
Style is back in tile



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Continued from page 202

FIELD first vice-presidents and members of the firm's board of directors.

Elections, Appointments

DESIGNS FOR BUSINESS, INC., Interior Designers, New York, N.Y., announce the appointment of RAYMOND R. HERTLER as a vice-president.

HARLEY, ELLINGTON, COWIN & STIRTON, INC., Architects and Engineers, Detroit, Mich., have elected MALCOLM R. STIRTON as president and JULIAN R. COWIN as chairman of the board of directors.

WILLIAM B. ITTNER, INC., Architects, St. Louis, Mo., have elected WILLIAM F. HECKER a vice-president in the firm.

ISD INCORPORATED, Interior Designers, Chicago, Ill., announce the addition of three new firm members: ANGIE MILLS, project manager; RICHARD MARSH, manager of tenant development; and E.V. MARKULA, senior designer.

LUSS/KAPLAN & ASSOCIATES, LTD., Interior Designers, New York, N.Y., have made known the appointment of MART GORDON as a vice-president and director of design.

JOHN CARL WARNECKE & ASSOCIATES, Architects, Planning Consultants, and Landscape Architects, New York, N.Y., announce the appointment of EUGENE KOHN as a vice-president of the firm and director of the New York office.

WILSEY & HAM, Architects, Engineers, and Planners, San Mateo, Calif., announce the association of EDUARDO BARANANO as vice-president for planning.

Name Changes

PARMELEE, UTZLER & WELSH, Pittsburgh, Pa.; formerly, CHRISTY, PARMELEE & STRICKLAND.

Correction

In NOTICES (SEPTEMBER 1967 P/A), we incorrectly spelled the name of a new firm. The announcement should have read: FREIDEN, KLEIMAN, KELLEHER, Architects, 342 Madison Ave., New York, N.Y. 10017.

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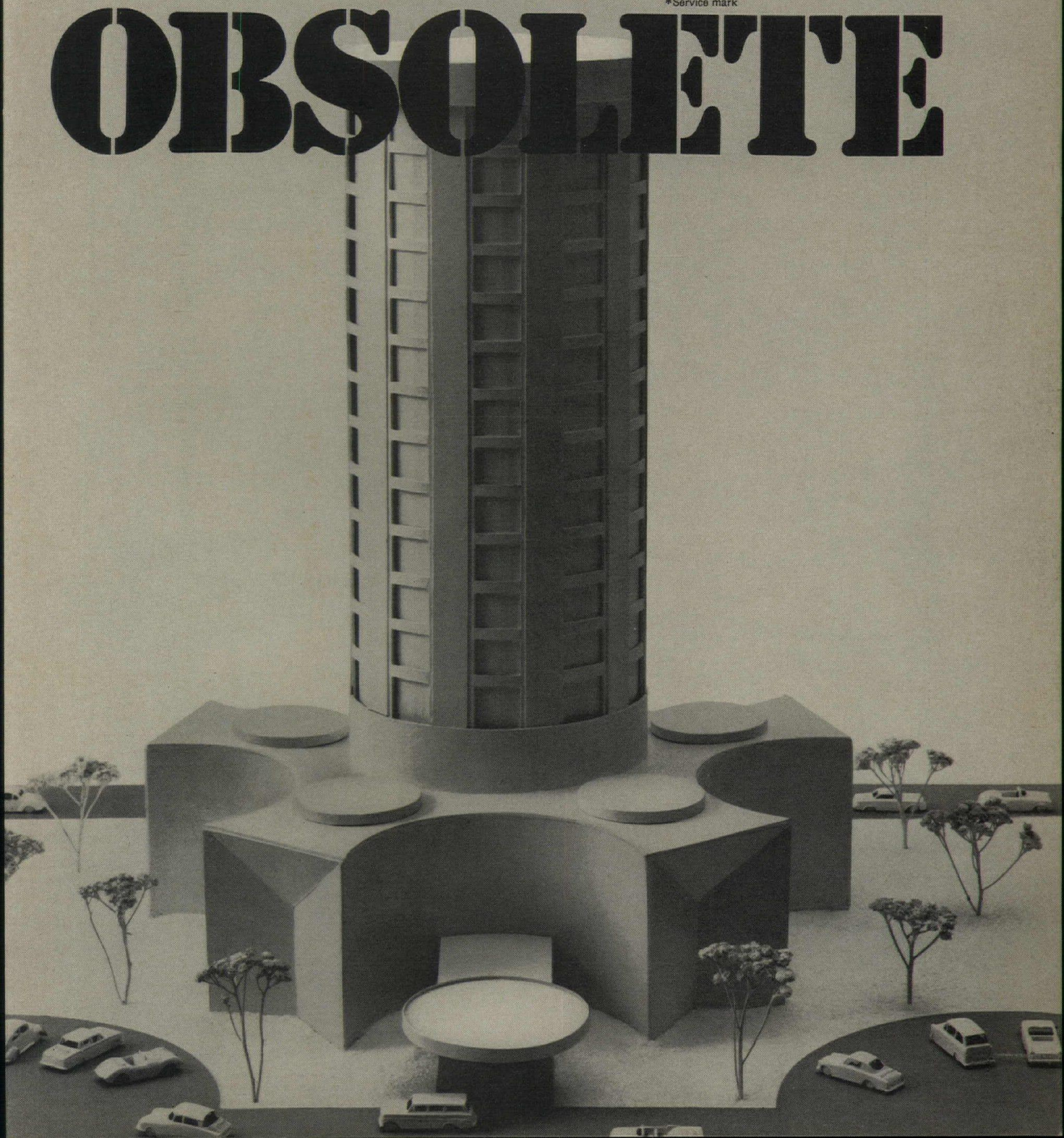

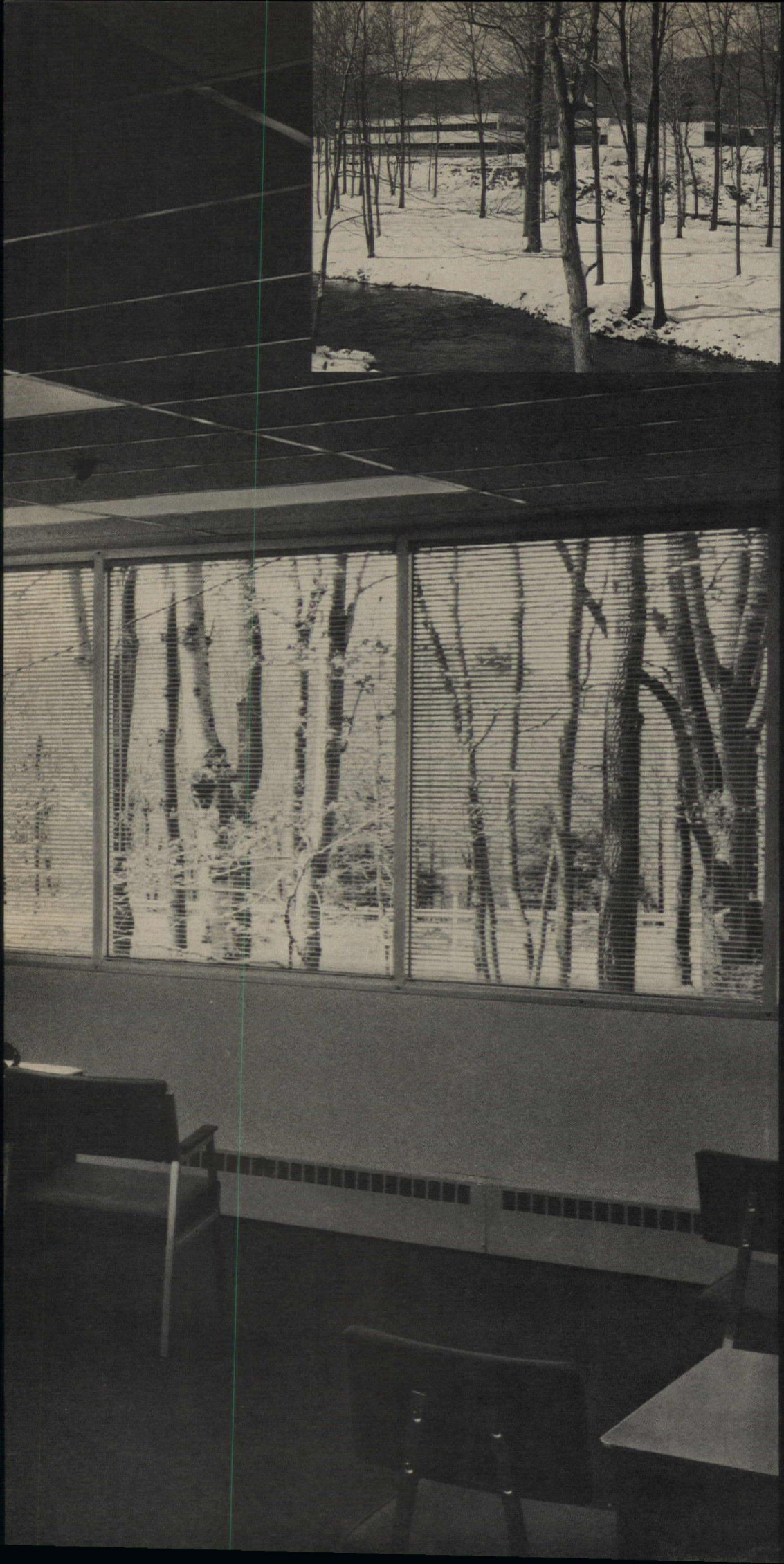

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FOR THE SCENERY.

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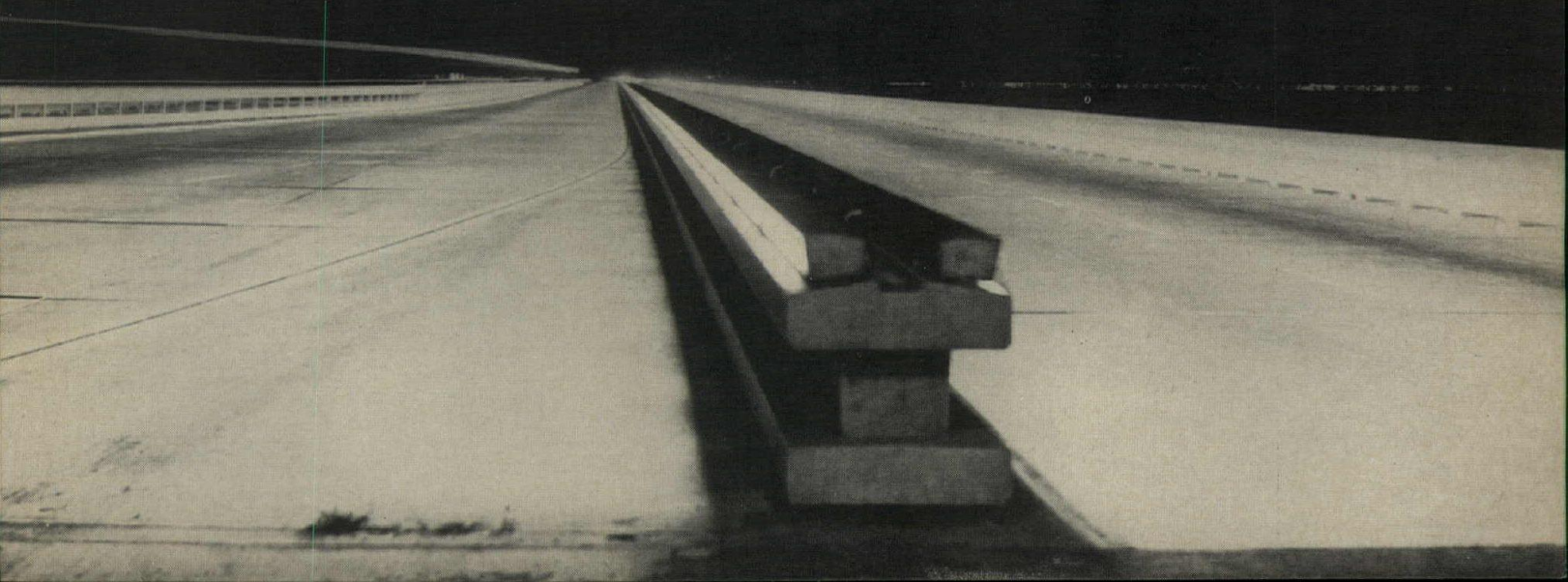

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