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GENERAL CONTRACTOR: William F. Harwood, Inc.,

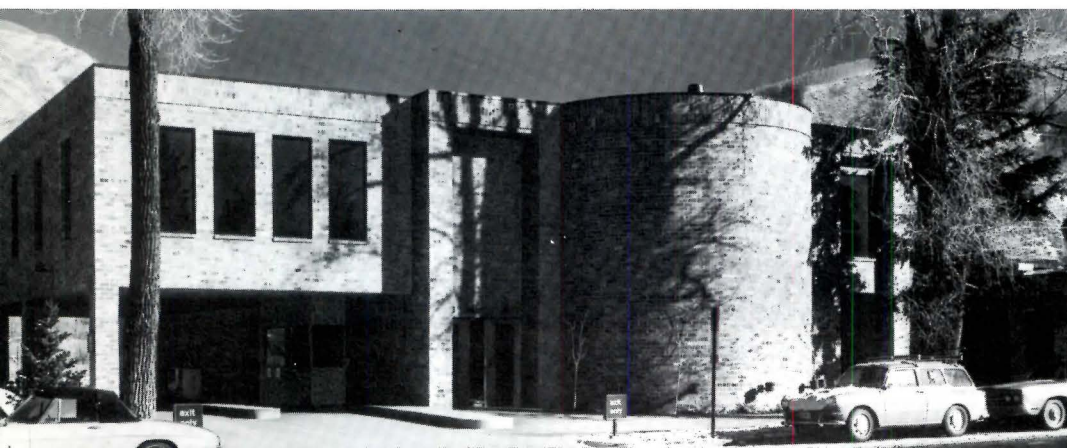
Grand Junction, Colorado

MECHANICAL/ELECTRICAL ENGINEER: Rice-Marek-Harral &

Associates, Denver, Colorado

CEILING SYSTEMS CONTRACTOR: Acoustics & Specialties, Inc.,
Denver, Colorado

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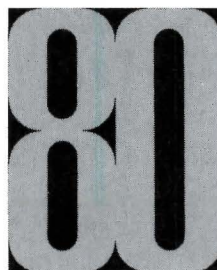
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TH
YEAR
OF
PUBLISHING
1892-1972

THE ARCHITECTURAL FORUM Vol 136 No 3, April issue

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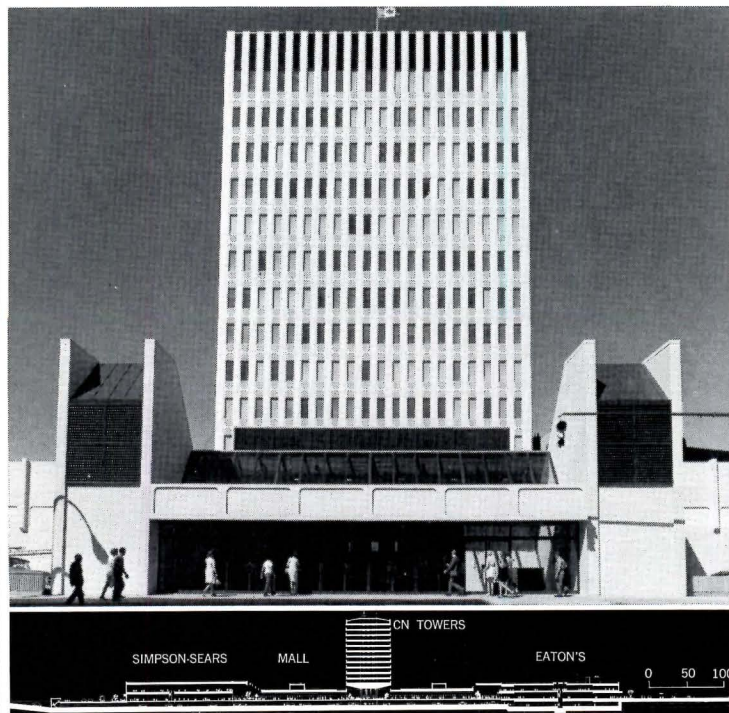
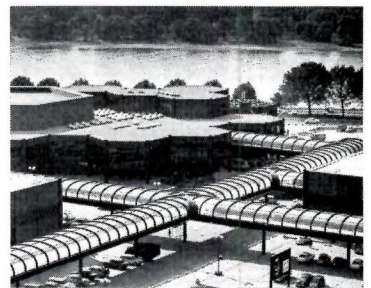
Simply stated: Plia by Giancarlo Piretti. Produced by Anonima Castelli of Italy. Distribution solely by Krueger/Green Bay, Wisconsin. Chromium plated steel and Cellidor® in colors of: blue, yellow, rose, smoke, clear. An auxiliary chair that folds, stacks and hangs.



PLASTIC PEOPLE TUBES

A great attraction of the Dusseldorf Fair is its system of plastic enclosed people movers designed by Heinz Wilke. Elevated and supported by a single row of weathering steel columns, the central portions of the tubes have moving sidewalks (not visible here because they terminate before the end of a

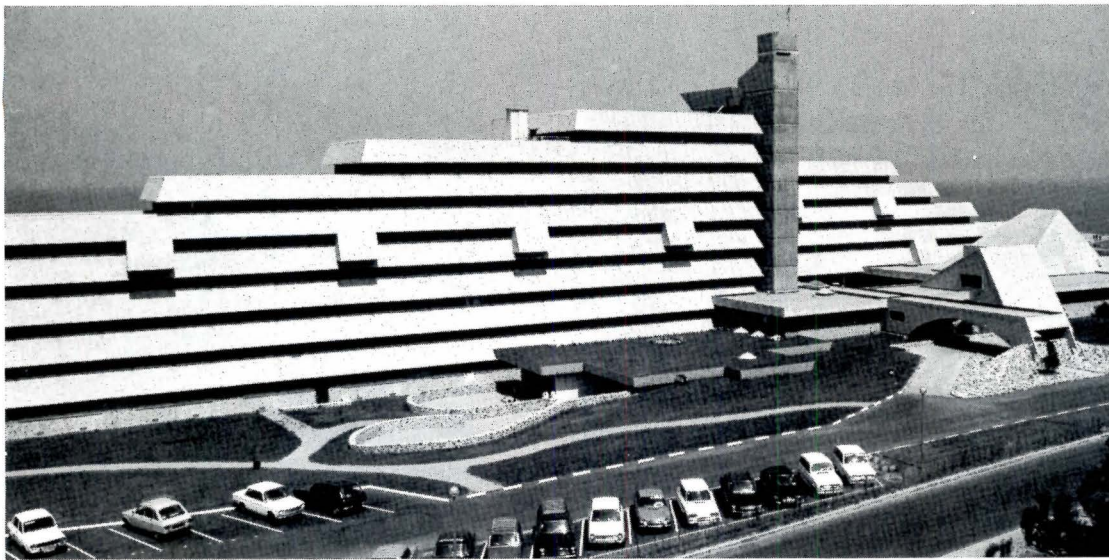
tube to allow for transfers). The people tubes provide the skeleton of the whole fair, with the different buildings plugged into it. The fair buildings themselves are designed primarily as large halls, which provide neutral open spaces for the development of a range of activities and exhibits. Even their colors tend to be neutral.



NEW URBAN FOCUS

Saskatoon's (Canada) new Midtown Plaza, designed by Gordon R. Arnott & Associates, provides a vertical landmark for the city and a focal point for its activities. The \$17-million, 24-acre complex includes an enclosed, shopping mall (small photo), combined with a 12-story reinforced concrete office building, two department stores, a theater, a large food store and underground and surface parking areas.





AWAY FROM IT ALL

Conceived as part of a new vacation community in France (in an area known as Chambre d'Amour), a new oceanfront hotel spreads its way along a beach (near Bayonne), isolated by cliffs on three sides. Designed by Aquitaine Architectes Associes, the complex has a facade of terra cotta to blend with the sand. Its horizontal form is varied so it will not resemble a wall and reflects the shape of the site. A vertical tower of rough concrete provides contrast and reflects the vertical movements within the hotel. The whole project was conceived as a vacation land for middle-income guests.

FOR RESIDENTS ONLY

A bright blue and green box, perched on a hillside overlooking the Tama River in the outskirts of Tokyo is full of hidden surprises. Designed as an economical home by architect M. Miyawaki & Associates, the box makes exceptional use of its very narrow, cramped site by bringing the outdoors in and keeping neighbors' eyes out. The front part of this house, containing the living room, is cantilevered out over the hill. A round conversation pit ex-

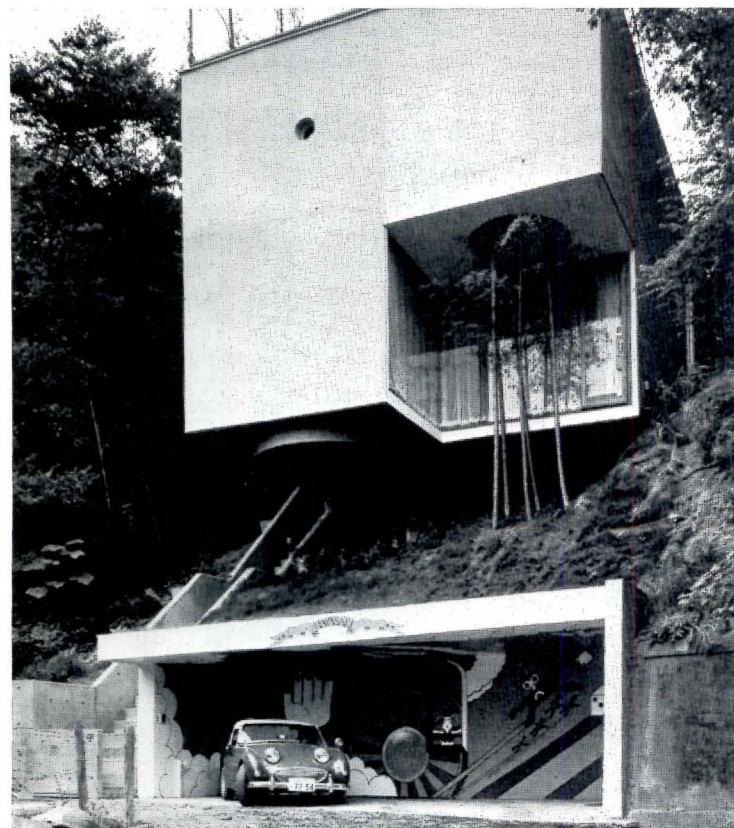
tends down through the floor and is visible from the road. It includes freely arranged living areas without any conventional partitions or column interruptions. The second floor is partly bedroom area and partly open terrace, which is hidden from the outside by the walls of house, but is open to the sky above and even has trees. A staircase with a skylight is the focal point of the interior and the rooms are arranged to open onto this space so that they all receive natural light.



IN THE GRAND TRADITION

For a mere \$50,000 investment in stadium bonds, a fan of the Dallas Cowboys can buy, and for another \$40,000 (or so) decorate, a box in the football team's new Texas Stadium. One oilman, Frederic Wagner, has already satisfied his urge with a box (top photo) reminiscent of the heydays of the Unsinkable Molly Brown. A western version of Louis XIV decor, the box has velvet couches, "French" murals, a bar and

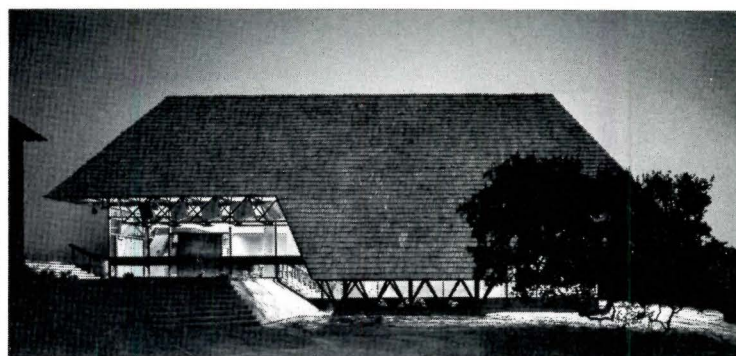
closed-circuit TV, all covered by a vaulted ceiling and huge crystal chandelier. But, lest Texas be accused of living only in its extravagant past, let it be said that the stadium itself is as modern as tomorrow. Designed by architects A. Warren Morey & Associates, it includes a heat-repelling roof that protects the spectators from the elements, while a 2½-acre opening over the field leaves the game in the open. The stadium covers 10 acres and seats 65,000 fans.



TELEPHONES ON HIGH

A new addition to the lower Manhattan skyline is the New York Telephone Co.'s new switching center, designed by John Carl Warnecke. Its 29 floors average 18 ft. high, so the building is equivalent to a typical 50-story structure in height. Vertical columns project from the facade and enclose

service, mechanical and air systems. Heat generated by the telephone equipment will be used to heat the building. The tower stands where several pre-cast iron facade buildings once stood and before it could build, the telephone company had to promise the city it would preserve the historic fronts for eventual reuse (Oct. '68 issue).



A WEB FOR STUDY

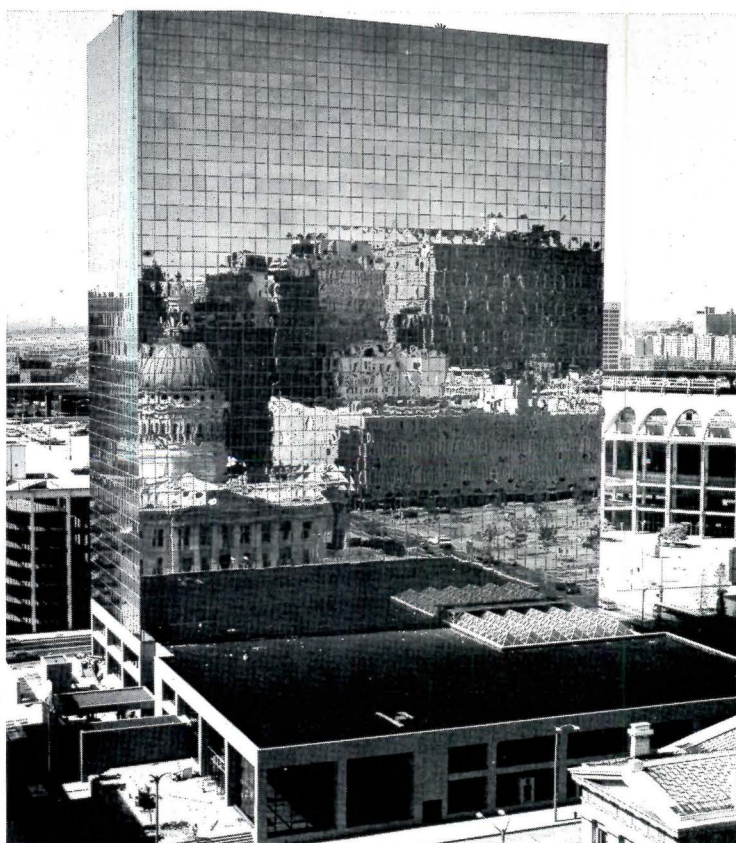
A space truss that provided flexibility in locating openings and column-free interior space is the key to the York School Library, in Monterey, Calif., designed by Smith Barker Hansen. The roof overhangs made it possible to open up the library to the ocean view. The library has a split-level first floor and a mezzanine.



REFLECTIONS OF URBAN LIFE

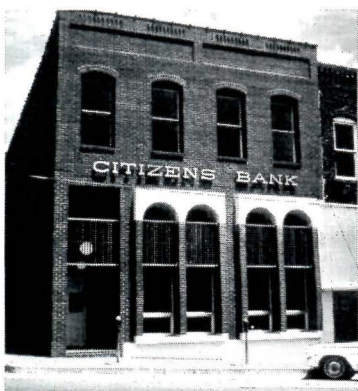
Another new building clad in silver reflective glass has appeared, confirming that such facades are indeed the fashion of the day. This one is an office for the Equitable Life Assurance Society of the U.S., in the central business district of St. Louis. Designed by Hell-

muth, Obata & Kassabaum, Inc., the complex contains a 21-story office tower and a low-rise commercial center with a total of about 480,000 sq. ft. The two structures are linked by a covered, but skylit, garden (see also p. 58). The facade was chosen to reflect the important structures and spaces around it.



BEFORE OR AFTER?

It has a certain kind of quality. Located in Marshall, Ark., The Citizens Bank has undergone two renovations. The first (lower photo) gave the old building a 1950s streamlined packaging. But the latest, which included gutting the entire building when the bank changed hands, is more traditional in outlook. The windows of the building were modified to accommodate new floor levels within. The facade was revised with classic precast concrete arches and bronze glass. The old vault was retained; the original door refinished; and the original brick walls restored to their natural color. The architects were Wittenberg, Delony & Davidson, of Little Rock.



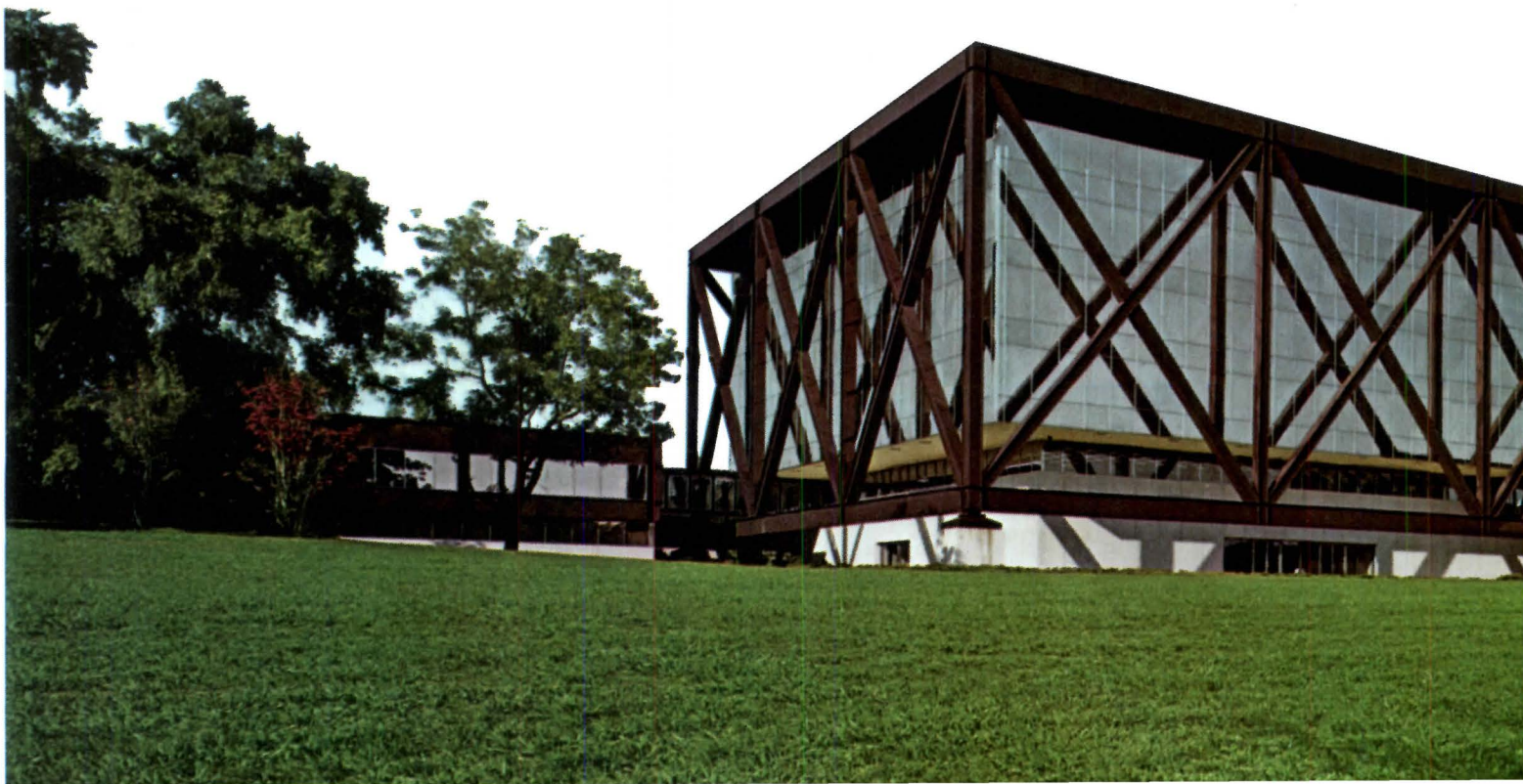
PHOTOGRAPHS: Page 5, Domus (top); Baumeister (center). Page 6, M.S. Crettol (top); Japan Architect (lower left); UPI (interiors right); Tom Dillard (aerial). Page 7, Todd A. Watts (top left); Gerald Ratto (top right).

A Bold Corporate Look.

Exposed steel, mirror glass and a park-like setting are the distinctive and highly visible elements of Burlington Industries' bold new Corporate Offices at Greensboro, North Carolina.

The requirements for a structure which would project the owner's corporate identity and provide maximum flexibility were handsomely met by steel—used both structurally and aesthetically.

The complex is comprised of two distinct structural systems. The dominant, six-story tower of exposed painted steel trusses and reflective glass, houses executive and staff functions. The tower is 152' square with a welded, steel-framed central core housing its services. The top four floors are suspended by hangers from the roof grid while the lower two floors are supported by columns on a caisson foundation. Surrounding the tower on



Defined in Steel



three sides and connected to it by three pedestrian bridges is a bolted, steel-framed, three-story structure which houses corporate, departmental and divisional offices and auxiliary functions.

Exposed steel in the trusses and in the 5/16-inch plate fascia around the low-rise structure

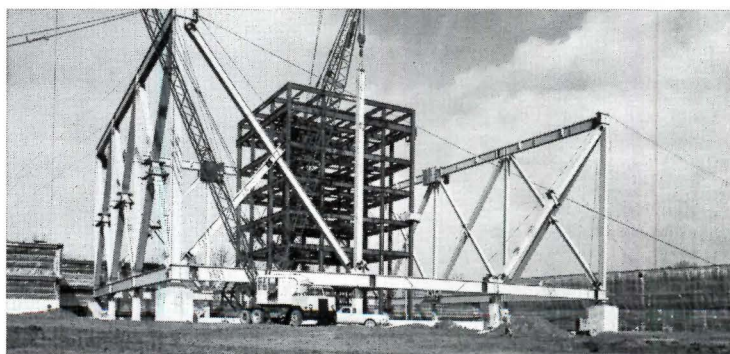
were painted a dark earthen hue.

Studies to determine the materials to be used indicated that steel would be the most economical system to satisfy both functional needs and the strict timetable that was set for completion of the structure.

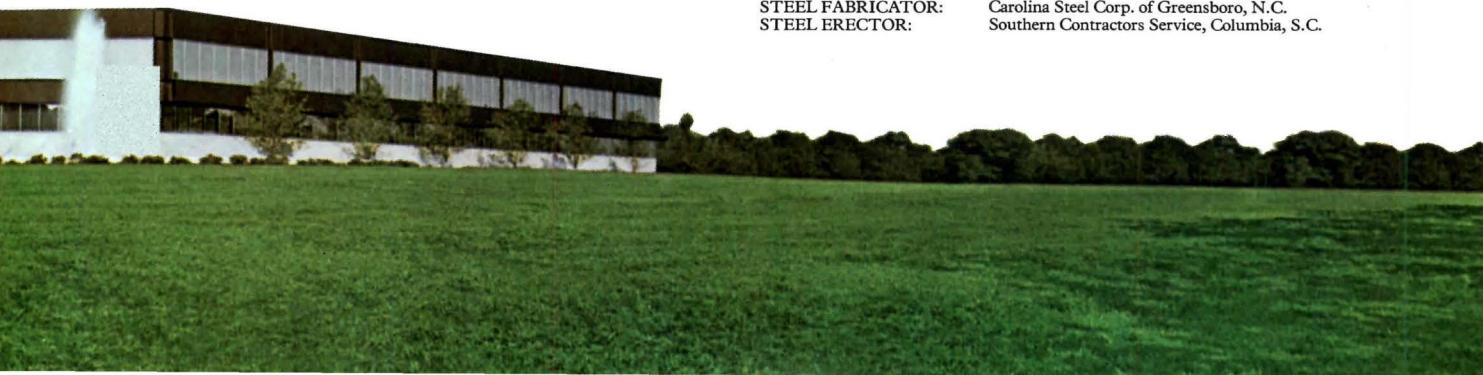
For more detailed information, we'll be happy to send you a copy of our new Structural Report titled Burlington Industries Corporate Offices (ADUSS 27-5084-01). Contact a USS Construction Marketing Representative through your nearest USS Sales Office or write: U. S. Steel, 600 Grant St. (USS 7450), Pittsburgh, Pa. 15230.



United States Steel



OWNER: Burlington Industries, Inc.
ARCHITECT/ENGINEER: Odell Associates Inc., Charlotte, N.C.
GENERAL CONTRACTOR: North Carolina Division, Daniel International Corp., Greensboro, N.C.
STEEL FABRICATOR: Carolina Steel Corp. of Greensboro, N.C.
STEEL ERECTOR: Southern Contractors Service, Columbia, S.C.



BOOKS

SYMBOL SOURCEBOOK. An Authoritative Guide to International Graphic Symbols. By Henry Dreyfuss. McGraw-Hill Book Company, New York, N.Y. 8½ x 11. \$28.50. Illustrated.

Henry Dreyfuss has designed Bell telephones and John Deere tractors, alarm clocks and vacuum cleaners, the ocean liner *Independence* and the old New York Central's "20th Century Limited." More than anyone, he has given decent design a leg up by working it into the warp and woof of daily life. The *Henry Dreyfuss Symbol Sourcebook*, released in February, is a fountainhead of insight into the silent language through which all men, all cultures, all nationalities can communicate and by which their environments could become at once more simple, more intelligible, and more humane.



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Against Lightning



Fertility



Sunshine



Rain



Wisdom



Good Luck



Against Demons



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OR



VISITORS



OUT-PATIENT DEPARTMENT



MATERNITY



NURSERY



THE LOVERS



THE CHARIOT



JUSTICE



THE HERMIT



WHEEL of FORTUNE



STRENGTH



THE MOON



THE SUN



THE JUDGEMENT



ENGINEERING MATERIALS



MATERIAL REMOVAL



MATERIAL FORMING



CASTING, MOLDING and METALLURGY



CASTING



ROTATIONAL CASTING



METALWORKING



TEXTILE PROCESSING



NO USE GOING THIS DIRECTION



THIS WAY



HIT THE ROAD! QUICK!

OR



GOOD ROAD to FOLLOW



ROAD SPOILED, full of other hobos



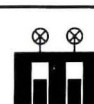
DANGEROUS DRINKING WATER



Q. K. ALL RIGHT



GOOD PLACE for a HANDOUT



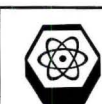
SLUICE



WATER POWER



STEAM POWER



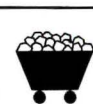
ATOMIC POWER



ELECTRIC TRANSMISSION



ELECTRIC APPLIANCES



COAL MINING



SWAMP PLANT



WATER PLANT



PLANT with WOODY STEM



SHRUB



TREE



PLANT USEFUL to WILDLIFE



CLONE



MERGED IN



DESCRIBED WELL in this SOURCE



SCATTERED CLOUDS, 0.5



BROKEN CLOUDS, 0.6 - 0.9



BROKEN CLOUDS, 0.6



BROKEN CLOUDS, 0.7 or 0.8



BROKEN CLOUDS, 0.9



OVERCAST



CUMULUS, little vertical development



CUMULUS and STRATOCUMULUS



ATOMIC s ORBITAL



ATOMIC p ORBITAL



ATOMIC d ORBITAL



TWO ATOMIC ORBITALS forming SINGLE MOLECULAR sigma ORBITAL



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MEN FIGHT



MAN DIES



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BUCKMINSTER FULLER ISSUE

FORUM: I suspect Mr. Fuller is a result of a Herbert Hoover philosophy of two cars in every garage. I trust that somewhere in this world a reservation will be kept for those of us who disagree, where a river will be left to flow inefficiently to the sea unshorn of its potential energy, where unmined mountains will be left to produce trees and flowers.

I have an intuition that electric can openers and 120 mph automobiles will soon become curious antiques planted with geraniums and set in gardens to be viewed with humor by future generations. If I am wrong, I trust Bucky's disciples will give us a garden somewhere which I, for one, promise never to leave.

Bucky's philosophy seems so rooted in the concerns of the Third World with its need to establish a viable life for its citizens, that it is frightening when applied to the consumerism of the United States. It seems to be a green light to the Babbits of industry who make such a profound impression on my daily life. To tell GM they can make as many cars as they can sell for the rest of eternity is a bone-chilling thought to me.

The hope that Bucky Fuller offers to the 56% of humanity who have not yet tasted the fruits of the earth is a promise to be kept. I think we should strive to fulfill that promise.

Bucky, I hope you live forever, to be sure your promise is kept.

TOM E. MORRIS
Denver, Colo.

FORUM: You are to be warmly congratulated for a most welcome birthday issue on Fuller.

The presentation is superb—or super, if you will. Now, to

see the effects of your efforts, will someone please do something about implementing the uniqueness of Fuller's admonitions to the world? For, as usual, we still perpetuate the madness of over-extended defoliation, degradation and devastation of our ever-decreasing earth.

LEONARD SCHEER, AIA
Levittown, New York

FORUM: I've read most of your Bucky Fuller pieces twice, for a lot of the matter is far over my humble head.

The telling thing in all the articles, to me, that you have caught Bucky not so much as the cleverest brain existing today but also as a person who tolerates freely lesser intellects; warms, nourishes and inspires them by his natural, scintillating presence, his rushing river of enthusiastic logic. You have done a magnificent job on an extraordinary human being.

New York, N.Y. RICHARD SALMON

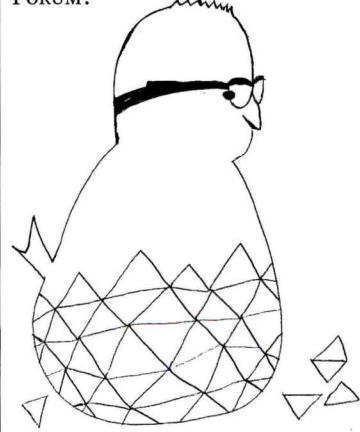
FORUM: re: Fuller issue and your article. Seldom do we have the pleasure of seeing an important subject covered with such depth and sensitivity. Congratulations.

New York, N.Y. FRED L. FOOTE

FORUM: Where did Bucky Fuller get those hairpins with which to make his Vector Equilibrium, and why was he carrying them around with him?

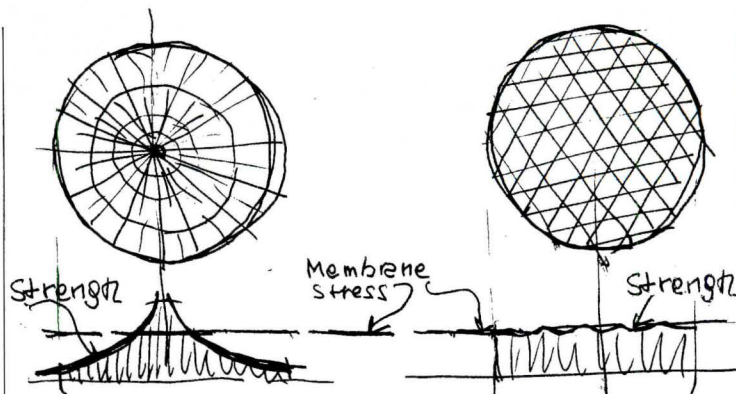
CONSTANCE STICKLER
New York, N.Y.

FORUM:



New York, N.Y. BO THORNE NILES

FORUM: Please accept my compliments for the excellent issue of FORUM dedicated to Bucky Fuller. To appreciate his work, there is an obligation to understand it and learn from it. In



this spirit may I add a clarifying footnote to Don Richter's article on Geodesic Domes? These domes are strong and light, and as in so many great ideas, the underlying principles are simple.

The membrane stresses in shallow domes (such as are discussed in the article) are nearly of uniform intensity over the surface. In classical framed domes, based on a radial symmetry of elements, the density of material (and, therefore, the strength per sq./ft. of surface) is not uniform, but is maximum at the center and diminishes hyperbolically towards the outer ring; consequently, it does not follow the distribution of stresses. In the geodesic dome the material is uniformly distributed; strength follows stress distribution. (See diagram above)

It is possible to produce a uniform density with radial symmetry, by using smaller cross-sections near the center and larger ones in the region of the outer ring, and also by correspondingly varying the spacing of the members. If this is done, the radially-symmetric dome becomes as light as the geodesic dome, but the structure becomes complex and may be costly to fabricate and erect. A geometry, which achieves uniform density with members of nearly constant size, requires the sub-division of a spherical surface by a quasi-regular network. This is not a simple task, but the geodesic dome accomplishes it with great elegance. It required someone of Bucky Fuller's creativity to synthesize these facts into a practical and beautiful solution.

New York, N.Y. PAUL WEIDLINGER

FORUM: "The World of Buckminster Fuller" is a delight and as invaluable to my students as to me.

I have known Bucky personal-

ly for almost 20 years. For the past two years now I have been teaching a course called World Game Philosophy. This has caused me to think and rethink of everything I have ever heard Bucky say (that I can remember and that is a surprising amount) as well as everything he writes that I get to read. The result is an intermittent series of spurts of intuition and looking at universe as at words in light of new meanings. It has even brought me to the point that I no longer prepare for discussions with students. They and I simply continue where we left off: There is virtually no student who is not both participating and benefitting. In other random seminars I might be invited to give, the new *Weltanschauung* quietly makes its contribution and transmits its inherent excitement to the participants.

With many thanks again for this super issue.

Montreal, Quebec H. E. STRUB

SWEET VICTORY AT AKRON

FORUM: Thanks for the UPS & DOWNS item about my billboard battle (Jan./Feb. '72). The Naegle Company recently withdrew their \$280,000 suit.

By the way, I am not an architect, but an industrial designer.

Bath, O. F. Eugene Smith, FIDSA
Sorry, our mistake.—ED.

LESS IS A BORE

FORUM: In reply to letters in your January/February 1972 issue: Messrs. Mullen and Damaz are entitled to their, I believe, mistaken opinions. What neither they nor Mr. Santi are entitled to do is leave me out of their criticism. My name is on the ascription. What the hell do they think I did in connection with these articles? Type them?

DENISE SCOTT BROWN
Philadelphia, Pa.

(continued on page 17)

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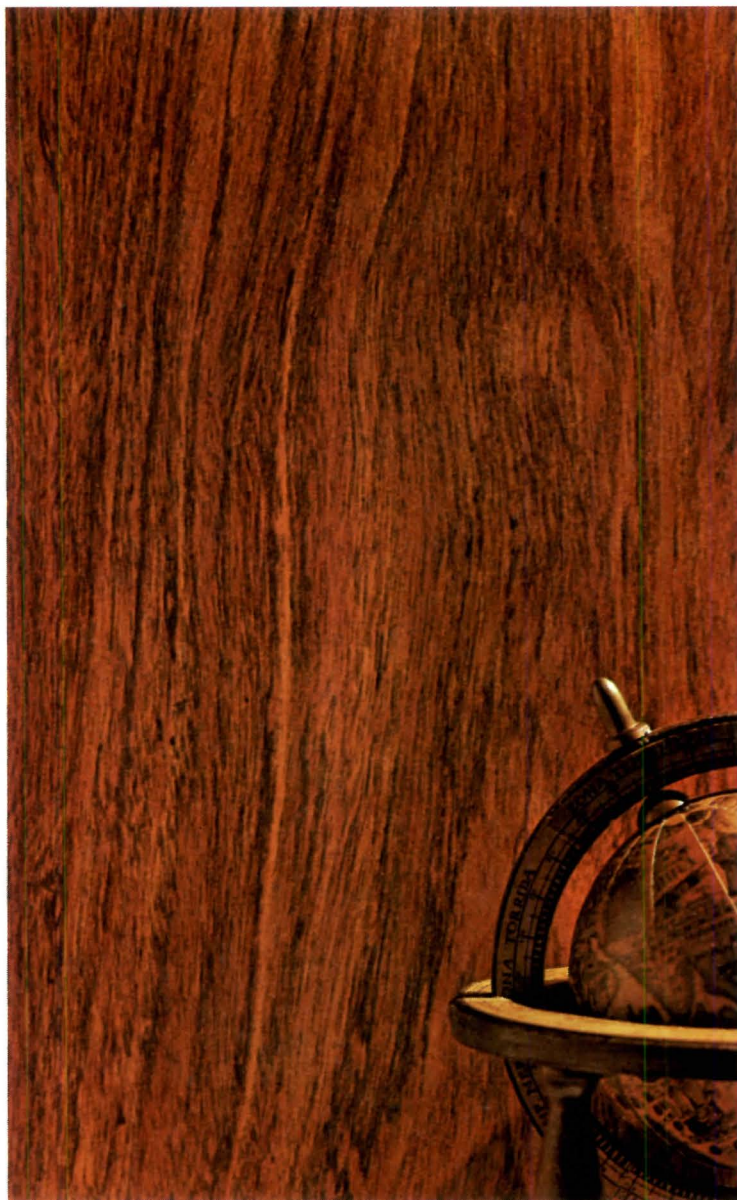
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CYANAMID



laminated plastic

(continued from page 14)

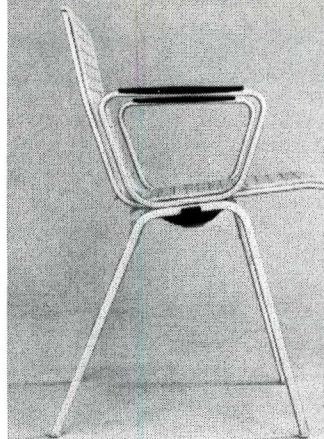
ODE TO ARCOSANTI

Somewhere out west, near Cordes Junction,
a city has begun, not yet in function.
A man called Soleri, has this image,
and plans to build it, from his visage.
Ideas draw people, and good ones more,
so this is a tale, of people by the score.
They came from a compass, all over the globe,
seeking a new one, inside the old.
Teachers, students and drop outs too,
honeymooners and pros, to mention a few.
Each of the backgrounds could write a book,
yet each was open, ready to look.
Once together we journeyed forth,
to inhabit our home up in the north.
Nothing fancy provides a home,
some concrete cubes and canvas dome.
When it rained it poured, and leaked as well,
and when the sun was up it was hot as hell.
a couple of weeks to straighten you out,
So any weather was an easy bout.
When food came round so did the bums,
hundreds of flies who ate more than crumbs.
Scorpions, rattlers and even a skunk,
often liked to share your bunk.
Welcome they're not, but tough to explain,
to leave at once from whence they came.
The local bar would quench the thirst,
and dizzy you were right from the first.
The West was met here all the time,
even if the drink was less than wine.
Our neighbors were friendly, but sometimes unsure,
just what our gardener would do with manure.
Surprised they were with weather sporadic,
to find our bountiful garden, organic.
Paolo would come and we'd sit and rap,
and try to understand Arcology sap.
Although confused we all agreed,
before us was a brand new seed.
Others coming to look around,
were handed a pick and invited to pound.
For work's what it is all about,
if you don't believe me, you better stay out.
You're up with the sun at 5 each morn,
by the end of the day you're truly worn.
You tramp up a road 1/4 mile long
singing Arco blues, a fine little song.
Once on top it's all by hand,
busting your back to clear the land.
Newcomers know how it is to yield,
and find themselves deep in the leech field.
Rock by rock is moved down there,
this is no place for those who are fair.
A 20 ton crane to overwhelm,
with artist Natalie, hard at the helm.
Lifting and moving whatever was needed,
whenever she spoke, the command was heeded.
The walls go up, at first quite slow,
but soon at last, a vault will show.
It will not show the mixing of concrete
by shovels, hands and even our feet.
Of bags of cement upon a shoulder,
or time it took to move a boulder.
Of bangs and bruises silently healing
or patience and jokes which were always revealing.
What it will show is some people cared,
to build a city, not yet dared.

Arcosanti, Ariz.

KEVIN SCHOPFER
Student Volunteer

The indestructibles.



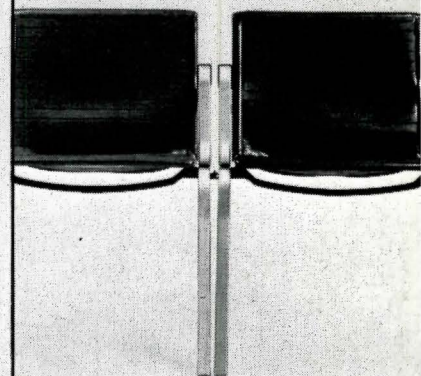
Interstax can write...



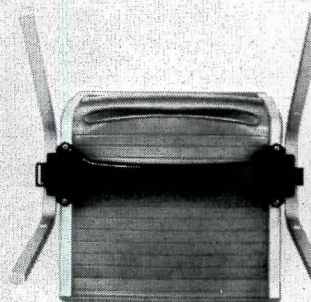
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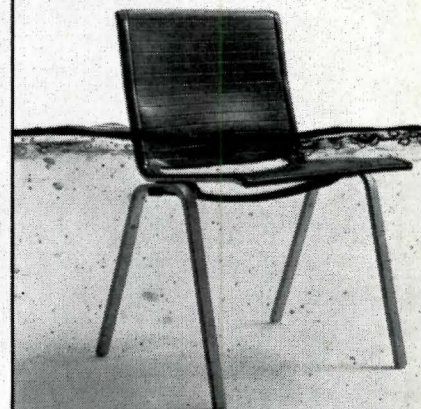
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PREVIEW

TRANSFUSION AT TRENTON

Like many cities trying to stay alive after five, Trenton, New Jersey, was ready to maul its downtown to death with another commercial strip act. One more case of renewal renewing the wrong things by locking new development into a single kind of use.

Last year, Trenton (half suspecting a mall is not all there is) asked economists whether a *mixed* use development might not be more profitable. They concluded (as architects have been telling cities for years) that downtowns need diversity.

Sometimes it is a good thing that economists get a hearing before architects do. For the result, recently announced, is Trent Place designed by the architectural and planning firm of Geddes Brecher Qualls Cunningham.

A true town center, Trent will mix housing, offices, public spaces, shops, retail stores and parking. Walkways will lace the 6.5-acre site, linking it to the nearby shops on State Street, a complex of state offices, and residential areas of Mercer-Jackson and Kingsbury.

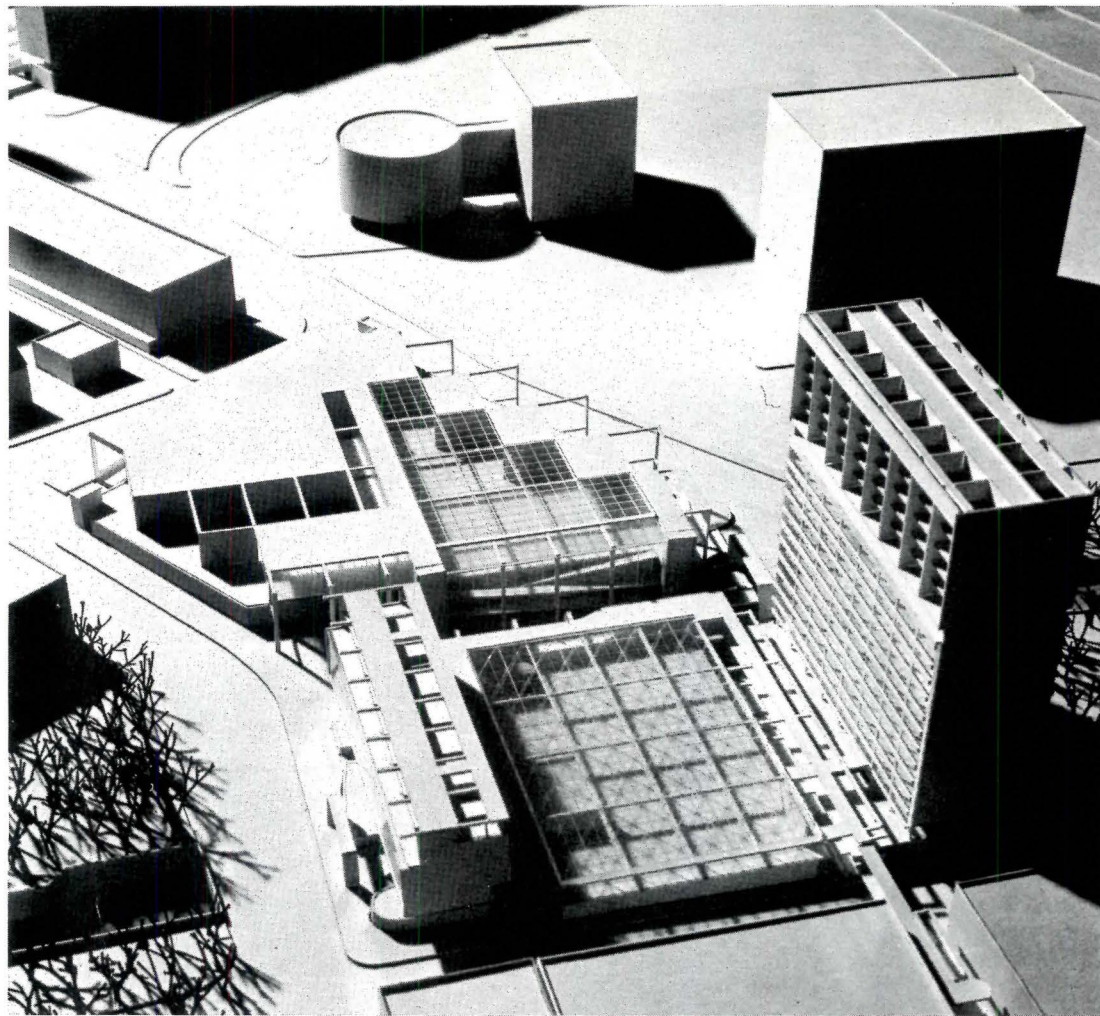
A few steps up from Broad Street, at the base of two multi-use buildings, a covered public plaza will provide visual and functional focus for existing downtown action.

Trent Place will be developed in four phases, enabling the city and developers to build, over a period of years, their varied programs disciplined by a general urban design framework.

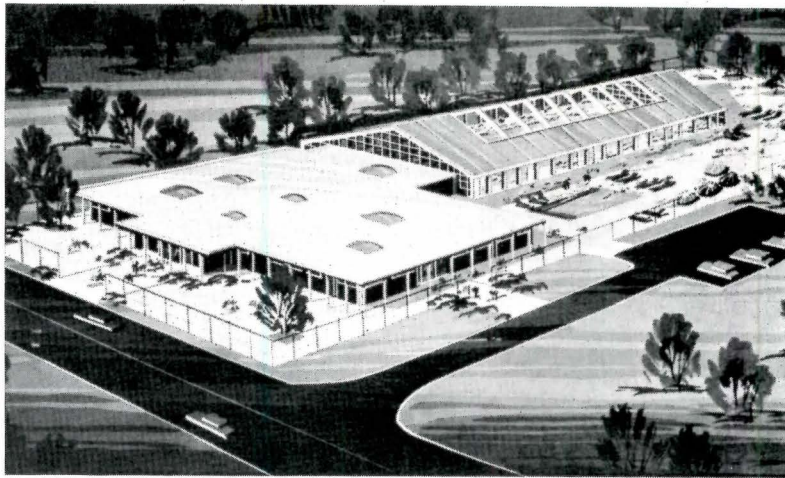
Trent is a leg up from the esthetically crippled renewal schemes which regularly wreak from your Sunday real estate page. From the standpoint of both economics and culture, it has Trenton's core (and future) nicely covered.

Site Plan

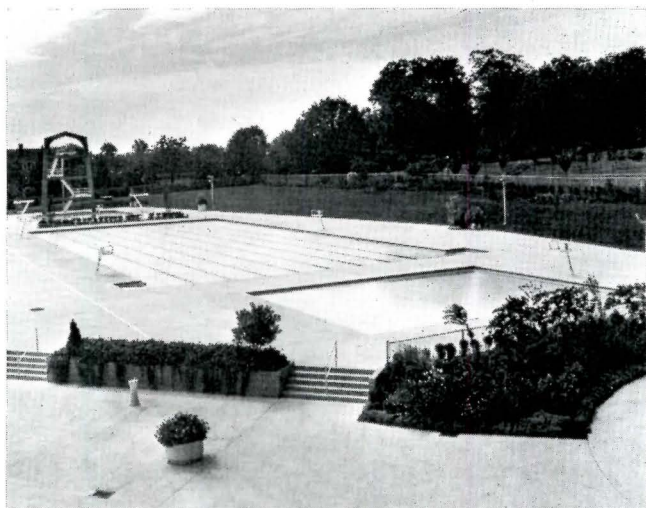
- a Commercial Offices, Apartments, and Convenience Retail
- b The Pedestrian Way
- c Public Plaza and Commercial Activities
- d Professional Offices and Apartments
- e Public Passage
- f Parking Garage and Exhibition Space
- g Proposed Park



The Paddock Swimming Pool System



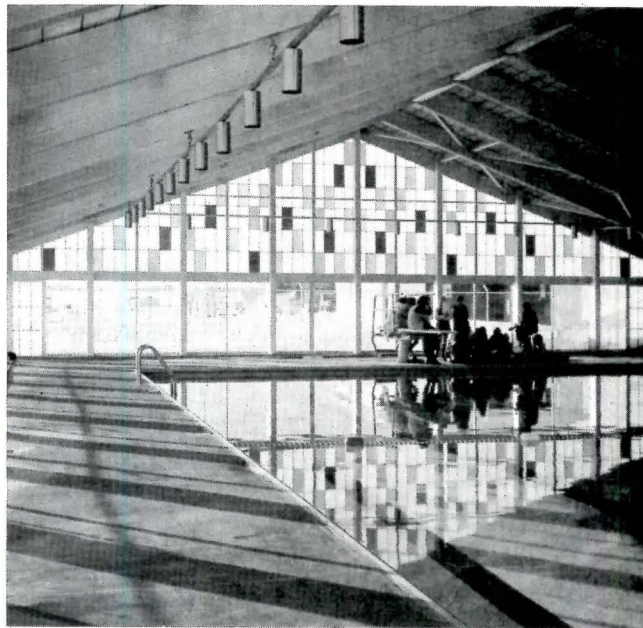
The Paddock Pipeless Pool in a Paddock Skywall Natatorium . . . the perfect combination for indoor/outdoor swimming . . . year round.



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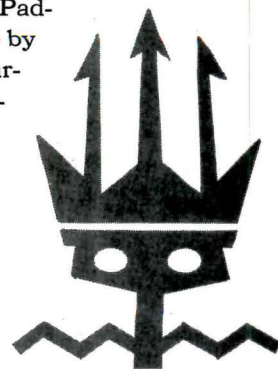
And, it is enclosed in Paddock's Skywall Natatorium, the indoor/outdoor enclosure, in which nearly 50% of the roof and two thirds of the side wall may be open or closed as weather dictates.

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FORUM

We have always tried to be as much of a forum of ideas as a forum of buildings; and since ideas in architecture and urban design are expressed in words as often as in steel, concrete, straw, or PVC, we have been quite unashamedly proud of the attention we have paid to books (including non-books), and of the reviews and the reviewers we have been able to attract to our pages.

As one who has written both books and book reviews, I must confess that our reviews must be among the most unusual to have seen the light of day in some decades: for example, in October 1966, when a book on Philip Johnson's work was published in living color, I felt that the only reviewer really qualified to review it was Philip Johnson himself. He agreed with me, and we published his auto-defrocking, verbatim. In July 1966, when a significant book on Adolf Loos crossed our desks, we felt that the late Richard Neutra, who had basked in Loos' light as a youth in Vienna, simply had to review it—and he did. When Marcel Franciscano came out with his book on Walter Gropius and the creation of the Bauhaus, we asked Walter Gropius' widow, Ise Gropius, to review the book for us in our special January/February '72 issue—and her extraordinary review, which occupied some three or four pages, will be as fascinating to future historians as Richard Neutra's comments on Loos.

There have been a great many other book reviews that make me feel fairly proud: When Buffalo's Michael Brill reviewed Dr. Renato Severino's book, "Equipotential Space: Freedom in Architecture," (June '71 issue), he slammed into you and me with this first sentence: "I really hate this book!" Nobody—no reviewer, except, perhaps, that anonymous London Times Literary Supplement man (or woman) who once wrote that "the covers of this book are too far apart"—has ever, to the best of my knowledge, declared himself (or herself) so unequivocally.

Next month, we will be publishing a review of "Inside the Third Reich," the book that Architect Albert Speer wrote after he was released from Spandau Prison half a dozen years ago. Speer was, of course, Hitler's pet architect and his most efficient administrator. The book will be reviewed by Willo von Moltke, Director of Harvard's Urban Design Program and, incidentally, a man who could, perhaps, have become Hitler's architect for the asking. Instead, he left his native land in protest; and those of his relatives who stayed behind to fight the regime suffered the terrible consequences.—PETER BLAKE.

MANKIND

THE CLUB OF ROME

On March 6, 1972, a bomb dropped on the world in the form of a book. It is called "The Limits to Growth," and was already out of print on the day it was published. It has received

high praise and outraged scorn. It is the ominous report of the Club of Rome, published under the auspices of Potomac Assocs.

In April 1968 Dr. Aurelio Peccei, an Italian industrial manager and economist, called a meeting in Rome at the Accademia dei Lincei of 30 people from ten countries: scientists,

educators, economists, humanists, industrialists, etc., to discuss "the present and future predicament of man." Calling themselves the Club of Rome, this group decided on an ambitious undertaking—the Project on the Predicament of Mankind. The intent of the project was to examine "poverty in the midst of plenty; degradation of the environment; loss of faith in institutions; uncontrolled urban spread; insecurity of employment; alienation of youth; rejection of traditional values; and inflation and other monetary and economic disruptions." This study became Phase One and, with financing from the Volkswagen Foundation, began its work at MIT, under the direction of Professor Dennis Meadows.

In a vastly oversimplified word, the MIT report calls for a screaming halt to all growth—population, economic, etc., declaring that our planet is finite and that its resources are rapidly becoming exhausted. MIT gives us 100 years.

Scientists are listening and many are skeptical. Some call the report unscientific (the report did not include the data used as input—that is to be published later). Others protest that the ability of humans to adapt to changes in the environment was not considered. Still others wonder if the world resource base would in fact become exhausted exponentially, as the report warns. Resources for the Future, Inc., a nonprofit research group studying resources and environmental problems, distrusts MIT's computers, and has summed up the report this way: "An interesting framework upon which to hang some types of resources and environmental research? We think so. A helpful tool for strengthening . . . our understanding of man's predicament . . . We think not."

UNITED NATIONS

Three years ago, about the same time the Club of Rome was born, Sweden proposed to the United Nations a Conference on the Human Environment. Now, at last, after monumental amounts of advance work by scientists and ecologists from all over the globe, 130 nations will meet in Stockholm June 5-16. This March, UN Secretary-General Waldheim introduced a proposal for the creation of a new UN

agency (to which the United States has pledged \$100 million over a five-year period) which would monitor and control pollution although no mention was made of how the UN might enforce any ruling, or cope with a misdemeanor. The Final Preparatory Meeting was held March 6-10 at which an 800-page digest (?) of advance material was distributed to participating nations. Out of this meeting came a "global declaration of principles" and a "global monitoring network." It is interesting



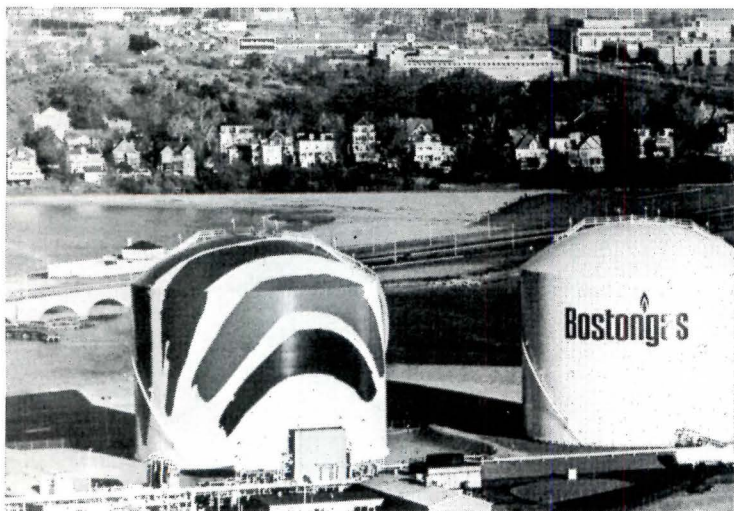
to note that "population" is not on the agenda; this being considered a sensitive subject by the underdeveloped nations who are urged to limit themselves by the have nations. There is no doubt that the MIT report discussed above will have an impact on this conference, and one can expect long debate on the fairness of limitation to economic growth to the two-thirds of the world living in desperate poverty, who have as yet to taste of the sweet fruits of prosperity.

ART

CORITA KENT PAINTS A TANK

Artist Corita Kent put an orange-red-blue-green-purple rainbow on a 150-ft.-high lique-

Gas tanks can be beautiful



fied natural gas tank overlooking Boston's Dorchester Bay, thereby turning the unseemly tank into a giant 73,374-sq. ft. al-fresco art object.

Four painters worked six weeks to complete the job, applying 555 gallons of paint. On parts of the top of the tank where solid footing was impossible, the painters brushed on paint while swinging from bosun chairs. The biggest problem, though, was the wind which capriciously swayed the suspended painters back and forth, making it difficult for them to keep in front of their work.

Public reaction has been mixed according to Claude F. Machen, chairman of Boston Gas Company, which commissioned the work for its 150th birthday. Some people are amazed at the size of the work; others are simply amazed.

Says Miss Kent, "It seemed a neat thing to do."

AFRICA REPLIES

The painters and graphic artists of Africa were invited by the Olympic Organizing Committee for the 1972 Games (Munich, August and September 1972) to compete in a poster competition. Out of 330 designs submitted by 246 artists, the jury chose seven, the first prize going to Acent Soi of Kenya. The jury was made up of representatives of the Olympic Organizing Committee, the former secretary general of the German-Africa Society, and four Africans. These four were: the former Moroccan Defense Minister (who is also a painter); a Senegalese painter; the Cultural Commissioner of Tanzania; and



African poster for Munich

the President of the Supreme African Sports Council. Entries were received from Algeria, Cameroon, Kenya, Mozambique, the Sudan, and Tunisia.

Shown here is a design by Luigi Okenatez of Nigeria. The entire collection of entries, titled "Africa Replies," is now touring African capitols.

SHOPPING WITH MOMA

For the right-thinking, upward-mobile, corporate executive who has everything—except a smashing painting on his office wall—New York's Museum of Modern Art has a beautiful answer. The MOMA's Art Advisory Service will advise him and offer suggestions, after studying his budget and space. This innovative service is free. MOMA receives a commission from the artist or gallery, and the price to the corporation remains the same as if the graphics, paintings or sculpture were purchased directly from the gallery without benefit of expert advice.

The service has been available on an informal basis for some time, but now the museum has made it an independent department. Although the objectives are laudable, some critics have certain doubts: should MOMA, for example, provide a professional service? (What if its Department of Architecture were to recommend architects to corporations?) And will the new service, in effect, discriminate against galleries and artists unwilling to cooperate? And, further, will MOMA expand its already considerable influence as a tastemaker? The answers will come in due course, as the service starts in earnest.

PS

IS

THE RENT WAS TOO HIGH

The Seagram Building on Manhattan's Park Avenue has turned out to be too expensive for one of its tenants—Joseph E. Seagram & Sons, Inc. The distillers are moving 600 of their 983 employees away to other less-costly quarters.

Jack Yogman, executive vice president of Seagram's has conveyed his displeasure about some aspects of New York City to Mayor John Lindsay. Could one of those items be the Seagram's real estate assessment of \$28.5 million, which the company is appealing?

DIED . . .

The Mummies Theater, beloved offspring of Architect John Johansen, at the age of one year, in Oklahoma City, of the (financial) plague.

. . . ON THE VINE

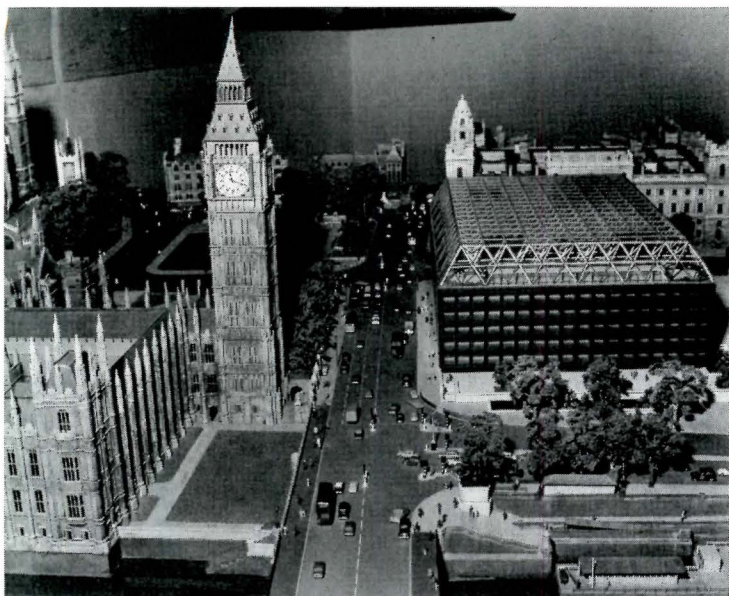
The Los Angeles County Department of Public Works has, of course, always been known for its sensitivity to social and environmental values. Last January, with the comment that California motorists drive too fast to see much anyway, Public Works began fulfilling its long-cherished pipe dream of lining Jefferson Boulevard in Marina del Rey with 900 plastic plants surrealistically enhanced with epoxy boulders painted green.

Fortunately, enough people protested the plastic that Public Works was obliged to weed out the factory-fresh foliage. \$74,000 worth of it. As one alarmed motorist put it, "The reason we drive faster and faster is because there is less and less to see!"

PARLIAMENT'S CHOICE

An architectural competition for a new office building for Members of Parliament has resulted in what some critics fear is Britain's answer to Washington's ponderous Sam Rayburn Building.

The winning architects were two young Britons in their early 30s, Robin Spence and Robin Webster. Their design is for an 80-ft.-high rectangular building that will fill a block, 200 x 350 ft. The facade is of bronze and glass. The bulk of the building (which is considerable) will hang from a steel truss roof



Offices of House of Commons will be suspended from a steel truss roof

grid, supported by four service towers, which are the only part of the building to touch the ground. Beneath the exposed trusswork on the roof is a private garden and terrace. A plaza will run underneath the elevated mass of the building and serve as "a breathing space for citizens."

If built, the structure is estimated to cost about \$14 million. It will provide offices for 450 members of the 630-seat House of Commons, and will also house recreational facilities and TV studios. Whether or not the design will become reality depends wholly on the Commons members, who have sovereignty in selecting an edifice. If it is selected, occupancy could start some time in 1978.

Should the design be rejected by Commons, the other six winning designs may be reconsidered, including two U.S.-based firms: Pafford Keatinge Clay in San Francisco, with a third-prize citation, and Kallman, McKinnell & Penney of Boston, who received honorable mention.

EXHIBITS

RIETVELD CELEBRATED

David Pearson, assistant professor of architecture at City College of New York, and an occasional contributor to the Forum, recently visited the Rietveld exhibition at London's Hayward Gallery. Here is his report:

On March 12 a retrospective of Gerrit Rietveld's works closed at the Hayward Gallery in London.

It was of a size and scope that the architectural-minded American has not been able to see at home in the recent past.

Rietveld was a member of De Stijl, the group of Dutch art and architectural theorists founded by Theo van Doesburg and including among its members Mondrian, Oud, and van't Hoff. The members worked with straight lines and abstract planes in formulating designs and environments during the early part of the 20th century (1917-1931). They limited at the same time their palettes to the primary colors and black, white and gray, to heighten the abstract quality of their design. Rietveld, who entered the group as a furniture maker, achieved with his red and blue wood chair a symbolic object that cap-



Rietveld's red-blue chair of 1918 tured the spirit of their movement. As Dr. Reyner Banham points out, the chair also served as the source for both Breuer's and Le Corbusier's now ubiquitous steel and leather versions.

The exhibited works included early prototypes of nearly all his chairs, presented in combination with tables, chests and even toys, as well as manufactured seating from Rietveld's later designs. Most objects came from the permanent collection of the Stedelijk Museum in Amsterdam, where the exhibit was first shown.

In addition to the objects, photographs of Rietveld's architecture from every phase of his career were presented. Of special interest were slide shows of his masterpiece, the Schroder House, and those buildings from the end of his career, after he was "rediscovered" and given, for the first time, large architectural commissions by the Dutch public agencies.

The highlight of the show was the complete walk-in model bedroom from the Moscow exhibit of 1927, designed in collaboration with Mrs. T. Schroder-Schrader.

OBIT

The Architectural League of New York, a curious organization that has, in the recent past, sponsored such diverse activities as a worldwide dial-a-poem hookup, an exhibition of its members' worst work, and an extravaganza (not to be confused with that last effort), depicting the "Architecture of Joy" generated by Morris Lapidus, outdid itself a couple of months ago with an exhibition featuring millions of Army Ants that marched around in a 400 sq. ft. sandbox constructed inside Manhattan's Automation House. The exhibition was the work—as well as the pleasure—of Artist Alan Sonfist, and the idea was that the patterns and structures created by those ants were, to coin a meaningless phrase, "meaningful." According to Artist Sonfist, the "exhibit visually explored the social behavior of the Army Ant. Known as predators to most of us, their complex daily activities in securing food, and their system of producing shelter by employing their bodies as modular building components are symbolic of the need to study the patterns of group behavior as part of urban planning."

Well, urban planning and patterns of group behavior are in need of plenty of study—though it would seem that studying ants to arrive at solutions applicable

(continued on page 69)



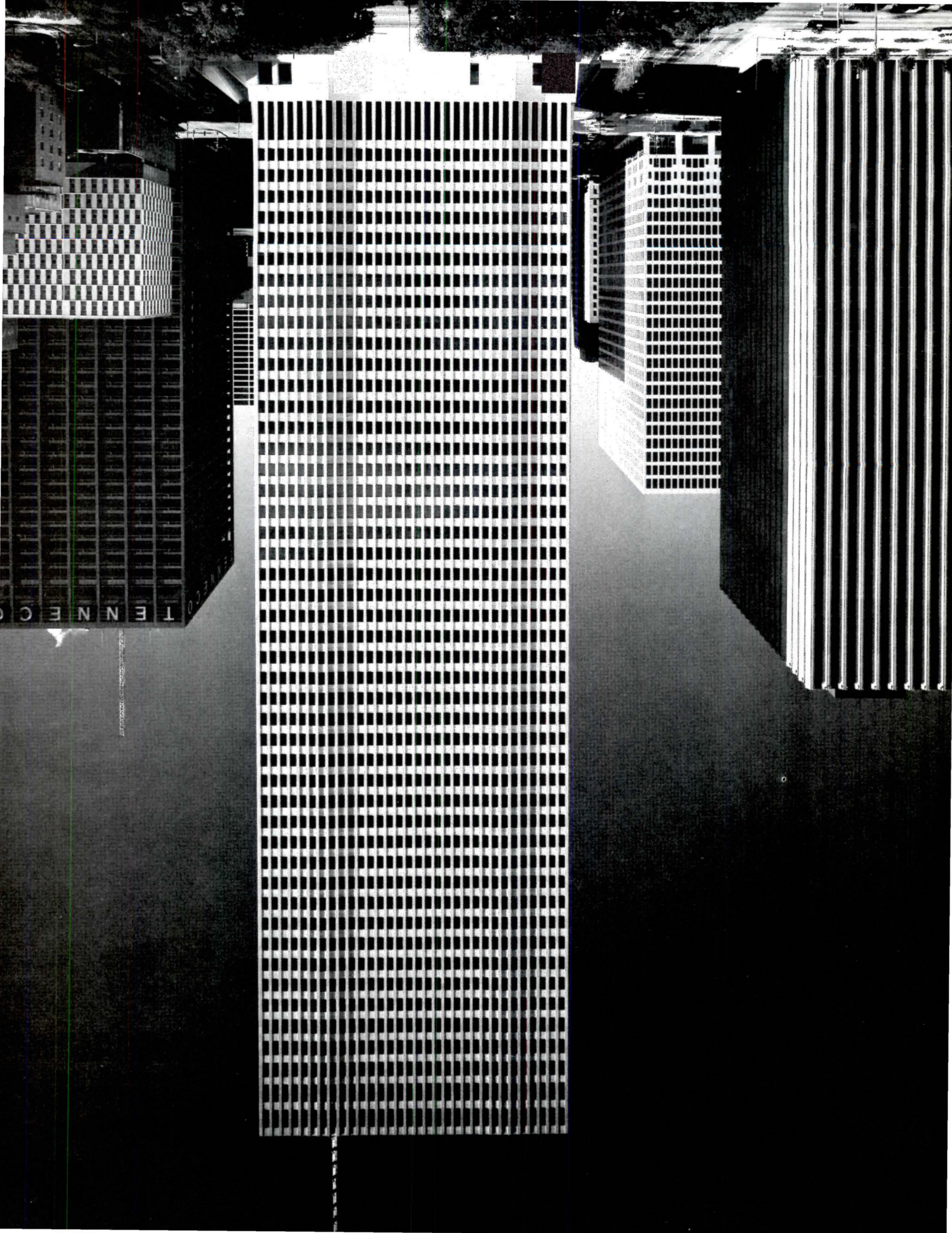
SUPER.CITY



*We shall not cease from exploration
And the end of all our exploring
will be to arrive where we started
And know the place for the first time*
T.S.Eliot

*Each spring, modern pioneers
retrace the old Salt Grass Trail*

There is an impression of Houston by Salvador Dali which shows a woman standing in a broad landscape, her face covered with a clump of camellias, gazing eagerly at a flaming giraffe. This painting of Houston, where Dali visited in 1952, is only slightly surreal twenty years later. The giraffes are still flaming. Oil derricks sprout, defiant symbols of man's dominance of nature. The camellias are in profusion now. The pursuit of beauty chastening raw power. The eagerness is no longer that of the wildcatter. The blue collar has turned button-down. Carthage is becoming Athens. In Houston, a calm confrontation is taking place. A confrontation between growth and the limits of growth, between change and the need to question change, between property rights and human ones. Houston's economy burgeons. Its boundaries edge outward. Barely audible, urbane incentives speak, leaving behind the time when city planning was something worked out between hands of poker. With wealth has come maturity; with both, greater awareness that mere bigness isn't enough.



JPERSHELL

Upswept and elegant Houston's One Shell Plaza has the clout and class of men playing for big stakes

Something interesting about One Shell Plaza. It may *not* be the tallest reinforced concrete tower west of the Mississippi for long. Which is Houston for you.

Right now, 60 downtown city blocks are slated for construction. Over 8 million sq. ft. of rentable floor space. Who said glut isn't next to godliness?

For the moment, at least, One Shell commends comment. Chiefly, because it is *there*. And because it is expressive of an attitude—once again, as at The Galleria, that of Gerald D. Hines.

One Shell is a 50-story shaft, splayed at the base—shades of The Monadnock. From grade to coping (715 ft. up), it is sheathed with 27 tons of travertine from the Montecanti quarries near Rome (or what is left of them). The building has 1,300,000 sq.ft. (gross) and surmounts a landscaped podium one block square, which is elevated four feet above the street. Beneath this are four levels; the first with shops, a cafeteria, post office and loading dock; the lower three with storage and parking for 365 cars.

Above the lobby and mezzanine, both of them banking spaces, there are 42 office floors averaging 20,000 sq. ft. each. The top three floors contain a private club, restaurant, and observation gallery. Mechanical equipment is on the 50th floor; cooling and window-washing equipment, in the penthouse.

Skidmore, Owings & Merrill, the project architects, report they were faced with developing "an optimum economical solution" in structural terms.

This means their "tube within a tube," a concept pioneered in large part by the firm's engineering genius, Fazlur Khan.

The exterior is framed with closely spaced columns, six ft. on centers, which form a load-bearing rectangular tube.

At eight points around the building, these columns were given additional depth to provide supplementary bracing for the stiff winds which frequently

slam the alluvial plain on which Houston is built. This stiffening runs the height of the building and reads as a subtle undulation, twice on each facade, taking to the top the effect of the splays at the base.

The interior tube is a shear wall core for elevators and services. Lightweight concrete slabs span the distance from tube to tube, providing deep, flexible office space.

Mr. Kahn says this system made it possible to build One Shell at the unit price of a traditional 35-story shear wall structure.

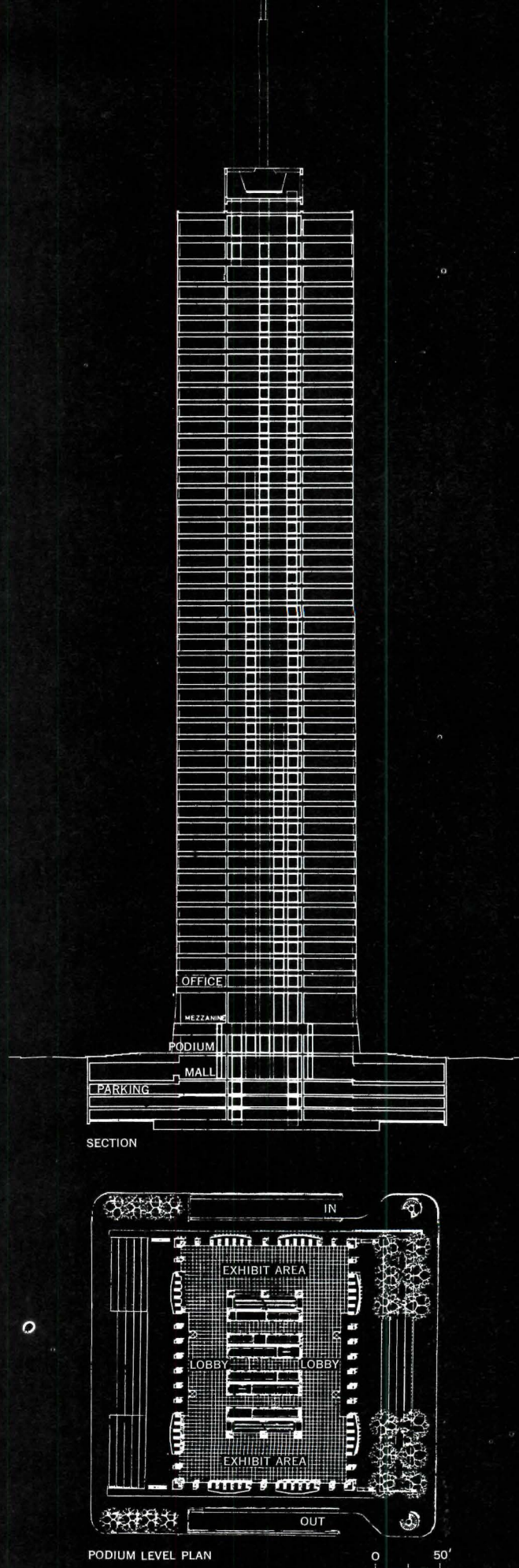
Three elevator banks serve the high, middle and lower levels of the building. A shuttle operates between the upper three floors; another between the below-grade shopping and parking levels.

All 22 elevators have nine-foot walls covered with seamless leather from herds in Belgium and Holland (or what is left of them).

Nine-foot cows. Primavera mahogany. Persian walnut burl. Shell One is, perhaps, the only symbol for Houston's bullish market, where (so one tycoon exulted) they don't just flaunt it. They use it.

With the amateurish abandon of a soapbox derby, developers are gasing up the old downtown grid, hedonistically contemplating their complexes, pushing them through, *ad hoc*, with unnerving speed. One Shell Plaza is part of this heavy drama, but it seems tentative in a town which defies progress before permanence and where air-conditioning is the one predictable desire.

Big-boned but suave, One Shell Plaza is like Matt Dillon in a Brooks Brothers suit. Construction becomes expression (right) as deep columns, twice on each facade, ripple skyward (left) like sinews in short-sleeves.





The sinews speak at curbside (right) as subtle splays soften One Shell's brute strength. Inside, bankers meet the public (left, above) and each other (left, below) in patrician surroundings paid for largely by the oil deals transacted many stories above.



FACTS AND FIGURES

One Shell Plaza, Houston, Texas. Architects: Skidmore, Owings & Merrill, Chicago Office; Bruce J. Graham, partner in charge. Associate Architects: Wilson Morris Crain & Anderson, Houston. Landscape Architects: Sasaki, Dawson & Demay Associates. Engineers: Skidmore, Owings & Merrill (structural); Chenault & Brady, Houston (mechanical, electrical). Contractors: Bellows Construction Co., Houston (general); EMDE Corporation, Houston (mechanical); Fisk Electric Co., Houston (electrical). Consultants: PPG Industries. Building Area: 1,593,448 sq. ft. (gross). Cost: Unavailable. (For a list of key products see p. 85.) PHOTOGRAPHS: Pages 24 and 25, Bert Brandt; pages 26, 28, 29, Ezra Stoller © ESTO.



SUPER MALL

**For shopping, skating or sipping vermouth cassis
The Galleria provides a smashing sense of place**

Houston's laissez-faire approach to planning can be as heartening as a barbecue. Take The Galleria, for example. In City Post Oak on Houston's west fringe, the 33-acre complex designed by Hellmuth, Obata & Kassabaum (associated with Neuhaus & Taylor) is a lavish orchestration of mixed uses.

Sears wouldn't have a chance in this shopping spa. Here, it's Neiman-Marcus: 188,000 sq. ft. of compelling opulence; it's the 22-story Post Oak Tower, an office building where (fittingly) a private elevator whisks you to the lush lair of Galleria developer Gerald D. Hines; here, too, it's the Houston Oaks Hotel, 21 stories, relentlessly Caucasian and carpeted in oriental rugs.

But here, and linking it all together, it's the Galleria Mall, 420,000 sq. ft., 600 feet long, a three-level skylit spine of specialty shops overlooking an 80 x 170-ft. ice skating rink.

Mark Cross. W & J Sloane. Tiffany's. Parke-Bernet. Refreshment kiosks. French cuisine. It's not everyplace you can munch *petit fours* while watching Peggy Fleming skate for charity.

City Post Oak has been a focus of Houston's growth since the early 60s. The Magic Circle, including office buildings and established department stores like Sakowitz and Joske's, have been complemented by The Galleria and its palette of honey-colored exposed aggregate concrete, white stucco surfaces, bronze glass and, not least of all, well-coordinated graphics. The mall is elegantly neutral, setting off a colorful collage of activity. Mall-watching being one of the most popular.

The first level has brick pavers; the second and third, carpeting. All signage is in a two-foot-wide strip below the ceiling. Two chandeliers create cascades of light over the ice, relieving the vast space with a subtle (and needed) texture. General lighting is subdued in deference to the feature lighting of the separate stores.

Getting around The Galleria is as easy as it is eventful. Stair and escalator banks at both ends of the rink give access to the various levels. The hotel and office building are off the first and third; and Neiman-Marcus off the second and third. Below-grade parking for 4,200 cars is off the first level. The second level of the mall, corresponding to grade, is the main public access. A low, unobtrusive entranceway deceptively withholds the interior spaces which you come upon, almost by surprise.

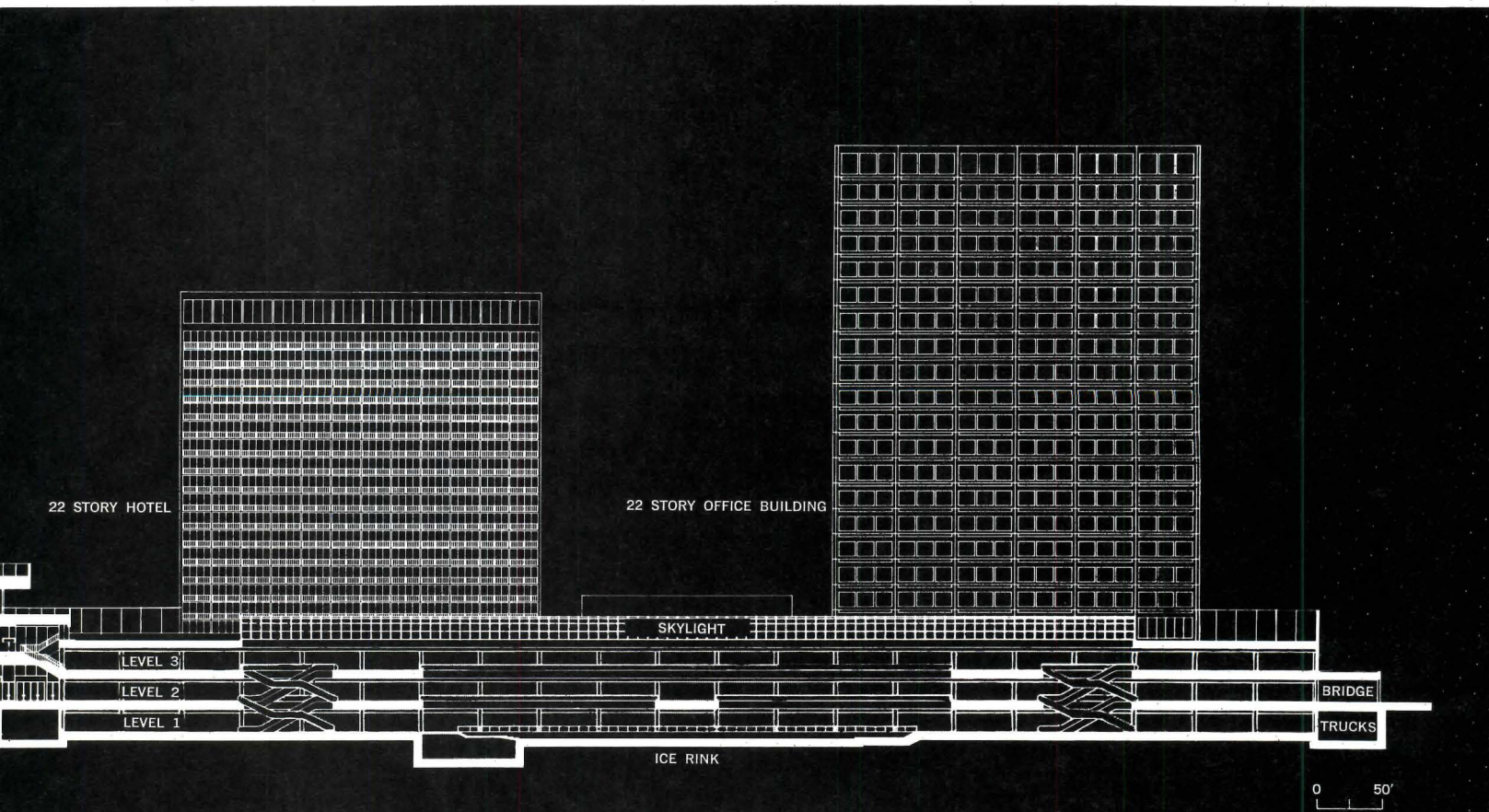
The Galleria came about in typical Houston fashion. Expediency. And, despite it, excellence in the form of things to be purchased and, fleetingly, in the form of people seen and spaces experienced.

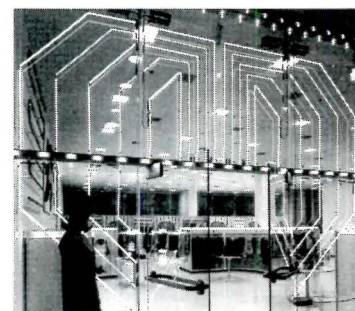
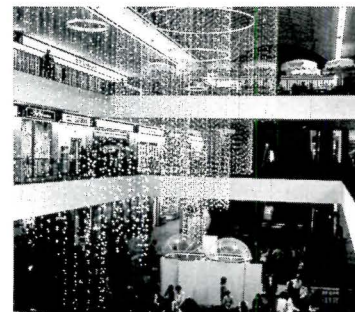
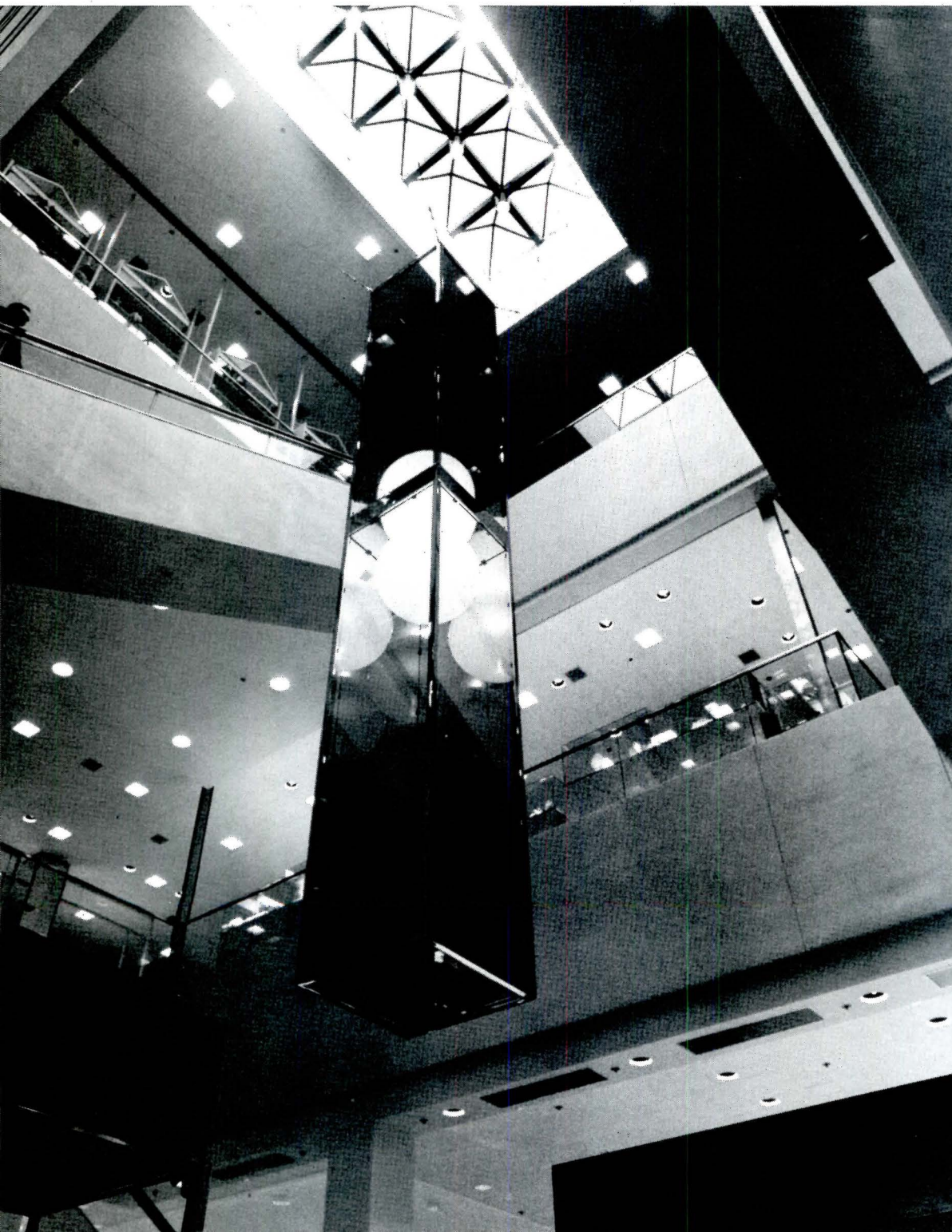
Six parcels, from 8,900 sq. ft. to over 13 acres, were assembled under six owners. Because there is no zoning (non-zoning, they call it), Mr. Hines was unimpeded by the land use controls which hold up ordinary developers. Already, he has scheduled construction for another office tower, this one 25 stories, and a garage for another 2,800 cars.

The Galleria, occupying a key site along the circumferential West Loop freeway, is already awash in a sea of autos. Assuming, to paraphrase Lewis Mumford, that *tread* is destiny, The Galleria may end up just a bejeweled microcosm of the pluses and pitfalls of Houston itself. Like many of the guts-and-gall projects here, it manifests the self-assurance, even the self-control, of the Medici who made this town. And *self* controls, they will tell you (time and again) are more effective than legal ones. Still, Houston, stick-shifting out to newer fringes, needs to coordinate its growth at regional scale, needs a matrix more accommodating than its ganglia of freeways, needs a mode of access less consumptive than the car. After all, not everyone can afford "His & Her" Thunderbirds from Neiman-Marcus.



SECTION





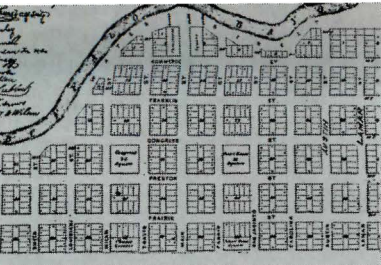
Shoppers are smashingly ensconced at Neiman-Marcus. Designed by Hellmuth, Obata & Kassabaum, the sumptuous store (left) opened in 1969 as the first increment of The Galleria development of Gerald D. Hines. The recently completed Galleria Mall, done by HOK in association with Neuhaus & Taylor of Houston, extends the Neiman-Marcus style along a spine with a rich mix of stores, shops, restaurants, and an immense skating rink (all air-conditioned). The Mall interconnects with a hotel and office building, which can be seen through the barrel-vault skylight opposite.

FACTS AND FIGURES

The Galleria, City Post Oak Urban Center, Houston. Architects: Hellmuth, Obata & Kassabaum Inc., St. Louis (Gyo Obata, Principal in charge of design). Associate Architects: Neuhaus & Taylor, Houston. Landscape Architects: Sasaki, Dawson & Demay. Engineers: Elmer Ellisor (structural); Chenault & Brady (plumbing, mechanical, electrical). Contractors: Harvey Construction Co. (general); Mel-drum Electric Co. (electrical); Sanco Plumbing Co. (plumbing); EMDE Co. (mechanical). Building Area: 1,577,125 sq. ft. (gross). Cost: Unavailable. (For a list of key products see p. 85). PHOTOGRAPHS: Page 32, Ezra Stoller © ESTO, except (lower right) Eugene Flemming; page 33 Hedrich-Blessing.







Houston's Main Street in 1884 (opposite, above) was different from most main streets in that it was wide, very wide, a legacy of the 1836 plan by Gail and Thomas Borden (above). It is a good thing, too. Today, 45,000 vehicles converge on Houston's downtown (below, opposite), over 60 percent of which leave after 5:30 p.m. Despite the oil and air-hammer ambiance of its booming economy, Houston is beginning to rediscover its beginnings, its steep-bank bayous, its leafy neartown neighborhoods and their fragility in a future which is too hastily pursued.

SUPERGAL

Houston's unbridled growth took lots of nerve but learning to rein it in will take much more

Turning and turning in the widening gyre. The falcon cannot hear the falconer. Things fall apart; the center cannot hold.

In Houston, there is no center to hold. And these lines from William Butler Yeats poem, "The Second Coming," are just right for a city in the midst of one.

Its First Coming was 1836 when Augustus and John Allen, New York speculators, bought 6,642 acres south of Buffalo Bayou for \$9,428. They advertised a non-existent town and then, to make good on their claims about "the great interior commercial emporium," hired Gail and Thomas Borden to lay it out. Publishers of the *Telegraph and Texas Register*, they had their hired man Moses Lapham, a settler from Ohio, handle the survey. The job took seven weeks and, it was boasted, without using mechanical instruments. Its most far-sighted provision was for streets 80 to 100 ft. wide; its most profitable, selling land in 12½-ft. lots.

This was about the closest thing Houston has ever had to a full-fledged city plan. Gail Borden even obscured his reputation as a planner by going off and inventing condensed milk.

Today, Houston is the sixth largest city in the United States. Over 1,255,000 people live in its incorporated area of 447 sq. miles. In reality, however, Houston isn't being contained. Its sprawl consumes all of Harris County, nearly 1,800 sq. miles, and sloshes over into several others. When you talk about Houston, you are talking about an accretion covering, without any sign of apology or restraint, well over 2,000 sq. miles. That's almost two million people with many eager whispers about four million by 1990. You have to be impressed considering that in 1900 Houston and Harris County combined had just 64,000 residents. Last year, that many moved there.

There are several cycles to Houston's phenomenal growth.

Just before the Civil War, it became a rail center. Thousands of immigrants, especially from Germany, came up from the port at Galveston to take the trains farther north into the hill country, where drought, cholera and Comanches waited.

The second cycle began in 1901 when the gusher at Spindletop came in. From then on, oil was it, the beginning of big money and of its bigger myths.

A third cycle began in 1914 when Houston decided Buffalo Bayou, that "beautiful little stream" early diarists wrote of, was too sluggish. The U.S. Army Corps of Engineers was called in and the result was the Houston Ship Channel which made the city a port 50 miles inland. Now the nation's third busiest. Without a sign of sluggishness, industry moved in with the ships. Oil pumped relentlessly, the city's plasma, its by-products the base of a diverse petrochemical empire.

Houston boomed. By 1940, with a population of 385,000, statistics were sprinting. From 1940 to 1960, it moved from 21st to 7th among cities.

The center gave. Four miles south of downtown on Main Street another downtown (the first of many) began emerging. Glenn McCarthy, celebrating over oil barrels of Irish Velvet opened his \$21-million Shamrock Hotel on St. Patrick's Day, 1949. Three months later, Frank Lloyd Wright, driving up to get his AIA Gold Medal, pronounced, "I see the sham; but where's the rock." More sham followed and, before long, the Hotel had generated a new business district with shops, stores and apartment houses.

Ten miles to the southwest along Westheimer, a major arterial, shopping centers began inundating the area around Post Oak Road in the middle 50s, generating more apartments, summoning department stores from the ever more fragile central business district.

Criss-crossed with arterials,

circumscribed by rings of freeways (400 miles of them), Houston's new development feeds on the local lust for motoring. Since the early 50s, Houston's aggressive annexation has brought all county areas within five miles of its 450 sq.-mile corporate limit under city control. Houston has the say when and for what these lands will be used.

The most controversial thing about Houston's expansion is, of course, its Borden brothers preference for staking out new claims without using instruments—like zoning. Houstonians defend non-zoning stridently, moralistically, cursing land use controls with the vehemence of Ayn Rand's Atlas Shrugging.

One thing about all this. They are, within broad limits (the only limits Houston tolerates) entirely correct. Non-zoning is not on the defense. Zoning is. And there are a lot of urban economists and planners (including many up north) who agree it's about time.

Non-zoning is usually singled out as the most important factor in Houston's expansion. Land use is modulated by the economic forces of the marketplace and, so non-zoning advocates say, this allows land to reach its most suitable use, most quickly.

Bernard Seigan, a lawyer and zoning expert from the University of Chicago, has been hanging around Houston quite a bit the last several years. Seigan says, "The dogma persists that if zoning doesn't work, try more of it. Non-zoning shows that the real estate market does not operate chaotically or haphazardly. Cities have patterns of development. Residential, commercial and industrial uses tend to develop separately. The gas station, regardless of where it is permitted, will locate on major thoroughfares, principally at major intersections. Most business and commercial uses also require substantial traffic counts not available on interior streets. Therefore, they too will be absent from much of the city as interior streets constitute close to 80 percent of total street mileage in Houston."

Be that as it may, *laissez-faire* land use has created commercial strips in disarray. Non-zoning, while permitting expediency, while maneuvering every parcel into its "proper"

use, has also permitted creation of an amorphous city, making Houston like any old *zoned* city. No worse, maybe. But no better.

No one with eyes to see can doubt that Houston excels at developmental leap-frogging, promoters jumping from parcel to parcel, uninhibited by the legalities which plague (fortunately, in some cases) the "free enterprise" of certain unprincipled speculators.

What one can doubt is whether non-zoning assures cohesion and compatibility in design terms. Non-zoning may strike its own ecological balance with respect to urban growth. But does it guarantee, along with the absence of restriction, the kind of thoughtful, self-imposed restraints which allow buildings to relate, first of all, to each other instead of only to themselves?

The same can be said of the proliferation of commercial nodes throughout the region. For example, Greenway Plaza on the Southwest Freeway was announced in 1968 as an 80-acre development of highrise offices for such corporate superstars as Union Carbide and Eastern Airlines.

Unbridled, its promoters bought up adjacent subdivisions so fast that they were, at several points, unable to say just how much acreage they controlled! The question here is not whether the residents wanted to sell. They did. The question is whether such brazen, ballooning acquisition adds up to a city whose *identity* and workability are truly as regional as its scale. The question is also whether instant cash is all there is to urbanism. Houston presumes to have found the answer in non-zoning when one feels it is an over-agonized rationalization of private power, excessively wrought by public relations representatives of a powerful plutocracy which supposedly knows what "the highest and best use" of land is all about.

A Malthusian example of this is Houston's central business district. Between 1960 and 1969, 14 new multi-story office towers increased downtown office space by six million square feet, almost all of it concentrated within a few blocks of the Main Street spine.

The apogee of development east of Main, over by City

Hall is, of course, One Shell Plaza, a 50-story testament in travertine-clad concrete that Houston's downtown, while shooting out runners, is at least trying to sink roots as well.

Megadensities are due. In the first four months of 1970, eight million more sq. ft. were under construction or announced: the ten-block Allen Center west of Main; a three-block development with two office towers and that inevitable new symbol of cities having made it—a Regency Hyatt Hotel; Cullen Center; a new tower for United Gas. And More.

The original Borden plan, as you recall, provided for wide streets. Today, an average 45 percent of downtown is reserved for street easements. Their plan also provided for very small blocks. In real estate parlance, blocks (no matter how small) are for busting, which is what Houston is doing with them.

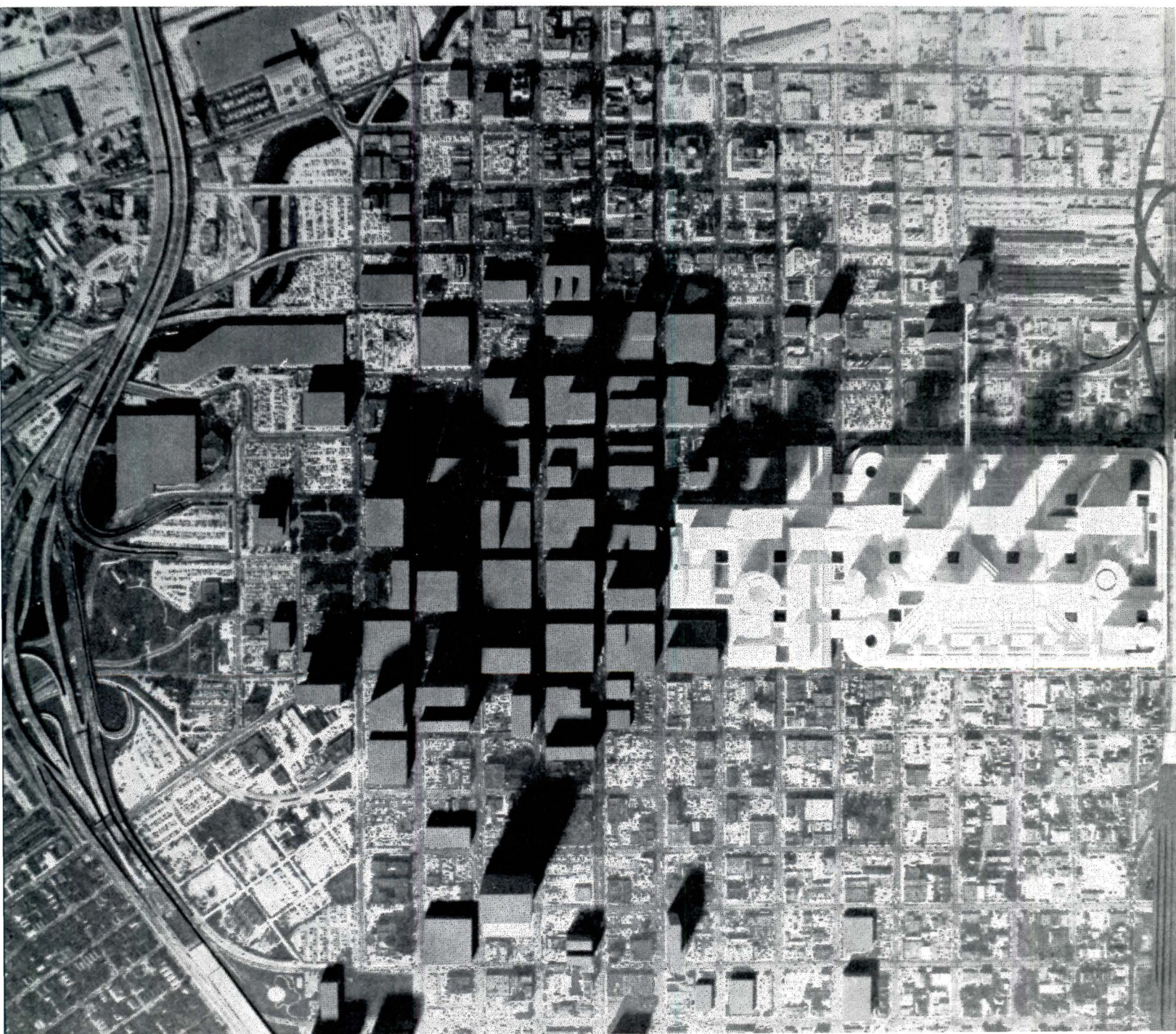
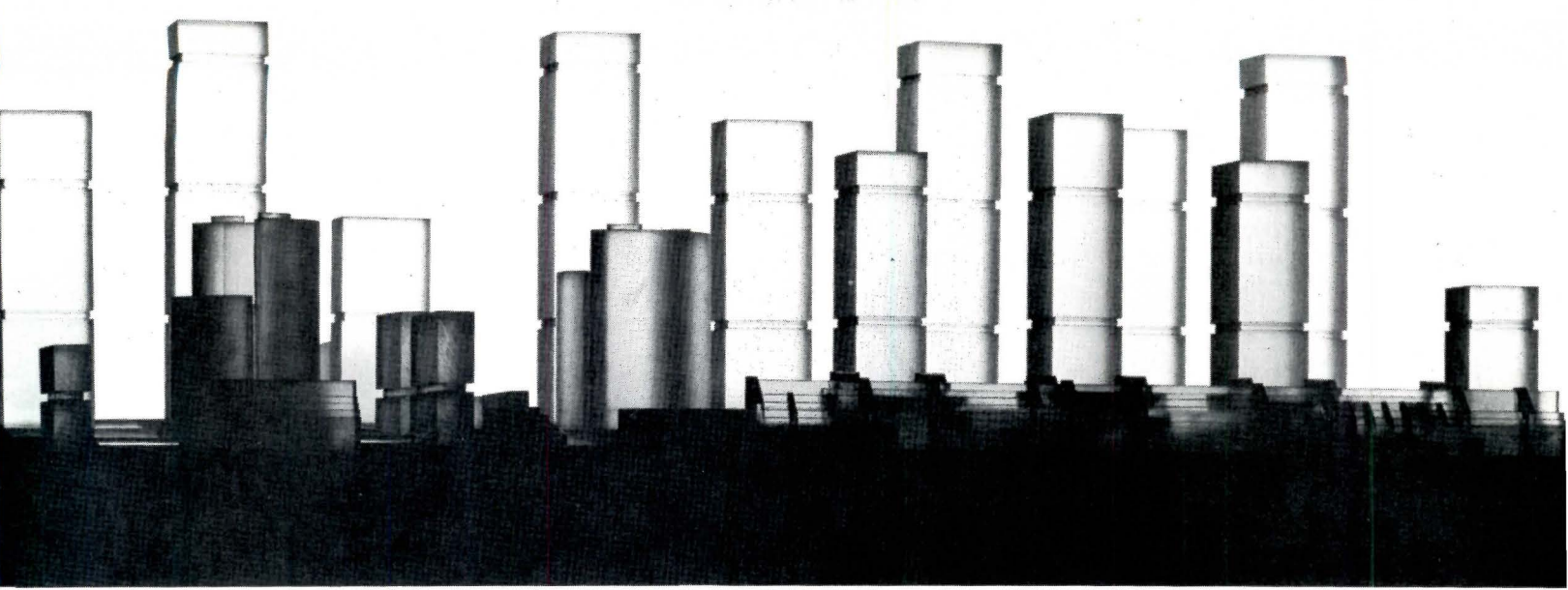
Spurred on by non-zoning, developers are creating, block by block, what Lawrence Marcus, the culture-conscious head of Neiman-Marcus in Houston, calls "horrors of individual freedom," development which ignores, block by block, the larger need to coordinate and interconnect new construction. Houston may know (maybe) that the real urban challenge is not merely to develop cities, but to *design* them.

There is no question of the city's means. There is, and *has* to be, a question about the mentality which exalts competition for land and profits over the kind of cooperative enterprise which could give added dimension to both.

A thrust has now been made in this direction. Houston Center, a 32-block development east of the built-up business district, is being financed by Texas Eastern Transmission Corporation. The master plan and urban design guidelines have been developed by Architect William Pereira to capitalize on the economies of mixed use.

At first look, the renderings for Houston Center foretold one of those Fastback Rogers schemes with happy people zapping around in transparent capsules. In reality, because of Pereira's consistent yet flexible urban design palette, Houston Center will be far more than the usual cash-in, cut-out land

Looking a little like a display of perfume bottles at Neiman-Marcus, the lucite model of Architect William Pereira's Houston Center for the Texas Eastern Transmission Corporation (opposite) dramatizes its immensity in relation to the built-up business blocks to the west. Building heights in the Center will be progressively reduced toward its north and south boundaries; office and apartment towers will rise along the Center's spine, surmounting a multi-level, mixed-use plaza.



deal which has come to characterize most cities. Including the zoned ones.

Texas Eastern, giving you reason to believe that free enterprise may be enterprising after all, insists it will stick with this project. Its provision for various functions, its attention to public and private space and scale, add up to a restored sense of life and commitment for downtown, something this downtown hasn't had since the Allens decided there should be one.

The design ethic for Houston Center is what Pereira calls "view and glass." Individual buildings, designed by various architects over a period of years, will cohere, not compete. Great attention has been given to the form-generating (and form restraining) framework of the complex, its relationship to the business blocks to the west, to the car and to projected modes of mass transit which the Voorhees company is now investigating for Houston.

Although the Texas Eastern parcel is now encrusted mostly with junk buildings—porno shops, short order places and flop houses—Pereira's team has been careful to inventory the existing ambience with an eye to retaining any worthwhile structure of historic or architectural significance which might enhance the new. In earlier days, these blocks had some of the finest houses of the city, and Pereira points out the economic and cultural sanity of integrating something of what remains of this rich past as a micro-amenity in the new development. An attitude which is, itself, an innovation.

Pereira's block-blending scheme will span existing streets where, at grade, the present grid will remain. The various apartment, office and hotel towers will surmount a vast multi-level megastructure edging gradually up from the street which will contain parking, lobbies, commercial and cultural functions, and a richly scaled pedestrian plaza. What might have been just another air-conditioned babel of towers will, more likely, be Houston's hanging gardens of Babylon, an about-time alternative to the visual and functional chaos which this city has been building.

Together with the Alley Theater by Ulrich Franzen, the Jones

Hall by Caudill Rowlett & Scott, and the newly restored Market Square area (all west of Main), Houston Center (given half a chance) will transform downtown into a 24-hour wonder where people can enjoy *being*, not just working.

It seems, as if a revelation of future shock, that Houston has begun to get its head together, begun to sense that if its center won't hold then something else in Houston had better.

In the 60s, demoralized residents were moving out of Houston in great numbers, trying to find solace in the minimeadows of outlying subdivisions. Old "neartown" neighborhoods like Montrose, where land use is protected by renewable restrictive covenants, languished.

That is being reversed. Young professional couples have moved into Montrose. Its tree-lined streetscapes are alive with restoration and playing children. Galleries, antique shops, and gourmet restaurants are lined up along Westheimer like a summons to better instincts where, only five years ago, sordid commercial strips, parking lots and hustlers dominated.

To the north of Westheimer, the Pagan Church has opened, ministering to the rednecks and young reformers who drink together, talk together, and whose varied lifestyles create a pleasant (if perverse) urbanism.

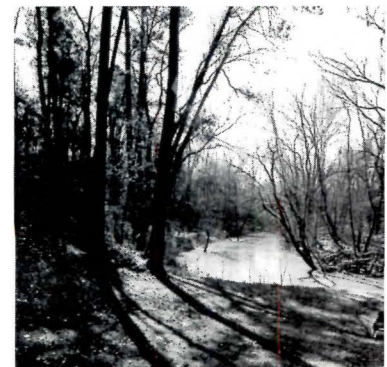
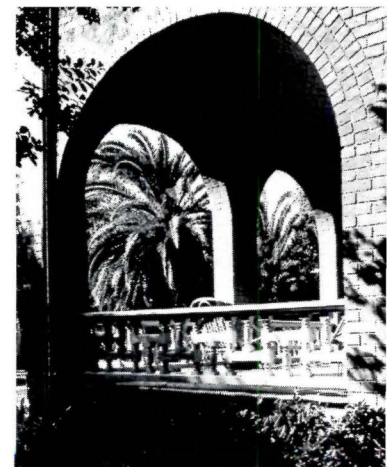
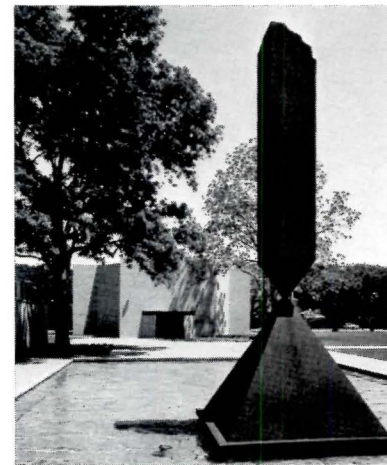
South of Westheimer, people like Architect Clovis Heimsath are giving new life to old buildings. Just a decade after the neighborhood's bottom fell out with the defection of the Junior League, old storefronts are becoming houses; old auto repair shops, pool halls.

Houston, precisely because of its resources, now has time to contemplate its future. And, because of that, its past.

In our acquisitive society, where more and more of everything has gone unquestioned for too long, the answers Houston comes up with, the course it chooses, will bear close study.

This is not just a matter of debating the merits of non-zoning. It is a matter of learning how wealth and power should be used to create lasting urban values.

Learning the limits of growth will be Houston's Second Coming. And, one suspects, much of America's.—WILLIAM MARLIN



The Neartown area has undergone a Renaissance. Westheimer, a sordid commercial strip just five years ago, is agallop with antique collectors and gourmets (1). At the Rothko Chapel (dedicated to Dr. Martin Luther King), near the University of St. Thomas, Houston is experiencing an ecumenism beyond its worldly economy (2, 3), enhanced by Barnett Newman's "Broken Obelisk." Great old houses, like Architect Clovis Heimsath's (4), are being restored, adding (mercifully) needed texture to Houston's dizzy growth. Meanwhile, its one line of continuity, Buffalo Bayou (5), meanders on, its beauty counseling caution to the Corps of Engineers which would make it just another culvert; and Houston, just another city. PHOTOGRAPHS: Page 34 (bottom) Bert Brandt. Page 35 (2,3,4) Beckley. Page 37 (top) Wayne Thom. Page 38 (top and bottom) and 39 Bert Brandt. Page 38 (2,3) Hickey & Robertson; (4) John Dixon.





ON THE VERFRONT

A community college
encloses a tiered
and balconied mall

You wouldn't exactly say that it allows one to shop for an education, but students, faculty and visitors in the new Sauk Valley College, in Dixon, Ill., find it closely resembles a shopping center in plan. It is designed around an interior street, or mall, which not only provides circulation and places for study and relaxation, but clear views into the classrooms and labs that bound it.

Peering into a storefront window, a passerby can watch a florist workshop, or nursery school practice teaching. On the balconies and bridges that serve as upper level malls, sports en-

thusiasts can look through a glass wall onto a gymnasium floor below, or a curious stroller can watch an architectural drafting class. From one end of the mall to the other, and on each of its three levels, the entire range of college activities is exposed and accessible. A student is almost forced to feel a part of the whole college experience even if he or she only takes a single class there.

This feeling of belonging is not an accident, but precisely what the client and the architects wanted. The architects were Caudill Rowlett Scott, in association with Durrant, Dein-

inger, Dommer, Kramer, Gordon. The college is the first in a series of two-year community colleges to be built in Illinois. It can accommodate 1,500 students, all of them commuters.

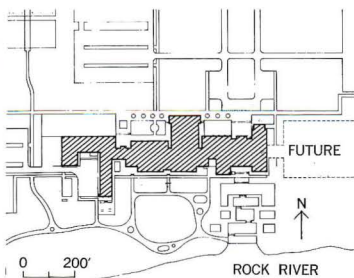
The linear form of the building was inspired by the Rock River, which runs to the south of the structure. Where possible, the architects located open spaces and classrooms so that they look out on the river, protected by concrete sunshades integrated into the building's structure. The site is otherwise "in the middle of nowhere," seven and 15 miles from the nearest towns.

In keeping with the rural set-



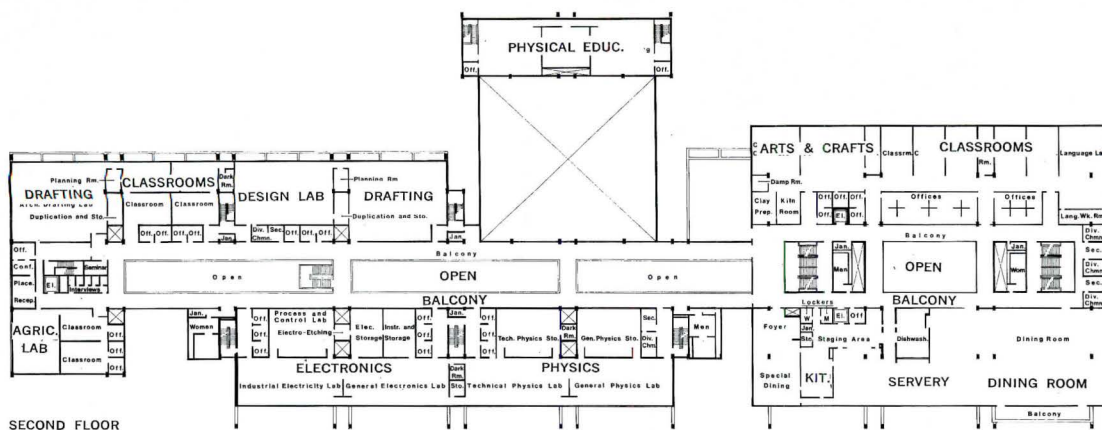
ting, the college is earthy and natural in tone and material, and less monumental than photos would imply. The exterior of the building is designed so that the walls starting at ground level are of brick up to the frame. The frame is plywood-formed and sandblasted concrete, and the upper infill panels are board-formed, then left natural. All of the concrete was poured in place.

The structural system comprises 60-ft. concrete joists supported by pairs of girders, spaced 10 ft. apart, and visible on the exterior of the building in the paired column supports. The

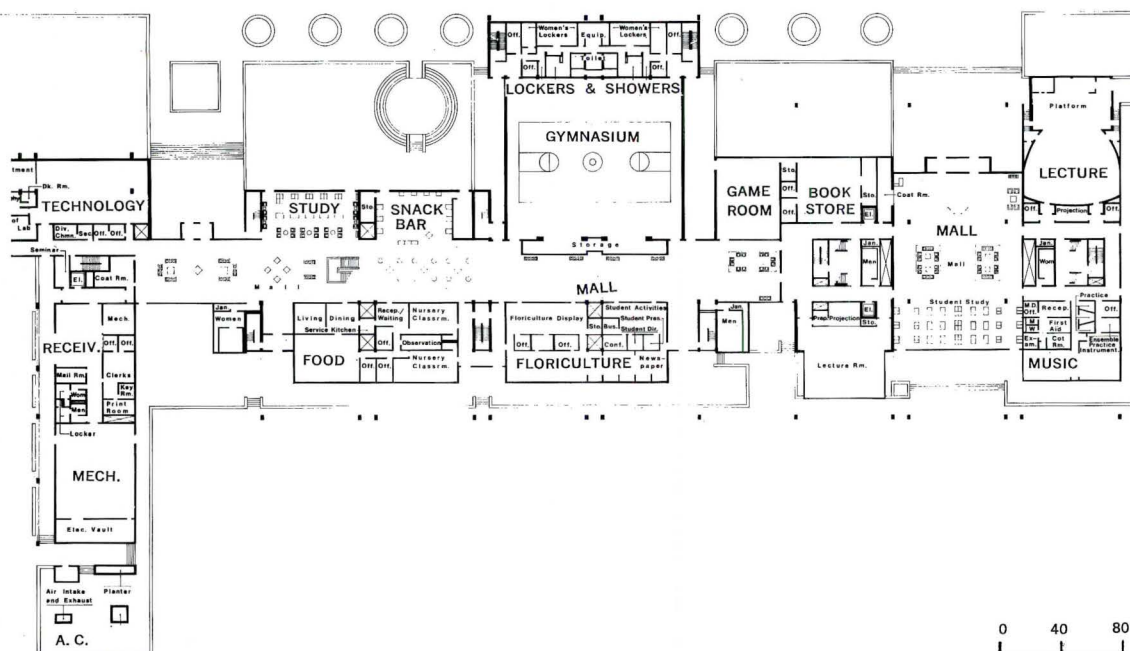


The college's linear form was inspired by its location on a river. The wintry climate and a desire for even part-time students to identify with the college as a whole led to an enclosed mall, megastructure concept. The portion completed will be followed by an addition that will make the library and student activity areas the hub of the college.





SECOND FLOOR



FIRST FLOOR

An interior mall or student street, from which classroom, lab and other activity areas are accessible and visible, is the key to the college plan. Bridges and balconies on the upper levels encircle and criss-cross the mall, providing entrance and circulation here, as well as a view of the mall below (photo, right). Even while the student is still outside the building (below), the overhanging floor pattern defines the space and provides a sheltered walkway. The plan is designed for expansion to the right, where an arts and humanities wing will ultimately make the second-floor student areas and a third-floor library the center of student life.



resulting 10 x 60-ft. bays are used for the fixed elements of the building, with the vertical circulation system and the mechanical system alternating in every other bay. The horizontal distribution system runs through cutouts in the girders.

But there is more to this college than currently meets the eye. One-third of it has not been built yet, resulting in an artificial and abrupt termination on the east. When the first phase was completed in 1970, a second phase was expected soon afterwards. But with money tight, this portion of the college has yet to be designed

or built and may not be for several more years.

The first phase contains primarily technical, scientific and vocational facilities, which were the most important program elements to educators of the late 1960s. The second, unbuilt section will be for the visual and the performing arts, humanities and administration. Until this portion can be built, the second-floor student areas and third-floor library had to be cut up by "temporary" classroom and office areas, which will be removed when the new structure is completed.

The ironic twist to the orig-

inal plan is that today students again want a general and liberal arts education, with less emphasis on science and technical training. The result is that beautifully equipped and furnished labs are somewhat under-used, while the relatively small allotment of conventional classrooms is bustling.

The tricks of time and program notwithstanding, this college stands as one of the early examples of interior mall designs for schools and colleges. How this design, which was completed in 1968, will be translated into the new curriculum and escalating cost schedules of

the mid-1970s, will make construction of the next phase worth watching.

—MARGUERITE VILLECCO

FACTS AND FIGURES

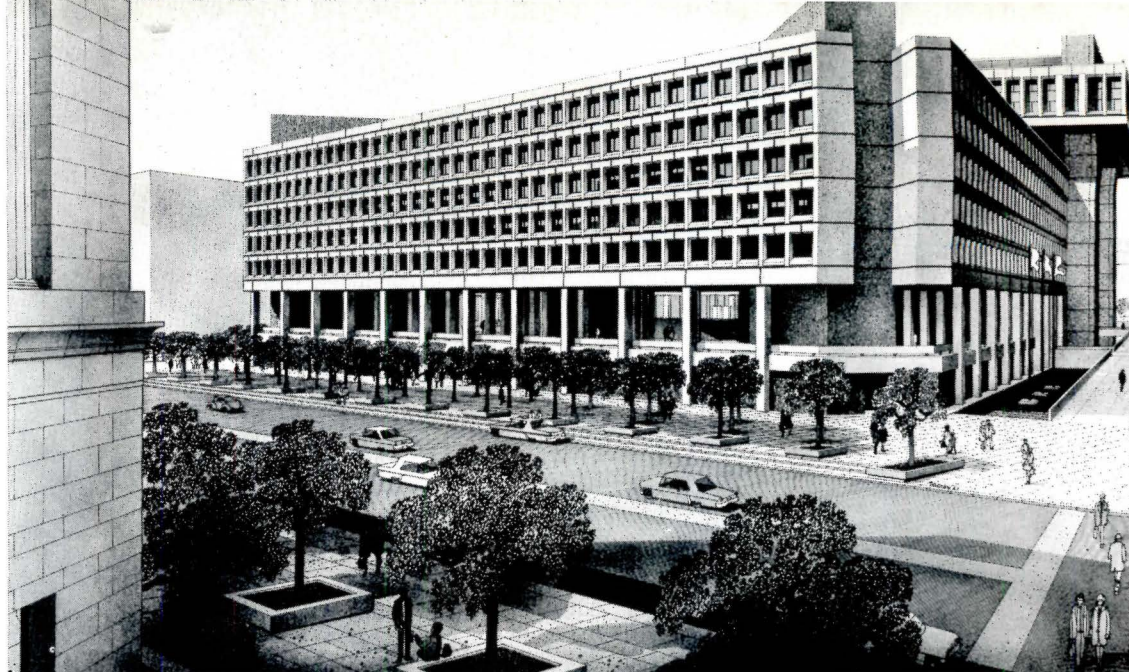
Sauk Valley College, Dixon, Ill. Architects: Caudill Rowlett Scott (James M. Hughes, principal in charge; Norman Hoover, project designer). Associate architects: Durrant, Deininger, Dommer, Kramer, Gordon (Donovan Kramer, principal in charge). Engineers: Durrant, Deininger, Dommer, Kramer, Gordon. Landscaping and interiors: Caudill Rowlett Scott. Educational consultant: O'Dell McConnell. General contractor: Donovan Construction Co. Building area: 334,000 sq. ft. Cost (including sitework, furnishings and fees): \$10 million. (For listing of key products see p. 85.) PHOTOGRAPHS: Hedrich-Blessing.



J. EDGAR HOOVER BUILDS HIS DREAMHOUSE

The new headquarters for the F.B.I. will further shape Pennsylvania Avenue in the "sub-imperial style"

BY ADA LOUISE HUXTABLE



Know-it-all on the mall, the FBI at Pennsylvania Avenue and 9th Street

Not exactly buried in the Federal budget which has been introduced by President Nixon is a \$126,108,000 item for the country's largest and most controversial building project—the new headquarters for the Federal Bureau of Investigation. It is hard to bury a building occupying 2,535,000 square feet and an entire block of Pennsylvania Avenue, even though three stories of it are underground and the sign on the site identifies it only as anonymous Federal construction. Eleven stories and 160 feet more of the building are now rising between 9th and 10th Streets, opposite the Justice Department and the Federal Triangle and back to E Street, for the avenue's most conspicuous monument since the Federal Triangle was constructed.

The official \$126,108,000 figure about to be released by the General Services Administration, the agency that puts up Government buildings, is an escalation of \$17-million to \$24-million over the most recent estimates. It is meant to cover further escalation through a projected completion date of July, 1974.

Because of a decade of delays, inflation, soaring construction

costs and changing site and plan requirements, costs have already risen from an estimated total of \$60-million in 1962, when the project began, to a \$102.6-million estimate last September by the General Accounting Office, the Government budgetary watchdog, followed by a \$109.6-million estimate by Congressional critics. So far, \$102,578,000 has been appropriated.

At \$126-million and still going—only the substructure has been completed and it is the rare undertaking that stays within estimates today—the F.B.I. Building promises to make the Rayburn Building look like a piker.

The architecturally notorious Rayburn Building cost \$87-million officially in 1964, but less official estimates top \$100-million. Staggering as it seems, it was cheaper and smaller.

But more important than its size, the F.B.I. project combines with still another Government construction item, the completion of the Federal Triangle, for one of the most significant chunks of monumental building in civic architectural terms to be undertaken in Washington since the nineteen-thirties.

The Federal Triangle price tag is \$135-million; added to the F.B.I., that makes over a quarter of a billion dollars of new construction in a five-block stretch of Pennsylvania Avenue. Work is scheduled for this year.

These two projects are the key building blocks of the nationally

publicized Pennsylvania Avenue Plan, begun by executive order under the Kennedy Administration, a program meant to revitalize and glorify the processional route of Presidential inaugurations.

This planning scheme, begun boldly with the appointment of the President's Commission on Pennsylvania Avenue, stumbled along for some time and is now moribund. But with the construction of the F.B.I. Building and the completion of the Federal Triangle, both of which have had the review and blessing of what remains of the now unfunded commission, the plan moves to fruition, after a fashion.

What becomes apparent on studying these projects is that the Government will probably get a lot more for its money in design and quality in the F.B.I. Building than it did in the Rayburn Building, and that the Pennsylvania Avenue Plan is moving toward noble failure.

The F.B.I. Building, designed by C. F. Murphy Associates of Chicago, a firm producing some notable civic and monumental construction in the Miesian modernist idiom, will not be one of Washington's pseudoclassical throwbacks.

The structure, of buff-colored precast and cast-in-place concrete, will be uncompromisingly contemporary in technology and style. Its appearance suggests something of the Housing and Urban Development headquarters in Washington and a bit of

the new Boston City Hall, with "articulated" banks of floors set into, or overhanging, stanch corner piers containing services.

It also suggests the inevitable scale of Washington bureaucracy in the relentless acreage of precast window frames. No artful efforts can disguise this humdrum reality; it is known as the no-win-Washington-architectural-synodrome.

Given the banal, elephantine problem, the Murphy firm has done a superior job. What would have been a deadly mass is now skillfully rearranged into visually defined structural and functional parts. Even so, it will look like a modern dinosaur. Washington is the great architectural boneyard.

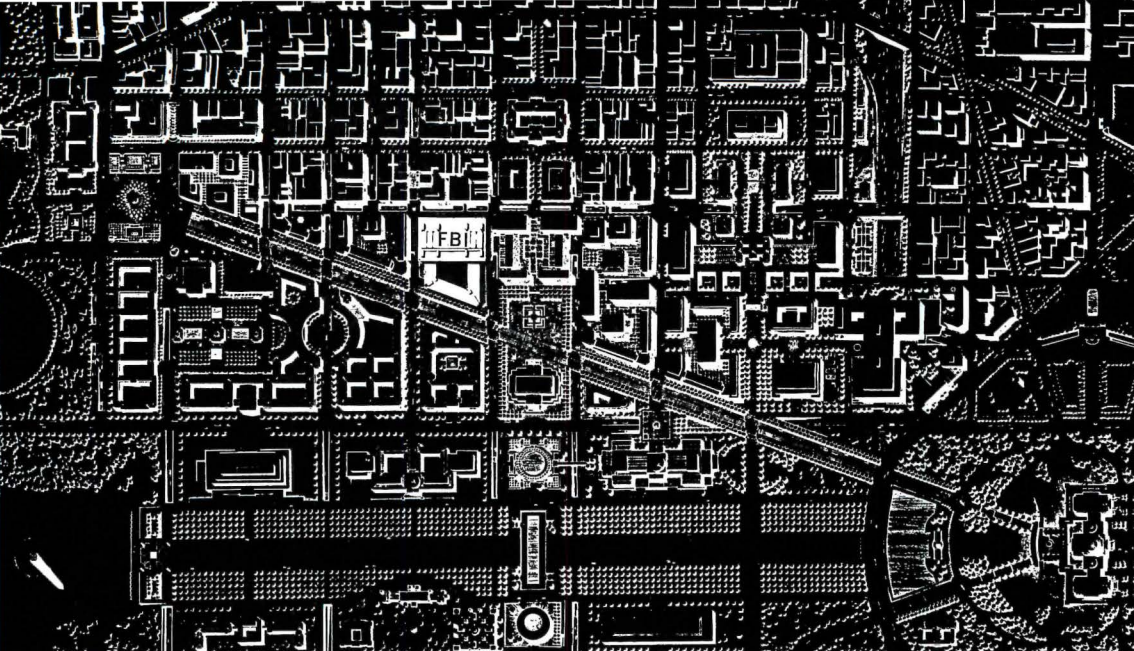
But it could be a lot worse. It could have looked like the Rayburn Building.

Designing the F.B.I. Building has been full of problems. The recommendations of the Pennsylvania Avenue Plan called for structures with ground-floor arcades to relieve the solid, closed-wall effect of Washington streets. According to the basic planning directives, Pennsylvania Avenue was to be opened up and livened with those arcades and pedestrian pleasures and activities.

The F.B.I. wanted, and got, a solid ground-floor wall. It vetoed arcades, and at street level the building is the inevitable bunker.

The agency would have pre-

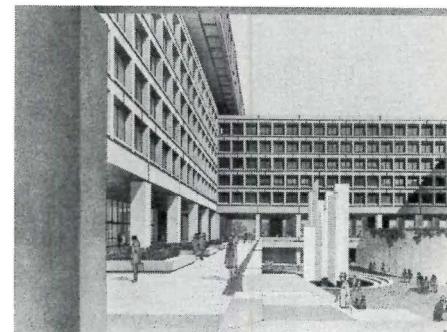
Mrs. Huxtable, the Pulitzer Prize-winning architecture critic for the New York Times, has been a contributor to the Forum in the past, and will be in the future. This, her first article in a series, was reprinted by permission © 1972 by The New York Times Company.



The Pennsylvania Avenue Plan



View from E Street



Courtyard for cops-outing

ferred an inviolate mausoleum from top to bottom, but there were Government review bodies that had advisory powers and used them. The Pennsylvania Avenue Commission, the Fine Arts Commission and the National Capital Planning Commission pressed for changes.

The building lost its ground-floor arcade but it gained a second-floor inner court accessible from the street, as a kind of substitute open public space. It acquired new massing, special paving and planting and additional basement parking. The three commissions' changes raised costs \$7,465,000.

Special F.B.I. requirements added \$14,350,000 more to standard office construction prices. These needs include a "tour route" for millions of visitors, requiring "secure" escalators and a "security slab" below the open second floor.

Additional floor-load capacity had to be built into the structure for maximum flexibility. More plumbing is required for an "unusual high population," and there are extra fire and safety provisions.

Space is labeled "general purpose" and there is a lot of it. There will be laboratories, classrooms, an auditorium, library, morgue, gymnasium and physical training area, firing range, test-pattern range and ballistics testing area, auto repair facilities, shops, an emergency power system, a "secure" communications system, an incinerator for dis-

posal of confidential material and, undoubtedly, files. The General Accounting Office, in its review last fall, found no executive "frills."

The most stunning increase of all is the purely inflationary one of rising construction costs in the last decade. The General Services Administration has estimated this figure at a whopping \$38,212,000, from April, 1962, to July, 1974.

There is no real villain to be fingered. The process is the culprit—interminable, complex, time-consuming and expensive—full of backing and filling, rejection and persuasion, during which the design evolved and costs skyrocketed.

Some of the escalation is due to delays, ranging from routine bureaucratic processing and the Congressional appropriations system to the multiple reviews and subsequent revisions. Other factors are changes that include redesign costs and increased square footage. However, \$38-million in inflationary construction costs—paralleled in private and public building across the country—required nothing more than sitting and breathing.

The theory that J. Edgar Hoover is building an extravagant monument to himself has little credibility with those who have done the work. He communicated minimally through subordinates and seemed more concerned with logistics and security than art and posterity.

The building will be a monument in spite of itself. And its security symbolism, on the Route of Presidents in the nation's capital, is making a lot of people uneasy. Some of its design is aimed at being demonstration-and-protest proof. Many would have preferred it in a distant meadow somewhere, like the Central Intelligence Agency.

If the F.B.I. is making a great leap forward stylistically, the Federal Triangle is the great jump backward.

In the early days of the Pennsylvania Avenue Plan, the completion of the Triangle was undertaken as a study by John Carl Warnecke, who proposed contemporary infill.

Later, the change from a Democratic to a Republican Administration brought a change from Democratic to Republican architects in the unpleasant tradition of using architecture as political patronage. The job went to Vincent G. Kling of Philadelphia with Leo A. Daly of Omaha, and the style went from modern to classical.

The project involves the much-debated destruction of the Old Post Office Building, being vigorously protested by preservationists. According to present plans, just the tower will be kept and incorporated into the new construction, which will copy the old.

The Internal Revenue Service Building will be extended and the circle completed on 12th Street. The Pennsylvania Ave-

nue facade will be finished as far as the District Building, and the sea of parked cars in the Post Office court will be replaced by a classically landscaped plaza with a parking garage underneath.

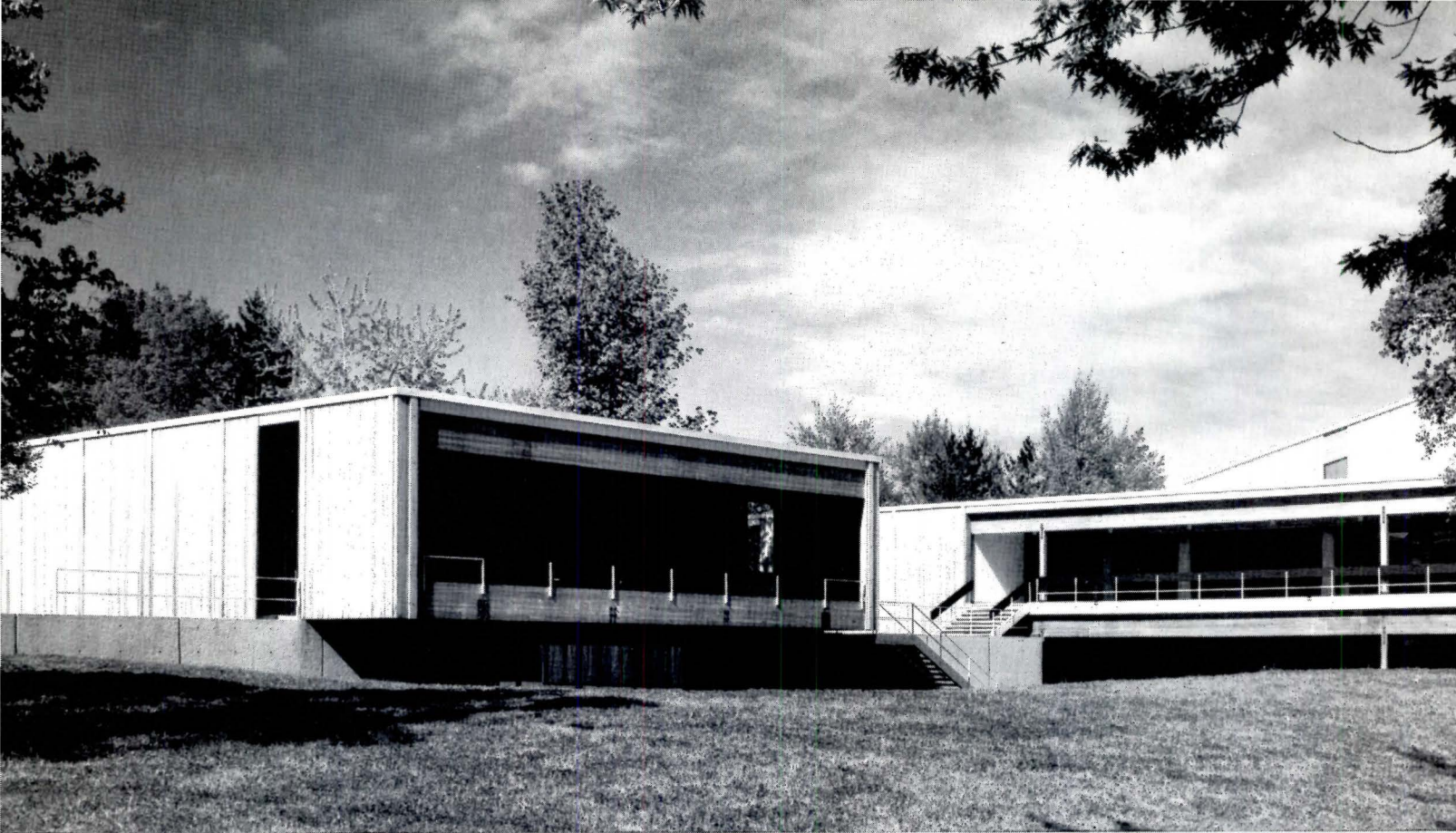
The General Services Administration has not instituted a master-plan study of the present or optimum uses of the Federal Triangle; the complex is simply being added onto with an impressive carbon-copy cliché.

The sum total of the new construction will be exactly what the Pennsylvania Avenue Plan set out to abolish: the cold, formal, dead stone walls that drain off all the life from Washington streets, a stillborn formula the Government seems destined to build.

Every bit of it, traditional or modern, to use a newly coined phrase of John Kenneth Galbraith, is in the Sub-Imperial Style. He refers to foreign policy, but the phrase applies equally to the Washington architectural scene.

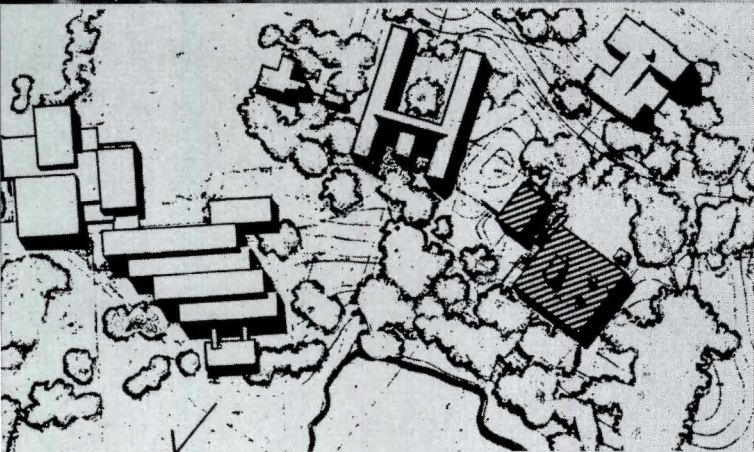
Unlike a genuine Imperial Style, the Sub-Imperial Style is what you get when power is exercised not by individuals but by organizations or a bureaucracy. The Sub-Imperial Style is what the bureaucracy builds for itself.

Apparently, no executive order can change it. Ten years and on the way to a billion dollars worth of building later, we are back where we started. Perhaps there was never any place else to go.



NEW BA FOR BENNINGTON

Science Building and
Lecture Hall for
this innovative college
were designed
to encourage change



View from the east shows the Lecture Hall building at left, with its "Overlook" facing north. The two-story science building is at right. The two are connected by an open walkway. Site plan includes the proposed visual-and-performing-arts center to the east of the completed structure. Night-time view at left shows the two loft-space floors of the science building, and the little greenhouse at far left.

Bennington's campus started out as a fairly symmetrical arrangement of vaguely Colonial buildings, quite residential in scale. To these have been added, in recent years, a number of modern structures (e.g. the Edward Clark Crossett Library by Beluschi & Koch—Feb. '60). The most recent addition to this pleasant collection of structures is Architect Robertson Ward's Science Building and Lecture Hall—a building that takes its place easily and comfortably on this relaxed campus.

One reason the new building works so well in its situation is that Ward understood that situation from the start. Walking around the campus, he realized very quickly that the most successful, older building there was a strange agglomeration of spaces known as The Barn—a great, big shed that had gradually evolved into "an envelope for a variety of different activities," as Ward put it. "I think the attachment everyone at Bennington has to The Barn exists because the building has grown and responded to the environment. There was no fixed, conscious form of the building which prevented its growth, or which prevented its change."

The new building is not all that amorphous, of course. It is, in fact, two rectangular structures linked by a gallery, and quite clearly defined in plan and elevation. "The new buildings (this one is only the first step in an ambitious program) will be very simple forms," Ward said after looking at the program and the campus, "and therefore they will have the same ability to invite, accept and encourage change while still retaining their original character." Nobody will know for some time, of course, whether or not these buildings can gracefully "invite, accept and encourage change;" but the intention is certainly laudable, and the initial impression successful.

The science-building portion of the new structure is, in effect, a two-story loft space, constructed on a 10 ft. 8 in. module, of massive laminated wood columns and beams, with all piping, wiring and ducts exposed, and with floors "pre-plugged" for future penetrations. It was designed for possible 40 percent future expansion; and the little greenhouse

attached to the south of it can be expanded by 200 percent. The science building has about 20,000 sq. ft. on each of its two floors, and its flexible loft space can accommodate anything from small faculty offices to spacious physics and biology labs.

The lecture hall to the east of the science building is an equally flexible space. Its basic capacity is about 140 to 160 students; but the side balconies that can be used by SRO audiences will increase that capacity to about 250, for community gatherings. And there are all the usual audio-visual facilities and devices.

All of these spaces are beautifully related to the Vermont landscape that makes this such a nice campus. There are porches outside the science building, and there is an overlook (facing a large pond to the north) in back of the lecture hall. The scale, in short, is quite as residential as that of the rest of the Bennington buildings—it is, in effect, another Bennington Barn, almost an addition to the old Barn.

This relatively small complex of buildings is only the first phase in Bennington's expansion plans, also designed by Robertson Ward. The next phase will be a visual arts/performing arts center to the east.

Meanwhile—and hopefully—its detailing will be as seemingly casual and *ad hoc* as that of the first phase: structure and services expressed and exposed, to serve as an additional teaching tool; to make the building itself understandable to those who use it. The exposed structure and utilities are only seemingly casual, of course: the architect made detailed and intricate drawings showing the precise location of ducts and pipes, and their precise connections; without these drawings, the exposed services might have ended up hopelessly confusing to the untutored eye.

"The building should be a vacuum which invites," Robertson Ward said when first asked about "the essential point of transformation for a building." The answer he gave was both honest and clever—it involved the client and user in the building's life. But no good building, however universal in spirit, is ever a vacuum—and this is a good building.

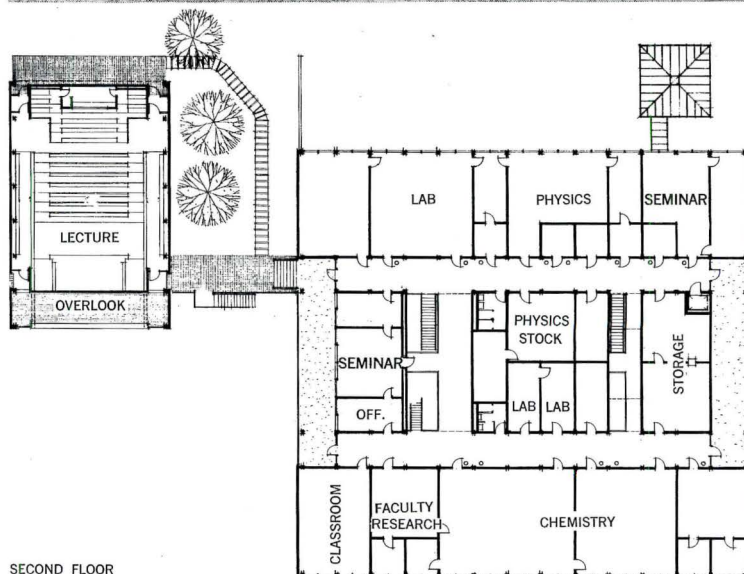
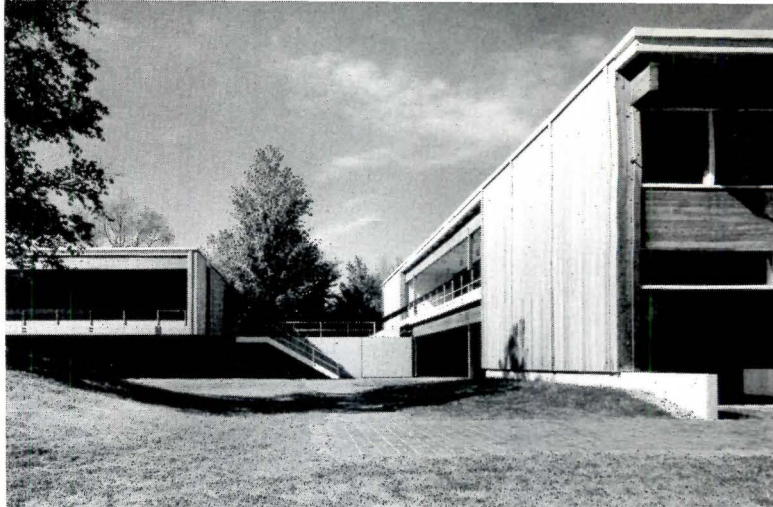
Top photo is of the open link between the two building blocks, explained also in the two floor plans. The photos on the opposite page show the lecture hall interior at top left, a typical science building interior at top right, and one of the elegant interior stairs in that same building at bottom right. The laminated wood structure and all the mechanical services—conduits, ducts, and pipes—are exposed throughout the building.

FACTS AND FIGURES

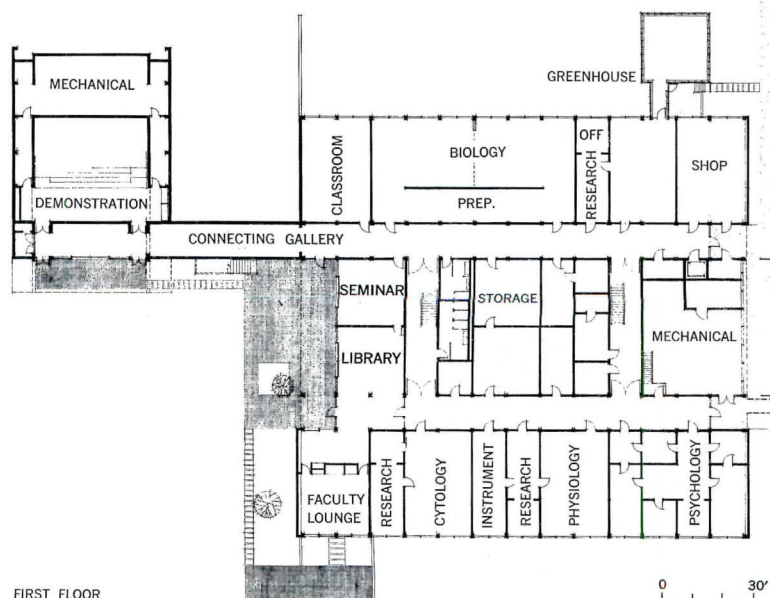
Dickinson Science Building and Tishman Lecture Hall, Bennington College, Bennington, Vt. Architect: Robertson Ward, Jr. (Timothy D. Smith, project manager). Engineers: The Engineers Collaborative Ltd. (structural); Environmental Systems Design, Inc. (electrical and mechanical). Consultants: Lyle F. Yerges (acoustical); Burgess P. Standley (laboratory facilities). General Contractor: Granger Contracting Co., Inc. Building area: 44,000 sq. ft. Cost: \$1,166,000 (construction); \$176,000 (furnishings and equipment).

(For a listing of key products used in this building, see p. 85.)

PHOTOGRAPHS: George Cserna

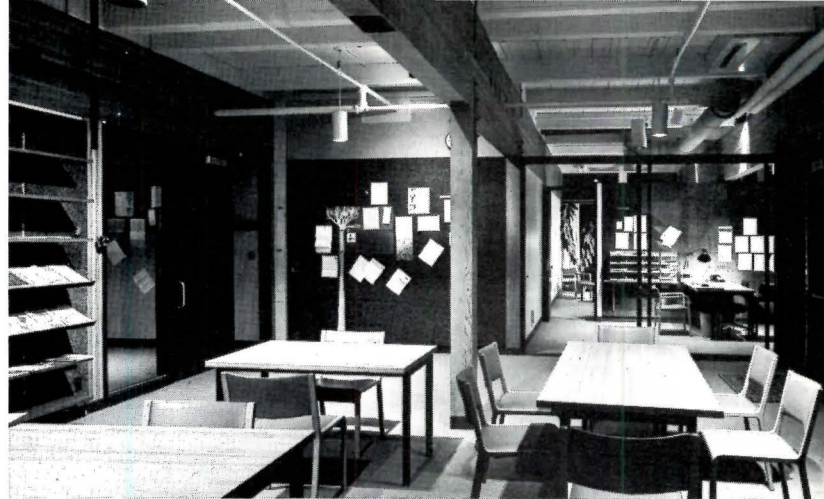
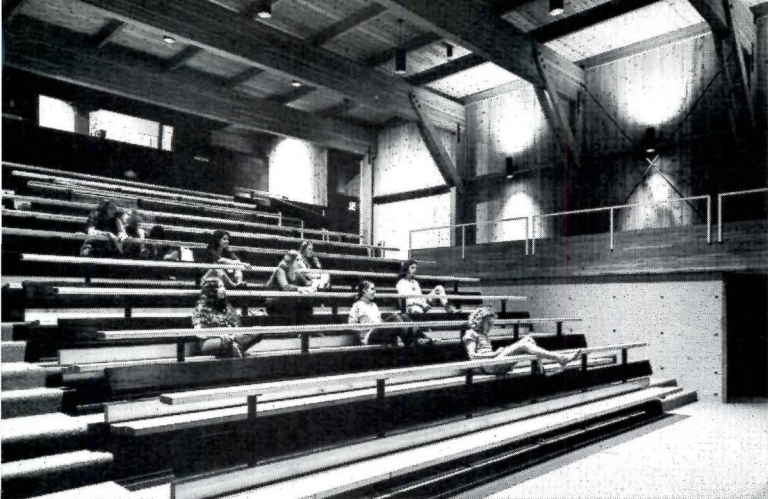


SECOND FLOOR



FIRST FLOOR

0 30'



IRRELEVANCE OF UNIVERSITY ARCHITECTURE

A forthright discussion
of recent
British universities,
with an important
message for
American campuses

BY IAN BROWN

The present-day British university cannot be considered separately from other urban and conurban units. Customarily, however, new universities are located in the light of an old, 19th-century conception of urbanism—the satellite town in relation to the parent city. Ebenezer Howard, when confronted with the conurbation, the multi-city, avoided the problem of redevelopment and took his “overspill” populations into rural areas beyond the city although within its sphere of influence. He created the myth of Garden City man, content with a small, introverted environment. He reestablished as an ideal the central mother city that was, even in 1900, merging into the shapeless, sizeless conurbation.

Fifty years later, in the face of ever larger student populations, the satellite introverted environment of similar medieval origins emerges as the customary solution. There is no questioning whether the present British student conforms to the historical ideal of the Oxbridge introvert. If the preconception of the satellite and monastical university is to be credible, the student—like Garden City man—must also be preconceived and idealized.

A realistic idea of the student of today, in the urban context of today, is overdue. The student must be accepted as free-ranging, mobile, metropolitan in the best sense; his location, his natural habitat, the multicenter amorphous, conurbation. To choose cities like Canterbury and Colchester alongside which to locate our most potent urban units is to delude ourselves in a more serious way about the university than did the Victorians. The prevalent urban form, under the impress of the automobile, the macadam road, the telephone, television and radio, is a dispersed, directionless urban form. The new university must relate to this form and must be made part of it.

The university can so relate only by itself dispersing, by breaking into many elements and abandoning its own compact, monolithic grouping. It will need to scatter along the city's access ways. Whether it breaks into the recognizable elements we call colleges, or into some new type of element, merits inquiry. But one way or another, whether we drift or drive to it, the university must become a series of linked suburban elements. Most of the new British universities—in location and strategic format—are not based on this kind of thinking. They are sited in unresilient groupings in parkland at some distance from a central parent city.

Urban mass, to be most responsive to university needs and to most other land uses, must be revisualized, with its access ways as the primary configurator and growth definer, with settlement elements relating secondarily to the access skeleton. Similarly whatever scale of element (total university mass, college, or some present-day equivalent) is chosen as the appropriate university unit within this urban mass, the nature of the element must be analogous to the nature of the city, because it is part of the same period,

conditioned by the same laws of rapid access, rapid change, rapid obsolescence.

In other words, the university should be reconceived as a skeleton or network of horizontal, vertical, oblique access ways on various scales and with a versatility in which, in the most temporary way compatible with a decent environment, should be located the various units of accommodation it requires. There should be the least possible fixity about these, the least possible nostalgia for either the monastic stasis of Oxbridge, or the symbolic stasis of redbrick.

This new impermanence had been the principle of modern architecture as it came finally to birth in Walter Gropius: an architecture of steel and glass, of standardization, of prefabrication, of systematization, of hard surfaces, and, in Pevsner's memorable phrase, of no personal security. It was to be a *neutral* architecture, an architecture that Mies van der Rohe described as “simply building.” Gropius explored in a series of quiet essays the possibilities of prefabrication, standardization, etc. The massive and complex triangulated structures of Buckminster Fuller have followed along the path that Gropius pointed.

Somewhere along the line something happened to the Gropius mainstream, subverting it from its hard-won principles. What happened seems more than anything to have been Le Corbusier. The latter, in his *Vers une Architecture* purported to be reinforcing the move to modernism. In fact what Le Corbusier represented was a return to classicism, to monumentalism, to the static values of the past, to the building as an esthetic-object-in-a-field that one walks around. Because of this, the work of Le Corbusier is beginning to look like a gigantic exercise in kitsch, when set alongside the disinterested rigors of Gropius and Mies van der Rohe. The final chapters of *Vers une Architecture* are a paean, not to the modern movement, but to the ruins of the Parthenon, to Ictinus and Callicrates, to the “brazen trumpets of the ancient work,” to the architect as hero. Le Corbusier's early productions, the small houses, represent a masterly superposition of classical Mediterranean formalisms on the new formal “limitlessness” in the thinking of Gropius.

With his chapel at Ronchamps (1950), the true reactionary in Le Corbusier broke completely through, and by the time of La Tourette convent (1957) most that Gropius had striven for had been thrown to the winds. La Tourette was the “built ruin,” a 20th-century folly equal to that first Gothic folly devised in 1746 by Sanderson Millar and destined to be as virulent a scourge of the 20th-century environment in Britain as was that other bizarre testament to the cultural exhaustion of a civilization. The prefabricated houses of Gropius have been unseated by La Tourette among a predominant part of the architectural profession in Britain today.

Gropius and Le Corbusier represent more than opposing views of what constitutes architecture: they represent two distinct states of mind. That of Gropius faces the realities of a century dominated by technology, by rapid change, and, particularly in Britain, by a rejection of the illusion that we can afford extravagant romanticisms in the fields of activity most crucial to our survival. It faces the realities of mass production, the sameness and standardization of artifacts, as tidal flows from which there is simply no escape.

Mr. Brown is an architect-planner in the Traffic Commissioner's office in the Department of Planning and Transportation, Greater London Council. He received his B. Arch. degree from Durham University in England. During the current year he has been a Lecturer in Architecture and Urban Planning at Princeton University. Major portions of this article appeared originally in *Higher Education Review*, published by the Cornmarket Press.

It grasps these elements positively as marvelous tools in the fight to provide for rising global populations, rising expectations in the face of increasing international competition. It is an attitude acknowledging urban existence as one of process, not stasis.

That of Le Corbusier is, for all the futurist polemics of *Vers une Architecture*, readily adaptable by architects who, with a craving for individual expression of an Athenian kind, turn their backs on these realities and who, like all romantics, hanker after an architecture, a way of life, of distant times or of distant places; a non-rational architecture that rejects today's egalitarian rationalization of existence. It is very much a bourgeois architecture, satisfying the appetite of a visually uneducated public for the different, for variety, for an escape from rigor, including the particular rigor of two main uniformities: that of mass-produced components and that of too continuous horizontal straight lines.

The new British universities, with small exceptions, are all a product of this romantic, backward-looking state of mind.

This latter impulse has been seen at work in the location of universities. But romantic symbolism also invests the configurations and structures of the university buildings as *buildings*, as artifacts, although their purpose is, or should be, to offer an efficient envelope for the production of the best possible graduates and postgraduates, and the best possible research—and to grow and change in order to do this. This growth and change must provide not only flexibility of the envelope as a static facility: for people sitting or standing still at some task, in groups or as individuals, or as groups of groups; but as an *access facility* enabling shifts of connection. It must be able to provide these facilities as quickly and cheaply as possible, in the first place and in subsequent redistribution of envelope and access. The strategic layout best suited to this is probably a uniform, non-emphatic (e.g., squared) multidirectional grid of access-way reserves capable of quickly and inexpensively achieving larger or smaller scale, and with least possible inconvenience to university courses and inhabitants. It should not be conceived in the first instance as a series of settlements: laboratories, lecture halls, teaching accommodation, libraries. These elements must be subservient, in the design process, to the primary configuration by the access-way reserves.

The building forms, as an absolute imperative, must be light and easily demountable.

This determines that the major emphasis in the building forms will be rectilinear. The lightness of the structure will require, at least in the foreseeable future, that the envelopes of accommodation be not more than three or four stories high. The system described here is a more advanced form of the system used in the British schools program and in particular those schools built by Aslin in Hertfordshire after World War II. These schools and the CLASP schools in Nottinghamshire identified and solved many problems in the production and variation of such complexes. Universities may be very grand places, but they are little different, except in scale and complexity, from the schools in which their students lately found themselves. Increased complexity and scale make such a sys-

tem more, not less, necessary.

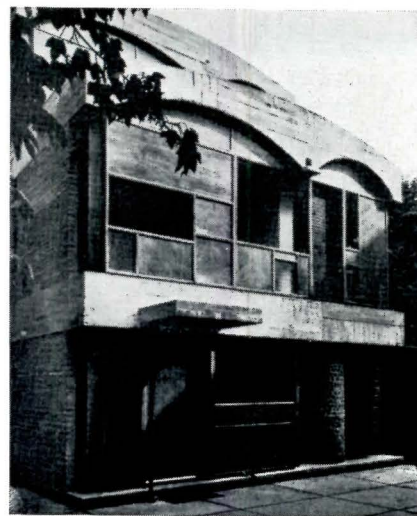
But the contemporary conception of the university, despite all that is said to the contrary, is still that of a monumental place, requiring monumental architecture, cathedral-like conceptions. And, certain examples apart, this is what the new universities have embodied. And since the major source of monumentalism in this country, now that the modern movement has made the Gothic and Classical styles finally ridiculous, is Le Corbusier, it comes as no surprise that it is in the main the monumentalism and romanticism of Le Corbusier that characterizes the "architecture" of many of the new universities. From his La Tourette convent, his Ronchamps chapel, and his two small houses, the Maisons Jaoul, the main style of the universities has sprung.

One of the most prominent examples of this effect is the University of Sussex designed by Sir Basil Spence. The major influences on this university are the Maisons Jaoul, designed by Le Corbusier in 1954, close to the end of his career. Their most characteristic features are massive reinforced concrete arches, using too much concrete for the job they needed to do: to span dimensions of house rooms. Whereas Le Corbusier's early houses emphasized the new thinness achievable in the modern wall, the Maisons Jaoul emphasized an especial thickness of massy brickwork. As opposed to the bold uniformities and continuities of the early modern movement, the emphasis is on diversity and difference, on the sculptural play of surfaces and recessions of rough material for their own sakes, as symbols of a less manufactured past. All of these factors Sussex takes over into itself. And if, according to the burden of this essay, these forms are inappropriate for a house for today, how much less appropriate they must be for a university. There has been no more sad nor ludicrous event in the architecture of modern times than the aping by this great building complex of the irrational mannerisms of a small domestic unit.

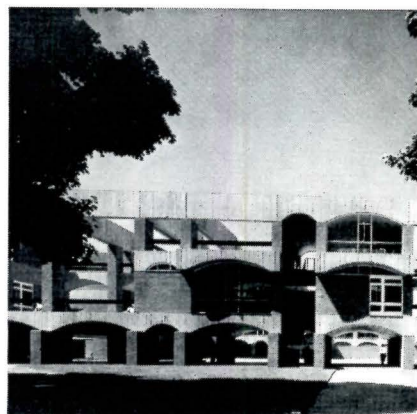
The result is anything but a machine for teaching and researching in; it is anything but flexible, economical, non-massive, demountable and capable of easy redeployment and incrementation. The principles which it enunciates in its forms are a rejection of the activities which it was intended to house. The configuration of its total campus massing is no less rigid than its detailed treatment. Nothing could be more immutable and inflexible than the five great blocks that stand in a relationship to one another as individualistic and unresilient as the Pyramids.

The situation providing the best chance for redeployment between settlement units and means-of-access reserves is one that provides for the latter in the first design (and permits of them in later redeployments) being free from, distinct from, not trapped in, the fabric of the settlement units. These should stand as far as possible *between* the main access ways and be fed from them. Where the subsidiary ways by necessity penetrate the building, they should do so on a systematic basis and be capable of systematic interchange with the movable elements of accommodation inside.

It may be thought that too much is made here of the requirements that change will force on the physical structure of the university in the future. It is worth quoting from Casson and Conder's



Maisons Jaoul by Le Corbusier



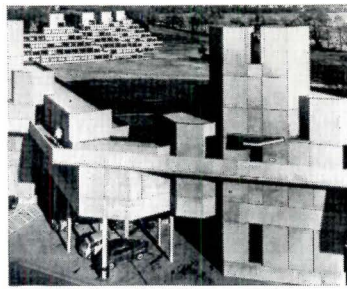
University of Sussex by Sir Basil Spence

University of Birmingham Development Plan Report (1958):

"It is a truism that a university is a society founded for the advancement of learning and a dissemination of knowledge. This means that it is constantly changing, always on its way, its work never completed. Departments expand, contract, quadruple in size, or virtually disappear within a few years, often in defiance of the most knowledgeable and expert forecasts. Every building and each layout, so optimistically and thoroughly designed, seems to become, within a decade, not only out of date, but physically hampering to the future. Any attempt therefore to constrict its movement artificially, either academically or physically, seems doomed, and rightly doomed to failure."

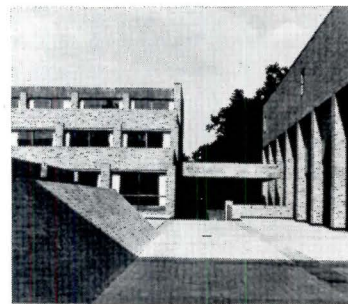
Equally custom-built for one point in time is the University of East Anglia by Denys Lasdun. The university is rooted in a main center and has been described as growing from that center in a series of limbs of various kinds, in which access ways, however, are not only part of the same physical envelope as the units of accommodation, but are the main configurator of that accommodation as it grows, for it can only grow along the access ways. The complex has been described as intuitively devised, and bearing a resemblance to a great cathedral in its need to be strictly adhered to as a master design over the 15 or more years required for its completion. But can the growth plan be so controlled, either in terms of limiting additions to the original concept, or in terms of deviations pressing upon the design within itself, from what was originally conceived? Lasdun is known to be one of Le Corbusier's dedicated admirers in Great Britain. He does not normally produce buildings either flexible in plan or construction. Nor are they as a general rule capable of being either speedily or cheaply built. He has an immense disdain for industrialized building and for anonymous architecture of the CLASP kind as used in the University of York. East Anglia's costs are well above those defined as reasonable by the University Grants Commission, the purseholder for universities in Britain.

Another example is Harvey Court at Gonville and Caius College, Cambridge, by Sir Leslie Martin, Colin St. John Wilson, and Patrick Hodgkinson. The program required a hostel for 100 undergraduates and a few fellows. The hostel is sited near the eastern corner of the Caius complex in an extensive garden. It was originally designed for a congested urban site in King's Market. For such a location there may have been some logic about its introverted design. But transferred to the West Road site, the hostel is a romantic nonsense. The monastic introversion of views denies the inhabitants visual access to the entire north side over the banks to King's Chapel. Another consequence of this turning inwards is that the rooms which open on to the stepped terraces, or "hanging gardens," as they have been over-kindly described, are exposed through their large glass windows to the view of anyone standing on the terrace immediately outside, and are almost equally exposed to view from the rooms opposite. Harvey Court is perhaps the most monastic and "historical" building in the whole range of university buildings built since World War II. Its structure is of brick-



University of East Anglia

Harvey Court at Cambridge



Engineering at Leicester



work, like that of Sussex, completely renouncing the available technology of the times and paying heavily for the indulgence in terms of cost, space and adaptability. It has been eulogized as sculpture in brickwork. The immediate ancestor of Harvey Court is La Tourette Convent. It uses the same nostalgic paraphernalia: that heaviness of structure that predates gunpowder and certainly the atomic bomb; the elevation of the facade to points high above the jostling world outside (except that, being in a garden, there is no jostling world outside); the penetration of that lifted facade by the fewest possible "embrasures." It is almost inconceivable that such a building could be designed and erected half a century after the Bauhaus. Harvey Court's costs were twice those considered normal for such a building.

Le Corbusier has not been the only retrograde source of influence on university architecture. There have been more subtle influences, producing nevertheless buildings equally bizarre and esoteric, equally unrelated to the parlous state of university provision in Britain, to the need to make that provision in the most plentiful, economical, changeable and accelerated way. To pinpoint these influences and to bring out their consequences it is necessary to glance briefly over the development of modern architecture in Britain during the last two decades.

Those who remember the early years of modern architecture in Britain after World War II will recall a style called, oddly enough, "Contemporary" although there is perhaps nothing more odd about this than calling a style modern except for the capital C. It reached its most advertised, if not exactly finest flowering in the 1951 Festival of Britain exhibition. The style, though superficially seductive, was in the main effete, cosmetic, without rigor, a reaction from the wars, but disgusting to the generation of architects who grew up with it. In reaction against it there developed a new style "the New Brutalism," dealing in rough concrete surfaces and overconscious manipulation of external forms in a blunt and rigorous manner. Its major progenitor was again Le Corbusier, and again La Tourette Convent was the building seminal to this movement. But this ran too into the sands, the brutalisms becoming more and more strident, more and more boring, more and more respectable even, until a complex as public and exposed as the Queen Elizabeth Hall group on the south bank of the Thames could safely make use of these tired mannerisms.

After the New Brutalism the ability to shock became an accomplishment difficult to acquire. In the hysterical state that British architecture had worked itself into by this time, however, the quest could not be abandoned, and, in the engineering building at the University of Leicester by Stirling and Gowan, the profession was presented with its Frankenstein, amidst a concert of maidenish squeaks that have not yet died down. At the sight of this brown tiled totem, the blood ran, or rather was supposed to run, cold. Bizarre, strident, Gothic in the way that Butterfield was Gothic, the Leicester building is perhaps the most extreme example to date in modern British architecture of esthetic individualism run riot. The masochisms of its mannered form make the New Brutalism look cozy by comparison: it reaches, with the studied calculation of a Hammer films-effects man, into the repertoire of the

"hard" Victorian ecclesiastical school of architects, translated superficially into a modern idiom in order to secure its teeth-on-edge effect. Like Butterfield's All Saints Church in Margaret Street (off Upper Regent Street), it deliberately assumes a basilisk persona. But what have such whimsies to do with the needs of British universities today and in the future? Very little, one could submit, unless our society is so hooked in its most sophisticated spheres on this kind of historico-visual sensationalism that it cannot pursue its rational lines of enquiry without a surrounding environment that is fully "turned on."

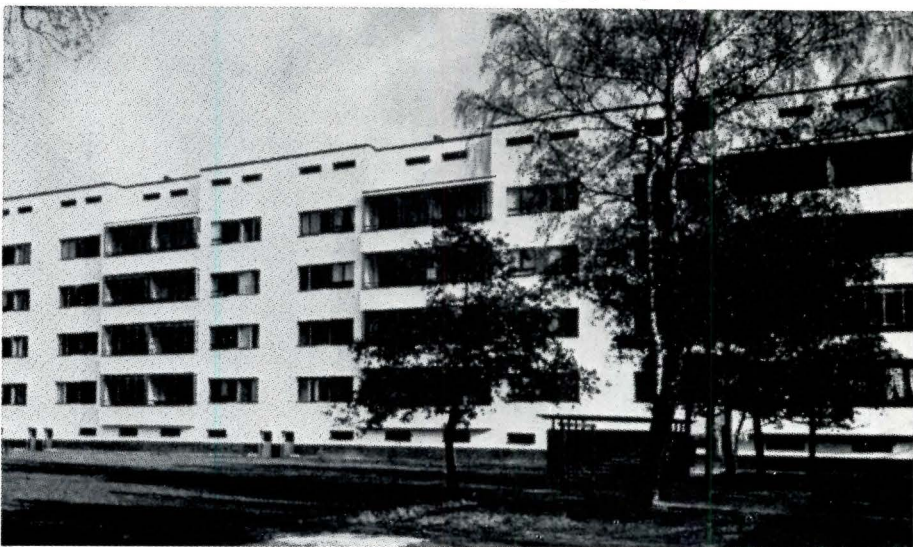
The University Center at Cambridge is perhaps the weirdest example of all. The architects, Howell, Killick and Partridge, progressing from the influence of Le Corbusier on their work for the then London County Council's Roehampton housing project in Richmond Park, had developed, by the time of the University Center, an interest in the work of the Spanish Art Nouveau Architect Antonio Gaudi, in his sculptured facades and superstructures. Nothing could be more remote from the spirit of Gropius' prefabricated houses and "infinite" row housing. To go deliberately to such a source in an attempt to break away from the monotonicity of the new architecture, is an escape analogous to that of the original Art Nouveau movement from the imperatives that manufacturing processes force on us globally. Its outcome is monotonous, the antithesis of the natural monotonicity deriving from technology taken "neat."

The University Center self-consciously echoes the super-baroque undulations and brooding overhangs of the Casa Mila in Barcelona by Gaudi around 1907. But the Center's undulations perform no function and the consequent V returns between the bays penetrate with excruciating awkwardness into the interiors, requiring further costly reflections on the internal walls that face them. Every last detail of the building, large and small, down to the corners of tables, is burdened with the clipped angle conceit of these V returns. More creepy is the superposition on the facade of this ultra-individualist "masterpiece" of a grid of heavily emphasized joints between the facing components. On the one hand, the studied rejection of rectilinearity; on the other the cosmetic exaggeration of rectilinearity. On the one hand the infliction on the building of useless and tedious expressionist emphases of a *fin de siècle* kind; on the other an infliction of a theatrically Meccano kind, both equally verbose and unnecessary. The University Center is consciously or unconsciously a black comedy about modern architecture, as inbred and nasty as one of Beardsley's more *recherche* pieces. The intricately sculptured base of the building completes the effect of perverse detachment from the realities of the 20th-century condition.

The examples selected are only a small sample of university buildings of a like kind, exemplifying a strong wave of expressionism in an architecture that set out, above all, to be rational. Many other examples could be cited to show that a large part of the British national income is being invested in university buildings that are not making the best use of extremely scarce resources. Those resources are being used through over-tolerant or exuberant vice-chancellors, to indulge architects in esoteric and expensive whims. These



University Center at Cambridge, above; far from row housing by Gropius, below.



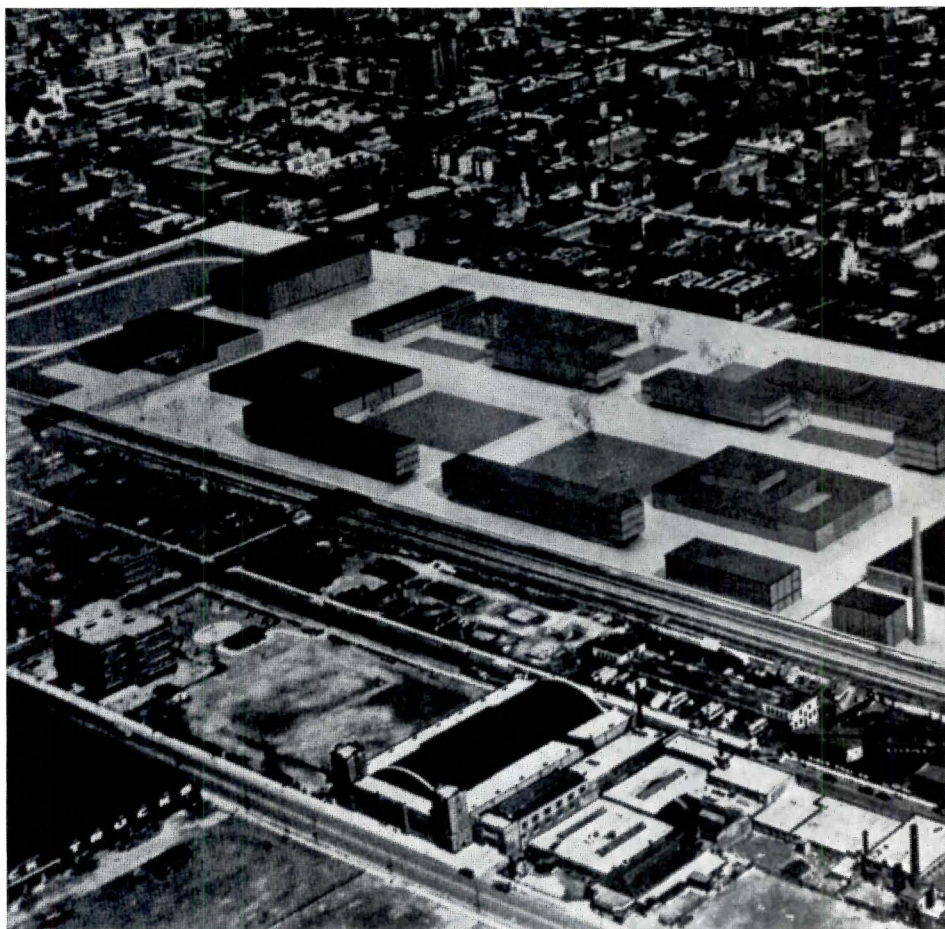
The University Center self-consciously echoes Gaudi's Casa Mila, below.



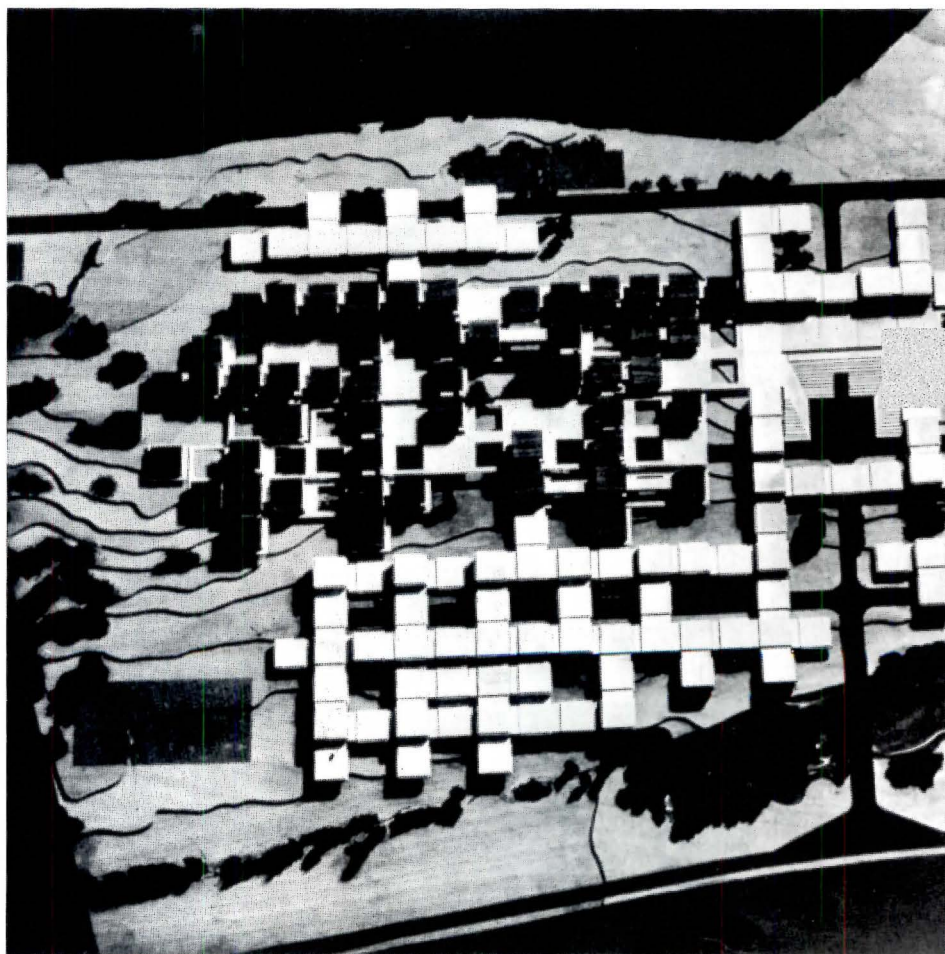
result in buildings less suitable for their present and long-term purpose than would have ensued from a more straightforward and rational approach, which took in above all the needs of the future, and the liability of present requirements to change radically in the course of brief periods. These buildings have been called "portrait" architecture, of favored professors for whom they were designed, or, more often—in the face of anonymous and self-cancelling committees, with little or no visual education—of the architects themselves. Designed to house the antennae of our society, they serve to move that society backward, not forward.

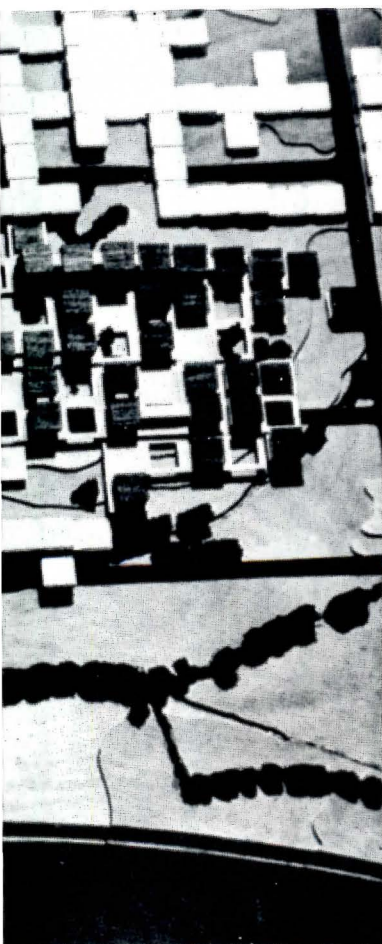
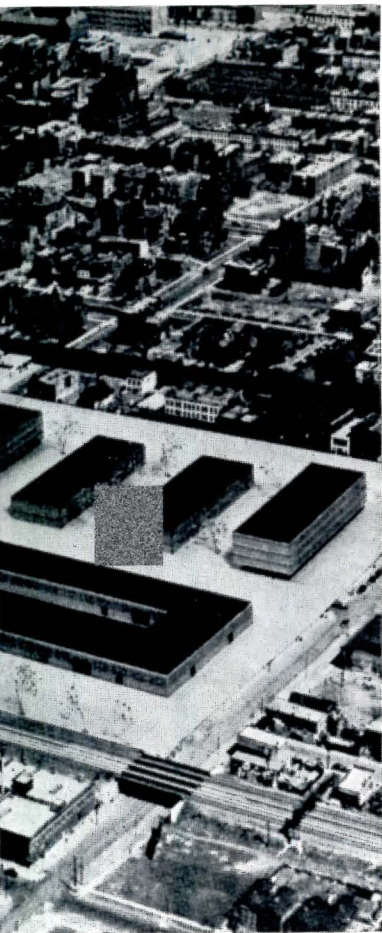
Do any of the recent university buildings set out to answer the requirements that this essay has set down? One of the clearest examples is not in Britain but in the United States: the Illinois Institute of Technology campus by Ludwig Mies van der Rohe, colleague of Gropius at the Bauhaus, and himself its one-time director. Although not every requirement set out above is met in this complex, a great many of the most important ones are. IIT is in a completely urban environment, as a piece of urban renewal, on as unromantic a site as it would be possible to find, completely locked into the large urban scene, rather than to the rural environs of a cathedral city. Rectilinear, flat, and with industrial environs, its site is divided by the architect into a uniform and multidirectional grid of squares, and both buildings and access ways are set down to conform with these. Thus a main framework is set down from the start. The buildings are all rectilinear in plan and in volume, absolutely simple box-like envelopes. They vary in size, but none exhibits an external shape specifically configured by the present special use it contains. Thus the building or envelope that contains the architectural school today could as easily, with the minimum of fuss, expense and disturbance of work, accommodate chemistry or physics tomorrow. Like the Bauhaus, the buildings are largely glass and steel frame over their external walls, with light partitions separating into simple rectangles the various rooms inside. The main access ways of the campus are very deliberately separate from and placed between the buildings or "settlement" units. Their layout is the main and primary configuration of the site: simple, rectilinear, balanced or "neutral," like the access ways of a Roman encampment, a Greek colonial town, a medieval bastide town, an English Renaissance town. Mies' other, individual, buildings receive much more attention than the IIT campus, which is virtually ignored in the professional press. But this complex is easily his most important contribution to urban design, and of particular importance internationally as a way forward in university architecture and campus layout. It has had practically no influence on campus design in Britain, and very little on urban layout in general.

Two university groupings in Britain are of particular interest as exemplars of these principles. The first is York University by Matthew and Johnson-Marshall. The buildings are in a modified form of the CLASP system. Simple, unpretentious, rectilinear, adaptable, speedily and cheaply erectable, these buildings are among the farthest forward that the Gropius tradition has taken architecture in Britain. The university is



Pointing the way: Illinois Institute of Technology, above; University of Loughborough, below.





positively conceived in a way that will enable it to begin now and grow later, and the constructional system is well suited to this. Its cool rectilinear blocks and unemotional treatment are a haven from the diversions of the general university scene. More important, the settlement units, the multi-faculty departments, are set down separately from the major access units and are free to expand, or contract, or internally change, without affecting the efficacy of the primary connections. And the CLASP system itself, of course, was chosen not simply because of its comparative cheapness, but for just that capacity to lend itself to detailed adaptation, to speed of change.

An even more interesting example is the University of Loughborough, by the British-domiciled Danish engineer, Ove Arup, the man who made the Sydney Opera House concrete spinnakers stand up. Arup takes the grid system (enabling flexibility and change) farther than any other building in Britain. His grid is not, moreover, the normal subdivision of the total area into squares, like Mies van der Rohe's. He moves on from this position to develop a "tartan" grid, where access-way reserve strips lie between the square settlement or accommodation unit reserves. A large unit of accommodation would embrace not only several settlement squares, but also the interconnected access-reserve strips that can be used either as secondary or tertiary access reserves or as bonuses to the settlement areas. Either way, the system of major access reserves is left available as a primary condition, and only an abuse of the system as a source of maximum change and maximum access would produce such an absorption of tartan strips by settlements as to block off the free overall connection system. The designer's definition of the problem is a clear echo of that made by Casson and Conder, and gives some hope of the beginnings in Britain of a mainstream Neutralist movement:

"As it cannot be predicted to what extent departments and schools are going to grow and change or even shrink, and as new methods of teaching, etc. are distinct future possibilities, it is fairly obvious that there is a great deal to be gained from consciously designing the buildings to be adaptable for as many uses as possible. Specific proposals for the size, height, use and relationship of buildings should be avoided, simply because the data upon which such proposals would be based may well turn out to be inaccurate."

Loughborough is without doubt the university project most clearly conceived in terms of these proper requirements of today enumerated in the foregoing pages. Its architecture will not suffer by virtue of the thoroughgoing systematization of response: despite the fact that he is an engineer, Arup (like Owen Williams before him) has produced some of the most civilized and satisfying architecture in Britain. The structure of Loughborough is spare, prefabricated, matter of fact, free of the historical distortions that afflict other university buildings. This is the tradition from which architecture in the main in Britain, and university building in particular, has departed over the last three decades.

Who is to blame for the kind of universities that the postwar decades have produced? In the larger context, the society that makes them pos-

sible or necessary. In the smaller, the architects who directly produce them.

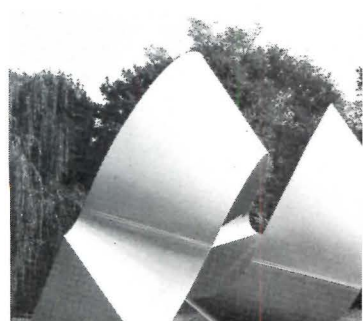
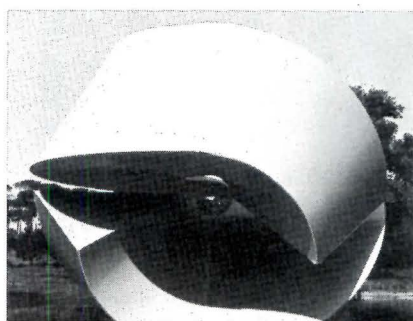
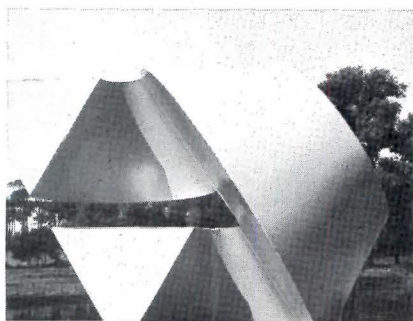
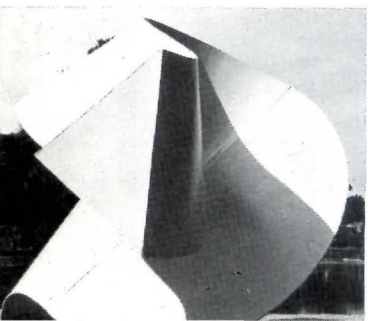
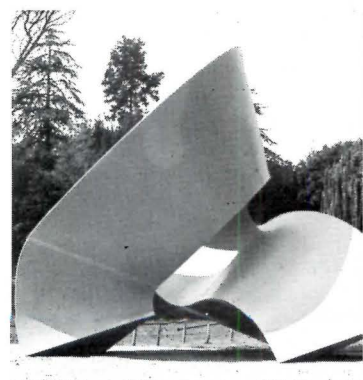
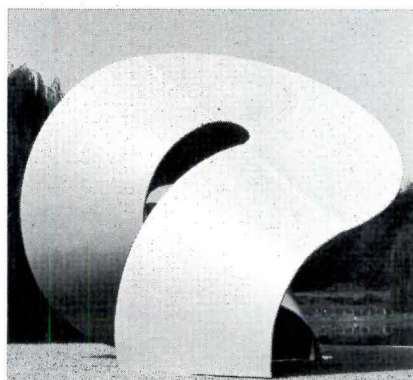
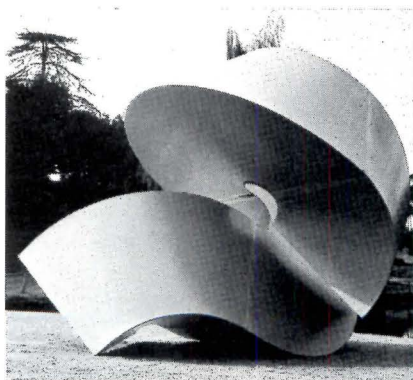
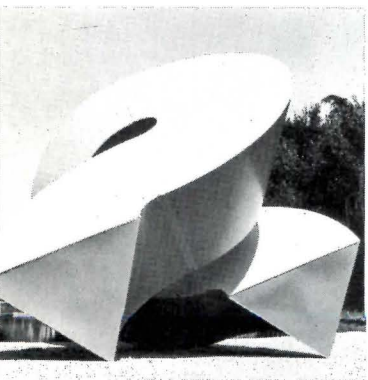
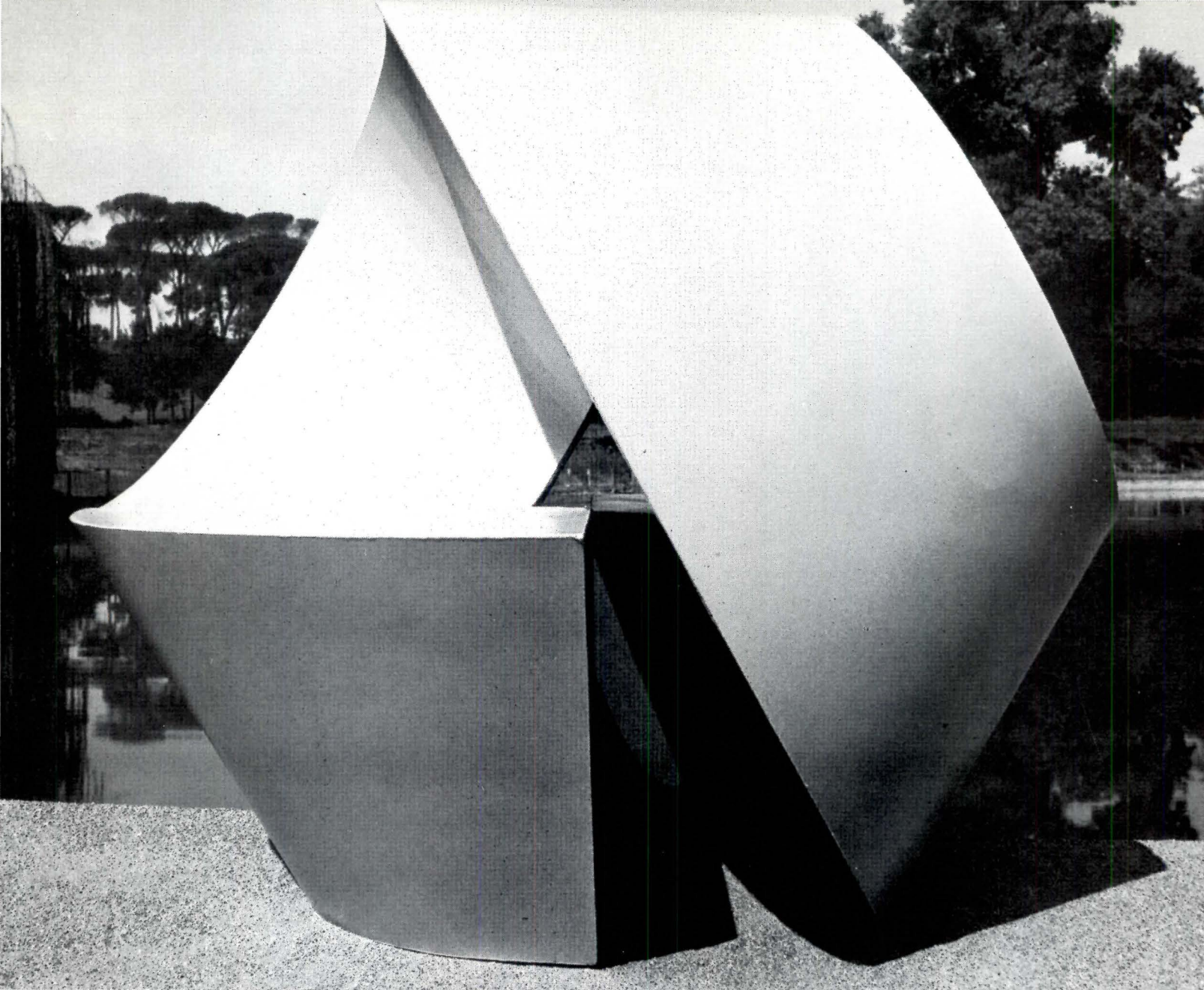
The profession has, by and large, failed present-day Britain as it failed its Victorian counterpart, while the engineers, Brunel and the rest, got on with the job of solving what W. B. Edwards called "the real problems of architecture."

What of the future? Certainly Britain is going to need many more universities than it possesses at the moment. Somehow, as has been said, this most potent element of an almost totally urban society must be integrated into the real urban unit of today: the shapeless, sizeless, and directionless conurbation, the multi-city, the city of suburbs. As part of this problem it must deal with students less and less content to submit to the impositions of what is considered appropriate as a "university way of life." This may well include an insistence on access to large metropolitan facilities, rather than those of the cathedral city or even seaside resort. The dispersal that has fragmented the city may tend to fragment, with increasingly sophisticated access provision, the students from the university as residence, and in other ways the present superficial homogeneity of the new universities. The accident of London could become the preferred solution of tomorrow.

Second, the building forms themselves may need to submit, not only to the kinds of discipline and rationalization commended in this essay, but, as the pressures of the society grow, for more intensive and extensive applications of these disciplines. Pretty surely an aspect of this will be the tendency more and more to facilitate the rapid manipulation of accommodation unit and access-way reserves, by housing them under all-embracing envelopes, Fuller's domes will move us inexorably in this direction. Mies van der Rohe has also explored these possibilities, and Gruen's shopping centers are signposts to this form of accommodation. But again this must involve a conflict with romantic attachments to the irrevocable *externalization* of building forms as an essential of architecture. With Leicester and the Cambridge University Center we have fled as far up that alley as we can go. Ralph Tubbs once called architecture "the art that stands in the rain." It need no longer be so.

Finally the addiction of the Anglo-Saxon, particularly the Anglo-Saxon architect, to the picturesque, and to very strictly limited continuities must be circumvented: it will never be cured. The future of the university like that of almost every element of British society, will be, if boldly contrived, one of continuities and uniformities, beyond anything, even Gower Street, that Britain has created environmentally to date. Sooner or later those aggregations of requirement that we forfeit now to the monotonous, through timidities unbecoming to post-Victorians, are going to have to be creatively conceived into *monotonic* forms in the future structuring of the built environment, the expanding conurbations.

These are all directions in which the universities of today in Britain, more than any other building type, should have given a lead. They are still primary centers of intellectual excellence. Loughborough is perhaps the only one to have attempted an exploration of them with courage and thoroughgoingness that our uniquely different century demands.



CHARLES PERRY

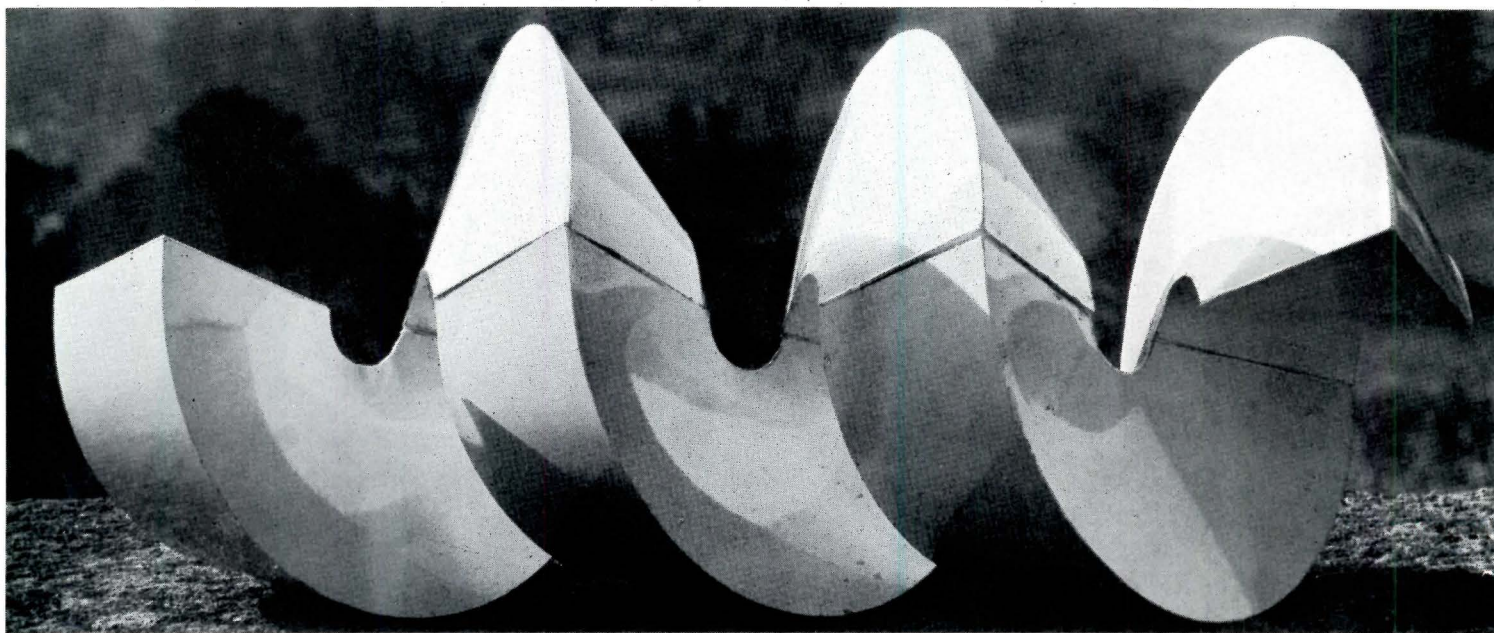
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THE USES OF SOLID GEOMETRY

The sculptures shown on these two pages (and on the cover) are, in fact, one and the same "piece"—or, rather, they are several combinations of four conic pieces: two of them half-circular, the other two quarter-circular. All four pieces have the same triangular cross-section, and the different shapes are formed by fitting the triangular ends to each other. Charles O. Perry, who made these and innumerable other geometric sculptures, calls this particular series "S", merely for identification. (The version on this page is a variation—it was made out of six pieces.)

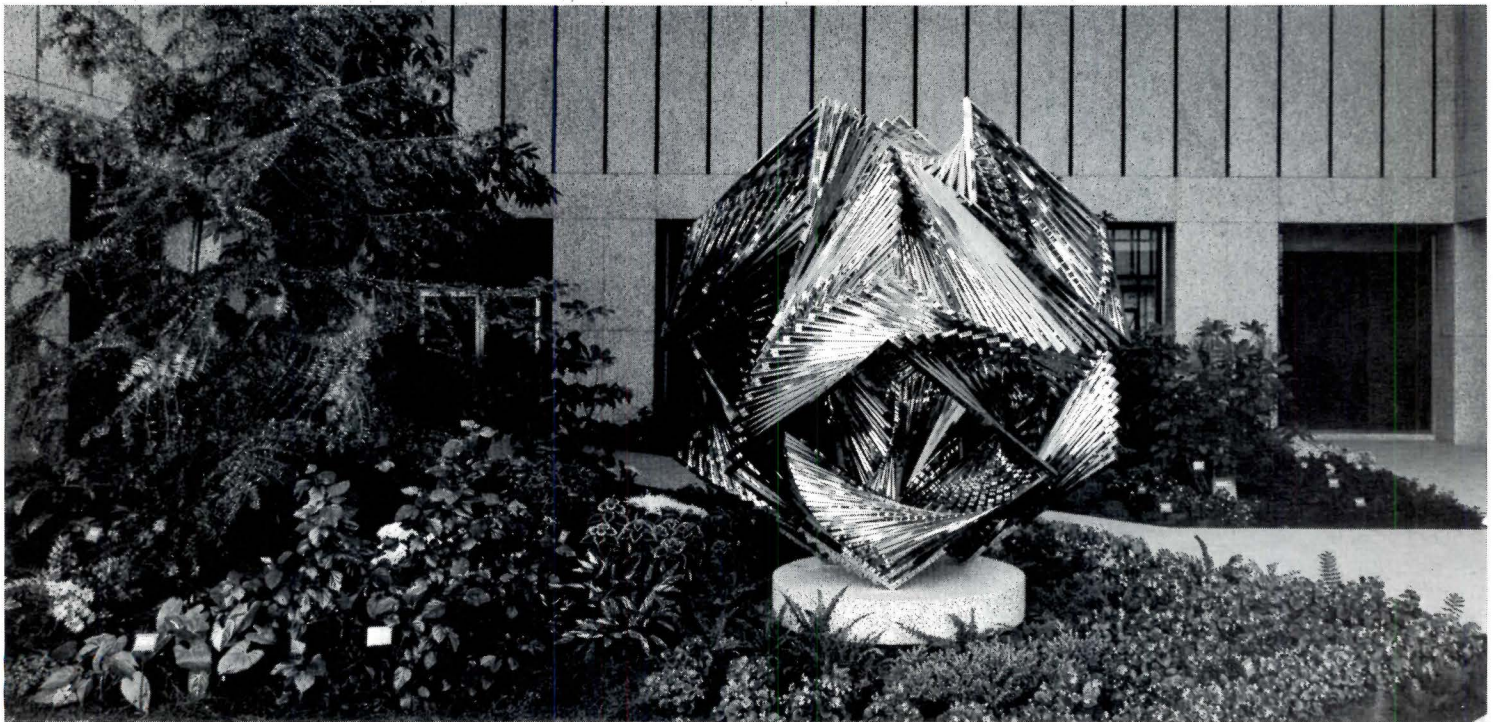
Perry, a former architect turned sculptor, has never calculated the number of variations possible with two pairs of identical twins. "The desire of this study," he says, "was to evolve a simple set of elements whose compositions vary in appearance from Totemic to graphic to humorous: to evoke completely different responses in the viewer."

"S" is one of Perry's latest works—one of the first to be made up of curvilinear elements. But much of his recent work has been in the area of what he calls

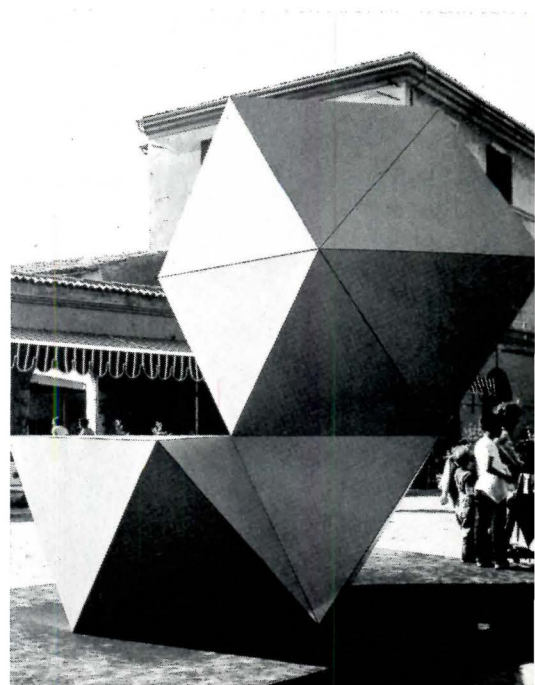
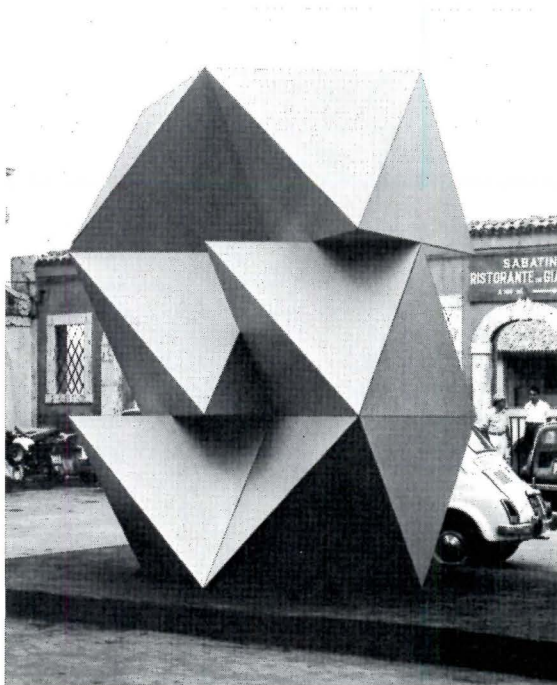
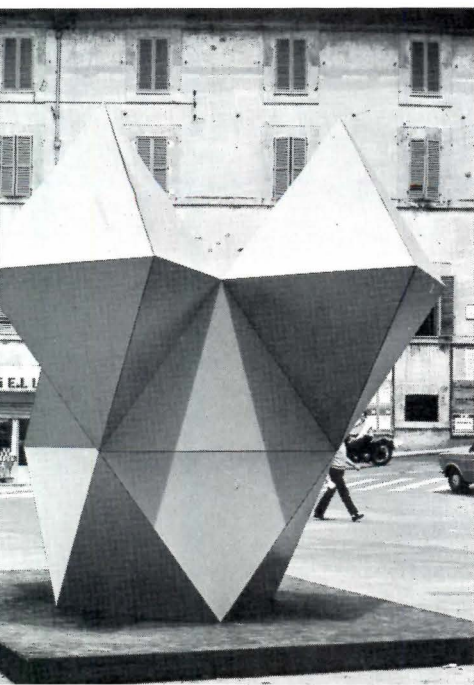
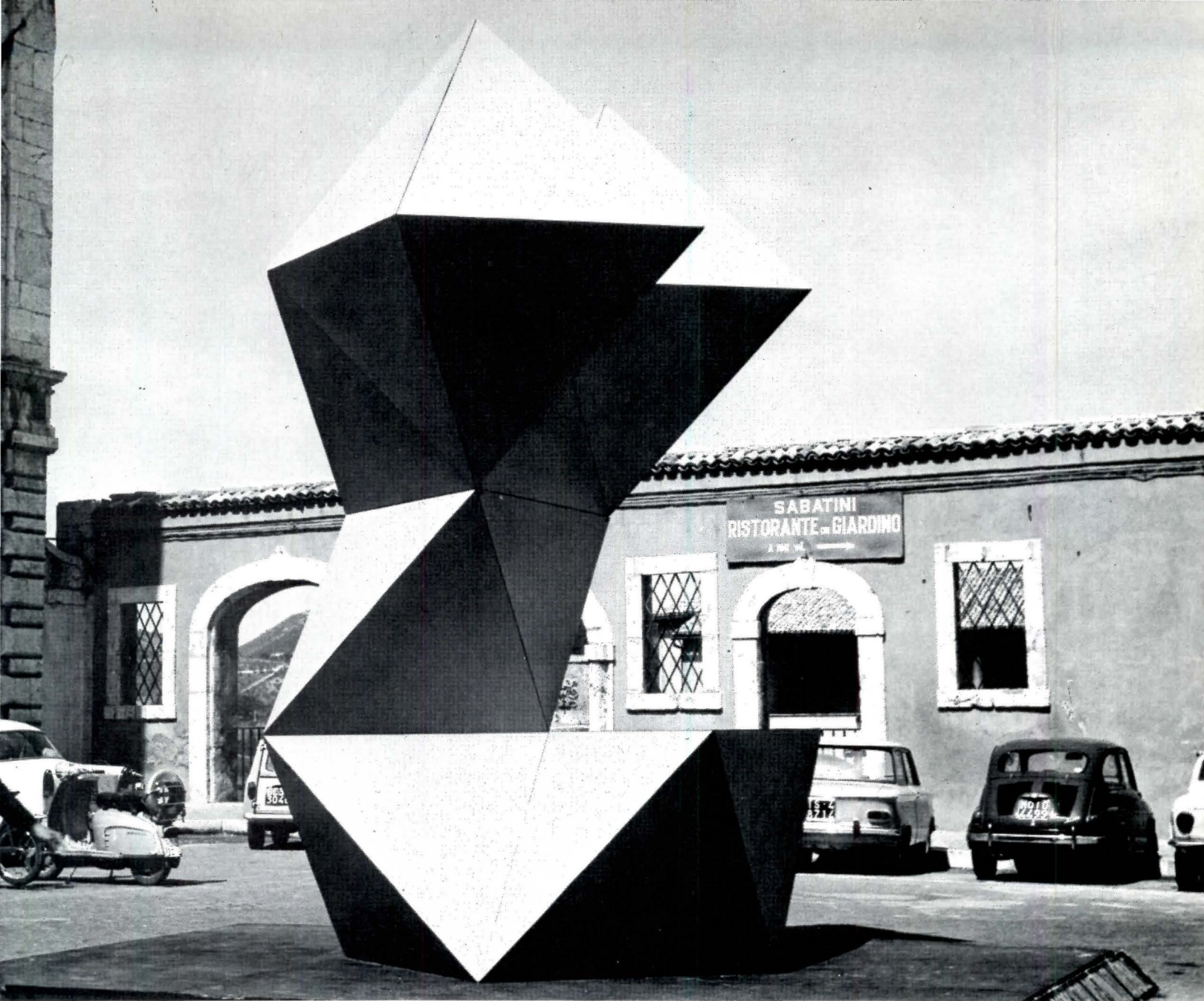


"system sculpture." The "bisected rhombic dodecahedron" shown on page 59 is made up of two identical pieces that fit together in several different ways. It was shown at Gian-Carlo Menotti's Spoleto "Festival of Two Worlds" a couple of years ago—and, being made of light plastic on an aluminum frame, the two pieces could be rearranged every day. "As a result, the sculpture became an actor in the festival," Perry says "It performed its daily event, and finally closed into a ball on the last day."

Perry's considerable experience as an architect has given him an understanding of the spaces in which his works will stand that is rare in sculptors. Out of his studio in Rome, he has dispatched sculptures to far-flung places—St. Louis, Atlanta, Australia, Saudi Arabia. Gyo Obata, for whose firm Perry did the cube that stands in HOK's Equitable Life Building in St. Louis (see next page), finds an immediate rapport with Perry that is sometimes missing in working with other artists. Yet, as these pictures show, Perry's work is not a reflection of the architecture around it; it is a counterpoint that complements it.



The chromium-plated cube (above) stands in the garden-lobby of the Equitable Life Assurance Co. Building in St. Louis, designed by Hellmuth, Obata & Kassabaum. It is, in fact, a 9-ft. cube that has been perforated by cylinders; and the leftover forms are defined by rectangular, chromium-plated rods that form hyperbolic paraboloid surfaces. Opposite: the "bisected rhombic dodecahedron" in Spoleto, undergoing four of its innumerable metamorphoses. PHOTOGRAPHS: Rafael Baldi ("S" and opposite); George Cserna (above).



THE CASE FOR



THE BIG DUCK

Another view—only somewhat facetious—of the “decorated shed” theory put forth by Robert Venturi and Denise Scott Brown

BY JAMES WINES

The Big Duck Store on Long Island, N. Y., appears with increasing frequency in articles by architects and critics. An extraordinary example of indigenous American roadway architecture, this marvelous structure (housing a market for retail ducklings) is generally used to illustrate some negative aspect of a design thesis. The building first gained notoriety in Peter Blake's survey of urban disaster, *God's Own Junkyard*. Its latest appearance prefaces an article entitled “Ugly and Ordinary Architecture or the Decorated Shed” by Robert Venturi and Denise Scott Brown (Nov. and Dec. '71 issues).

Considering the attention it has drawn, the Duck must have an exceptional capacity to impress; and perhaps it deserves more favorable scrutiny than it has been awarded thus far. The Venturis are careful to assign only pejorative reference to the Duck, while reserving praise for their own work which they characterize as exemplary of design integrity. Their essay continues by dissecting the mock heroics of Paul Rudolph as expressed in his Crawford Manor housing project of New Haven and as contrasted with the validity of their own Guild House in Philadelphia as the ideal “decorated shed.” This part of their argument is well taken and consistent. Given the Venturis' complete case for ugly and ordinary architecture vs. outdated expressionism, my only objections are reserved for what their brilliant polemics fail to acknowledge.

The Duck is defined by the Venturis as an example “where the architectural systems of space, structure, and program are submerged and distorted by an overall symbolic form.” This thesis is further expanded by suggesting that the “connotative expressionism” of Rudolph's Crawford Manor has, “while rejecting explicit symbolism and frivolous applique ornament,” become one big ornament itself. “In substituting ‘articulation’ for decoration, it has become a duck.” My arguments in favor of the Duck are predicated on an opinion that Rudolph's building has little in common with the big bird; and neither does Guild House, for that matter. Subjective views aside, both architectural statements are esoterically conceived, rhetorically conditioned by the cumulative practice of “good design” standards, and thoroughly professional in final resolution.

The Duck, on the other hand, would hardly be fit subject for the A.I.A. Annual Awards. Its virtues are elsewhere and quite beyond the insulated trap of professional credentials. The Big Duck has fantasy, humor, and a special fascination to which people react spontaneously—people who would be repelled by Rudolph's Ville Radieuse, indifferent to Venturi's Palazzo, and wouldn't give a plug nickel for any complicated rationales to justify either statement. A cautionary note here. This acknowledgement of the taste of the people is not leading to a defense of grass roots esthetic or developing a case in favor of a return to provincialism. In *Learning from Las Vegas* the Venturis suggest that we look to the development of the commercial strip, with all of its banality and pragmatism, to discover an inherent design vitality. By the same premise, the fantasy message of the Big Duck merits a comparable study.

Before projecting the “Duck Design Theory” let us examine the failures of the big bird in terms of standard architectural criteria. The fore-

most offense to any sacrosanct ethic is the interpretation of architecture as an “event”—a kind of visual pun or perverse example of architectural fowl play. In short, if you have seen it once you have seen it all. Secondly, there is the question whether the axiom “form follows function” was ever intended to be expressed on quite such literal terms. The scale is also absurd. It is too small for a store and too big for a duck. Given the Venturis' definition of “connotative and articulated” construction, this building must rank at the top of the list. It is futile to talk of the integrity of materials, the development of a cohesive unit in urban space, technological innovation, design programming, and sociological orientation. The Duck is simply a large, awkward, appealing, artifact—yet perhaps that is not all.

Let us assume, for the sake of argument, that all of our predisposition toward accepted design standards is the product of a conditioned reflex reaction—a built-in prejudice that insulates against a confrontation with more profound and disturbing questions. To conceal this defeat, an illusion of invention has been perpetrated by the architecture and planning professions by a manipulation of orthodox vocabulary. Heralded innovations are usually nothing more than reshuffled building blocks or technological sleight-of-hand, and have little to do with the questioning of basic conceptual premises. The field of design is in desperate need of its own Marcel Duchamp: someone with the courage and insight to examine every cliché, every credo, every assumption—someone to ask what, indeed, is architecture (and is it even necessary?). In the absence of this hypothetical genius, we must resign ourselves to being intrigued by such recent manifestations as the 45-degree highrise facade, reflective glass boxes, adaptive geodesics, ziggurat structures, and super-graphics. With all due credit, Robert Venturi is the nearest equivalent to a Duchampian sensibility at present and he manages to cut through a thick crust of Establishment attitudes in the evolution of his provocative ideas. On the other hand, he provides very few clues to explain the Big Duck phenomenon.

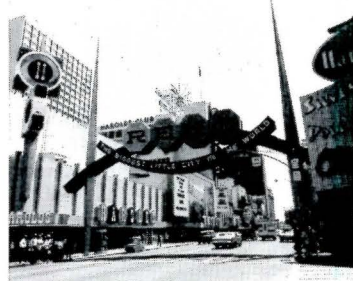
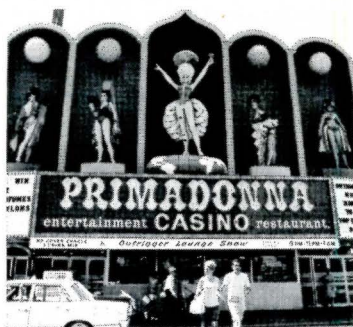
Within our society, fantasy is segregated from the real world by an admission price. People think nothing of parting with their money to enter Disneyland, pornographic films, the circus, or to provide a TV set for every room. Yet they would emphatically resist the same funds being spent to improve the visual environment. Americans have been conditioned from their earliest puritanical origins to feel that the everyday process of living should be dedicated to functional pursuits and should be free from the distractions of sensory or perceptual stimulation. The Big Duck represents an exceptional individuality in a country pervaded by a “business-as-usual” esthetic. This utilitarian ethic is consistent throughout the nation and creates a condition of conformity that makes it impossible to differentiate one locale from another. Throughout areas as diverse as Spokane, Baton Rouge, Miami, or Pasadena, the Howard Johnson super-bland persists without change as a tribute to hard work, personal hygiene, moral fiber, and making money. This ultimate guarantee that every square foot pays off in an economy of expediency has taken a heavy toll in visual terms. The response to fantasy, surprise, humor, and eccentricity has

Mr. Wines is the founding co-director of SITE, Inc. (Sculpture in the Environment). He is a sculptor whose work has appeared in numerous one-man and group exhibitions. He has received Pulitzer and Rome Prizes, Guggenheim Fellowships, and a Ford Foundation grant. He lectures and writes extensively, and is currently on the faculty of the School of Visual Arts in New York City.

been universally discouraged—not only by the unwitting self-interests of commerce, but by the architecture and planning professions as well. We are horrified, in retrospect, at the indulgence of Hitler's civic dreams by Albert Speer and the oppressive designs that grew out of this alliance. And yet the rape of our own urban landscape continues relentlessly (albeit for different reasons), and is graciously accommodated by the architect. One weakness of the Venturis' argument in favor of the Las Vegas Strip and Main Street U.S.A. concerns the rather exotic uniqueness of these examples. Gambling casinos and rural hardware stores do not represent the average state of affairs. Rather, the grim truth of the matter is that the cities of this country are indeed *boring*—but not in the Venturis' conditioned sense of that word. Today we face the universal boredom resulting from greed and neglect, not from integrity or esthetic. It is a boredom that proposes the sociological question, "does a dull and oppressive environment produce dull and oppressive people . . . or the reverse?" Any student of totalitarian governments knows that the best insurance against the danger of a self-assertive populace is to surround the people with a non-stimulative ambience. If the pedestrians' eyes are on the pavement, they are less likely to cause trouble. In summary, given the broad panorama of dull, pragmatic, and oppressive architecture, it is small wonder that the Big Duck suggests a very special kind of threat.

The problems in presenting a rational defense of the Duck are multiple, and are complicated by the absence of a time-tested and irrefutable testimony of the type always used to endorse the form-function thesis. A discussion of the response to fantasy must inevitably be subjective, even when supported by the findings and statistics of environmental psychology. For this reason, the development of a case for the Duck must be based primarily on observations of public reaction and on questions raised by its existence.

The most depressing aspect of current metropolitan development is the absence of a scale that the pedestrian in the street can relate to. By sheer overwhelming volume, city architecture reduces man to insect dimension and psychologically destroys his sense of identity. Land surface and walking areas have become nothing more than "leftover" space that services the automobile and allows a series of rigid arteries to accommodate man's functional existence. A certain amount of landscaping tokenism is occasionally provided to salvage the situation—usually in the form of potted trees, anachronistic little piazzas and fountains, or the random use of sculpture as a decorative element. Momentarily diverting, these remedies serve little purpose and rarely yield much relief from the omnipresent and out-scaled city walls. It is markedly significant that these walls are the objective of a persistent attack of hostile graffiti. Endless obscenities, slogans, and slanders are slashed across every available foot of urban concrete. And yet no one seems to write on the Big Duck. The most probable explanation is that the Duck, by virtue of scale and eccentricity, puts the viewer in a mellow and friendly frame of mind. Graffiti is commentary and since the Duck so eloquently makes its own statement, it would be redundant to add some less significant remarks to its underbelly.



From top to bottom: Fantasy at an admission price; gambling casinos aren't commonplace; no scale for the man in the street; eyes to the ground; the non-art of gut graphics.



The Venturis develop a defense of supergraphics by stating that "A sign on a building carries a denotative meaning in the explicit message of its letters and words. It contrasts with the connotative expression of the other, more architectural, elements of the building." Their use of the term "contrasts" suggests a compositional relationship of some kind, a formal counterpoint. This is precisely the kind of graphics they are defining. They refer to ART graphics and not the gut graphics of the Vegas Strip to which they credit their inspiration. Their applied signs lack the genuine urgency of Vegas advertising, which is not applied but is rather intrinsic to a condition of existence and a total way of life. The Vegas vitality is non-art. It is worth noting here that the Big Duck has no large-scale graphics, no mammoth sign to define its function. The Duck is its own advertisement—both denotative and connotative as one entity. Within the Venturis' polemic the choice is between the "decorated shed" or the "shed as decoration." The Duck suggests an area in between which engages the viewer in the process of its evolution. Whereas the work of the Venturis is, finally, resolved as *form*, the Duck is resolved as *process*. The structure elicits attention based upon audience speculation as to its existence. "Who thought of it, how was it made, where does it fit into the overall scheme of things?" These reflections become the substance of appreciation, instead of the usual reliance on a conditioned acceptance of formal terms. The configuration of the Duck is overtly referential and the product of a series of decisions demonstrating that *use* can be the associative embodiment of form—but, as a perceptual relationship rather than the familiar workspace-cum-esthetic dogma of the form-function tradition. In all objectivity, it is difficult to see how this equivocation could be considered less interesting than the tedious predictability of applied graphics and formalist architecture.

The world will probably not give widespread acceptance of the Duck Design Theory (henceforth known as D.D.T.). It is probably too early for civilization to embrace so benign and genial a message. Architecture would have a difficult time assimilating prerogatives that menace its authority and challenge its assumptions. The pragmatic world already begrudges every coffee break and would resist the further distractions suggested by universal D.D.T. Local agencies responsible for maintaining building codes and design consistency would be driven to apoplexy. The government would smell a subversive plot. Religious groups would denounce D.D.T. as the ultimate expression of hedonism gone rampant—anticipating the logical extension of this concept, which might lead to architecture in the form of copulating cocker spaniels (and, as luck would have it, right next to the parish house). Long before D.D.T. sweeps the country there must be a general condition of well-being, a decline in the mania of technology, and some indications of a national sense of humor. In the meantime, D.D.T. must function occasionally and subversively.

The Duck Design Theory offers a manifesto of ambiguity and ambivalence and an alternative to formalism and function. In brief, its doctrine suggests that;

1. Form follows fantasy, not function—or function is only fantasy in disguise, wherein process

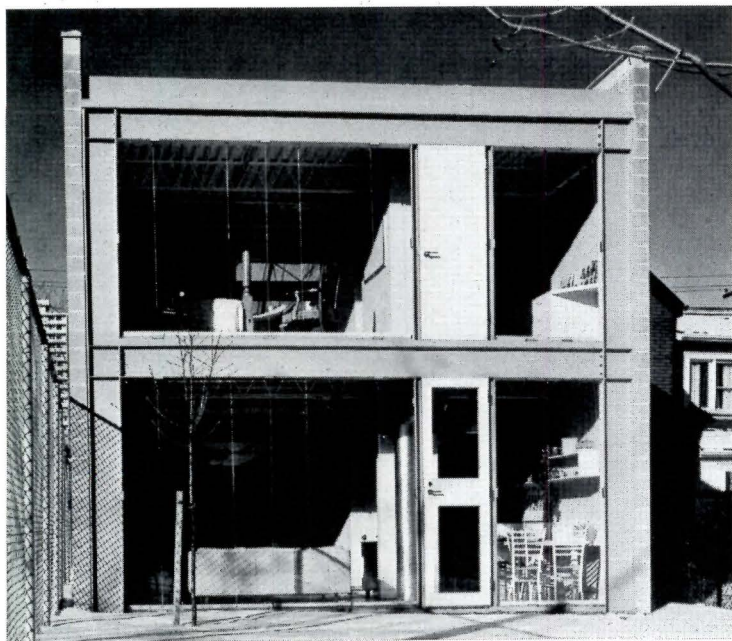
(continued on page 72)



INFILL TOWNHOUSE



On a typical street in Toronto's Yorkville Village, the first contemporary house reinforces the urban fabric



The first contemporary house to be built in Yorkville Village, Toronto, is the home of one of the partners of the firm A.J. Diamond and Barton Myers, architects of the delightful York Square shopping center several blocks away. The house fits neatly into a typical street of older, unprepossessing houses. Inside, a central court runs the height of the building and is covered by a huge greenhouse structure.

Yorkville Village, in Toronto, has a unique flavor—residents liken it to North Beach in San Francisco, or Greenwich Village in New York City.

Architects A. J. Diamond and Barton Myers felt a special responsibility to Yorkville Village in the design of this house. They wanted to prove "the feasibility of infilling on vacant properties to maintain and reinforce the urban fabric." They also wanted to offer "an economic alternative to renovation only." And one of the partners, Barton Myers, wanted a home.

The Myers house is a court house in plan, with the courtyard glazed over by a huge greenhouse structure, 20 ft. x 40 ft. On a lot measuring 25 ft. x 125 ft., the house is 70 ft. deep. The city waived its normal 20 ft. street setback and granted permission to maintain the existing building line; the architects call this "an enlightened precedent that may help save much of Toronto's old neighborhoods."

The court functions "much in the old tradition," say the architects—it is used as circulation space, meeting place and formal dining area. The architects explored various roof alternatives, but found the stock greenhouse most economical and most tested. The problem of shade is solved by canvas that moves easily

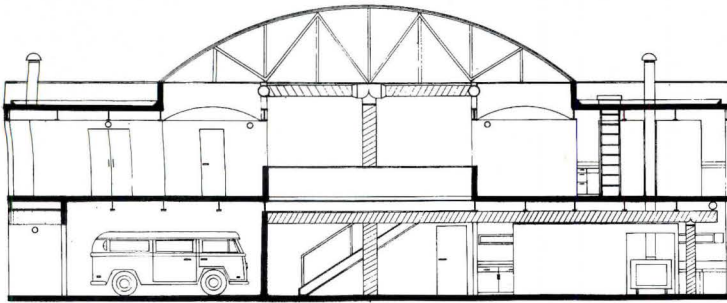
along the bottom chords of the pipe trusses. The heat trap of the greenhouse is relieved by gable louvers and by perimeter venting at north and south ends. Heat loss in the house (from front, rear and roof) is not much more than in a conventional house with openings on all four sides. (Toronto is at the same latitude as Rome, Istanbul and Barcelona; Lake Ontario protects the area from the snow belt of southwestern Ontario and upper New York State.)

Two roofdecks, reached from the bedroom areas by ladders, serve as outdoor gardens and as platforms for cleaning the greenhouse.

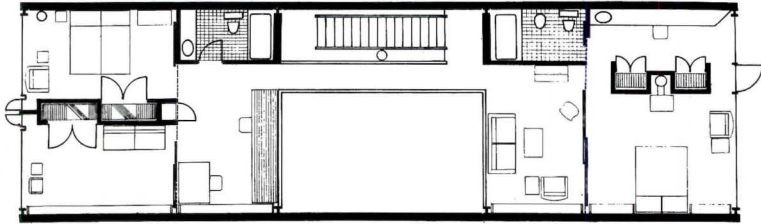
The structure is steel, with open-web steel joists and ribbed metal deck. Party walls are of concrete block; other partitions are steel stud and drywall, for complete flexibility in the interior arrangement.

The structural steel frame provides lateral reinforcement and becomes the glazing frame, with plate glass clipped directly to the structure. Environmental systems are frankly exposed; plastic plumbing, for instance, is painted a bright high-gloss industrial green.

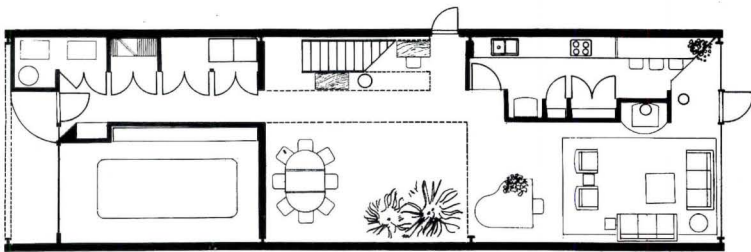
The house is still unfinished—it will have roof railings and decks, and garden walls. A future studio will be built amongst the greenhouse trusses.



LONGITUDINAL SECTION

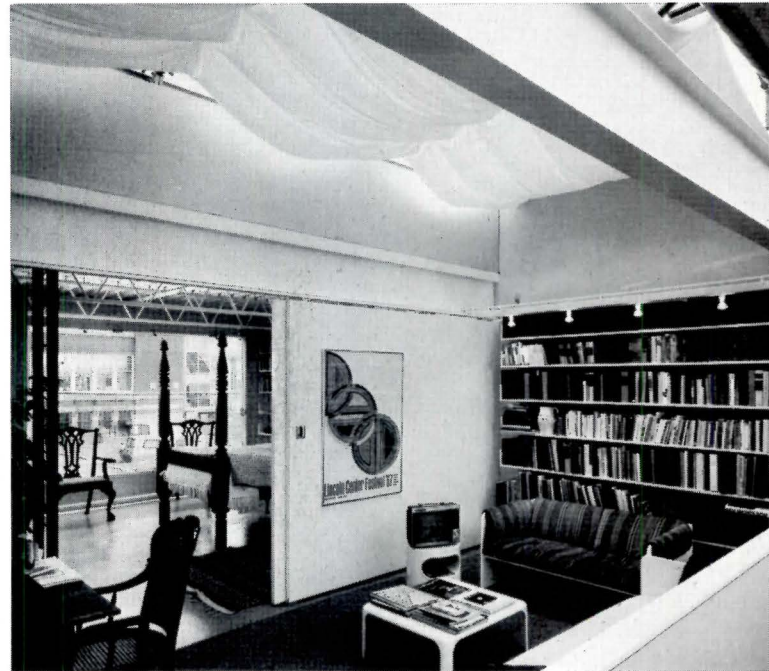


SECOND FLOOR



GROUND FLOOR

0 10'



The house is a court house in plan, with the court separating the house into car space at the front and living space at the rear. Upstairs, there are two bedrooms, study and bath at the front, and master bedroom, bath and study at the rear. A huge greenhouse structure covers the central courtyard. Air, water and lighting systems are fully exposed throughout the house; air ducts are a particularly strong feature of the interior.

FACTS AND FIGURES

Myers Residence, 19 Berryman St., Toronto. Architects: A. J. Diamond & Barton Myers. Engineers: (structural) M.S. Yolles (Aksel Salumets); (mechanical) G. Granek & Associates (Louis Austerweil). Quantity surveyor: Helyar, Vermeulen, Rae & Mauchan. General contractor: McMullen & Warnock Ltd. Building area: 2,400 sq. ft. (including courtyard and garage). PHOTOGRAPHS: Karl Sliva; except for Page 63 (left) and Page 64 (left), Ian Samson.





A reexamination of CPM techniques from an architect's point of view

BY JAMES BAKER

The second edition of James J. O'Brien's book, *CPM in Construction Management*, recently came across our desk and prompted us to take a look at the "state of the art" as practiced by architects.

The book, as an exposition of the Critical Path Method, is not, as the title indicates, oriented to architects and their primary area of concern, design (although there is a pertinent passage on the subject). Since the method was developed for construction management, this is understandable—even though it has been used for such a seemingly diverse activity as movie production. The concept of CPM or PERT (Program or Performance Evaluation and Review Technique) is simply that the sequence of a project can be represented by a predetermined

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logical network of activities. Although each has its own loyal supporters, CPM and PERT differ essentially only in details of their application and methods.

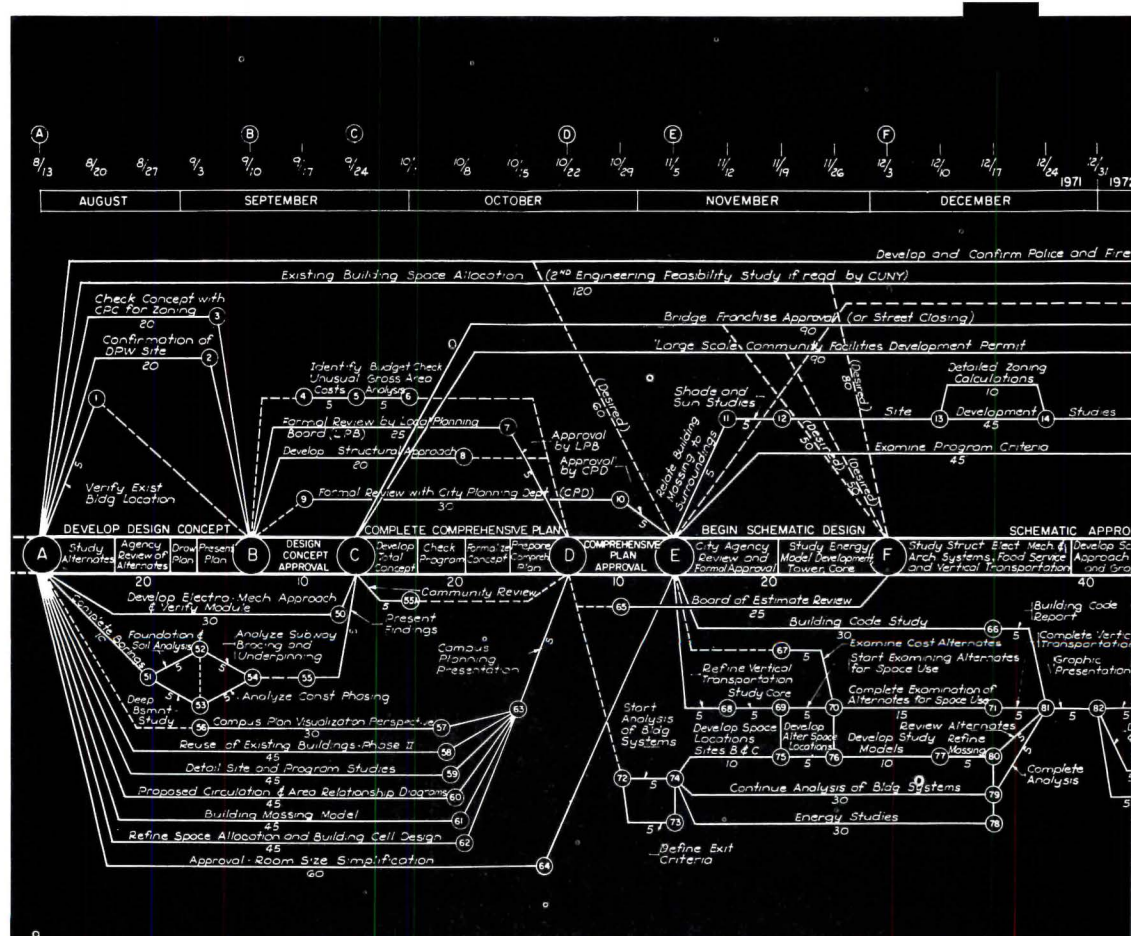
The essential element of CPM is an arrow, which represents a single activity of a project, its starting point and its completion point. The duration of the activity is annotated thereon, and its relationship to or dependence on all other activities of a given project are graphically established by interconnected activity arrows. Thus an activity network is created and the critical path (which gives the system its name)—i.e. the longest route through the network—is established. This is, however, about as far as one can go without getting into detailed discussions and descriptions. For this, Mr. O'Brien's clearly written book is recommended.

Unfortunately, these same details (although logical and necessary) have made architects more detractors than advocates

of CPM's graphic result. A fully developed CPM is yards of complex diagrams and reams of computer readouts which, taken as a whole, are anything but "logical." As one expert in the field remarked, "They have to be read by a robot."

Partially for this reason, and for the inherent related cost of making and maintaining a CPM, the method has remained essentially the province of governmental agencies and contractors who have the time, patience, money and vested interest. A CPM skillfully used by a general contractor can make the difference between profit and loss.

Yet, despite this well known and obvious benefit, there are still many contractors who refuse to use the system, relying instead on intuition or time-honored, but outmoded, bar charts. This resistance on the part of both architects and contractors to the inherent complexities of CPM has led recently to a "humanizing" of the



system, which in turn has made a number of architects take another look at the method—not so much as a construction monitor, but as a design tool.

To a master craftsman of CPM, this new humanized product is not really a CPM, but something that might more properly be referred to as a network working schedule. The critical path itself is gone from this new system. Also missing are float (the extra time available to complete an activity without slowing the project), early and late starts and finishes, and a number of other details that had helped to make CPM an unfathomable mystery to many. With such a simplified system, the architect can now establish and schedule only what he wants to on a need-to-know basis, and not every activity of the design process itself. Activity time, previously reduced to man-hours, has been simply restructured as the number of days in which the activity must be completed. And

there is no indication of the number of man-days required. This flexibility, missing from the classic CPM, is mandatory for the design process.

Graphically, the simplified system results in a chart of a few square feet for each phase of the design sequence, and, if required, each of these phases can be reduced to a two-page (more or less) computer readout.

But, more important than the manageable size and scope of the network is the logical discipline it forces on the design process and those involved in decision making. By graphically establishing a median line (see story, below right), owner and architect activities can be logically separated and related above and below this line. A hierarchy of decision making is established with the client so that he knows when a decision must be made in order for the design to proceed on schedule. "Desired" and "essential" decision dates can be

established where appropriate. Interest groups other than the client, and their dependence on the project, are also determined. Below the line, the architect's inherently sloppy design process is organized logically as to dependence and sequence.

This method promises to replace the architect's traditional bar charts, which, although still useful for relatively small projects, simply cannot assist the architect in sorting out the network dependencies and activities of complex ones. In addition, the method shows excellent prospects for use with fast-track projects. But when this can become a common tool for the designer is debatable.

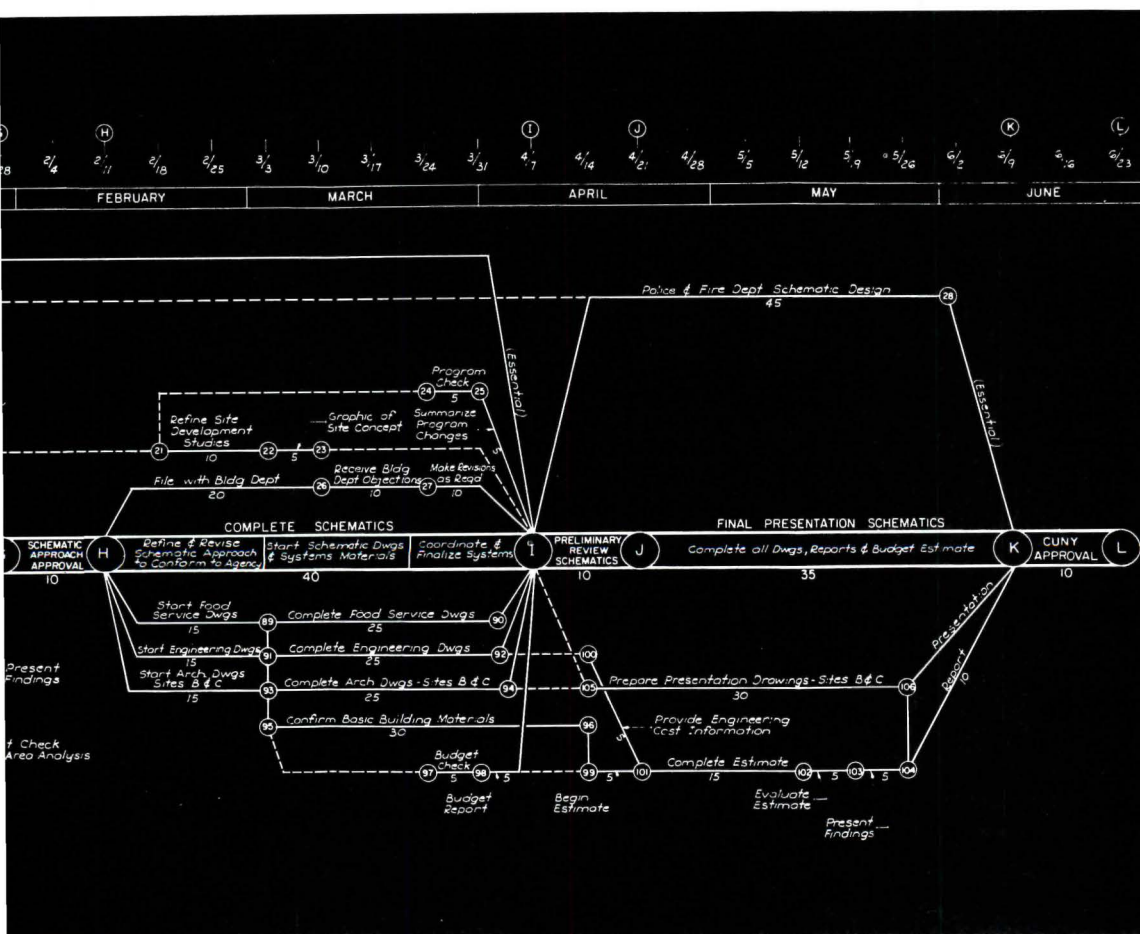
First, there is the question of compensation. Making and maintaining CPMs, or even modified CPMs, is a costly item and not within the scope of normal architectural services. The average cost of a CPM (appropriately monitored) is, according to Mr. O'Brien, approximately one half

of one per cent of the construction cost. On a \$5-million project, say for the New York State University Construction Fund, this would equal the job's potential for architectural profit.

Second is the question of skill. At the moment, the detailed knowledge required for CPM preparation remains with the specialists. And whether the task of preparing these networks will fall to experts within the architect's offices remains to be seen.

Third, there is the problem of disseminating the information. CPM as a discipline is not taught in architectural schools, except perhaps as a passing observation. This has resulted in education on the job, at substantial expense to the practitioner. The resulting "secrecy" seems more appropriate to medieval alchemy than modern "professional practice," but it does exist.

Regardless of who does the work or who pays for it, this modified CPM will clearly be a beneficial design tool.



Logical Sequencing: One alternative to the complexities of multiple CPMs

Attempts to make the undeniable logic of CPM and similar network schedules more usable are leading to new refinements of the scheme, often without an actual critical path. Graphically, the new systems are simpler than the typical CPM. Conceptually, they are more a control tool than a reporting system for a construction project.

One of these new versions has been developed by the Department of Design and Construction Management of the City University of New York (CUNY), under Arthur Gavender (Management Information Officer), with consulting engineers Praeger-Kavanaugh-Waterbury. It is called the Logical Sequencing Method and, like CPM, is based on the assumption that serious problems can be anticipated in the order of their magnitude and that they can be presented on a graphically simple flow chart of a project.

Unlike CPM, Logical Sequencing

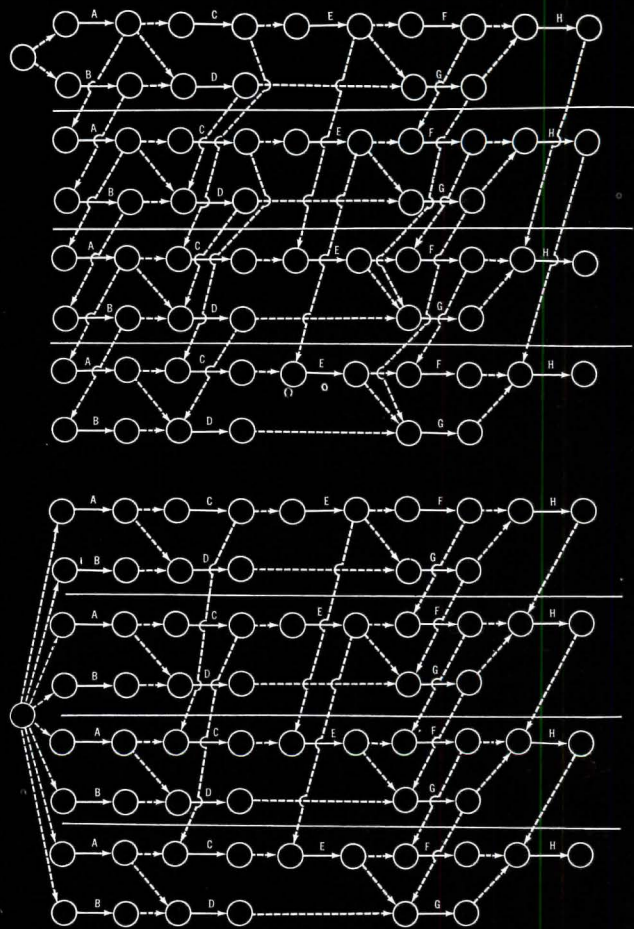
ing requires no computer print-outs, but is simply a graphic display. It need not—should not—be updated, since the basic logic of a project, properly developed, does not change. The presentation requires only one page, not yards and yards of diagrams. And the same format can be used for many projects, allowing multiple project monitoring without having to learn an entirely different presentation format for each project. The system is so simple, compared to conventional CPM, that it has become a quick reference point for judging new project plans; if an architect's Logical Sequence submission seems far out of proportion with earlier precedents, the CUNY staff can see this instantly and corrections can be made early.

CUNY is extremely enthusiastic about the system, which was inaugurated in August, 1971. At first, there was resistance from some architects who were unused to defining their project goals logically. The system threatened their so-called professional secrets, says Gaverder. But now, with the bigger architectural firms leading the way, the system is gaining acceptance.

Before Logical Sequencing, CUNY had required CPMs from architects and the usual confusions had resulted. A scheme submitted by Ulrich Franzen & Associates for a project, however, was far more readable, and therefore usable, than the others and became the basis for the Logical Sequencing Method.

With the new system, CUNY is now able to administer more effectively its \$1.2-billion building program (with \$306 million of work under contract). Since the Franzen model (illustrated), payments have now been integrated into the chart, so that owners and architects can work accordingly. From the owner's point of view, the system is a management tool that allows him to know exactly what work is in progress. Even schematics are clearly broken into four or five stages, so that a spot check on an architect's office by CUNY can immediately determine whether or not a project is on schedule. While not a proper CPM, the Logical Sequencing Method seems to fulfill some monitoring and control goals of CPM better than CPM itself usually does.

Traditional CPMs are the unique and often mystifying combination of computer readouts put into diagrammatic format. The result of logic taken to illogical conclusions, the CPMs are often so confusing that they are worthless. At right is a portion, only, of two graphic formats designed to encourage cross-eyed abandonment. Below is only one of two dozen computer readout pages for a "small project," which must be kept current. In all, the process can appear suited only to robots or a dusty bin.



SEQUENCE ST FL		PAGE 11							
WI	DESCRIPTION	TOT DUKAT CAL	START EARLY	START LATE	START FLUAT	FINISH EARLY	FINISH LATE	FIN FLUAT	
109	EXTERIOR MASONRY A1	20.0 51	16NOV70	15SEP71	212.0	14JUN70	12OCT71	212.0	
121	STRUCT STEEL STAGE AREA A1	5.0 51	15DEC70	13OCT71	212.0	21DEC70	19OCT71	212.0	
125	INSTALL STAGE INTERCOM SYSTEM A1	18.0 51	22DEC70	20OCT71	212.0	16JAN71	12NOV71	212.0	
126	INSTALL STAGE LIGHTING EQUIPMENT A1	18.0 51	22DEC70	20OCT71	212.0	16JAN71	12NOV71	212.0	
44	ELECT PLUMB HEATING A2 1ST FL	12.0 51	10DEC70	12OCT71	214.0	28DEC70	27OCT71	214.0	
35	ELEVATOR FOUNDATION A2	3.0 51	10DEC70	13OCT71	215.0	14DEC70	19OCT71	215.0	
37	ELEVATOR RAILS A2	15.0 51	15DEC70	16OCT71	215.0	6JAN71	5NOV71	215.0	
34	SET TEMPORARY ELEVATOR CAB	5.0 51	7JAN71	8NOV71	215.0	13JAN71	12NOV71	215.0	
93	INT MASONRY & DOOR FRAMES A3 REM CUL 2ND FL	5.0 51	17JAN71	24NOV71	219.0	25JAN71	1DEC71	219.0	
63	EAT MASONRY A5 REM CUL	5.0 51	12JAN71	18NOV71	220.0	21JAN71	30NOV71	220.0	
86	SETTING WINDOW & EXT DOOR FRAMES A5 REM CUL	4.0 51	10JAN71	24NOV71	220.0	21JAN71	30NOV71	220.0	
89	GLAZING WINDOWS A5	4.0 51	22JAN71	1OCT71	220.0	27JAN71	6OCT71	220.0	
130	INSTALL STAGE LIGHT CONTROLS A1	13.0 51	22DEC70	1NOV71	220.0	6JAN71	12NOV71	220.0	
64A	INSTALL & PLUMB STAIR #3 AS 2ND FL	2.0 51	19JAN71	26NOV71	220.0	20JAN71	24NOV71	220.0	
95	ELECT PLUMBING HEATING A5 REM CULS 2ND FL	4.0 51	20JAN71	30NOV71	221.0	25JAN71	3OCT71	221.0	
75	EXTERIOR MASONRY A5 CUL 6-10	12.0 51	4JAN71	12NOV71	222.0	19JAN71	30NOV71	222.0	
76	SETTING WINDOW & EXT DOOR FRAMES A5 CUL 6-10	6.0 51	12JAN71	22NOV71	222.0	19JAN71	30NOV71	222.0	
85	OVERHEAD DOOR A5	2.0 51	22JAN71	3OCT71	222.0	25JAN71	6OCT71	222.0	
94	INT MASONRY & DOOR FRAMES A5 CULS 6-10 2ND FL	7.0 51	7JAN71	19NOV71	224.0	19JAN71	30NOV71	224.0	
63	INSTALL & PLUMB STAIR 3 AS 1ST FL	2.0 51	31DEC70	16NOV71	225.0	4JAN71	17NOV71	225.0	
96	ELECT PLUMBING HEATING A5 CULS 6-10 2ND FL	6.0 51	11JAN71	24NOV71	225.0	18JAN71	2OCT71	225.0	
82	CONCRETE BEAMS & CANOPY A5 REM CULS	4.0 51	12JAN71	1OCT71	226.0	15JAN71	6OCT71	226.0	
	INT MASONRY & DOOR FRAMES A5 REM CULS 1ST FL	5.0 51	31DEC70	24NOV71	231.0	7JAN71	1OCT71	231.0	

FORUM

(continued from page 23)

to humans might not be the most rational procedure. Still, the Architectural League was certainly to be commended for its daring and its largesse.

Off it sent Sonfist to Central America, to collect a colony of three million Army Ants, while Sonfist's associates were building the sandbox inside Automation House. Finally, on February 10th, Sonfist and Friends arrived in Manhattan, and the Artist proceeded to unleash his creepy-crawlies in the sandbox. They seemed to like it OK, and Sonfist retired for the night.

His three million little pals, unhappily, had a better idea: like every first-time visitor to Manhattan, they wanted to have a night on the town; and, discovering a tiny aperture in the plastic-covered sides of the sandbox, they proceeded to march through it and out into the darkened galleries of Automation House.

Three million Army Ants marching in formation in the general direction of Broadway and 42nd Street can be a terrifying sight; and so the Automation House nightwatchman, upon seeing this vast population shift moving as if orchestrated by Sergei Eisteen, lost his cool and made a dash for the bug spray.

Ten minutes later, the first floor of Automation House looked like a maquette of the Battlefield at Verdun, there were 2,985,000 corpses, and 15,000 survivors—just enough, according to League Director Patricia Luciani, to fill a modest soup bowl, but hardly a 400-sq.-ft. sandbox.

Undiscombobulated, Sonfist dispatched a couple of his helpers to pick up another colony of 2 million ants in Panama, and these arrived in time for the official opening and a televised press conference. They performed reasonably well for the cameras, but, shortly thereafter, began to succumb to some undiagnosed malaise. According to the artist, it was either the local ambience or the local temperatures (wildly fluctuating from 80 degrees to below freezing). In any event, whatever the cause, the second contingent bit the dust before the week was out, thus proving that our cities, whatever other perils they might face, were at least ant-proof. It was, on the whole, not the League's finest hour.

GROPEFEST IN THE FOGG

Walter Gropius always loved a good party. And WALTER GROPIUS, 1883-1969: A PHOTOGRAPHIC RETROSPECTIVE began with a good one.

Assembled by his widow Ise, the Bauhaus Archiv in Darmstadt, Germany and The Architects Collaborative in Cambridge, Massachusetts, the show at Harvard's Fogg Art Museum through April 9 includes 212 photopanel which survey 68 projects spanning the years 1906 to 1968. There is also a filmed interview with Gropius, illustrated with slides, and a handsome catalog put together by Mrs. Gropius with an introduction by Columbia University's James Marston Fitch.

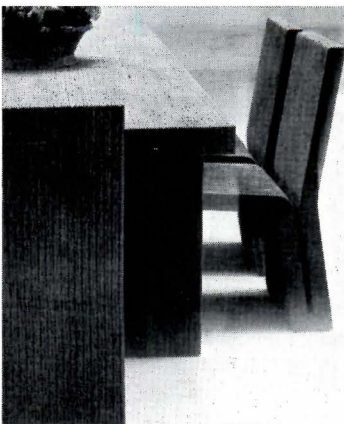
After April, the exhibit will travel for two years to museums across the country. Students from the many disciplines Gropius sought to unite (including, one hopes, architecture) will find great insight into his times, and ours; into his attitudes, and their own. Insights which are, as Walter Gropius insisted, the beginning of architecture.

INNOVATIONS

EASY EDGES DOES IT

Los Angeles Architect Frank Gehry has designed a line of furniture which is ridiculously cheap, durable, has a suede-like finish, and has been called an acoustitrician's delight (by Gehry who coined the word). It's made of paper and is called "Easy Edges." The material created by cross-laminating individual layers of corrugated fiberboard, alternating the direction of the corrugations for strength. His pieces have clean geometric lines, except for an

Just vacuum out the crumbs



Architect Gehry grinning

occasional bit of whimsy such as the table and chair shown.

The neat thing about it is the concept that paper is beautiful (and this furniture is) and, therefore, the Edgeboard Sections need no added skin or upholstery for decoration.

The designer will happily jump on the dining table, pour ketchup on it and remove it easily, or lay a lighted match on it and wirebrush off the burn stain in seconds.

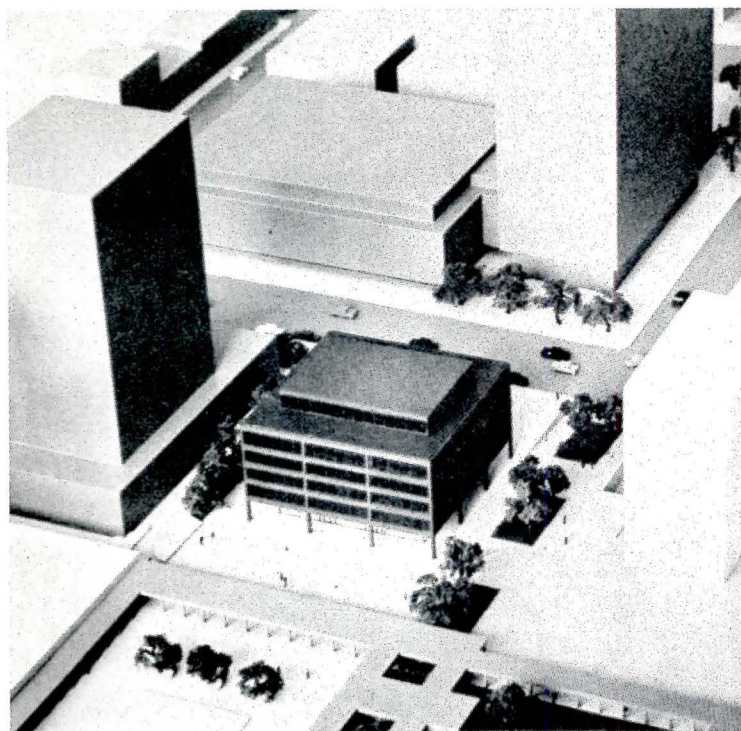
Architect Gehry visualizes the eventual application of Edgeboard Sections as a construction material for houses. His firm, Frank O. Gehry & Associates, has designed the headquarters complex of the James W. Rouse Company in new town Columbia, Maryland, and Merriweather Post Pavilion in Columbia (Gehry, Walsh & O'Malley), which won an AIA Award of Merit.

Gehry's firm (with Christopher Jaffe) was selected to redesign the Hollywood Bowl (March '71 issue). The well-known acoustical problem in the Bowl was solved by standing cardboard tubes (36 ft. high and three ft. in diameter) on end around the sides and back of the orchestra.

RENEWAL

MIES ON THE RIVER

"Something very strong architecturally" is rising on the Louisville Riverfront. Architect Bruno P. Conterato of the Chicago-based firm of Mies van der Rohe has designed the "something"—an eight-story (three floors are underground) office building for the American Life and Accident Insurance Company of Kentucky. The relatively small building, part of a major \$60-million urban renewal project for this downtown area



The scene from the river will be beautiful

of dilapidated wharves and occasionally flooded warehouses, maintains the link between Main Street and the plaza overlooking the Ohio River, and will surely help turn Louisville's face back to the river.

The Mies building is a square steel box precisely centered in front of the 40-story First National Bank, the tallest building in Kentucky. It has a self-oxidizing steel skin with expanses of bronze-tinted plate glass.

Says Architect Conterato, "We wanted a building that could hold its own in design and proportion. Its long span, made up of three structural bays each 42 feet wide, and its oxidized steel exterior will give it a 'gutsy' look. The view from the river will be great—a progression of heights from the shore to Belvedere Park to American Life to First National."

"It is going to look like a rust-bucket for awhile and people will hate it," muses American Life President Dinwiddie Lampton, who signed the contract with Mies in 1969 two months before the great architect's death.

FFICIALDOM

COUNCIL COUNSELS STATE

The scandalous costs and delays of public projects are notorious. (See page 44.) Officials admit that a government body may

pay as much as \$6 million for an office building that private industry may erect for \$4 million. And the government agency is likely to take over three times as long to complete the job—perhaps seven years, compared with two years.

State governments seem particularly afflicted with such problems. Often there is no centralized building authority and often they must work through or around local jurisdictions and government units. New York State, with one of the nation's most ambitious building programs, has been the perfect example of bureaucratic inefficiencies. The responsibility for design, planning and construction has been spread over 44 agencies, each with a special pride in having developed its own individual procedures and methods. The result is that the agencies find it difficult, if not impossible, to work with each other and that architects, engineers, contractors and other members of the building industry have had to learn entirely new methods of operation every time they did a project for a different state agency.

But now New York is taking steps to improve the mess. And its methods and successes may well become the model for other states to follow.

The latest reform, enacted on the recommendation of the New York State Council on Archi-

itecture, is a directive by the governor that all state agencies involved in design, planning and construction for the state or with state monies must adopt the CSI (Construction Specification Institute) uniform system for specifications on projects initiated after April 1, 1972.

According to John Jansson, executive director of the Council on Architecture, the new system can save the state's taxpayers millions of dollars yearly. "By conservative estimate, the CSI uniform system will eliminate about 100,000 manhours of work by state personnel, architects, engineers, contractors and subcontractors, manufacturers, suppliers and others involved in the building process. Figure \$15 to \$20 per hour for professional time and the savings become obvious."

Jansson elaborated on the mandate for CSI specifications and the continuing role of the Council in a speech delivered to a joint meeting of the New York Chapters of the American Institute of Architects and CSI. The Council, he said, is the leading overview agency in the state in coordinating the activities of the New York State building industry so that the man-made environment is improved and greater economies of methods and costs are achieved. It is a specialized management, consulting and advisory agency, assigned particularly to make such building projects more efficient and of better design.

Established in 1968, the Council has undertaken a number of measures and programs to accomplish its goals. It is trying to change the compensation procedures for professionals from a standard fee basis to a time-plus-cost method. It is working through studies, lobbying and legislative hearings to repeal the state's mandatory multiple contract law, which requires at least four primary contracts for each job. The Council argues that this should not be mandatory, but depend on the specific job. There is strong labor opposition to the law's repeal, with New York's Central Labor Council (under the leadership of Harry van Arsdale) at the forefront. But Jansson is encouraged that the laborers, carpenters and operating engineers have come out for repeal.

The Council has recently received a grant from the Na-

tional Endowment for the Arts for its work as the first state agency set up to promote public awareness of architecture.

If the Council succeeds in accomplishing its goals, Jansson estimates it could cut state construction overcosts and delays in half. Michigan has already asked Council representatives to advise it on the feasibility of setting up a similar agency and has set up a governor's commission to study the idea. Other states, including Texas and Massachusetts, have also expressed interest.

PI PLE

UNIVERSITY APPOINTMENTS

- Argentina-born Architect Cesar Pelli has been named to the Charlotte Shepherd Davenport Professorship, the highest architectural chair, at Yale University. Currently, Mr. Pelli is design director for Gruen Associates of Los Angeles.

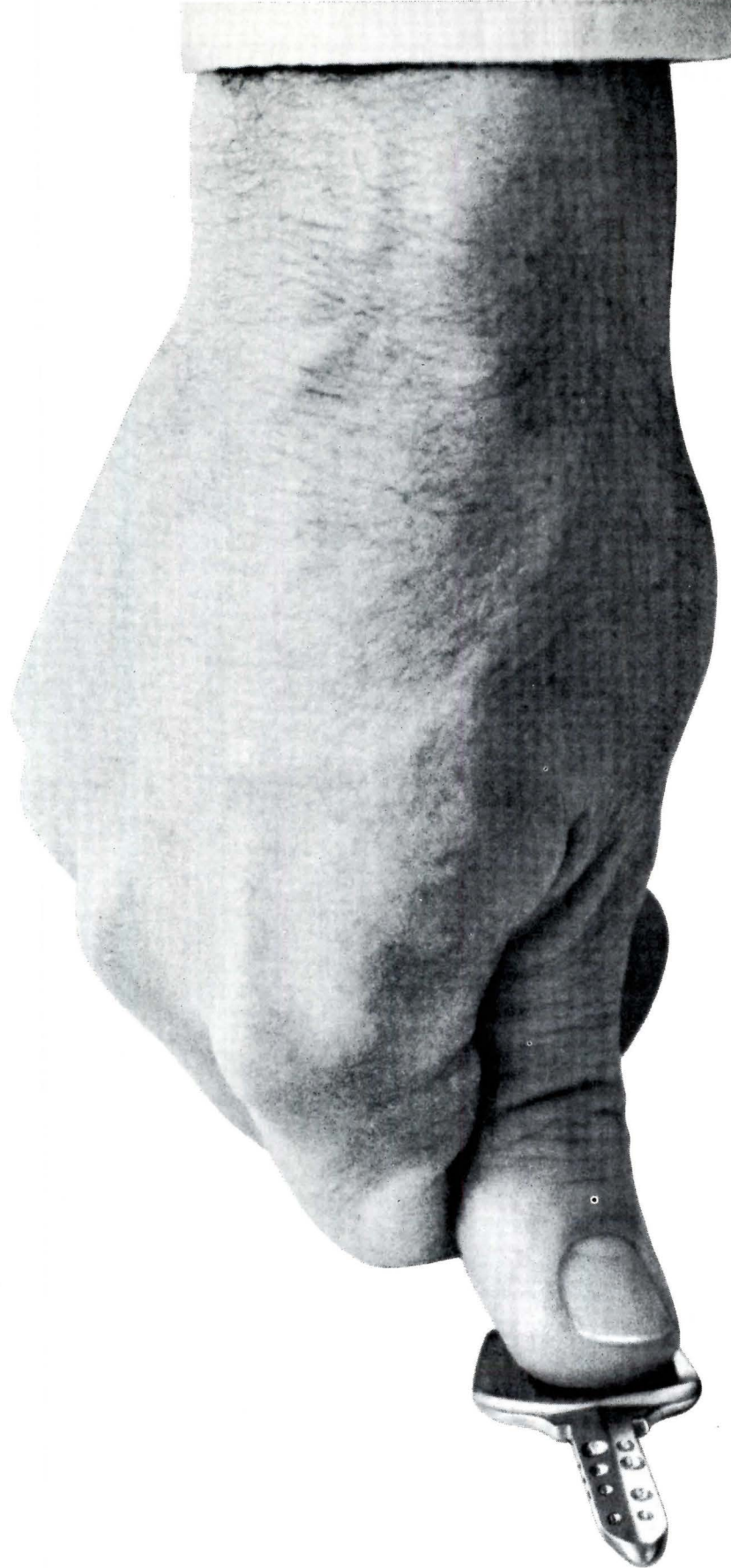


- Architect James Stewart Polshek has been named Dean of the School of Architecture at Columbia University, succeeding Kenneth A. Smith who has held the position since 1963.

HONORS FROM THE AIA

Here are more announcements of awards to be given in Houston at the convention:

- Wolf Von Eckardt, architecture critic of the *Washington Post*; the Architecture Critics' Medal.
- Peter Collins, Canadian author, architect, and educator; the Architecture Critics' Citation.
- Ten architects from nine foreign countries; Honorary Fellows. Among them are: Gueorgui Orlov of the Soviet Union, Jean Louis Lalonde of Canada, and Michael Scott of Ireland. This title is reserved for "architects of esteemed character and distinguished achievement who are not U.S. citizens and do not practice in this country."



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That's just the beginning of the Sargent Maximum Security System story. Its lock cylinders are singularly pick-resistant . . . and three rows of pins converge on the key from different angles, making the cylinder all but invulnerable to the usual picking or raking techniques.

A total of seven levels of masterkeying are available, four more than conventional systems. And since the system does not utilize the split pin method of masterkeying, the security of these lock cylinders remains unimpaired even at the highest master key level.

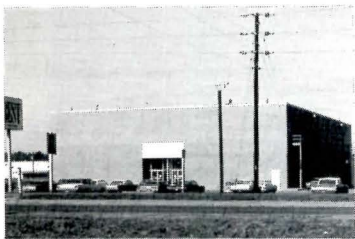
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THE BIG DUCK

(continued from page 61)



SITE's "Peeling Project" for BEST Products, Inc. Top: the building as is; bottom: a sense of ambiguity.

becomes more important than objective and, therefore, can exist as art in itself.

2. Function, in the prevailing view, is an expedient measure used by commerce and government to control the populace. Function is service, and service is just another word for repression.

3. Formalism, good design, and esthetic codes are usually architecture's way of avoiding imagination.

4. Architecture that cannot offer shelter is remiss in its obligations for man's need to be protected: Architecture that cannot radically change has defeated man's need to aspire: Architecture that cannot offer fantasy fails man's need to dream. The difference between Form-follows-function and the Duck Design Theory might be compared to the choice between sex exclusively for procreation or sex for enjoyment. Both can produce the same results; but only the latter makes life worth living.

An example of the Duck Design Theory in practice is presented by the Richmond, Va., "Peeling Project" of SITE, Inc.* This unique concept is the work of a group of five artists specifically organized to work with problems of site-oriented, non-focal art in the urban context. Philosophically, SITE is committed to art that is conceptually realized to involve a total site (as a preferable alternative to the decorative placement of object art in the environment). For this reason the corporation creates ideas using the specific factors present in each location (materials, topography, phenomena, psychology), instead of superimposing a studio-conceived esthetic or style on a particular site. With respect to the Richmond project, SITE developed a visual transformation of a mundane commercial building into a place of visual fantasy—and this with considerable economy of means.

Commissioned by BEST Products, Inc. (a retail appliance and gift center on Midlothian Turnpike in Richmond), the concept calls for a series of peeling corners distributed over the brick facade of the building and adjacent property. The objective is to establish a metamorphosis of intent that changes the site from a place of routine utility to a place of visual ambiguity. At the same time the essential form and character of the shopping center is retained. The sculpture elements are established as an intrinsic part of the building and land surface. By using inherent materials and the special significance of the place, SITE has suggested a new alternative for the use of art in an urban space, a new kind of decorated shed. Returning to the Venturis: they describe their own view of a decorated shed as "explicit ornament." They say: "It reinforces and contradicts the form of the building it adorns and it is to some extent symbolic." SITE's concept is the logical extension of this attitude—to a point where the premise is completely changed. The Venturis decorate with the restraint of disciplined architects, to achieve proper relationship. SITE's peeling project assumes that such relationships are irrelevant and that the ultimate purpose of decoration is to not decorate at all, but to be resolved

as the process of "becoming" a building. By becoming the structure it also becomes a psychological transfiguration. Literal and formal messages are completely forgotten as the spectator contemplates an anarchy of materials (in this case brick, asphalt paving, and grass plots), in which nothing seems to be behaving predictably. Facade graphics have an appropriate place, an assigned reference. Peeling walls are equivocal and suggest that either the construction has popped its seams or that the proper order of things is not really very important or very interesting after all.

The BEST Products peeling project suggests some thorny questions. When originally engaged for this project, SITE was offered a finished building and environment to deal with. What right, then, does the artist have to utilize and comment upon the product of an architect (albeit a dull and heavy-handed example), as part of his raw material? The Duchampian tradition established the artist's right to comment on the state of both life and art. But architecture has been relatively free of such manipulation by insulating itself behind a bulwark of unassailable humanitarian objectives. The Duck Design Theory provides the opportunity to question all basic assumptions and protective devices. The real message of the BEST Peel is the dialogue created in the mind of the spectator; the enigma established for the viewer, in a passing car on Midlothian Turnpike, who must reconcile the phenomenon of his shopping center peeling away. Instead of the reassurance of academic answers, he has the endless questions evoked by a surreal event.

For the Venturis, "The duck is a special building that is a symbol, the decorated shed is the conventional shelter that applies symbols . . . but we think that the duck is seldom relevant today although it pervades Modern Architecture." Not relevant to whom, and for what reasons? Perhaps the Duck is not relevant to the architect whose dogmas presume to contain all the answers for man's habitat. Perhaps it is not relevant to the banker considering a real estate deal where every cubic foot is money; perhaps it is not relevant to the archaic enforcers of social conformity—the politician whose career is built on man as a statistic, the housing code director maintaining architectural consistency, and the planning administrator whose master plan will put a super-highway right through the Big Duck.

The basic tenets of the Venturi argument for shed architecture retain an allegiance to the form-function hypothesis—this in spite of an obvious sympathy for pop culture and design radicalism. The result suggests a rather polite avant-garde, which makes their revolutionary postulates seem more like a smoke screen to hide orthodox convictions. This is probably not the case; however, it is suspicious that their comparative analyses which reject expressionist and gestural design offer only decorated functionalism as an alternative. Duchamp would have offered an alternative to architecture. The Duck Design Theory, although somewhat facetious and absurd, suggests the reevaluation of certain prevailing criteria. Its message may seem to be only diversionary; and yet, without the congenial presence of the Big Duck, the technological utopias predicted for the future may end up with all of the answers and none of the people.

*Sponsored by BEST Products, Inc. of Richmond (Sydney Lewis, President), the project is now under construction. Project Director is Cynthia Eardley of SITE, Inc.; Consulting Engineer is Mario Salvadori; Local Consulting Engineer is William J. Davis; General Contractor is Taylor & Parrish.

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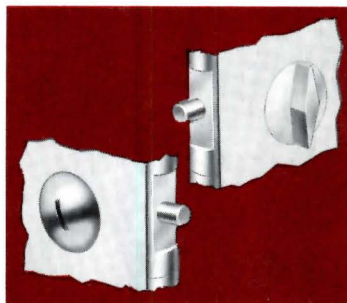
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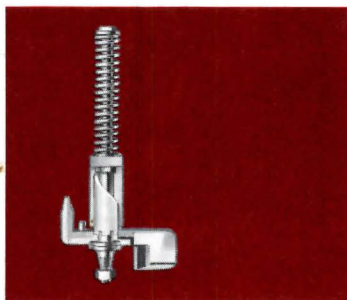
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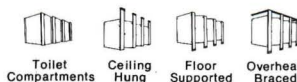
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this new concept may change your entire thinking about roof decks!



A leaking roof deck is not only destructive to a building's contents, but embarrassing to the men who designed it. Leaks happen every day. Even on relatively new buildings.

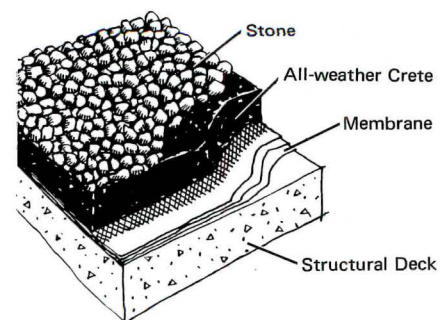
Consider these facts. For a roof deck to leak, there must be a fault or opening through the waterproof membrane. This can be in the form of an accidental puncture caused by man or his equipment.

One of the most powerful forces of nature that affects even the strongest of materials is temperature. The expansion and contraction caused by extreme temperature cycling can in time tear the guts out of most membranes. Whether attached or not, materials must move.

With each temperature cycle most roofing membranes shrink permanently, thus getting smaller and smaller. Cracks occur and membranes tear away from edges and roof protrusions.

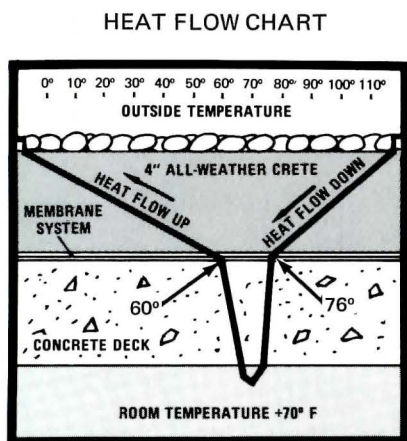
There is a solution. A new concept! Simply stated, the principal is to protect the membrane by covering it with insulation. Why isn't this standard practice?

The answer is simple. Except for the age old sod roof principle, there has not been an efficient, modern insulating material tough enough to stand up to the abuse. As a matter of fact, water and freezing will in time destroy most insulations. It's no wonder that for years designers have been protecting the insulation, not the membrane.



The answer is found in a unique insulating material called All-weather Crete. It is composed of sealed cell expanded volcanic rock, one of the world's finest insulating materials, coated with a thermo-plastic binder. It is mixed on the job site and applied over the membrane system. There are numerous membranes on the market that are excellent when protected by this insulation. A final touch is a layer of stone over the All-weather Crete for added protection and decor. Here is how All-weather Crete works to perform these functions:

a) The membrane is always kept warm and ductile. Example:

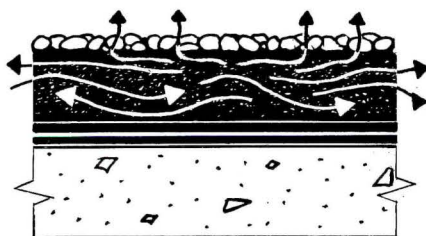


In a severe climate where roof deck temperatures may range from -10° to $+120^{\circ}$, the membrane insulated with 4" of All-weather Crete will experience only a 16° temperature variation. Thus, the membrane remains "alive" and ductile for years with negligible effects from expansion, contraction and shrinkage.



b) It is applied in various thicknesses providing a tough protective cushion over the membrane. Most accidental punctures will not penetrate through.

c) Water will never freeze on the membrane. All-weather Crete is contoured to provide slope to drains. There are no joints. Water is drained away naturally! Water or vapors which might enter the system cannot freeze near the membrane and freezing and thawing have no effect even on the surface of All-weather Crete! Furthermore, All-weather Crete transmits vapors.

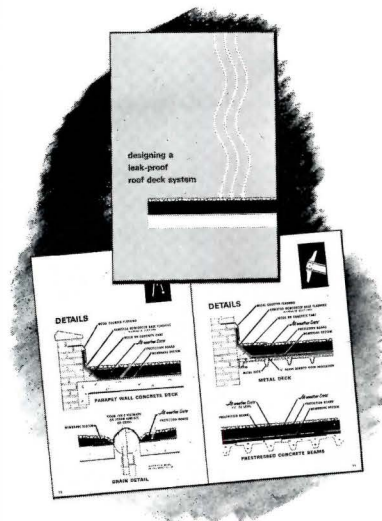


Vapors entering the system are evaporated out through the surface and never trapped within.

We call this concept the All-weather Crete Insul-top System.

Some architects refer to it as the "upside-down" roof. We are beginning to believe it's the only "rightside-up" one. All-weather Crete insulation is a proven product. Most of the nation's successful plazas utilize this concept with the addition of a wearing slab over the insulation to take foot and vehicle traffic. Hundreds of plaza decks are protected with All-weather Crete.

In conclusion: Consider this "New Concept", the All-weather Crete Insul-top System, on your next project if you want the ultimate in a long lasting, leak proof roof deck.



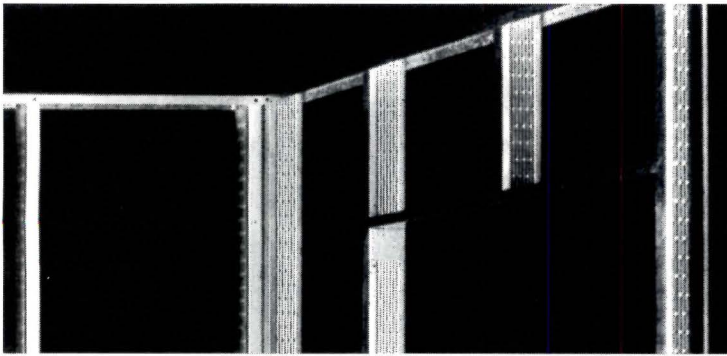
Get the facts. A technical booklet titled "Designing a Leak Proof Roof" contains temperature charts, technical facts and details. It's yours for the asking. Just write Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525. Study it, compare, ask questions - we think you may change your entire thinking about roof decks.

 **All-weather Crete® Insul-top System**



PRODUCT REVIEW

This month's Product Review concentrates on structural materials and various building components.



THERMAL STUDS

Super-C Steel Thermal Studs, by U.S. Steel Corp. offer new features for residential, institutional and light commercial structures. The stud was developed by U.S. Steel to substantially reduce heat flow through exterior loadbearing walls stud locations. This al-

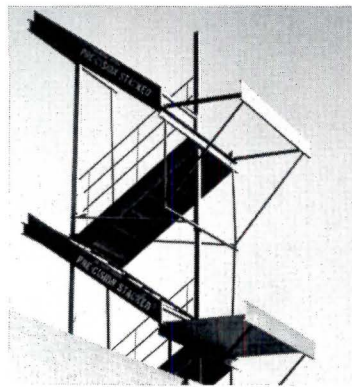
lows inside and outside wall surfaces to stay free of objectionable "ghost marking." The studs are also nestable, they stay straight, will not warp, twist, shrink or swell (which causes most wall cracks), are non-flammable and offer long-term performance.

On Readers Service Card, circle 101.

STACKED STAIRWAY

The Precision Stacked Steel Stairway System is available as components kits for local fabricating shops or may be shipped directly from the manufacturer to the job site for conventional erection. Produced by Metal Service Co., Inc., the stairways provide safe access to upper floors, reduce construction time and help cut costs. No scaffolding is required; vertical supports are temporary.

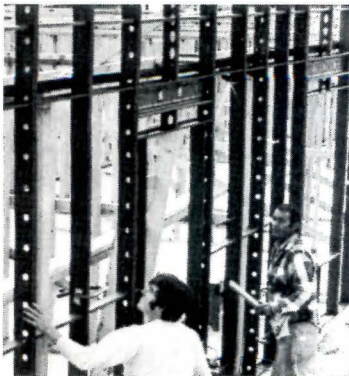
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STEEL PANELS

Speed-Steel Instant Wall lightweight structural steel panels that can be erected immediately, replacing individual stud welding on site, are available from Keene Corp. The wall panels may be ordered to include openings for windows, doors and air conditioning, heating and ventilating equipment. The standard size is 17 ft. 6 in. high, and 6 ft. wide, but the panels are available in other sizes as well.

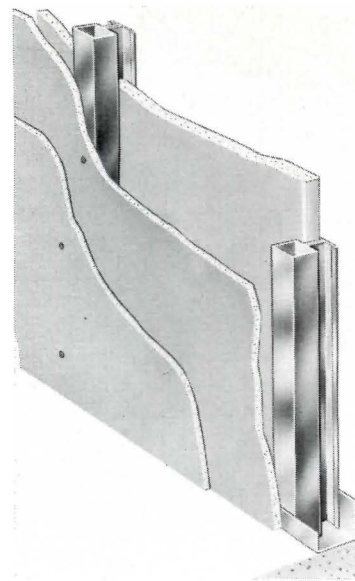
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CAVITY WALLS

New cavity shaft walls, by U.S. Gypsum Co., provide the ruggedness and one-side erectibility needed for enclosing elevator shafts, stairwells, air ducts and mechanical shafts. All components install from outside the shaft, allowing immediate use of shaft enclosures that can be finished later, along with interior partitions. A wall cavity accommodates electrical conduit and boxes as well as sound attenuation blankets. New USG steel T-studs and shaft wall liner are key components. The cavity walls are more economical, easier to install, and lighter in weight than either solid gypsum or masonry shaft walls.

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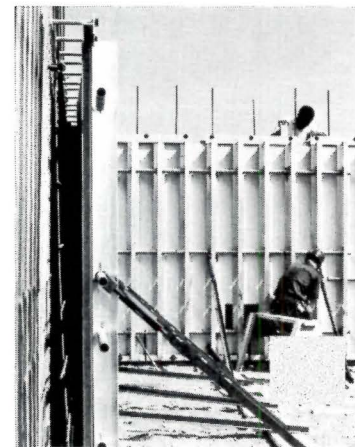


ALUMINUM WALL FORMS

Extruded aluminum wall forms, produced by Cast-In-Place, Inc., allow contractors to pour a finished concrete wall, including insulation and interior gypsum board, all in one operation. When the exterior forms are removed, the concrete looks like brick, stone or anything else the architect desires, says the company. The system can reduce wall construction costs by as much as 50 per cent, claims the company, because no ties are required to hold the forms in place while the wall is being poured. This allows for direct placement in the form on an inside liner of styrofoam bonded to the gypsum board, which becomes a part of the wall when

the concrete is poured. An outer liner can imprint an unlimited number of designs on the exterior wall surface.

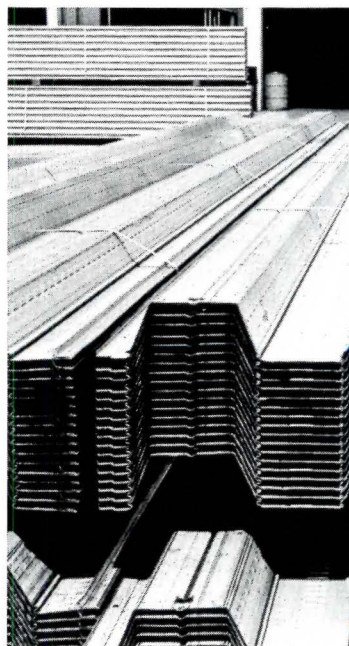
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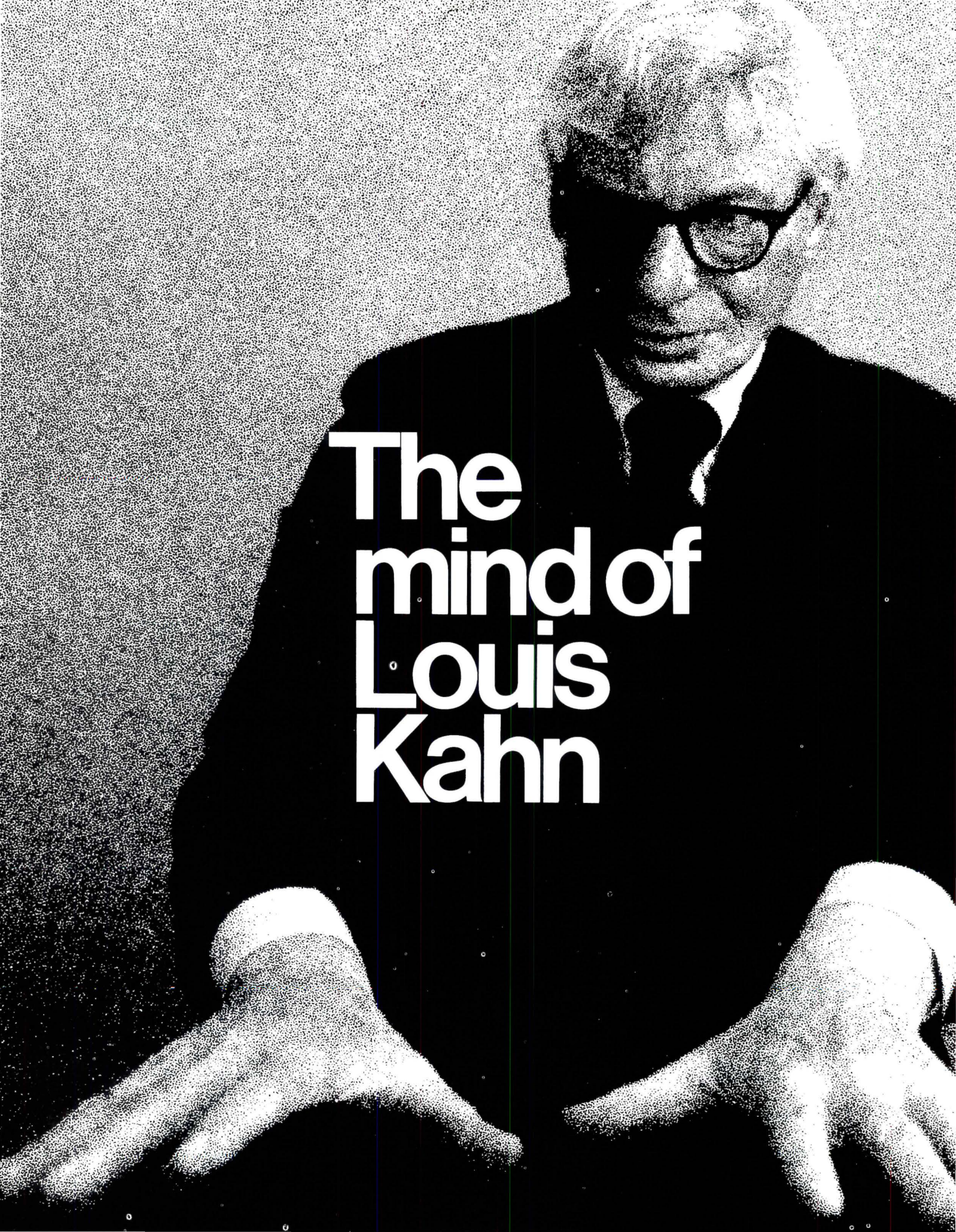
STEEL FLOOR SYSTEM

A new composite floor system for use with composite beam building designs has been developed by H. H. Robertson Co. Called the Q-Lock/CB system, it is a series of non-cellular and cellular sections for floors with integral electrical raceways on several modules as well as integral secondary air distribution ducts. The company claims that the new system can save up to 15 percent in structural steel costs, along with savings in shipping, hoisting and installation. Key to the system is a newly developed section, 3 in. deep and 36 in. wide; when used with welded shear connectors or studs, these wide flutes permit development of an undisturbed cone of influence between connector and concrete.

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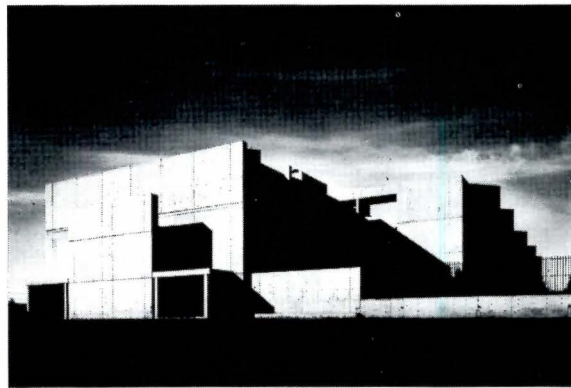


**The
July/August
issue of
The Architectural Forum
will be an
editorial encounter
with an
“architect’s architect”**



The mind of Louis Kahn

For years he was called an "architect's architect", a visionary, a theoretician whose thoughts were more significant than his practice. But lately, at construction sites from Fort Worth to San Diego to Bangladesh, his designs have come to solid realization in structures of such strength and integrity that now, at 71, Louis Kahn is believed by many to be the most important American architect of his generation. In 1971 he received his profession's highest award, the Gold Medal of the American Institute of Architects. He is soon to receive the gold medal of the Royal Institute of British Architects.



This year The Architectural Forum will devote its July/August issue to this emergent genius. And we invite you to join this editorial venture, a meeting with "The Mind of Louis Kahn."

Second in a Continuing Series:

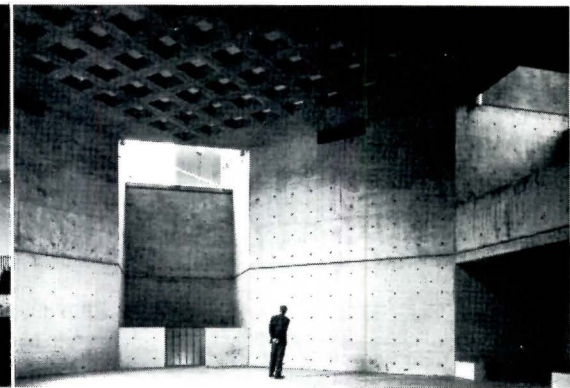
This will be second in a new series of publishing landmarks, issues appearing at six month intervals focusing the thoughts and achievements of influential designers who are calling the turn of the times. The series began early this year with "The World of R. Buckminster Fuller" January/February issue which has been called the FORUM's finest since the dramatic Frank Lloyd Wright issue of 1938.

Kahn's Contribution

"The Mind of Louis Kahn" will be an introduction to the fascinating man who was first to look beyond the steel and glass grids of the International Style in the 1950's (he called the Seagram Building "a lady whose beauty is hidden in corsets") and explore a bold new architecture of solid mass and poetic form.

In this issue of the FORUM, readers view the plans and sites of his recent achievements:

He has given modern architecture a sense of history, creating a continuum of past, present and future in building forms that recall the aura of their primitive forebears—Scottish castles, Romanesque vaults, 13th century French townscapes and Florentine towers.



He has taken that oft-repeated but rarely practiced dictum—"form follows function"—more seriously than any architect of his time, creating buildings whose living spaces, utility cores and arteries, structural bones, walls and windows—all come together in an integrated architecture that never abandons its central purpose.

More than any other architect he has used the full values of natural light as an element of building design; his interiors are an eloquent answer to the poet, Wallace Stevens, who once asked the architect, "What slice of the sun does your building have?"

He has been among the foremost to plan architecture which does not begin and end with the individual building, but takes its place within the human environment, and architecture which, as Professor Scully of Yale put it, "regards the city as the ultimate work of human art."

Design For the World at Large

The FORUM will take its readers to worldwide sites where stirring achievements are either projected, under construction or brought to full realization:

New Haven, Connecticut

where the Paul Mellon Center for British Art and British Studies will bring the academic and business worlds together in a building that not only provides inviting spaces for culture, but retail space to reinvigorate an old commercial street.

Dacca, Bangladesh

where a new capital city challenges the climate with a striking skyline of turrets penetrated by huge geometric openings—and where Kahn designed a series of archways that may be the most magnificent vaulted masonry of our times.

Exeter, New Hampshire

where Kahn has designed a library which stands as a strong symbolic center of learning to become the contemporary heart of an old New England campus.



Fort Worth, Texas

where a roof of repetitive vaults shelters the Kimbell Art Museum whose curved ceiling contours were designed to carry natural lighting deep into the interior exhibition spaces.

Venice, Italy

where history has challenged Kahn (as it challenged LeCorbusier before him) to envision a twentieth century architecture that joins hands with the 13th century—as Kahn has done with a proposed plan for a congress hall that would be 428 feet by 100 feet by 78 feet high.

Ahmedabad, India

where within Kahn's exciting campus, the FORUM's readers will see a school building concept which is, in effect, "a building-within-a-building—one open to the sun, the other open to living"—a design to admit natural light but repel the impact of a hot, hostile climate.

Kansas City . . . Fort Wayne . . . Jerusalem . . . Nepal . . . New York . . . Berkeley . . . Baltimore . . . here and at sites beyond, Kahn has new work in progress which the FORUM will bring into the handsome format of its July/August issue.

But one point about this issue must be clear:

this will not be just another record of accomplished work, not just a perfunctory layout of pictures, captions and plans. This will be an intimate view of a great architectural mind at work.

The FORUM will focus on Kahn's creative process (or "reprogramming" of a building as Kahn often calls it) which is his distinctive way of developing organic plans that are functionally and harmonically integrated.

When Kahn takes on a new project, he goes back to the deepest roots of the design concept, explores the proposed building's most basic function to seek a solution that is both practical and poetic. He believes that a room is the organic center of a building. "The room," he says, "is the beginning architecture . . . it is the place of the mind." And he adds, "The plan is a society of rooms." This is the thought out of which his buildings grow.

Deeper Insight Into Architecture

The FORUM's editors will undertake to bring you close to the core of Kahn's design process, as is their editorial way. Over the years the Forum has consistently attempted to take its audience behind the facade, to expose the profound purposes, the functions and esthetics from which a building takes its form.

By exploring the underlying purpose of architecture the Forum has taken its place as architecture's most articulate spokesman.

The Architectural Forum invites you to meet a man who was born on an obscure Estonian island in the Baltic Sea, and became one of the most inventive leaders of modern America. We hope you will join our editorial encounter with "The Mind of Louis Kahn," second in our series of twice-a-year publishing events, *double numbers* focusing on the thoughts and achievements of influential designers of the Seventies.

Memo to Advertisers

Advertising forms for the July/August issue of The Architectural Forum—an editorial encounter with "The Mind of Louis Kahn"—will close on June 16.

The Architectural Forum

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130 East 59th Street, New York 10022
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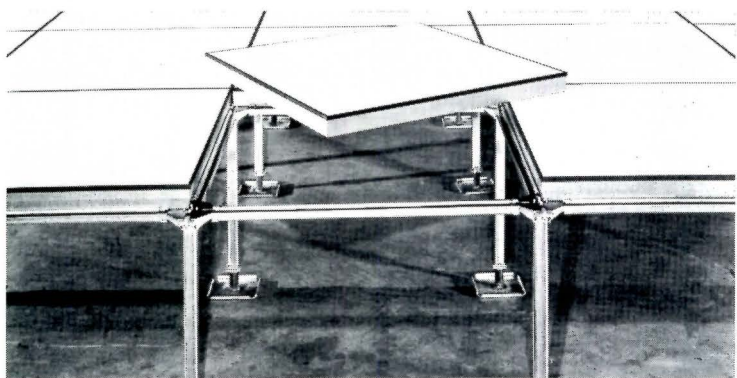
CEILING SYSTEM

The Armstrong Cork Co.'s Accessible Tile System ATS is a new ceiling system designed to meet the requirements of a tight tile ceiling and provide complete accessibility without damaging the tile. Ceiling tile, lighting fixtures and room partitions can be rearranged easily to satisfy future design requirements of any installation. Each acoustical tile is mechanically supported and removable (by pulling down-



ward). Only a minimum clearance of 2 1/4 in. is required from the ceiling line. Lighting units may be laid on top of the system's T-bars, where they slide into position. The T-bars and lighting units are installed before the ceiling tile.

On Readers Service Card, circle 107.



ACCESS FLOOR

A new access floor, available in 24-in. through 36-in. square modules, has been introduced by Washington Aluminum Co., Inc. The system is suitable for office buildings, laboratories and general construction where flexibility of floor space and utility

access is important. The panels are also available in thicknesses from 3/4 in. to 2 in. to meet various load conditions and providing maximum thermal insulation, sound absorption and electrostatic control.

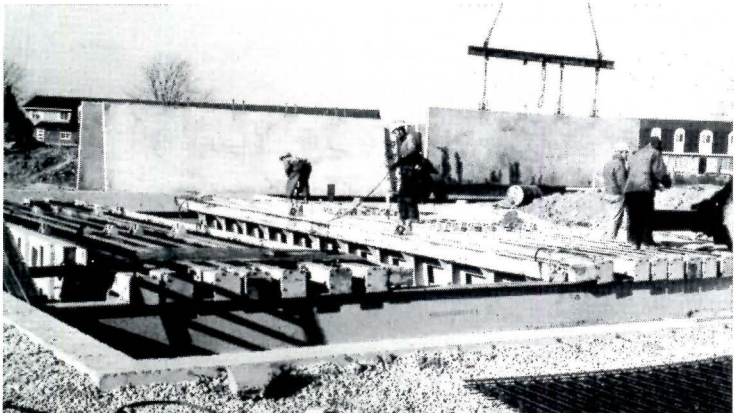
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CONCRETE MOLD

A concrete battery mold developed by IE Industries allows vertical casting of loadbearing walls on site. The increased cost of site casting can be offset

by savings in shipping costs. The vertical mold can also be operated inside a plant, where it uses much less floor space than conventional casting beds.

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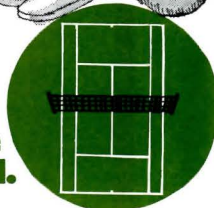
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The Invisible City

The resources of a city are its people, places and processes. It is our collective attitude toward these resources that either encourage the destruction of the city through apathy and abandonment or reaffirm the necessity of the city to civilized life by participation and use. Use as the place for learning; participation as the involvement of everybody as a teacher.

We live in the invisible city. A place where public information is not public; a place that is not maintained because it is not creatively used. The most extensive facility imaginable for learning is our urban environment and the people in it. If we can make our urban environment observable and understandable we will have created classrooms with endless windows on the world.

We'd like you to join us for the 22nd annual International Design Conference in Aspen, Saturday through Thursday, 17-22 June 1972. There we will all be teachers and we will all be students. Talking together, we will explore ways of making the many resources for learning in our cities visible, accessible, and comprehensible to all. We will have conversations with people who are now doing exactly that. Among them:

Warren Bennis, William Birenbaum, John Bremer, John Bunting, David Clarke, Richardson Dilworth, John Dollard, Nancy Donovan, Charles Eames, Leonard Finkelstein, Marcus Foster, Farnum Gray, Alan Green, John Holt, Ivan Illich, Nicholas Johnson, Louis I. Kahn, Bernard Kohn, Ruth Kohn, Bill Lacy, Alan Levy, Simon Nicholson, Harry Parnass, Albert Eide Parr, Lisa Licitra Ponti, Jaquelin Taylor Robertson, Michael Southworth, Larry Wells, and Troy West.

And, as the following calendar makes clear, we expect to have a good time.

Richard Saul Wurman
program chairman



Saturday 17 June

10 am-3 pm, registration (there will be a special rate on the Highlands ski lift).

3-6 pm, opening night party, which we hope will take place on a closed-off street with the town invited.

8:30-10:45 pm, opening.

Welcoming words from Jack Roberts, president of IDCA.

A description of the week's activities and goals by the program chairman, Richard Saul Wurman. Wiseman's film *The High School*.

Every morning

8:30-9:30 am, 5¢ coffee and coffee cake. Talk, listen, watch names become people.

9:30 am-noon, the Aspen music tent will be the scene of a TV-talk-show format interview session. Each day three of our resource people will be individually interviewed.

Midday

Buy 1/6 of a lunch for \$1.25 and turn five strangers into friends. We won't sell you a whole lunch, but enough bread, or meat and cheese, or fruit, or drinks, for six people and it will be up to you to find five others who want some of what you have and who have some of what you want. While you eat together you may find that your ideas make good sandwiches, too. The resource people will have the napkins and forks, so you'll be sure to meet them.

On Tuesday, between 2 and 6 pm, our annual fish-fry at the ghost town of Ashcroft, with fresh-caught brook trout sauteed for you next to a white water stream.

Every afternoon (except Tuesday)

2-5 pm, explore the options.

All our resource people will be available and there will be demonstration School Without Walls meetings with local resource people. Everyone can participate, including children. You might meet a chef, a local planning official, or an artist/craftsman; take a tour of Aspen's architecture; or learn to identify local varieties of mushrooms and the wildflowers of the area.

The "Exhibit of Exhibits" will include "Making the City Observable" and exhibits from New York, Hartford, Philadelphia, Chicago, Montreal, and Lowell; a series of drawings by Lou Kahn about the use of the street; and anything pertinent you might like to include concerned with using the urban environment for learning.

You may browse in a special bookshop run by Sam Yanes, editor of *Big Rock Candy Mountain*. Or take map drawing with Troy West, who will roll paper down an Aspen Street. You and other members of the community will participate in designing a meaningful map.

Evenings

8-10 pm.

Sunday, an evening with Ivan Illich.

Monday, Louis Kahn.

Tuesday, Charles Eames.

Wednesday, yet to be confirmed.

The Late Show

10 pm-midnight.

Monday and Wednesday, films.

Tuesday and Thursday, ice skating at Brown's Palace.

Free and useful conference literature

Aspen Visible, a guidebook to Aspen with maps and information.

A *Yellow Pages of Learning Resources*, definitions of over 100 generic people, places and processes.

A set of posters by 11 designers graphically illustrating many of the *Yellow Pages* items.

A chart book with magazine and newspaper articles dealing with the theme of the conference.

A booklet of the week's events and information about the resource persons.

A special issue of *Design Quarterly* devoted to conference proceedings to be published in the fall and distributed free to all conferees.

The International Design Conference in Aspen 1972

Registration fee, \$100.

Companion, \$50.

Student (proof required), \$35.

Fees include access to all conference programs and literature.

Make your check payable to IDCA and send it to: IDCA, Box 664, Aspen, Colorado 81611 U.S.A. Your check will be your receipt.

Registrations will not be accepted after 2 June or after cutoff number has been reached, whichever comes first.

Please reserve _____ places for *The Invisible City*, IDCA 1972.

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Address _____

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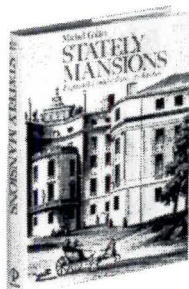
STATELY MANSIONS

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Michel Gallet

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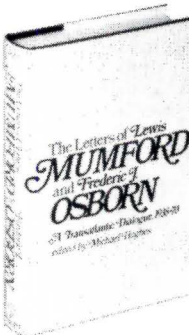
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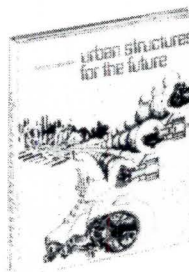


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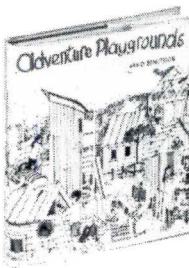


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**UCT
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(continued from page 81)

PLASTIC CEILING

A new plastic sound resonator ceiling system, manufactured by the United Lighting and Ceiling Corp., demonstrates a new approach to the problems of sound absorption and weathering. The ceiling, which was first developed for the Bay Area Rapid Transit System (BART), corrects the full range of sounds for greater absorption of low rumbling noises. The break-proof and fireproof slats will not rust, chip, dent or corrode



and the ceiling may be wiped clean with a sponge. The colors are integral to the materials and the system is easily coordinated with mechanical, air and lighting systems.

On Readers Service Card, circle 110.



CEILING SYSTEM

The Alcan Aluminum Corp. has introduced the Alcan Planar Aluminum Ceiling, an interior and exterior, low-maintenance

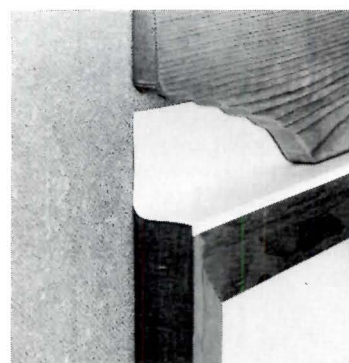
ceiling system. The system achieves a crisp linear appearance with aluminum panels, available in a range of baked-on standard finishes or any color on special order. The panels are individually snapped into metal stringers and can easily be removed and replaced when required. Panel length is unlimited, though the standard increment is 4 ft. The system also has expansion carriers and can be adapted to almost any building design.

On Readers Service Card, circle 111.

VINYL FLASHING

A new, patented, dual-durometer extruded vinyl flashing for window head casings has been introduced by Crane Plastics. Called DualFlashing, the system is designed for easy maintenance, good appearance and fast installation. It is an L-shaped extrusion made of rigid and flexible vinyl to help eliminate bending and denting problems and has integral color.

On Readers Service Card, circle 112.



FASTENING TOOL

An automatic fastening tool, capable of completing 20 fastenings a minute, has been developed by the Ramset Fastening Systems of Olin Corp. Twenty drive pins and energy pellets

are the major features of the tool. Two belts of ten fasteners each are loaded into a fastener drum attached to the tool's front end. A spring-loaded fastener follower in the drum automatically feeds a fastener one at a time into the tool's chamber. Energy for each fastening is provided by a track of ten power pellets loaded into a channel in the handle. The tool weighs only 6 lb.

On Readers Service Card, circle 113.

(continued from page 84)

The following is a listing of the key products incorporated in some of the buildings featured in this issue:

ONE SHELL PLAZA. ARCHITECTS: Skidmore, Owings & Merrill. (Materials & Manufacturers as submitted by the architects). STEEL PILING: J. G. McCullough Constr. Co. WATERPROOFING: DuPont. CONCRETE & CEMENT: Gifford-Hill. INTERIOR & EXTERIOR MARBLE: Vermont Marble Co. STRUCTURAL STEEL: Bethlehem Steel Co. GLASS & CURTAIN-WALL: PPG Industries. FENESTRATION: Maloney Gasket Co. INTERIOR PARTITIONS: Offenhauser. ELEVATORS: Otis Elevator Co. REVOLVING DOORS: Crane Fulview Glass Co. ELECTRICAL EQUIP: Westinghouse. LIGHTING FIXTURES, LAMPS: Benjamin, Edison Price. PLUMBING FIXTURES: American Standard. HEATING BOILERS: Kewanee. UNIT VENTILATORS, RADIATORS, CONVECTORS: Wing. HEATING VALVES, PIPING, CONTROLS: Jenkins, Powers Regulator. AIR CONDITIONING COMPRESSOR, FAN UNIT & UNIT AIR CONDI-

TIONERS: Carrier. DIFFUSERS, DUCTS, PUMPS: Peerless Worthington, Waldinger, Krueger. SPECIAL FANS & VENTILATORS: Westinghouse, Acme Claridge. INTERCOM SYSTEMS: Powers. PNEUMATIC TUBES, CONVEYORS: Lamson Corp. WATER COOLERS: El-kay. FINISH FLOORING & CARPETING: Armstrong.

GALLERIA. ARCHITECTS: Hellmuth, Obata & Kassabaum, Inc.; Neuhaus & Taylor. (Materials & Manufacturers as submitted by the architects). SKY-LIGHT: Super Sky Products Co. PRECAST CONCRETE: Schokbeton, Texas Industries. LAMINATE GLASS: Amerada Twi-Lite. ESCALATORS: Westinghouse. AIR CONDITIONING: Carrier. INTERIOR LIGHTING: Lightolier, Mel-drum Electric. CARPET: Universal Carpets, Inc. NEUTRAL PANELS: Tobin & Rooney. SIGN CHANNEL: Benjamin Lighting Div. of Thomas Industries. ACOUSTICAL CEILING: Johns-Manville.

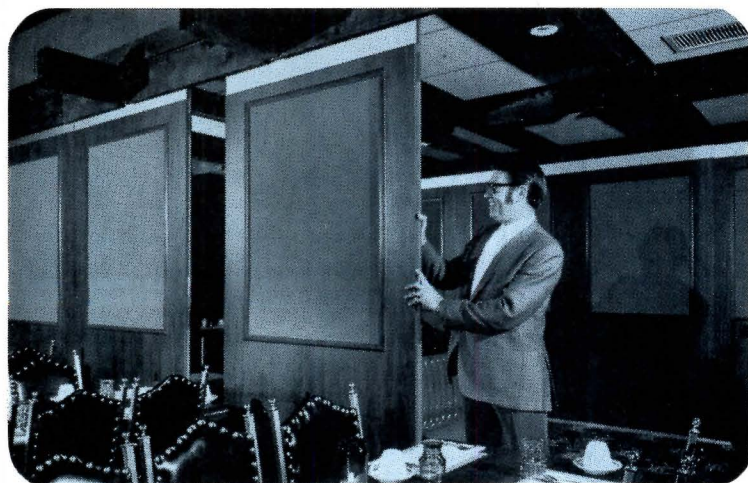
SAUK VALLEY COLLEGE. ARCHITECTS: Caudill Rowlett Scott; Durrant, Deininger, Dommer, Kramer, Gordon. (Materials & Manufacturers as submitted by the architects). BRICK: Acme-Bennett. STRUCTURAL STEEL: Bradley Iron Works. ROOF MATERIALS: Johns-Manville. THERMAL INSULATION: Silbrico All Weather-Crete. ACOUSTICAL MATERIALS: Armstrong, Pyrospray. FENESTRATION: Marmet Aluminum Products. GLASS: PPG, American St. Gobain Corp. ELEVATORS: Montgomery Elevator Co. DOORS: Marmet Aluminum Products, U.S. Plywood Corp. HARDWARE: Cor-

bin. INTERIOR MATERIALS (TILE, PLASTIC): Artex. PANELING: U.S. Plywood Corp. PAINT: Benjamin Moore. ELECTRICAL EQUIP: Westinghouse. STANDBY EMERGENCY POWER: Kurz & Root. LIGHTING FIXTURES, LAMPS: Westinghouse. PLUMBING FIXTURES & WATER COOLERS: American Standard. HEATING BOILERS: Cleaver-Brooks. UNIT HEATERS, UNIT VENTILATORS, RADIATORS, CONVECTORS & AIR CONDITIONING COMPRESSOR, FAN UNIT: Trane. HEATING VALVES, PIPING, CONTROLS: Fisher, Minneapolis Honeywell. DIFFUSERS, DUCTS, PUMPS: Titus. SPECIAL FANS & VENTILATORS: Carnes. KITCHEN, LAUNDRY, LABORATORY EQUIP: Servco Equip., NII Laboratory. FINISH FLOORING & CARPETING: Armstrong, Connor's Loxit, Alexander Smith. FURNITURE & SEATING: American Seating.

DICKINSON SCIENCE BUILDING & TISHMAN LECTURE HALL. ARCHITECT: Robertson Ward, Jr. (Materials & Manufacturers as submitted by the architect). FOUNDATION WATER-PROOFING: American Elastomers Co., Inc. CONCRETE & CEMENT: William & Dailey, Inc., Atlas. BRICK, BLOCK & STONE: Alwine Brick Co., Morse C&B Block, Arch. Stone Co. STRUCTURAL WOOD, FLOOR & DECK SYSTEMS: Timber Structures, Inc. CURTAIN-WALL & PANELING: Potlatch Forest Industries. ROOF MATERIALS: Barrett, Colortrim, Inc. THERMAL INSULATION: Barrett, Celotex. ACOUSTICAL MATERIALS: Armstrong. FENESTRATION: Hope's Windows, Inc. GLASS: PPG, Libbey - Owens - Ford,

Tempar-Glas. INTERIOR PARTITIONS: U.S. Gypsum, Donn, FIAT Products. ELEVATORS & ELECTRIC STAIRWAYS: Dover Corp. DOORS: Eggers, Arcadia, Philip Mfg. Co. HARDWARE: Lockwood, Hager, Richards-Wilcox. INTERIOR MATERIALS (TILE, PLASTIC): American Olean. PAINT: O'Brien. ELECTRICAL DUCTS & WIRING: General Electric, National, Wiremold. ELECTRICAL EQUIP: General Electric. STANDBY EMERGENCY POWER: Automatic Switch Co. LIGHTING FIXTURES, LAMPS: Prescolite, Globe Lighting, Lightolier, General Electric, Wheeler Reflector Co. PLUMBING FIXTURES: Kohler, Zurn, Watersaver Faucet Co. PIPING: Vulcathene, Duriron. UNIT HEATERS & FAN UNIT: Dunham-Bush, Inc. UNIT VENTILATORS, RADIATORS, CONVECTORS: Schemenauer Mfg. Co., Space Conditioners, Inc. HEATING VALVES, PIPING, CONTROLS: Powers Regulator Co. DIFFUSERS, DUCTS, PUMPS: Titus, Air Balance, Inc., Bell. SPECIAL FANS & VENTILATORS: Penn Ventilator Co. AUDIO VISUAL EQUIP: Radiant, Kodak. SPRINKLER SYSTEM & FIRE PROTECTION EQUIP: Walter Kidde, Edwards. WATER COOLERS: Halsey-Taylor. MOVABLE PARTITIONS: Modernfold. VENETIAN BLINDS & SHADES: Berkshire Mfg. Co., Louver Drape, Inc. KITCHEN, LAUNDRY, LABORATORY EQUIP: Connecticut Laboratory Furniture Co. FINISH FLOORING & CARPETING: Ruberoid, American Olean, Lee. FURNITURE & SEATING: Hanseatic, Adjusto, Jasper. FABRICS, UPHOLSTERY & DRAPERIES: Art Drapery Studios, Ben Rose. DRAPERY HARDWARE: Kirsch. GREENHOUSE: Lord & Burnham. CHALK-BOARDS: Claridge.

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Mueller Climatrol Corp. describes Central Station Air Handlers for heating/cooling and heating/ventilating. On Reader Service Card, circle 200.

ALUMINUM GRILLES

W.P. Hickman Co. has available brochures covering new product line of aluminum air diffusion grilles and enclosures. On Reader Service Card, circle 201.

BUILDING SYSTEMS

Star Manufacturing Company offers a Metal Building Systems Planning Guide containing specifications and dimensional data for use in planning metal building systems. On Reader Service Card, circle 202.

COMMUNICATION SYSTEMS

TeleVisual Systems, Inc. describes and illustrates audio-visual and television systems in current use in four-page brochure. On Reader Service Card, circle 203.

CONCRETE

Trinity White announces availability of 12-page booklet detailing examples of imaginative use of white architectural concrete. On Reader Service Card, circle 204.

Concrete Plank Co., Inc. has available catalog incorporating significant characteristics of concrete plank, channel slabs, Porotherm cellular concrete roof fill, and custom-casting of special concrete shapes. On Reader Service Card, circle 205.

FENCE FABRIC

Page Fence Division of American Chain & Cable Co., Inc. offers comprehensive, revised kit containing helpful information on Page aluminized chain link fence fabric. On Reader Service Card, circle 206.

FLOORING

The Flintkote Company makes available 24-page 1972 catalog of flooring styles showing samples of new and current patterns. On Reader Service Card, circle 207.

H.H. Robertson Co. describes and illustrates new steel composite floor/beam system in eight-page brochure. On Reader Service Card, circle 208.

INSULATION

Construction Products Division, W.R.

Grace & Co., has available brochure detailing a Zonolite wall insulation system consisting of rigid foam insulation and metal furring channels (Thermo-Stud). On Reader Service Card, circle 209.

LIGHTING

Filon Division, Vistron Corp. offers manual on "How to Design With Daylight" which details facts and figures on translucent fiberglass panels. On Reader Service Card, circle 210.

NOISE CONTROL

Ferro Corporation announces availability of four-page bulletin detailing reduction of noise radiated from a vibrating surface by the application of Coustidamp damping compound. On Reader Service Card, circle 211.

Consolidated Kinetics Corp. has available new design guide on the control of impact and airborne noise in buildings and other structures. On Reader Service Card, circle 212.

Keene Corporation offers new literature on pre-engineering approach to solving commercial and industrial noise problems. On Reader Service Card, circle 213.

OFFICE FURNITURE

All-Steel Equipment, Inc. has available brochure featuring their new 100 Series Contour Chairs. On Reader Service Card, circle 214.

ROOFING

Roofing Systems, Inc. makes available eight-page brochure describing Spanish tile roofing system which employs aluminum tiles. On Reader Service Card, circle 215.

The Celotex Corporation has available 1972 Barrett Roof Insulation manual covering urethane, Celoterm, fiberboard, cant and edge strips, and containing a roof insulation selector guide. On Reader Service Card, circle 216.

Johns-Manville introduces a new brochure on the Regal line of Seal-O-Matic self-sealing asphalt shingles. On Reader Service Card, circle 217.

SHINGLES

United States Gypsum Company offers "How to Dramatize Your Mansard Roofs," illustrating the versatility of Concorde mineral shingles as a mansard roof and exterior sidewall

material. On Reader Service Card, circle 218.

SIDING

Masonite Corporation makes available literature covering Colorlok, Woodman Planked Panel, Ruf-X, and Bay-side Lap Siding. On Reader Service Card, circle 219.

SLIDING GRILLES

Cornell Iron Works, Inc. issues bulletin on its line of Sliding Grilles, presenting actual installation and describing the many uses of the grille as low-cost protective barrier. On Reader Service Card, circle 220.

STEAM BOILERS

Reimers Electra Steam, Inc. introduces eight-page catalog giving complete specifications on their line of high and low-pressure packaged electric steam and hydronic boilers. On Reader Service Card, circle 221.

STEEL JOISTS

United States Steel Corporation offers brochure on USS Super-C steel joists and steel foundations presenting technical data on floor framing for residential dwellings. On Reader Service Card, circle 222.

TERRAZZO

The National Terrazzo and Mosaic Association, Inc. is releasing a new Terrazzo Design Data book containing information to aid architects in designing terrazzo and mosaic work. On Reader Service Card, circle 223.

THERMAL JACKETING & TAPING

Hexcel Corporation makes available brochure describing new and complete line of pressure-sensitive tapes and thermal jacketing. On Reader Service Card, circle 224.

THERMOSTATS

Weather-Rite, Inc. describes solid-state device that probes temperature of open doorway and then programs discharge temperature of door heater accordingly. On Reader Service Card, circle 225.

VACUUM SYSTEMS

Nash Engineering Company offers 12-page bulletin on central vacuum and compressed air systems for hospitals, schools and laboratories. On Reader Service Card, circle 226.

VAPOR BARRIER

St. Regis Laminated and Coated Products Division has available new literature including samples and data sheet on Sisalkraft 299 cold storage vapor barrier. On Reader Service Card, circle 227.

WALLBOARD

Gypsum Association announces availability of reprinted American Standard for the Application and Finishing of Gypsum Wallboard. On Reader Service Card, circle 228.

WALL COVERINGS

Rohm & Haas Company offers eight-page illustrated bulletin on use of Kydex acrylic PVC alloy sheet as a protective wall and door surface covering. On Reader Service Card, circle 229.

WALL PANELS

Modular Materials, Inc. makes available a four-page color brochure illustrating all-new Aggreboard Panels. On Reader Service Card, circle 230.

WASHROOM FIXTURES

American Dispenser Co., Inc. offers a 36-page catalog covering over 300 soap dispensers and other washroom accessories. On Reader Service Card, circle 231.

Bradley Washfountain Company has available a condensed catalog of its washfountains, Bradpack pre-assembled wash centers, shower room fixtures and special equipment. On Reader Service Card, circle 232.

WATERPROOFING

St. Regis Laminated and Coated Products Division describes how Moistop underslab moisture-vapor barrier prevents moisture migration through concrete. On Reader Service Card, circle 233.

Steelcote Manufacturing Company announces availability of a technical bulletin on improved methods of preventing water seepage above or below grade in installations of "two-course" concrete slabs. On Reader Service Card, circle 234.

WINDOWS

Andersen Corporation offers 52-page 1972 catalog covering its line of low-maintenance windows and gliding patio doors. On Reader Service Card, circle 235.



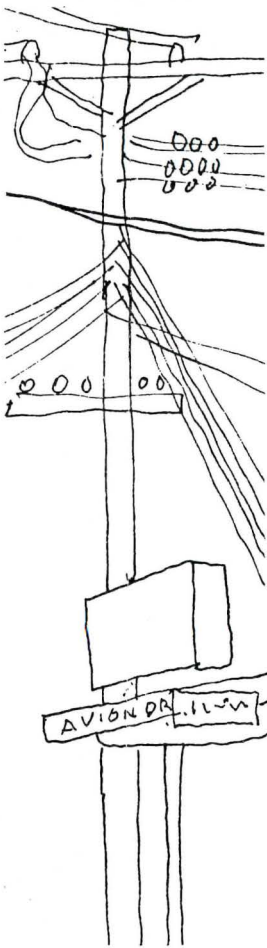
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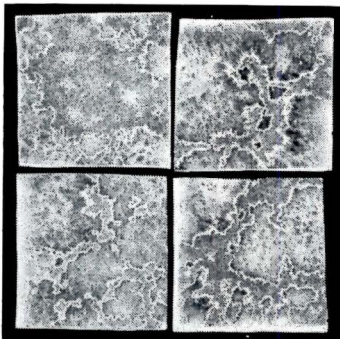
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Mesh mounted on 12" x 12" sheets with complete trimmers, for easy installation at low cost. For further information, write to:

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