# THE NEW AGE OF ARCHITECTURE

# THE NEW ROLE OF THE ARCHITECT

75TH ANNIVERSARY ISSUE

ARCHITECTURAL RECORD

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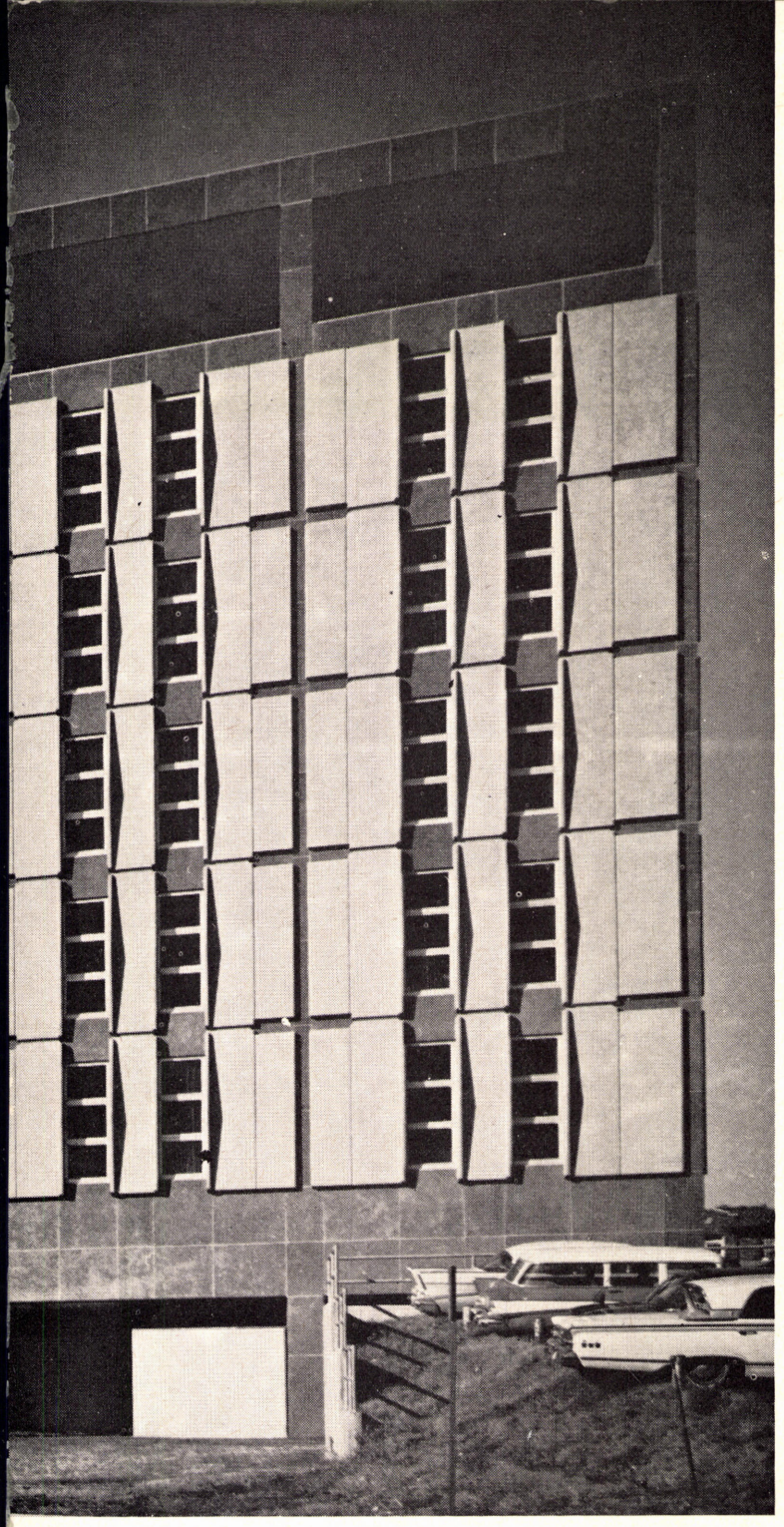

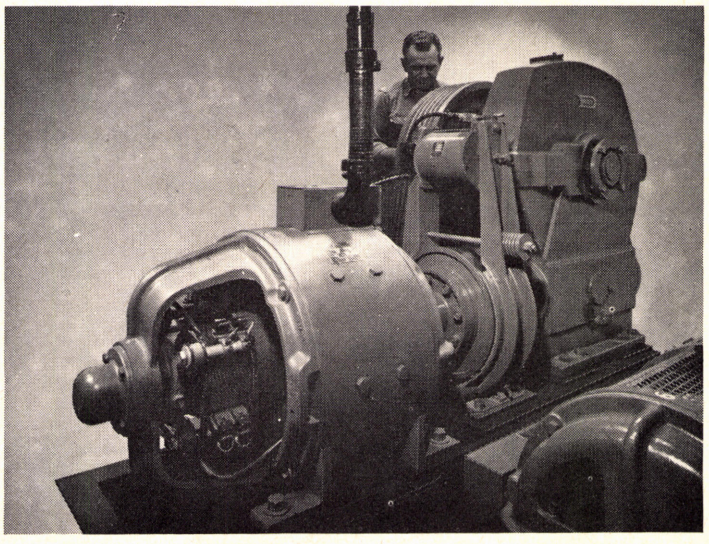

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# THE NEW AGE OF ARCHITECTURE

# THE NEW ROLE OF THE ARCHITECT

ARCHITECTURAL RECORD, July 1966, Vol. 140, No. 1. Published monthly, except May, when semi-monthly, by McGraw-Hill, Inc., 330 West 42nd Street, New York, New York 10036. CORPORATE OFFICERS: Donald C. McGraw, chairman of the board; Shelton Fisher, president; John J. Cooke, vice president and secretary; John L. McGraw, treasurer. SUBSCRIPTION RATE: for individuals in the field served $5.50 per year in U.S., U.S. possessions and Canada; single copies $2.00; further details on page 6. THIS ISSUE is published in national and separate editions. Additional pages of separate edition numbered or allowed for as follows: Western Section (including Western Architect and Engineer) 32-1, through 32-24. PUBLICATION OFFICE: 1500 Eckington Place, N.E., Washington, D.C. 20002. Second-class postage paid at Washington, D.C. POSTMASTER: Please send form 3579 to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N.J. 08520.

ARCHITECTURAL RECORD

CONTENTS: JULY 1966 75th ANNIVERSARY ISSUE

INTRODUCTION / WHAT IS HAPPENING IS NOTHING LESS THAN A REVOLUTION 147

1 SCIENCE AND TECHNOLOGY AS A DESIGN INFLUENCE 149

2 A NEW MEANING OF MODERN ARCHITECTURE / A REORIENTATION 171

3 SHAPING THE COMMUNITY IN AN ERA OF DYNAMIC SOCIAL CHANGE 189

4 ARCHITECTURAL RECORD THROUGH 75 YEARS 207

5 THE CHANGING JOB TO BE DONE / BUILDING TYPES AND LAND USE 215

"THE WILD MEN OF PARIS" / A PERSONAL LOOK BACK TO ANOTHER REVOLUTIONARY ERA 237

6 THE CHANGING PATTERNS OF ARCHITECTURAL PRACTICE AND EDUCATION 241

9 BEHIND THE RECORD

35 THE RECORD REPORTS

40 BUILDINGS IN THE NEWS

44 TRENDS IN CONSTRUCTION

46 CONSTRUCTION COSTS

65 REQUIRED READING

112 LETTERS

128 CALENDAR AND OFFICE NOTES

261 PRODUCT REPORTS

264 OFFICE LITERATURE

373 READER SERVICE INQUIRY CARD

408 ADVERTISING INDEX

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### ARCHITECT-INITIATED SKYSCRAPER FOR BOSTON NOW COMPLETE

The State Street Bank Building is known to architects all over the country as the office building conceived as a real estate venture by architect Frederick A. Stahl, who picked the site, persuaded British interests to finance the structure and later designed it in collaboration with Hugh Stubbins and William J. Le Messurier.

### HOTELS, MOTELS AND RESORTS

Next month's Building Types Study will focus on the pace-setting resort buildings which are being designed and constructed to meet the demands of the rapidly expanding tourist industry in the Pacific States and Hawaii.


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EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 330 West 42nd Street, New York, New York 10036. Western Editorial Office: 255 California Street, San Francisco, California 94111. PUBLICATION OFFICE: 1500 Eckington Place, N.E., Washington, D.C. 20002; second-class postage paid at Washington, D.C.

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# CRITICISM IS DEAD; LONG LIVE CRITICISM

On another page in this issue I have promised to comment in some detail about "criticism," for which the early ARCHITECTURAL RECORD was so famous, and which is more restrained today. We are continually being asked why we do not swing so lustily now; we are charged with not having the nerve; occasionally the charge is that we don't have the critics. At any rate, if we knew our job—so we hear—we would "give 'em hell."

Well, we *do* have the nerve. We *do* have the critics. We have the whole world to criticize, and all the means we need. We have no prohibitions. We have the interest, and we could amuse ourselves happily, and perhaps advance our personal "images" if we let go.

So why not start the fireworks?

On the sober side there are some things to ponder.

In the first place, it is not the criticism that is missing; it's only the fireworks of really negative attack. The critical faculties of the staff are at work day in and day out, supplemented by all manner of advisers, formal and informal, willing and unwilling, quiet and vehement. Very few magazines enjoy the close, really intimate relationships with their readers which are the rule in the architectural world.

RECORD editors have formal territorial assignments; they are frequently in the field scooping up all kinds of information, comment, material for publication. And every note they make on the trip or in the office involves an exercise of critical judgment. Every building that is published—good, bad or indifferent—involves some element of criticism; every photograph, caption, or bit of text.

Sometimes the criticism is open and obvious, and occasionally fairly sharp criticism in the old sense, fireworks. More often it shows quietly as normal dedicated reporting.

Our concept of really valuable criticism is the analysis and possibly desiccation of some ideas or dogmatic contrivances. The RECORD through the years has done hundreds of pages of discussion of architectural trends or principles. But however architects may protest that criticism can be constructive as well as negative they don't consider discussion of ideas as criticism. Criticism must deal with one building or one architect, or what fun is it?

What is missing is treading on sensitive toes just for what editors call "impact." We tread on toes when it is necessary—we made FLLW just plain mad some years ago with some published disparagement of his public pronouncements. We are accustomed to having architects angry at us—architects love to make pronouncements, especially to magazine editors, but they rarely agree on anything.

Legal aspects of libel or slander are not to be forgotten, of course, but they are much less of a factor than one would think. I never heard of a legal suit against the RECORD, in 75 years. There is some danger here from damage to building ownership, more than from slandering architects. And owners write more fearsome letters than do architects.

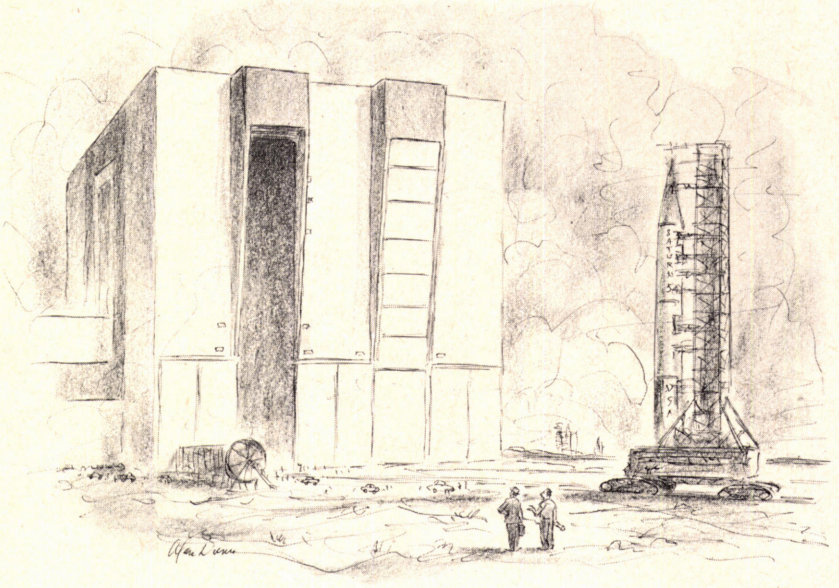
In the second place, we ask ourselves to define our functions as a magazine. What do our readers need from us?

Well, we must show them the latest, best, most significant, most exciting, most promising architecture. Must we put a rating on it? Architects always answer yes to that question, but they always make it apparent that it is *other* architects that need to be told; they themselves can judge for themselves.

Here I must make a declaration, a personal one: I believe that, generally speaking, architects do not need to be told how a building is to be judged. Or perhaps I should say, "do not profit from being told." They can, or at least do, make a personal judgment. And they should. They might be interested in the opinion of some more or less subjective observer in a magazine, but it does not sway them very much. What does sway them is publication, with or without words.

As for other functions, we must also tell architects how to plan a hospital, a school, an urban renewal project; we must also keep them up to date on

*Drawn for the* RECORD *by Alan Dunn*



*"What do we landscape it with—giant redwoods?"*

techniques and materials. We could have great fun with exciting discussions of architects' achievements or failures, but we should probably be neglecting our jobs.

Another declaration: I believe that most of the earnest pleas for criticism imply a small architectural world. The usual thing that is understood by "criticism" is a whirling of abstract concepts in a closed academic atmosphere. I don't mean to disparage this world; it corresponds roughly to the farther-out scientific investigations. I merely mean it is best done in a closed circle, not in a magazine.

But not a very large percentage of practicing architects are engaged in this innovative exercise, much as they would like to feel they are. Most architects, when at work, are exercising their innovative capabilities on practical problems of clients and building requirements. Out of this can come great architecture—and we shall be there spotting it, and publishing it, and its greatness will speak out.

What I am saying is that most work of most architects simply is not subject to true architectural criticism.

It was a small world in which the earlier RECORD won its acclaim for criticism. European architecture was the fashion, and rebellion against it was big news. The fight took a generation or so. Then came the fight for "modern," and it took a generation. Now we have something new every six months. The whirl becomes dizzier, and the circle of cognoscenti smaller. While the architectural world grows larger, much as we might wish it wouldn't.

It was a small world in which the RECORD first talked to the public. It was a small world of readership, sophisticated readership. Out of that world—and out of history—came the assumption that architecture would profit from a public discussion of its highs and lows.

(Let us grant that the RECORD did a tremendous job in educating the public about architecture. Let us grant also that criticism aided that education. Criticism today probably aids in that education now. But in those halcyon days of criticism in the RECORD, the editors wrote (Feb. '09) "Nor is the architect to be helped greatly by the strictures of critics, lay or professional. There is, of course, a wholesome necessity for criticism. Criticism even has a high measure of efficiency. But criticism in a public sense is not a great force with the average man, even the average man of some intelligence. Instruction is a much greater force in our present condition.")

One must make a distinction, I think, between whether one is *for architecture*—art in the abstract—or *for architects*. My own loyalty—shoot if you must—is to architects. If I had a publication for the general public, I should almost certainly measure my obligation to architects' clients, and I should consider analysis and/or criticism of architecture a natural function. But I should not consider that I was doing a favor to architects to expose all of their bickerings and uncertainties and personal biases. The early RECORD did a great service to architects by educating the public, quite aside from its critical writings. And perhaps the publicity value of criticism overshadowed, in those days, the detrimental effects of unfavorable comments. No doubt there was glory in the battles, too.

I should have to insist, today, however, that the architectural world has very old-fashioned ideas of public relations. Architects are positively masochistic in their insistence on public debate on architectural abstractions. Debate they must, or die—true, true, true—but the place for that is in the back room at Mory's (where we can be tunefully immortalized by losing our way). Art is real, and art is earnest, but the world wants to go to the moon; it is engrossed in other fights than the sparring of artistic academies. The automobile world might have benefited the public if manufacturers had publicly argued about weaknesses in each other's cars, and perhaps they would have benefited themselves, but the auto industry is not showing any signs of believing it.

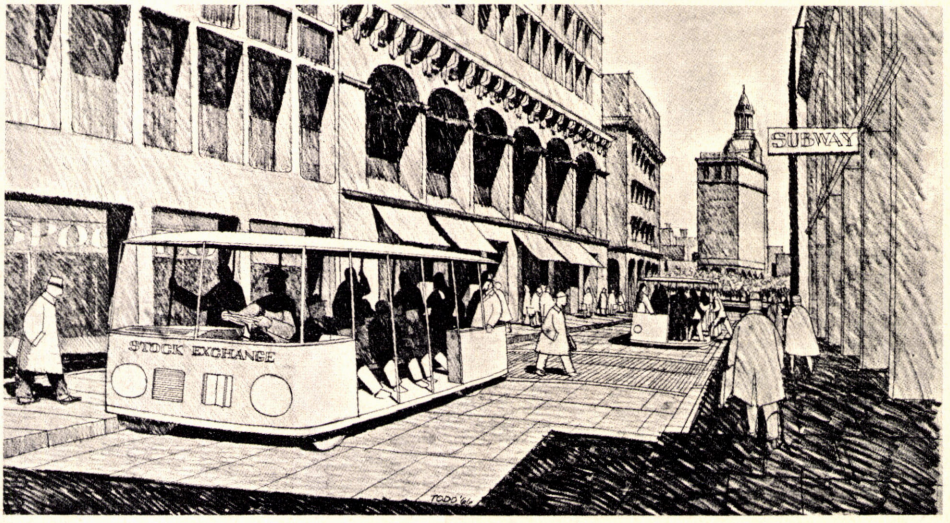
Must the commercial world then engulf us? Well, it has. It has engulfed us or left us behind.

But let's take it to a higher level, that of the very human demands of a tortured world that has outgrown its towns and cities, its ideas and standards, its environmental concepts. This world is not presenting challenges to the architectural fraternity in contract documents, but it needs all of the help a design group can provide. The peaceful life of the future may well depend on thoughtful planning.

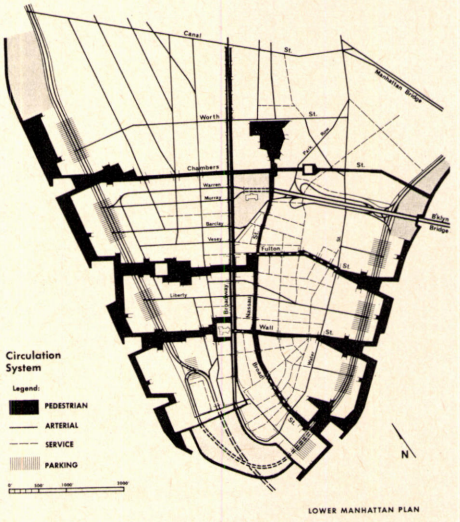
So how about taking a fling at the "brave new world"? There are new sources of inspiration, new types of buildings to design, new guides to form, new matters to criticize, new arguments to throw around.

Or, if you are going to insist on arguing about abstractions of architectural art, come visit the RECORD offices. We'll buy you a lunch, and we'll all enjoy indulgence in earnest jousting.

*—Emerson Goble*




Proposed pedestrian street with arcade and Intra-bus




LOWER MANHATTAN PLAN

## Lower Manhattan Report provides "organizing concept" for present and future growth

The Lower Manhattan Report, prepared for the New York City Planning Commission, provides not a "master plan" but "a system of development, on an area-wide scale, in which every phase of downtown life is related in an overall process of planning and change." The report, prepared by Wallace, McHarg, Roberts and Todd, architects and planners, Philadelphia; Whittlesey, Conklin and Rossant, architects and planners, New York; and Alan M. Voorhees & Associates, Inc., transportation and planning consultants, Washington, D.C., proposes the "feasible separation" of pedestrian, arterial and service traffic (by this separation recalling provisions of the British report "Traffic in Towns" by Colin D. Buchanan, reviewed in ARCHITECTURAL RECORD in June 1964, page 78). The New York report is planned as "a general strategy for the redevelopment and growth of an area; an approach, a process and an organizing concept. Development can occur, within the framework of guiding principles, in a number of different ways, at different times in different places."

The report deals with three problems: function, environment and access and movement. Functional goals include the strengthening of the downtown business core; the establishment of a residential community of 80,000 to 100,000 people organized in six interconnected development areas each located around plazas which will serve as "windows on the waterfront"; the diversification of the range of employment; the protection of existing blue-collar jobs; and the smooth incorporation of large and diverse downtown projects such as the Civic Center and the World Trade Center.

Environmental goals include taking maximum advantage of the waterfront and the improvement of the working environment by providing daily amenities, services and attractions found elsewhere in the city.

The goals of access and movement will be implemented by a horizontal system of organization, treating the old streets as either arterial, pedestrian or service, thus organizing the old irregular street pattern and "providing the basis for important links to future development at the core's periphery." A small, low, moderate-speed vehicle, the "Intra-bus," is proposed for short hauls in the pedestrian road system. The peripheral roads, which are presently elevated highways, are planned to be built on new-fill land and to be depressed. The transit stations will be improved and integrated with the pedestrian system.

THE RECORD REPORTS ON:

California library will have maximum study facilities ..... 365
Library will conform to traditional campus setting ..... 365
Research tower has maximum flexibility ..... 380
Circular library designed for optimum control ..... 380
Chicago apartment building contains enclosed pool ..... 387
Australian pavilion at Expo '67 is "a floating square box" ..... 387
Cultural center combines four distinct elements ..... 394
Residential complex will blend older urban neighborhood ..... 398
Showroom tower has a series of 23 staggered decks ..... 402

## Euston succeeds Spreiregen as A.I.A. urban programs director

Andrew F. Euston Jr. will succeed Paul D. Spreiregen as director of urban programs of the American Institute of Architects. Mr. Euston has been an associate in the New Haven architectural office of his father, Andrew F. Euston Sr. Mr. Euston has also been with the offices of Cooper & Auerbach and W. H. Metcalf Jr., both in Washington, D. C.

Mr. Spreiregen leaves his post after four years to become program director of architecture and design of the National Endowment for the Arts. One of his first duties will be to formulate plans for a study which will lead to the estab-

lishment of a National Environmental Design Institute. The Institute, proposed by Albert Bush-Brown, Minoru Yamasaki and William Pereira, members of the National Council on the Arts, will include the arts of architecture, urban design, regional planning, landscape architecture, industrial design and graphic design. It will work with Federal agencies and state and local private organizations and academic communities. Already appropriated by Congress is $150,000 to plan the development of the institute, and $200,000 has been allocated for pilot projects to implement the study as it progresses.

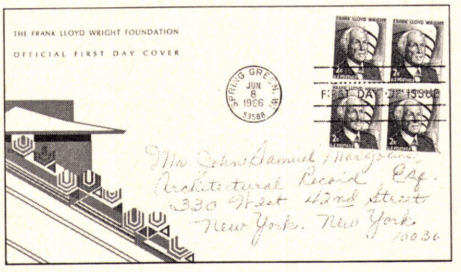
## Marcel Breuer will design a new memorial to FDR

Marcel Breuer is the new architect for the Franklin Delano Roosevelt Memorial in Washington, D.C. In a meeting of the FDR Memorial Commission on June 8, Mr. Breuer was selected from five "finalists" chosen from a field of 55 architects invited to be considered. The other finalists were Philip Johnson and Paul Rudolph of New York; E. Lawrence Bellante of Bellante & Clauss, Scranton, Pennsylvania; and Andrew Euston Sr. of New Haven in association with Andrew Euston Jr. and Cooper & Auerbach of Washington, D.C.

At a meeting of the FDR Commission in January, all designs from the famous national competition held five years ago were formally and finally rejected, including the winning design by Pedersen, Tilney, Hoberman, Wasserman and Beer. Opposition from the Roosevelt family was said to have prompted this decision. Commenting on the original winner, Mr. Breuer said, "it was an interesting design. It was a good proposition, although I was not in absolute agreement with all of the details. On the whole, it was a good monument."

## Sweet's gives Canada its own construction catalogue file

The first Canadian Construction Catalogue File has just been issued by the Sweet's unit of the F. W. Dodge Company, a division of McGraw-Hill, Inc. The file contains nearly 5,000 pages in seven volumes dealing with data on Canadian building products. The Canadian file has quite a bit of growing to do before it compares with the 12 volumes and 16,800 pages in its 60-year-old U.S. counterpart, but it is a husky new-born indeed compared with the one-volume, 760-page first issue of Sweet's in 1906. Seven thousand copies of the new file are being distributed without charge to qualified organizations and firms.




## FLW first-day cover issued from Taliesin East

A first-day cover containing a block of the new two-cent stamps honoring Frank Lloyd Wright was issued June 8 from Spring Green, Wisconsin, the site of Taliesin East. The stamp and envelope were designed by Taliesin Associates under the direction of Mrs. Wright. The new stamp is the fifth in a series of two-cent stamps honoring "prominent Americans." Others so honored: Abraham Lincoln, George Washington, Benjamin Franklin and Albert Einstein.

## Plan distribution to chapters of A.I.A. convention film

The entire proceedings of this year's national convention of the American Institute of Architects in Denver, June 26-July 1 were to be filmed and videotaped in color and black and white, to communicate the proceedings to the approximately 95 per cent of the A.I.A. membership who do not attend.

The result of these efforts was expected to be three 16-millimeter films, each approximately 30 minutes in length, which would be distributed free of charge to the 161 A.I.A. chapters. Richard Stitt, director of information services of the A.I.A., is technical and editing adviser for the project.

After distribution to A.I.A. chapters, the films will be made available, free of charge, to engineering groups, schools of architecture, and the Producers Council. The project will be underwritten by three private sponsors. The only known sponsor, at present, is Formica, Inc., a subsidiary of American Cyanamid Co.

## Honors and awards

Robert E. Simon Jr., creator of the new community of Reston, Virginia, was recognized as an "Urban Pioneer," in receiving the first medal of the Department of Housing and Urban Development. The medal was presented by Secretary Robert C. Weaver at the official dedication ceremonies of the new community. Mr. Weaver said the new award had been established to give special recognition for creative contributions to building "Urban America."

The Kennedy Special Warfare Center Headquarters and Academic Building, Fort Bragg, North Carolina, designed by Arthur Gould O'Dell and Associates, has been selected from 12 entries as "the Chief of Engineers Distinguished Architectural Achievement for 1966." Winning the honorable mention award was the Non-commissioned Officers' Open Mess at Fort Ord, California, designed by Robert Stanton. The Chief of Engineers Architectural Achievement Award was instituted last year "to promote greater functional and esthetic qualities in Corps of Engineers design for the Department of the Army." Serving on this year's professional jury were Architects O'Neil Ford, San Antonio; Roy Larson, Philadelphia; and Philip Will Jr., Chicago.

Ludwig Mies van der Rohe has received the Gold Medal of the Chicago Chapter of the A.I.A., its highest honor. The chapter, in its publication "Inland Architect," cited him as follows: "In the past two-and-a-half decades, Mies' structures, the majority of which are, fortunately for us, in Chicago, have increasingly demonstrated those qualities of directness, clarity, expression of principle, and sensual refinement which distinguishes his architecture and characterizes his teaching."

Lavette Cox Teague, a student at the Massachusetts Institute of Technology, has won the 1966 Brunner Scholarship, a grant of $6,000, administered by the New York Chapter of the A.I.A. Mr. Teague won the national award to work on "the creation of a theoretical framework for architectural analysis, embodied in a computer system the architect can use during the design process."

## Two named to advise HUD on design and the arts

George T. Rockrise of the San Francisco firm of Rockrise and Watson was named on June 20 by Secretary Robert C. Weaver of the Department of Housing and Urban Development as Adviser on Design.

At the same time, Mrs. Estelle Dodge, president of Estelle Dodge Associates, New York, architectural art consultants, was named to study the use of works of art in urban redevelopment.

Mr. Rockrise's primary assignment, said Mr. Weaver, will be to spearhead the drive to raise the quality of design throughout all of HUD's programs. He will also serve as liaison to various groups concerned with esthetics and design, including the A.I.A. and The American Society of Landscape Architects.

Architect: Walton & Madden, Riverdale, Md.
Screen erected by: Acme Iron Works, Inc., Washington, D.C.

# BORDEN DECOR PANEL AS BUILDING FACADES

Shown above is Deca-Grid style Borden Decor Panel used as a facade for the Pargas, Inc. building in Waldorf, Maryland. Set off by piers of white precast stone, the sturdy aluminum Deca-Grid panels are finished in blue HINAC, Pennsalt's new finish for metals.

This Deca-Grid installation has tilted spacers, a feature called the Slant-Tab variation wherein spacers may be mounted at angles of 30°, 45°, 60° or 90° as desired. The Slant-Tabs may be further altered by use of non-standard angles, or lengthened tabs.

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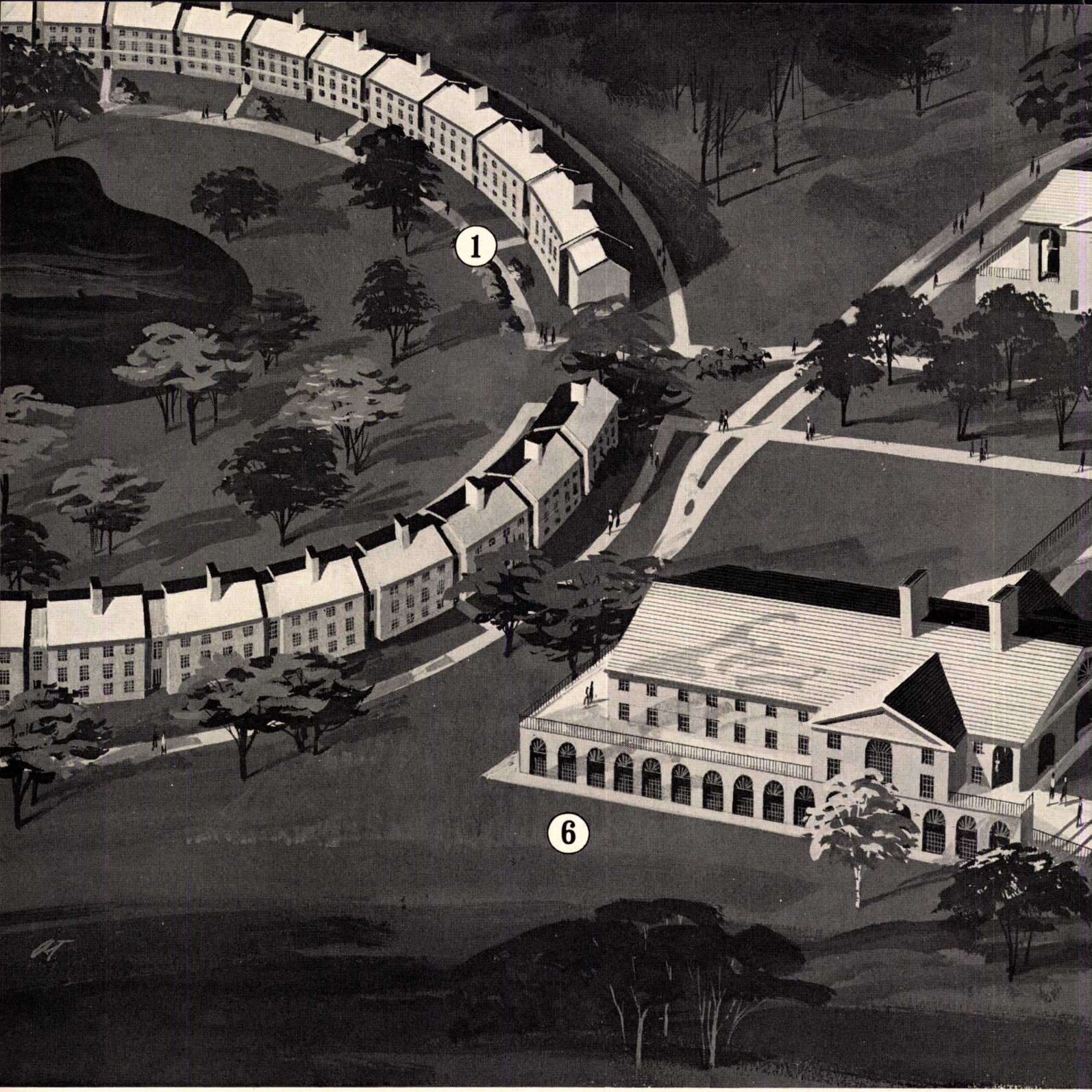



# Bentley College of Boston selects all-electric design for new Waltham campus...finds costs competitive, operating advantages conclusive

When the Board of Trustees of Bentley College, a professional college of accounting and finance, started planning their new $25-million, 102-acre campus in Waltham, Massachusetts, this was their goal:

> to create an environment which was completely conducive to serious academic pursuits, beautiful to the eye, and thoroughly functional.

Comparison studies with other methods convinced them that an all-electric campus, employing flameless electric heating and cooling, would best meet their requirements.

Quiet operation and individual room temperature controls would provide a better atmosphere for study. The cleanliness of an electric system would mean reduced housekeeping and maintenance costs. Elimination of boiler rooms and bulky equipment would allow building space to be utilized more efficiently.

As to cost, two independent feasibility studies showed that—compared with a fossil-fuel system—annual owning and operating costs for the electric heating and cooling system would be equal, or possibly even less.

*Architect's rendering*

## Plan for new Bentley College Campus

WALTHAM, MASSACHUSETTS

**Architect:** Perry, Shaw, Hepburn and Dean, Boston.
**Engineer:** Syska & Hennessey, New York.

**1. Dormitory Complex:** Seven residence houses for 510 students to be built initially. 95,000 sq. ft.

**2. Student Center:** Dining for 440, snack bar seating 550, college store, lounge, exercise facilities. 45,000 sq. ft.

**3. Faculty-Administration Building:** 125 offices, facilities for ancillary services. 50,000 sq. ft.

**4. Baker-Vanguard Library:** Stacks for 150,000 volumes, expansion provision for an additional 100,000 volumes. Seating for 750. 45,000 sq. ft.

**5. Lecture Hall:** Ten 108-man lecture halls, two 216-man lecture halls, computer laboratory. 45,000 sq. ft.

**6. Classroom Building:** 40 small classrooms, four science laboratories. 60,000 sq. ft.

And with capital funds at a premium, an initial capital outlay of almost $600,000 would not be necessary by eliminating a central heating plant and underground piping system.

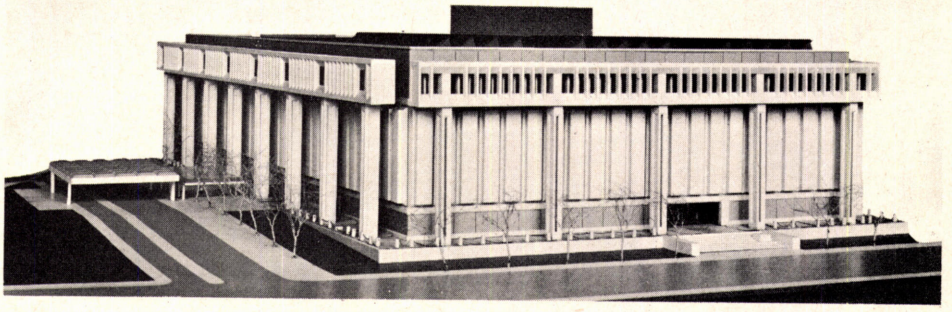
As in the case of Bentley College, modern all-electric design offers environmental and economic benefits for any type of construction. For more facts about applying these proved advantages in your institutional, commercial or industrial buildings, contact your electric utility company. They will welcome the opportunity to work with you.

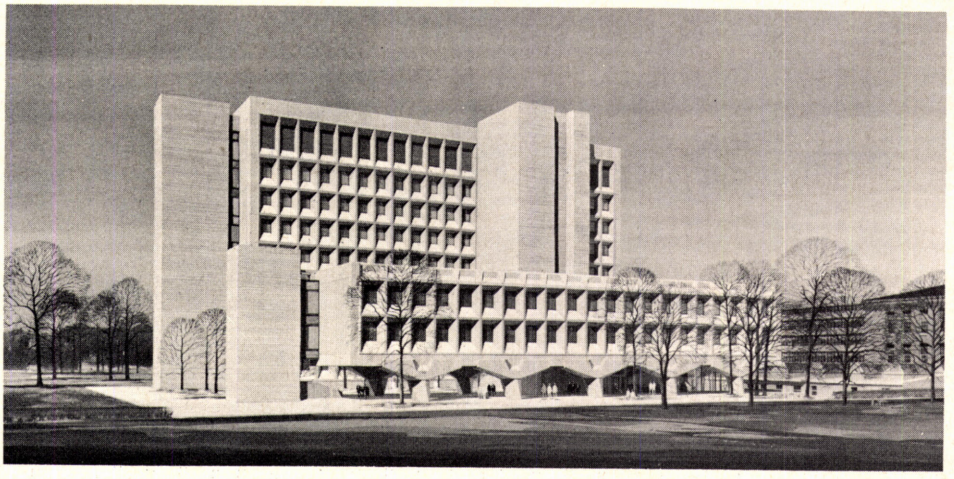
This plaque identifies a modern building, meeting Edison Electric Institute standards for electric heating, cooling, lighting and other applications.

ALL-ELECTRIC BUILDING AWARD

# LIVE BETTER ELECTRICALLY

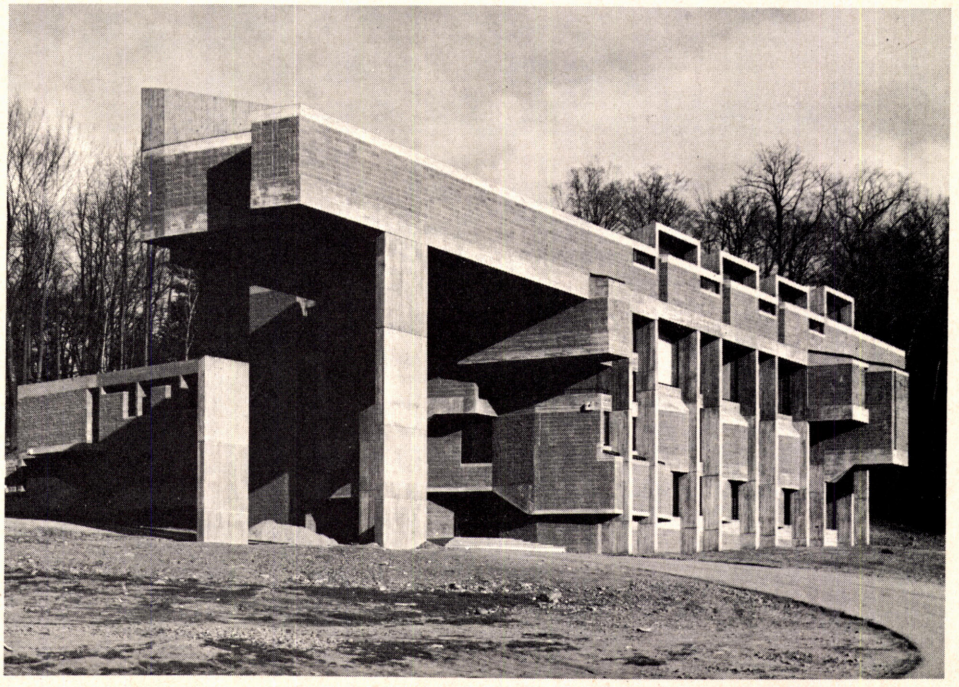
**Atlanta's Memorial Cultural Center,** designed by Toombs, Amisano & Wells, is designed as one unit to ensure that "the paths of all the arts cross and connect." The $13-million project, now under construction, organizes a museum, an art school, a 1,925-seat symphony hall and an 891-seat theater around a central galleria. General contractor is Batson-Cook.





**The Technology II Center** of the School of Engineering and Science at the University Heights campus of New York University, designed by Marcel Breuer & Associates, will centralize four departments now scattered in 17 locations. A seven-story building will house laboratories and quarters for faculty members and graduate students, while an adjoining three-story structure will house classrooms and seminar rooms. Two floors below ground level will provide a 15,500-foot library extension. The $8.2-million structure will contain 103,000 square feet.

*Broussard*



**The Charles A. Dana Creative Arts Center** at Colgate University, Hamilton, New York, designed by Paul Rudolph, has recently been completed. A four-story structure housing basic facilities for drama, music and the visual arts, it cost approximately $1.5 million. The rugged concrete of the structure relates in color and texture to the building stone used for older campus buildings. Contractor is Ryan & McCaffery, Inc.

# A.I.A. SELECTS ANNUAL HONOR AWARDS

Three honor awards and nine awards of merit were selected in this year's 18th annual Honor Awards Program of the American Institute of Architects. The winning entries in the major annual national architectural awards program were chosen from a total of 380 entries. Those men serving on the jury included: David N. Yerkes, Washington, D.C., chairman; Robert G. Cerny, Minneapolis; O'Neil Ford, San Antonio; George T. Rockrise, San Francisco; and Benjamin Thompson, Cambridge, Massachusetts.

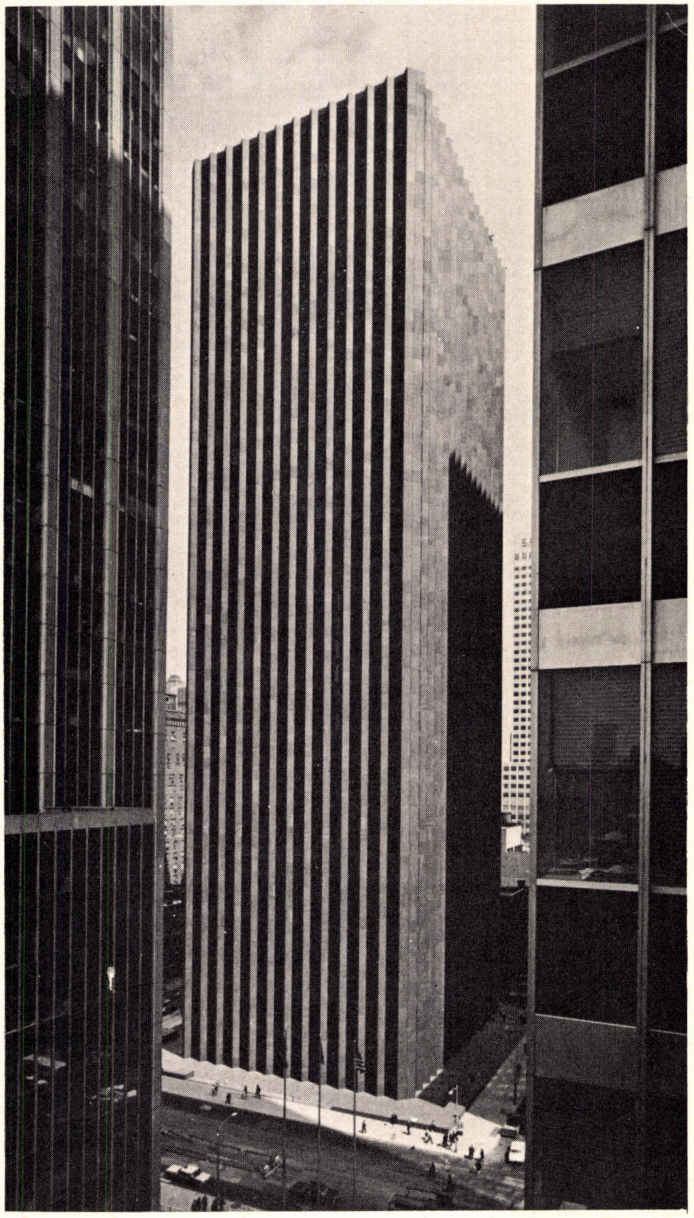
The jury, in its report, at the suggestion of the Institute's Committee on Esthetics, attempted to identify directions or common denominators of strength or weakness. They agreed generally upon four recurrent trends:

"1. We recognized the influence of some of our architectural leaders in a tendency toward formalism—a self-conscious approach to design which results in the creation of a monument to be worshipped rather than a working building to be participated in and used. The relationship, if any, between the architectural forms and the functions they perform is vague, and the product approaches stage design. Perhaps it would be called 'Award Architecture'; certainly it is produced with at least a sub-conscious eye on design awards and magazine publication.

"2. The jury felt that little credit is due the designer who creates a form

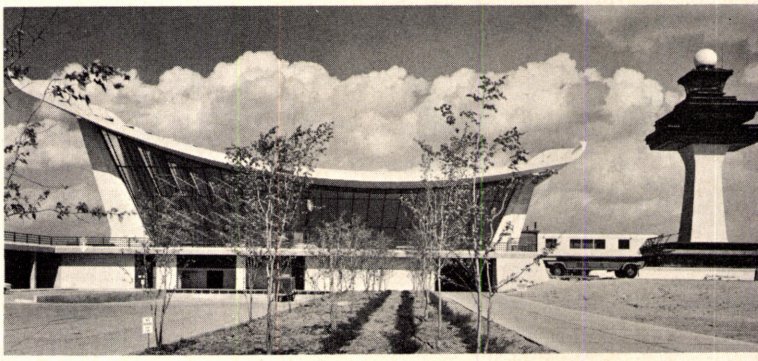
## Honor Awards

*Joseph W. Molitor*



"This superbly simple and disciplined building grows directly out of the ground and straight up to the top. The triangular columns emphasize the clean verticality of the form, and as one passes the building, they reveal a constantly changing view of glass and granite...."

COLUMBIA BROADCASTING SYSTEM, INC. HEADQUARTERS BUILDING, New York City. Architect: *Eero Saarinen and Associates;* engineer: *Paul Weidlinger;* mechanical and electrical engineers: *Cosentini Associates;* and general contractor: *George A. Fuller Company.*



"To a remarkable degree Dulles epitomizes the qualities of vigorous, free and graceful movement which we associate with flight, while avoiding literal and obvious analogy. The two major building parts, the main concourse and the tower, are satisfying counterparts...."

DULLES INTERNATIONAL AIRPORT TERMINAL BUILDING, Chantilly, Virginia. Architect: *Eero Saarinen and Associates;* engineer: *Ammann & Whitney;* mechanical and electrical engineers: *Burns & McDonnell Engineering Company;* landscape architect: *Office of Dan Kiley;* airport consultants: *Landrum and Brown;* owner: *Federal Aviation Agency;* general contractor (finishes): *Humphreys & Harding;* and general contractor (structural): *Corbetta Construction Company.*

*J. Alexander*

"Tiber Island represents a solution to a problem of increasing importance, the creation of a handsome and livable complex of varied urban dwelling units. The challenge has seldom been met with more understanding and greater success...."

TIBER ISLAND, Washington, D.C. Architect: *Keyes, Lethbridge & Condon;* structural engineer: *Carl C. Hansen;* mechanical engineer: *Kluckhuhn & McDavid Company;* landscape architect: *Eric Paepcke;* owner: *The Berens Companies;* and general contractor: *Charles H. Tompkins Company.*

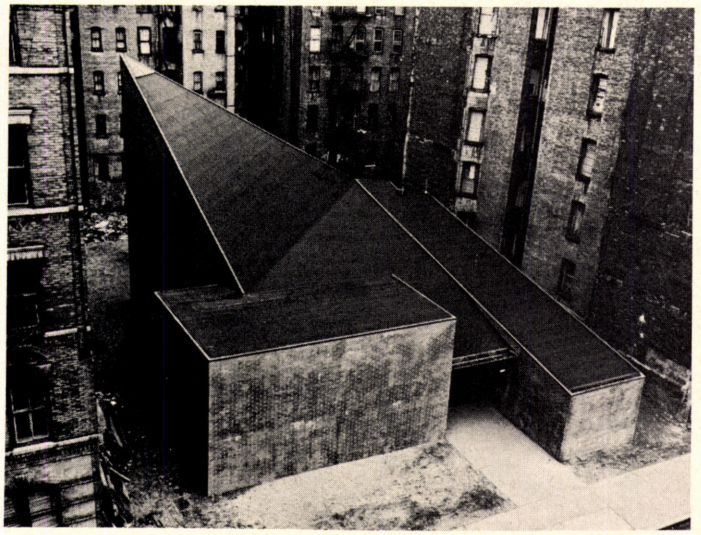
and then 'beats it to death' by endless and inappropriate repetition. When the supposed form-givers succumb to this temptation, it is not surprising that the followers fall into line. Perhaps this failing springs from the pressure to produce too much in too short a time. As one juror remarked, some of these architects make a major decision about an important building every day; no wonder the well runs dry. And that of course raises another question: How are we to use our best design talent most effectively in meeting the huge and growing demand for new buildings? Mies has pointed out one direction. Another course is suggested by the design leaders who associate themselves with firms less prominent than their own to delegate production of working drawings.

"3. We noted that few outstanding schools, commercial structures or industrial buildings were submitted. The answer may be found in the fact that a fine building requires an unusual client as well as a gifted architect. School boards and store owners are more often concerned with standardization, economy, and maintenance than with esthetics. Our profession must prove that buildings of moderate cost which work well can also be good architecture.

"4. The jury regretted that few large-scale projects were submitted in which the architecture was as significant as the over-all planning and social concepts. This has been true of many redevelopment and new town projects—perhaps in part because design ability has seldom been the principal criterion for architect selection."

## Awards of Merit

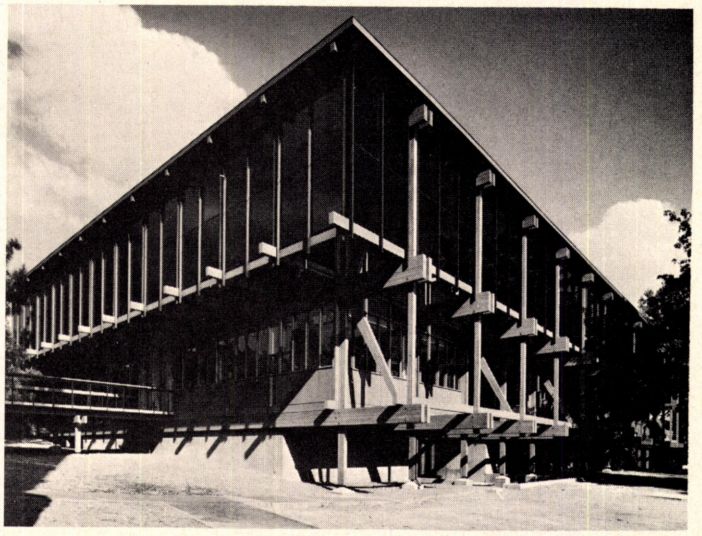
George Cserna



"This remarkable building was outstanding among all the entries because it accomplished so much with so little. . . . The entire character of the church, inside and out, seems completely consistent with its environment and purpose. Its austerity movingly expresses the strong structure of religious belief rather than the ornamental quality of ritual."

CHURCH OF THE RESURRECTION, East Harlem Protestant Parish, New York City. Architect: *Victor A. Lundy;* structural engineer: *Severud Associates;* mechanical engineer: *Fred S. Dubin Associates;* and general contractor: *Thompson-Brinkworth, Inc.*

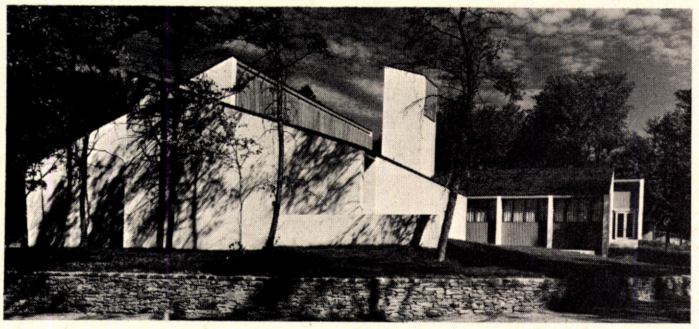
Hugh N. Stratford



"The choice of wood, as the principal material, is a logical outgrowth of this building's function. Through skillful articulation of the structural members, the building has a vigorous linear character which is made warm and human by the quality of the wood. . . ."

HUGO WINKENWERDER FOREST SCIENCES LABORATORY, University of Washington, Seattle. Architect: *Grant, Copeland, Chervenak, A.I.A. & Associates;* structural engineer: *Harvey R. Dodd & Associates;* wood sculptor: *Dudley C. Carter;* and general contractor: *Baugh Construction Company.*

J. Alexander



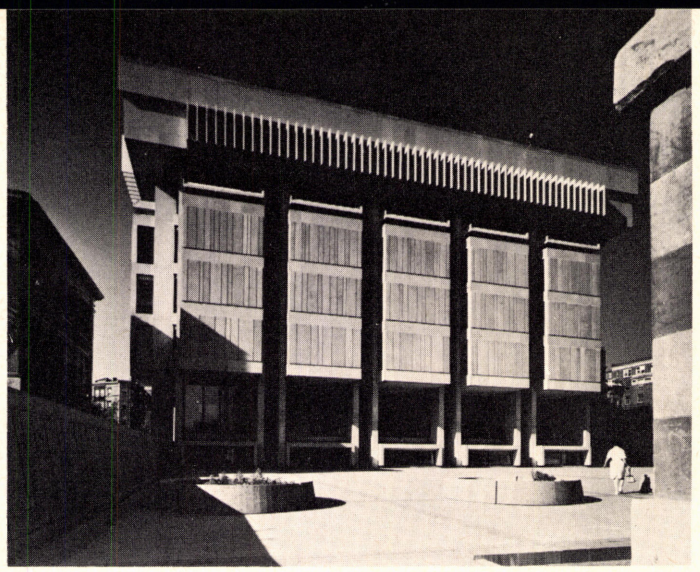
"A handsomely unpretentious building which expresses the Unitarian philosophy with clarity and vigor. In contrast with so many contemporary churches, this one does not strain for dramatic effect. Instead it achieves crisp simplicity and effortless variety. . . ."

RIVER ROAD UNITARIAN CHURCH, Bethesda, Maryland. Architect: *Keyes, Lethbridge & Condon;* structural engineer: *Robert A. Weiss;* mechanical engineer: *Kluckhuhn & McDavid Company;* landscape architect: *Lester A. Collins;* and general contractor: *Furman Builders.*

Lawrence S. Williams, Inc.

"A romantic contemporary building whose pitched roofs and stone walls create a satisfying harmony with its older neighbors. . . . The relationship of low and lofty spaces produces an exciting interior which must be a joy to those who use it. . . ."

SHARPLES DINING HALL, Swarthmore College, Swarthmore, Pennsylvania. Architect: *Vincent G. Kling and Associates;* structural engineers: *Severud Associates;* mechanical and electrical engineers: *Pennell & Wiltberger, Inc.* and general contractor: *John S. McQuade.*



Louis Reens

"A beautifully organized building, strong yet sensitive, whose component parts are integrated into a thoroughly unified whole. The clarity of its organization is a delight. The interior space is as satisfying as the forms of the exterior. . . ."

COUNTWAY LIBRARY OF MEDICINE, Harvard Medical School, Boston. Architect: *Hugh Stubbins and Associates, Inc.;* engineer: *LeMessurier Associates, Inc.;* and general contractor: *George A. Fuller Company.*

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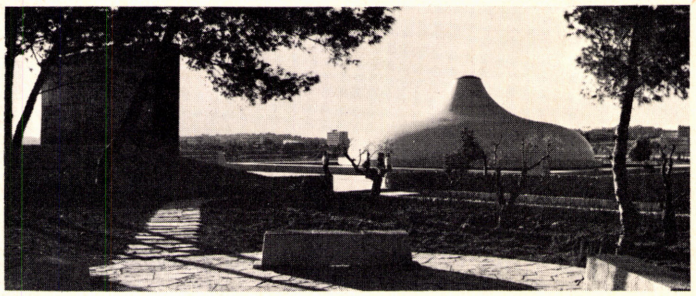
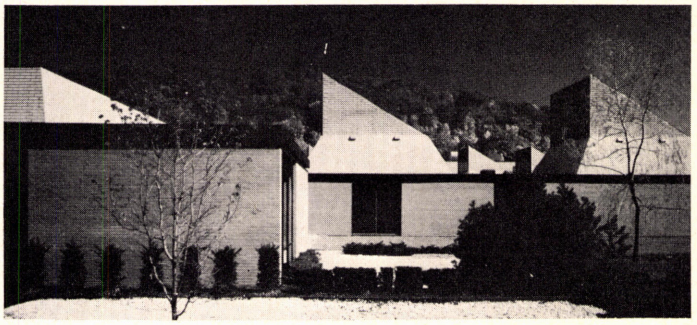


"The concept of this structure is strong and dramatic, although many forms, patterns and textures were employed. With greater simplicity and unity, notably in the interior, it would have avoided the slightly flamboyant quality which is one of its characteristics. Nevertheless, it is a vigorous and imaginative work which clearly states its unique and historic function."

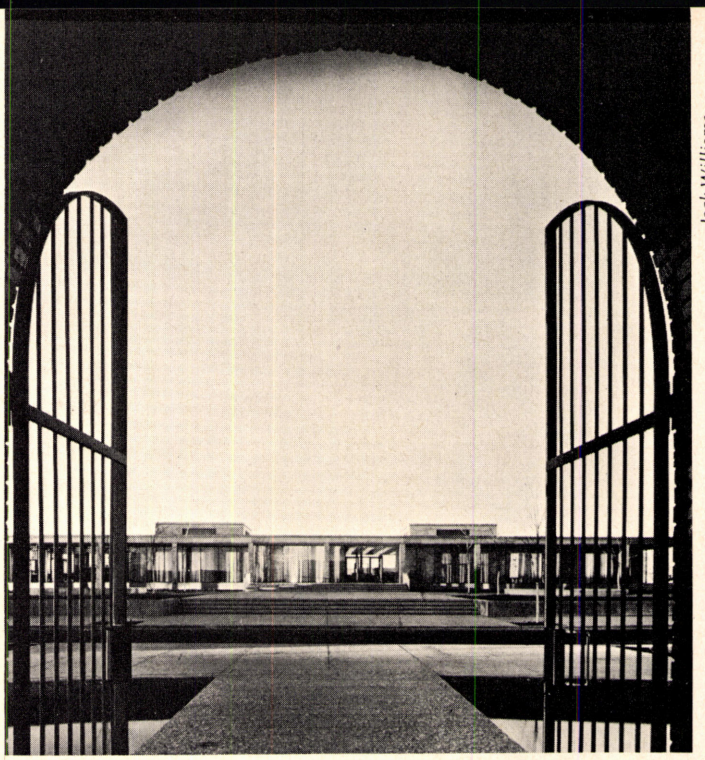
THE SHRINE OF THE BOOK, THE D.S. & R.H. GOTTESMAN CENTER FOR RARE MANUSCRIPTS, Jerusalem. Architect: *Frederick Kiesler and Armand Bartos;* engineer: *Strobel and Rongved;* mechanical and electrical engineers: *Frank J. Sullivan & Associates;* owner: *The National Museum, Jerusalem;* and general contractor: *Joseph & Hillel Fefferman & Company, Ltd.*

Robert Damora



"This building is especially notable because projects of this type seldom receive such careful attention. The skylights provide a consistent and repeated source of visual interest. Skillful organization in plan and handsome detailing combine to produce industrial architecture of a very high order."

WORLD WIDE VOLKSWAGEN INC., Orangeburg, New York. Architect: *Katz, Waisman, Weber, Strauss, Joseph Blumenkranz, consultant, and Sidney L. Katz, partner-in-charge;* engineer: *DiStasio & Van Buren;* landscape architect: *Paul Friedberg;* interior design consultant: *Designs for Business;* and contractor: *Milau Associates.*

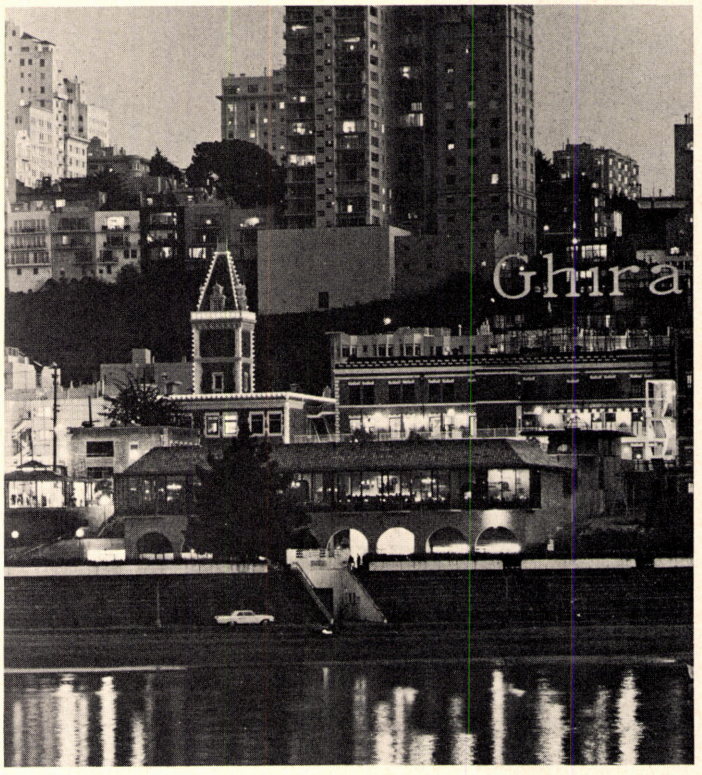


Jack Williams

"Care, imagination and skill have made what might have been a prosaic utilitarian structure into a fine architectural achievement. Each component is a straightforward statement, but each is related to the others. . . ."

CENTRAL SERVICE FACILITY, Boise, Idaho. Architect: *Kenneth W. Brooks;* engineer: *Kendall M. Wood & Associates;* landscape architect: *Lawrence Halprin & Associates;* artist-sculptor: *Harold Balazs;* owner: *Intermountain Gas Company;* and general contractor: *Jordan-Wilcomb Company.*

Ernest Braun




"A highly successful urban development employing old buildings and open spaces for new uses. Its qualities of gaiety, levelness and color make it a delightful addition to the San Francisco scene. . . ."

GHIRARDELLI SQUARE, San Francisco. Architect: *Wurster, Bernardi and Emmons;* engineer: *Gilbert-Forsberg-Diekmann-Schmidt;* landscape architect: *Lawrence Halprin & Associates;* design consultant: *John Matthias;* graphics consultant: *Barbara Stauffacher;* owner: *William M. Roth;* and contractor: *Swinerton and Walberg Company.*

# F. W. Dodge Construction Outlook at midyear

*By George A. Christie, Chief Economist, F. W. Dodge Company, a division of McGraw-Hill, Inc.*

Architects should by now be feeling the effects of an important departure from this year's anticipated pattern of building activity. Like just about every other measure of the nation's economy, construction is turning out to be bigger in 1966 than it would have seemed reasonable to hope for last fall. But even more significant is the fact that this year's expansion is taking a very lopsided form, with by far the largest part of the growth taking place in nonresidential buildings, while housing has slipped into a decline.

The single event which did most to alter the whole framework of the 1966 economy—and the construction market with it—was, of course, the escalation of the Vietnamese war late in 1965. Coming as it did after an almost five-year long period of business expansion, the sudden injection of extra billions of military and related expenditures soon changed orderly growth into heated boom.

By late spring, however, things began to take on a different look. Not long after the first quarter blew its top, there were signs that the pace of the economy was slackening to something that was more sustainable. The shape of the balance of 1966 had begun to reveal itself.

**Nonresidential Building**

In keeping with the fast tempo of business activity, industrial and commercial building has been setting the pace of the broad nonresidential building category in the opening portion of 1966. Two factors suggest a leveling off at the present rate of contracts for business-related construction during the second half, however. One is that in the early months, new projects were already being initiated at a rate reflecting an annual growth of between 15 and 20 per cent—the range indicated by spring surveys of business intentions for plant and equipment outlays this year. What's more, it's likely that as the year unfolds, and as construction labor markets tighten even more, the physical capability of realizing more than a 15 per cent increase in industrial and commercial construction has to be taken into account.

Only a step behind the booming industrial-commercial construction market in 1966 is the swelling volume of institutional building. Responding primarily to the current sharp increase in college enrollments, contracts for educational building began to accelerate last year, and this recent trend has carried on into 1966. With its strong start, and the continued backing of the several new Federal programs, educational building is heading for a gain of 10 per cent for the year as a whole.

Hospitals are again showing growth similar to the early sixties when this type of building was expanding vigorously. Medicare's added demands will boost hospital contracts 12 per cent this year, and even more in the future.

Some modest gains and declines can be expected in 1966 for the remaining nonresidential building types (see table below), but in the aggregate, this primarily architect-designed class of construction will be showing a strong 11 per cent advance in contract value for the full year.

**DODGE CONSTRUCTION OUTLOOK**
**1966 MIDYEAR REVIEW**

| NONRESIDENTIAL BUILDINGS | Per cent change in contract values |
|---|---|
| Commercial | +16% |
| Manufacturing | +14 |
| Educational | +10 |
| Hospitals | +12 |
| Public Bldgs | − 5 |
| Religious | + 9 |
| Recreational | − 3 |
| Miscellaneous | + 5 |
| Total | +11% |
| RESIDENTIAL BUILDINGS | |
| One-and-Two Family | + 1% |
| Apartments | − 1 |
| Nonhousekeeping | − 3 |
| Total | — |
| NONBUILDING CONSTRUCTION | + 7% |
| TOTAL CONSTRUCTION | + 6% |

**Residential Building**

The same events that have given a substantial boost to the demand for most nonresidential buildings have been having an opposite, and perhaps even more pronounced, effect on residential building in 1966.

By all customary measures of housing demand, the stage seemed set for a modest gain in new housing activity this year. Yet, at the end of the first five months of 1966 performance was, to say the least, disappointing.

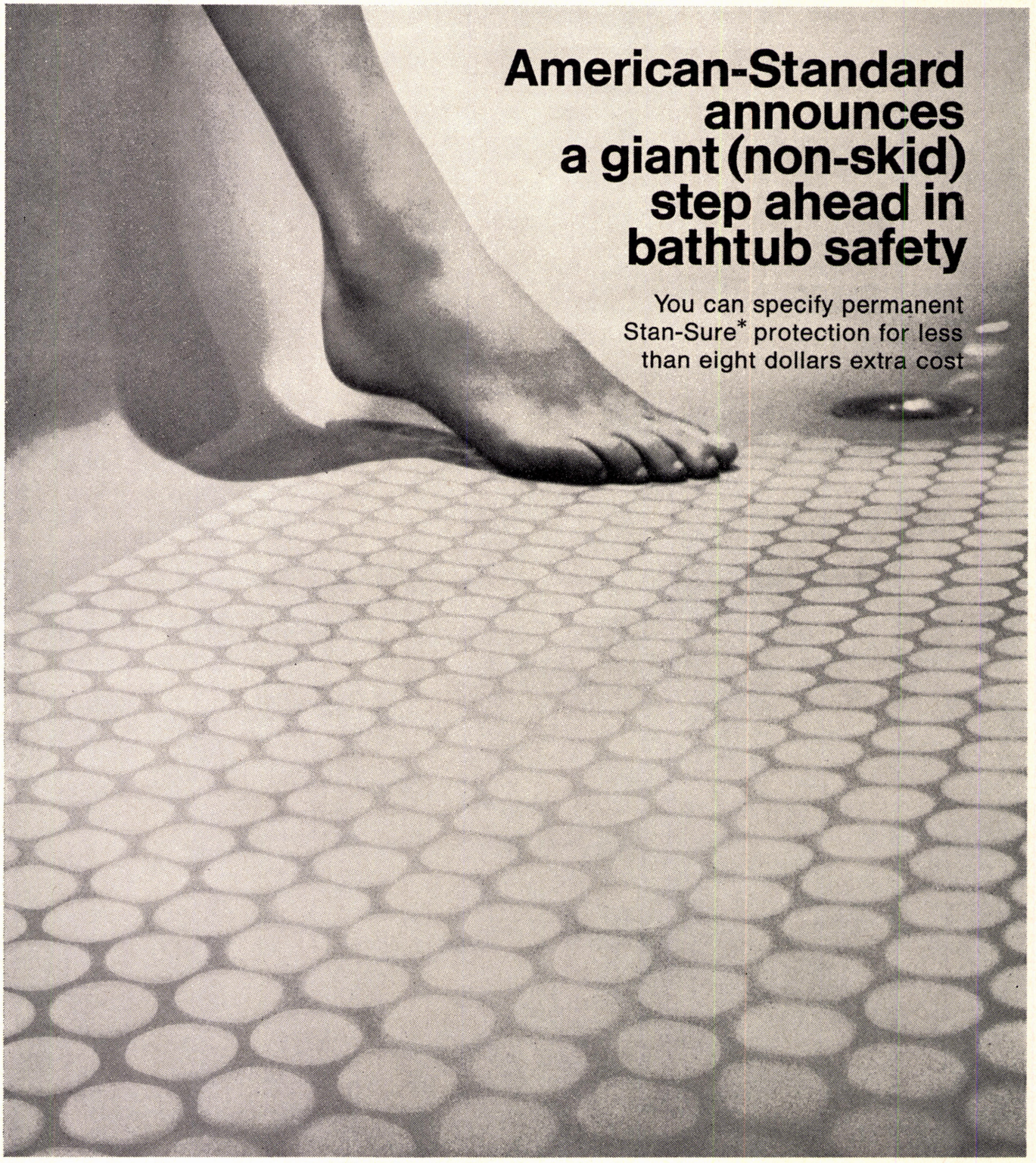
What went wrong, of course, was that the one ingredient needed to transform last fall's promising signs into this year's starts—mortgage financing—has been conspicuously absent.

It's pretty clear that we'll still have to live with a tight money market in the latter half of 1966, but at the same time, the conditions which gave rise to the spring mortgage crisis may let up just a bit, and more funds will be available, at a price. Transformed into housing starts, this pattern means about 1,425,000 private, non-farm starts for the year, with a rate around 1.4 million during the critical second and third quarters, and some small improvement in the fourth.

In mid-1966, construction is showing a decidedly one-sided kind of growth as nonresidential building responds to very strong business and institutional needs, and housing is held in check by a lack of mortgage money.

Total construction (including nonbuilding projects) will advance by 6 per cent this year, with contract value reaching $52 billion.

(A fuller analysis of construction markets at midyear is available from F. W. Dodge Company upon request.)



# American-Standard announces a giant (non-skid) step ahead in bathtub safety

You can specify permanent Stan-Sure* protection for less than eight dollars extra cost

The attractive *Stan-Sure safety bottom* is now optional in all American-Standard cast iron bathtubs. Its effectiveness comes from 1″ circles spaced 1/8″ apart—with no skips. Foot pressure *from any direction* sets up a squeegee action, makes slipping virtually impossible. An integral part of the enamel, Stan-Sure is acid-resistant and easy to clean. Stan-Sure provides safety assurance out of all proportion to its low cost. See your American-Standard representative for details. Or write American-Standard, Plumbing and Heating Division, 40 West 40th Street, New York, N.Y. 10018.

**AMERICAN-STANDARD**

This safety innovation pictured in *Life* Magazine as a recommendation of the Cornell Bathroom Study.

*TRADEMARK AR&SS CORP.

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AMERICAN-Standard
PLUMBING AND HEATING DIVISION

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# BUILDING CONSTRUCTION COSTS

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

*William H. Edgerton*
*Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service*

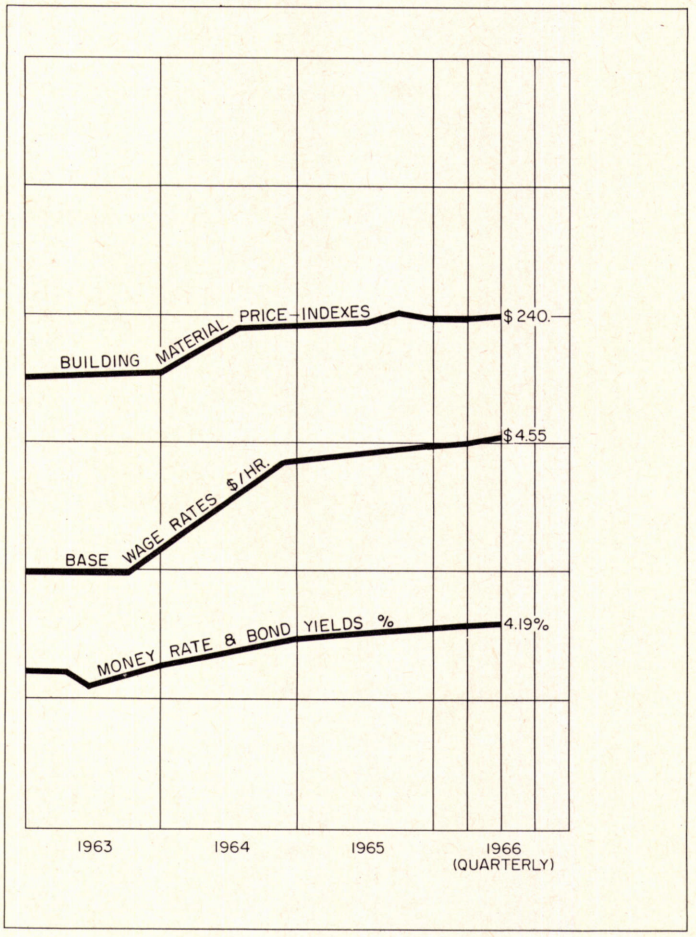
## APRIL 1966 BUILDING COST INDEXES

1941 averages for each city = 100.0

| Metropolitan area | Cost differential | Current Dow Index residential | Current Dow Index non-res. | % change year ago res. & non res. |
|---|---|---|---|---|
| U.S. Average | 8.5 | 273.9 | 291.8 | +1.02 |
| Atlanta | 7.2 | 308.7 | 327.5 | +1.02 |
| Baltimore | 7.7 | 276.6 | 294.8 | +1.03 |
| Birmingham | 7.5 | 252.8 | 271.8 | +1.01 |
| Boston | 8.5 | 248.7 | 263.2 | +1.03 |
| Chicago | 8.9 | 302.7 | 318.4 | +1.02 |
| Cincinnati | 8.8 | 263.0 | 279.5 | +1.02 |
| Cleveland | 9.2 | 280.9 | 298.5 | +1.04 |
| Dallas | 7.7 | 256.8 | 265.2 | +1.02 |
| Denver | 8.3 | 281.3 | 299.0 | +1.02 |
| Detroit | 8.9 | 276.2 | 289.9 | +1.02 |
| Kansas City | 8.3 | 247.3 | 261.8 | +1.02 |
| Los Angeles | 8.3 | 279.2 | 305.5 | +1.03 |
| Miami | 8.4 | 269.4 | 282.8 | +1.01 |
| Minneapolis | 8.8 | 272.8 | 290.0 | +1.01 |
| New Orleans | 7.8 | 246.9 | 261.6 | +1.02 |
| New York | 10.0 | 284.4 | 305.9 | +1.01 |
| Philadelphia | 8.7 | 272.4 | 286.0 | +1.02 |
| Pittsburgh | 9.1 | 257.1 | 273.3 | +1.02 |
| St. Louis | 9.1 | 271.0 | 287.2 | +1.02 |
| San Francisco | 8.5 | 353.1 | 386.4 | +1.03 |
| Seattle | 8.4 | 250.0 | 279.4 | +1.02 |

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0÷10.0=80%) or they are 20% lower in the second city.

## ECONOMIC INDICATORS

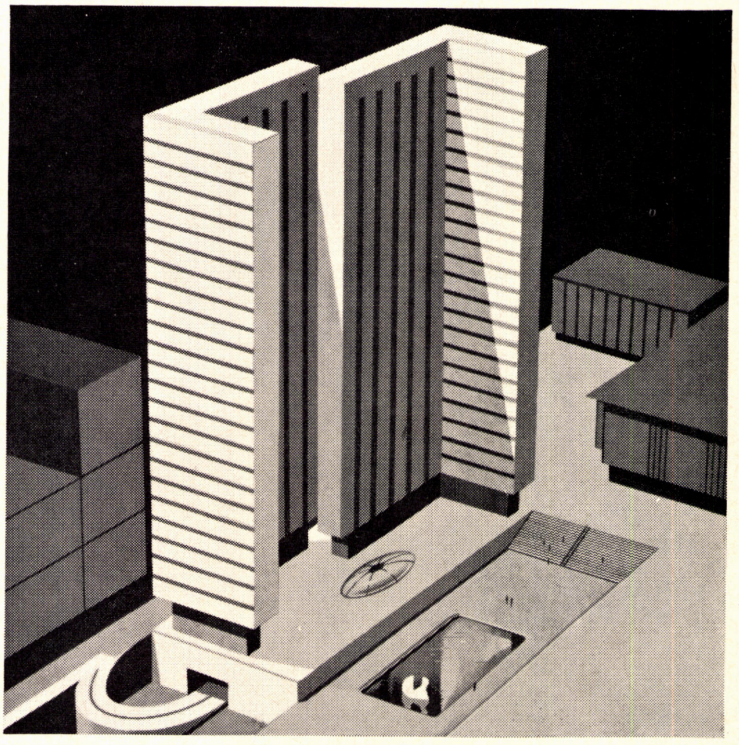



## HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

| Metropolitan area | 1952 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 (Quarterly) 1st | 2nd | 3rd | 4th | 1966 (Quarterly) 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U.S. Average | 213.5 | 255.0 | 259.2 | 264.6 | 266.8 | 273.4 | 279.3 | 279.5 | 281.0 | 288.7 | 284.9 | 286.3 | 287.3 | – | – |
| Atlanta | 223.5 | 283.3 | 289.0 | 294.7 | 298.2 | 305.7 | 313.7 | 313.9 | 317.9 | 320.6 | 321.5 | 322.2 | 323.3 | – | – |
| Baltimore | 213.3 | 264.5 | 272.6 | 269.9 | 271.8 | 275.5 | 280.6 | 280.5 | 281.0 | 284.7 | 285.7 | 288.6 | 289.6 | – | – |
| Birmingham | 208.1 | 233.2 | 240.2 | 249.9 | 250.0 | 256.3 | 260.9 | 261.2 | 264.1 | 264.9 | 265.6 | 267.1 | 268.1 | – | – |
| Boston | 199.0 | 230.5 | 232.8 | 237.5 | 239.8 | 244.1 | 252.1 | 251.7 | 252.6 | 256.3 | 257.8 | 258.5 | 259.6 | – | – |
| Chicago | 231.2 | 278.6 | 284.2 | 289.9 | 292.0 | 301.0 | 306.6 | 306.5 | 307.3 | 310.2 | 311.7 | 312.6 | 313.7 | – | – |
| Cincinnati | 207.7 | 250.0 | 255.0 | 257.6 | 258.8 | 263.9 | 269.5 | 269.4 | 270.2 | 272.9 | 274.0 | 274.7 | 275.7 | – | – |
| Cleveland | 220.7 | 260.5 | 263.1 | 265.7 | 268.5 | 275.8 | 283.0 | 282.3 | 283.4 | 290.8 | 292.3 | 293.0 | 294.1 | – | – |
| Dallas | 221.9 | 237.5 | 239.9 | 244.7 | 246.9 | 253.0 | 256.4 | 256.9 | 257.9 | 259.5 | 260.8 | 261.7 | 262.6 | – | – |
| Denver | 211.8 | 257.9 | 257.9 | 270.9 | 274.9 | 282.5 | 287.3 | 287.3 | 288.2 | 292.7 | 294.0 | 294.6 | 295.5 | – | – |
| Detroit | 197.8 | 249.4 | 259.5 | 264.7 | 265.9 | 272.2 | 277.7 | 277.7 | 279.3 | 283.5 | 284.7 | 285.5 | 286.5 | – | – |
| Kansas City | 213.3 | 239.6 | 237.1 | 237.1 | 240.1 | 247.8 | 250.5 | 251.2 | 252.0 | 255.0 | 256.4 | 257.3 | 258.2 | – | – |
| Los Angeles | 210.3 | 263.5 | 263.6 | 274.3 | 276.3 | 282.5 | 288.2 | 288.9 | 289.7 | 295.8 | 297.1 | 298.0 | 298.6 | – | – |
| Miami | 199.4 | 249.0 | 256.5 | 259.1 | 260.3 | 269.3 | 274.4 | 274.4 | 275.4 | 276.6 | 277.5 | 278.4 | 279.2 | – | – |
| Minneapolis | 213.5 | 254.9 | 260.0 | 267.9 | 269.0 | 275.3 | 282.4 | 283.4 | 283.6 | 283.9 | 285.0 | 285.7 | 286.6 | – | – |
| New Orleans | 207.1 | 237.5 | 242.3 | 244.7 | 245.1 | 248.3 | 249.9 | 250.5 | 253.1 | 255.1 | 256.3 | 257.1 | 258.0 | – | – |
| New York | 207.4 | 260.2 | 265.4 | 270.8 | 276.0 | 282.3 | 289.4 | 290.2 | 294.0 | 296.0 | 297.1 | 297.8 | 298.7 | – | – |
| Philadelphia | 228.3 | 262.8 | 262.8 | 265.4 | 265.2 | 271.2 | 275.2 | 275.5 | 276.4 | 279.5 | 280.8 | 281.7 | 282.6 | – | – |
| Pittsburgh | 204.0 | 241.1 | 243.5 | 250.9 | 251.8 | 258.2 | 263.8 | 264.0 | 264.9 | 265.9 | 267.0 | 268.9 | 270.1 | – | – |
| St. Louis | 213.1 | 246.9 | 251.9 | 256.9 | 255.4 | 263.4 | 272.1 | 272.9 | 276.1 | 279.9 | 280.9 | 282.2 | 283.2 | – | – |
| San Francisco | 266.4 | 321.1 | 327.5 | 337.4 | 343.3 | 352.4 | 365.4 | 366.6 | 366.9 | 367.7 | 368.6 | 376.2 | 377.7 | – | – |
| Seattle | 191.8 | 232.7 | 237.4 | 247.0 | 252.5 | 260.6 | 266.6 | 265.1 | 266.3 | 267.8 | 268.9 | 271.1 | 272.1 | – | – |

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0÷200.0=75%) or they are 25% lower in the second period.



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For further information on communications planning,
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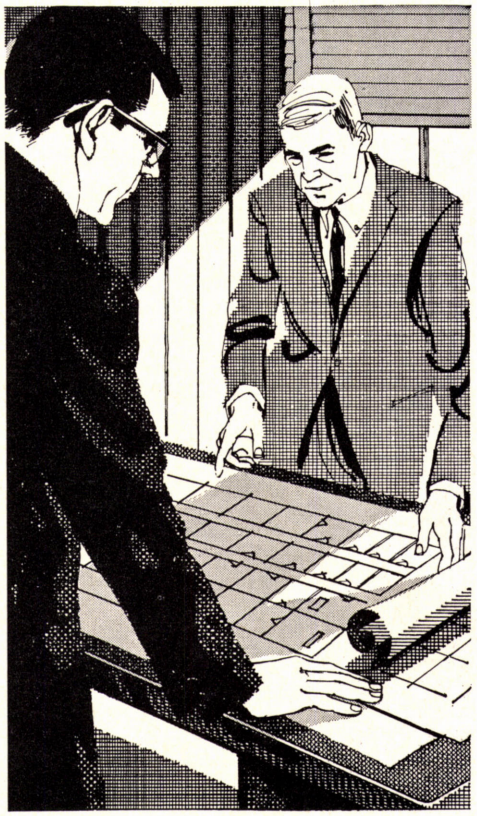
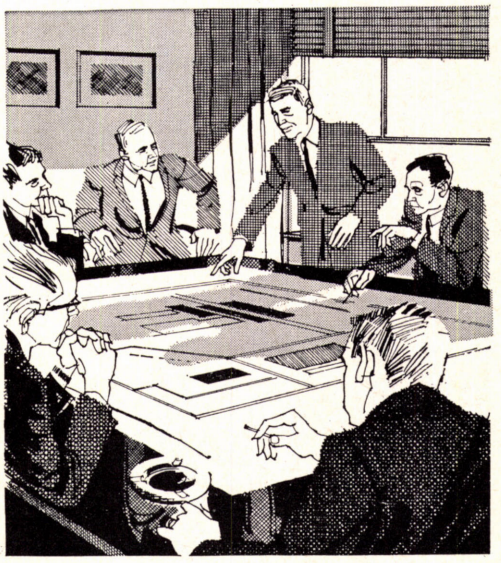
and Sweet's Industrial Construction File 19f/Be.

# Planning an x-ray department?





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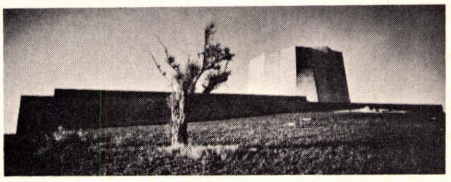
## Philip Johnson

PHILIP JOHNSON, *Architecture 1949-1965. Introduction by Henry-Russell Hitchcock. 51 color photographs, 31 drawings and plans, chronology, bibliography.* Holt, Rinehart and Winston, 383 Madison Ave., N. Y., N. Y. 10017. $15.00.

It is inconceivable that Philip Johnson would design a commonplace building, or—in truth—have anything to do with anything that could not be carried out with great style, great taste and great elegance. This book is no exception, for it has been produced with typical Johnsonian flair and is a handsome volume indeed. It was designed by Elaine Lustig Cohen, and beautifully printed in Zurich under the supervision of Chanticleer Press, on paper that can only be described as luscious, and must be seen and touched to be appreciated.



Nuclear Reactor. Rehovot, Israel. Philip Johnson, Architect.

The photographs, plans and sections carry no captions or written explanation beyond a simple identifying line, but do illustrate all of Johnson's major works in color. The idea here, of course, is that the architecture speaks for itself and no further information is necessary—or even desirable. Some readers may praise such a manner of presentation; others may quarrel with it. In either event, the picture-sans-words concept has here been carried to its ultimate expression—wih great style, great taste, great elegance. If one would like to know more about the buildings, or possibly visit them, he might refer to the chronology, bibliography, and introductory text by Henry-Russell Hitchcock.

Hitchcock's 20-page essay—written with that author's usual insight and sound scholarship—attacks the difficult task of trying to find the place Philip Johnson and his work should occupy in the shifting, changing story of an evolving 20th-century architecture. Hitchcock deals with this formidable task admirably, although any observer's view of now —at least in historic terms—is necessarily myopic. His text is interesting and well worth reading; in fact, the entire book is a must for architects. If you, architect-reader, claim to be too busy to read it, we suggest you leaf through it just to enjoy the pretty pictures!

*James S. Hornbeck, A.I.A.*

## Architectural theory and empirical problems

INTENTIONS IN ARCHITECTURE. *By Christian Norberg-Schulz. The M.I.T Press, 50 Ames St., Cambridge, Mass. 02142. 242 pp., illus. $8.50.*

It would be presumptuous to assume a handbook for good architecture should exist when the profession has shown itself a bit unwilling to work out a theoretical basis for the field. But here is an attempt at a comprehensive theory which includes the psychological, sociological and symbolic background of architectural design. It is a system of architectural concepts which investigates architecture as a *whole* of mutually interdependent individual parts.

The author, a Norwegian architect, is hard put to describe the present situation in architecture as anything but impossible. Says he, "We might not always agree with the common criticism of art and literature, but at least we must acknowledge that it undoubtedly has created an increased respect for these fields. For architecture we hardly find any respect whatsoever either from the public or from the architects. In discussing architectural matters we rarely achieve anything but a quarrel about what you like and what I like. . . . One of the reasons why the public reacts *against* modern architecture is simply that it does not offer any *new visual order* as a substitute for the 'devaluated' styles of the past. It has certainly created a new vocabulary but so far no hierarchy of meaningful signs which may serve the purpose of expressing the way of life of the society." Such is the tone of his background for the program.

At the core of his theory is the premise that architecture is a human product which should improve our relations with environment. His investigations are based categorically on (1) the prerequisites and effects of architecture, that is, buildings and users; (2) the organization of the means, independent of their effect; and (3) whatever particular means correspond to particular prerequisites and effects. If architecture is to be brought forth as a human product, its dependence on information from other fields necessarily follows. Perception and symbolization are examples of such phenomena. The author discusses these with a view of their relevance to architecture.

The theory is an attempt to arrive at a common basis of architectural language. From the start it is uncompromisingly theoretical in the real sense of the word. It consists in dimensions of comparison which make possible the analysis of any architectural totality, the basic dimensions being these three: building task, form and technics. Essentially, "the architectural totality is a building task realized technically within a style."

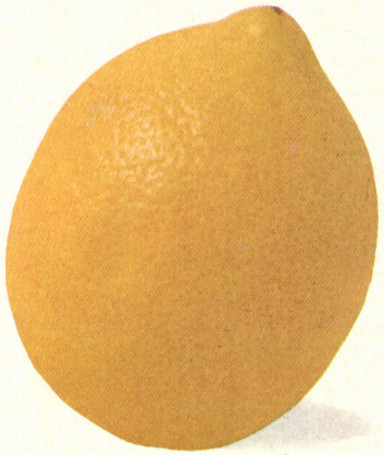
Undeniably, the theory stems from practical problems and appropriately the author returns to them. The problems faced are those of the experience of architecture, the education of architects, architectural criticism and historical research as well as those involved in the production of works of architecture. The theory gives an account of architecture as an object, but the author is cognizant that the solution of problems is not by intellectual analysis alone. In the end he turns over his discussion to the definition and treatment of such problems *vis-a-vis* insights offered by the theory.

*continued on page 70*

THIS MONTH'S BOOKS

**REVIEWS**

"Philip Johnson, Architecture 1949-1965" Introduction by Henry-Russell Hitchcock ..... 65
Christian Norberg-Schulz, "Intentions in Architecture" ..... 65
John Ely Burchard, "The Voice of the Phoenix: Postwar Architecture in Germany ..... 70
"Design and Planning" Edited by Martin Krampen ..... 76
**BOOKS RECEIVED** ..... **101**



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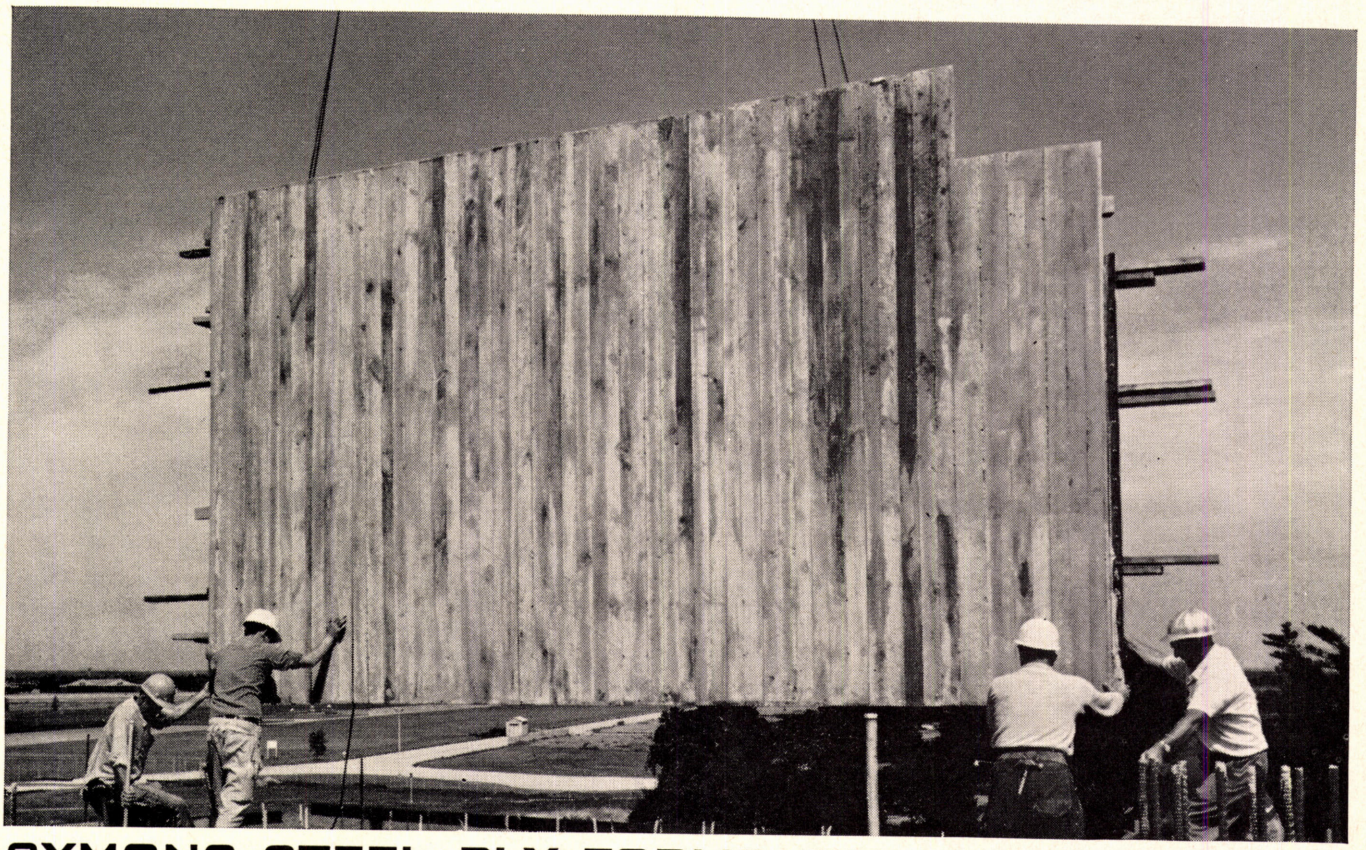

# SYMONS STEEL-PLY FORMS GANGED AND LINED

## 140′ HIGH MITERED AND TAPERED CORNER SHAFTS ARCHITECTURALLY AND FUNCTIONALLY DESIGNED

Hofstra University, Hempstead, Long Island, recently constructed a new library tower which expanded their facilities three times.

Four 140′ high mitered and tapered corner shafts, poured in place with a special light grey cement and sand and gravel, form the library design base. To form these corner shafts, Symons Steel-Ply Forms were assembled in 11′ x 15′ x 20′ gang sections, and lined with Spruce and Pine, 4″ wide and varying in thickness. A rough finish was obtained by staggering the varied thickness boards, and by intermingling circular saw cut boards.

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continued from page 65

## Postwar Germany

THE VOICE OF THE PHOENIX: *Postwar Architecture in Germany. By John Ely Burchard. The M.I.T. Press, 50 Ames St., Cambridge, Mass. 179 pp., illus. $12.50.*

Mr. Burchard remarks that the stereotyped judgments on the quality of German architecture, past and present, may be unfair and proceeds to make a strong case in favor of the postwar German accomplishment. His appraisal is a worthwhile addition to any architect's collection of books for his comments are exceedingly thoughtful and they brim with an undeniable candor which accompanies his well-formed opinions.

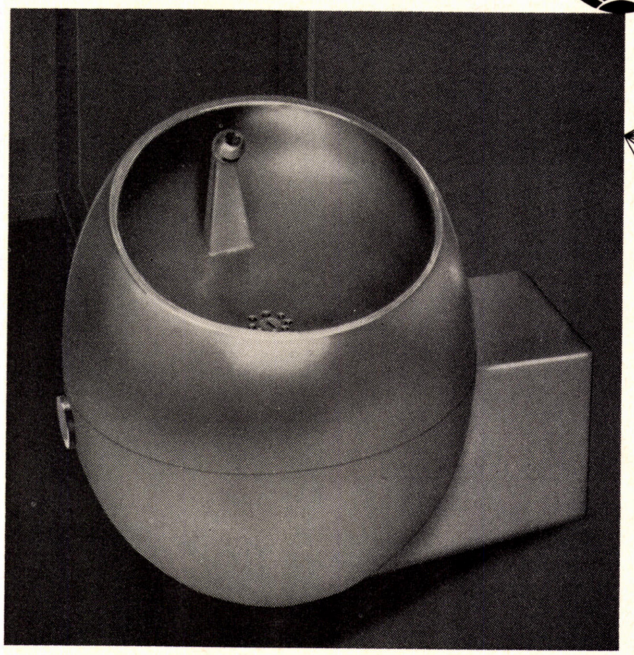
Throughout the author is searching German achievement with the hope of helping America. (Also, he intertwines his text with questions about the motivations behind great architecture but this is rhetoric and happy incident.) The question is posed: Are the problems of the two countries the same? Postwar rubble had to be gotten rid of and Germany had to be rebuilt. Our deteriorating structures and exploding population engage the architect and city planner in urban renewal. The cities of Bremen, Münster, Freiburg and Hanover have handled such problems and their juxtaposition of the new with the old is noteworthy.

The author is cognizant of the German failures in architecture from this period but he maintains that Germany is a country possessing architectural priorities. Looking at German interests Mr. Burchard states: "I can feel regret that some of them are not better developed here. On the whole I have no doubt that we build more interesting educational buildings at all levels, better hospitals, better airports, better libraries, better private houses. We have many more interesting commercial buildings, and much larger ones, but the best German examples could be suggestive to us in their dignity, their modesty, and their relation to the other needs of the city. Art galleries are perhaps also a standoff. The Germans have clearly done better than we in their group housing, their churches, their theaters, and other buildings for public recreation." These are emphasized. They are inspirational.

The discussion leads to and ends with the city. The traditional German attitude toward land use seems to have preserved the German countryside and her cities against massive debasement. "Germans have been used for a long

continued on page 76


# Haws gives you a world of design possibilities...



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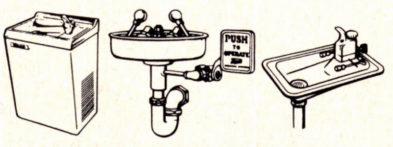

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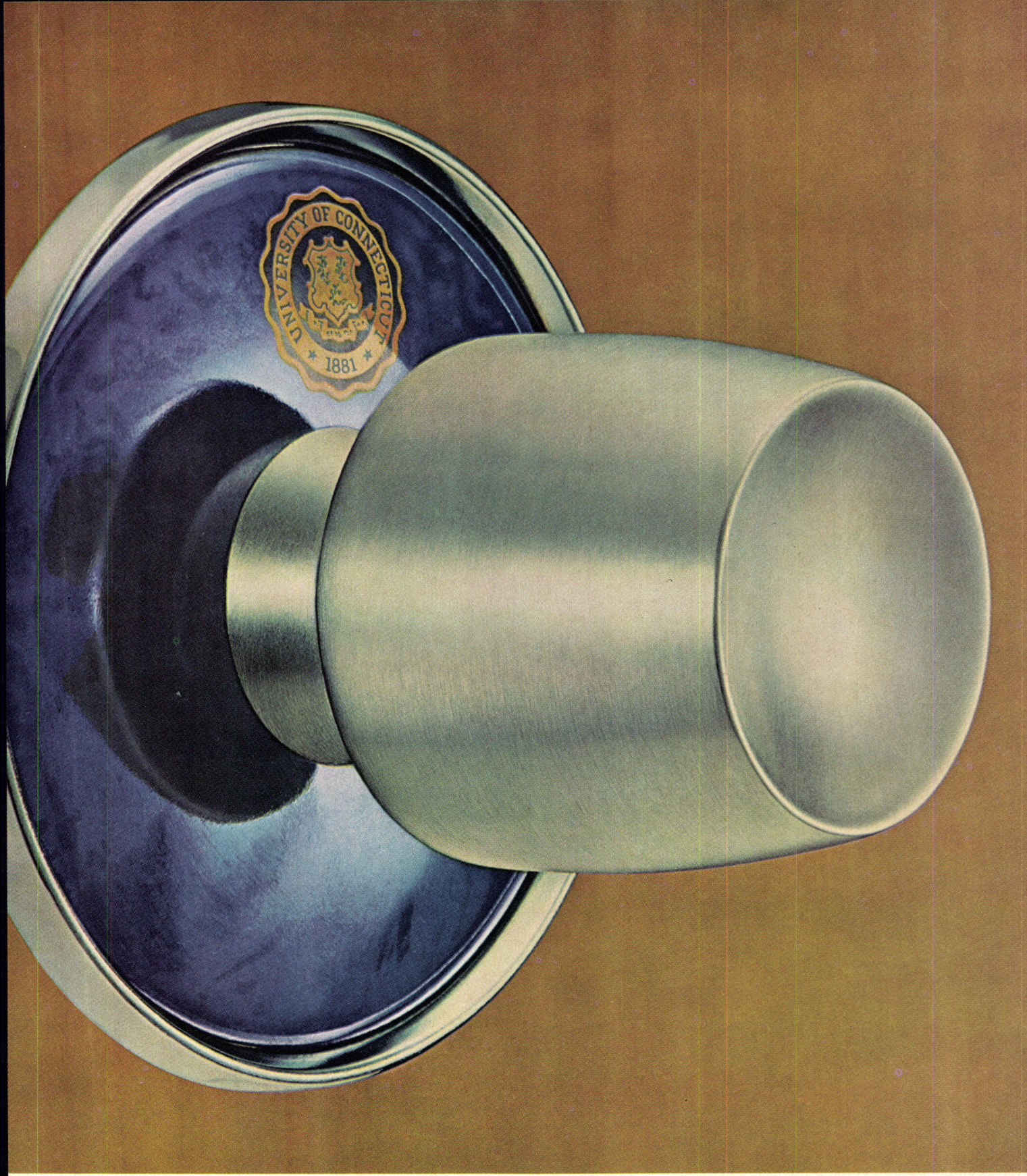


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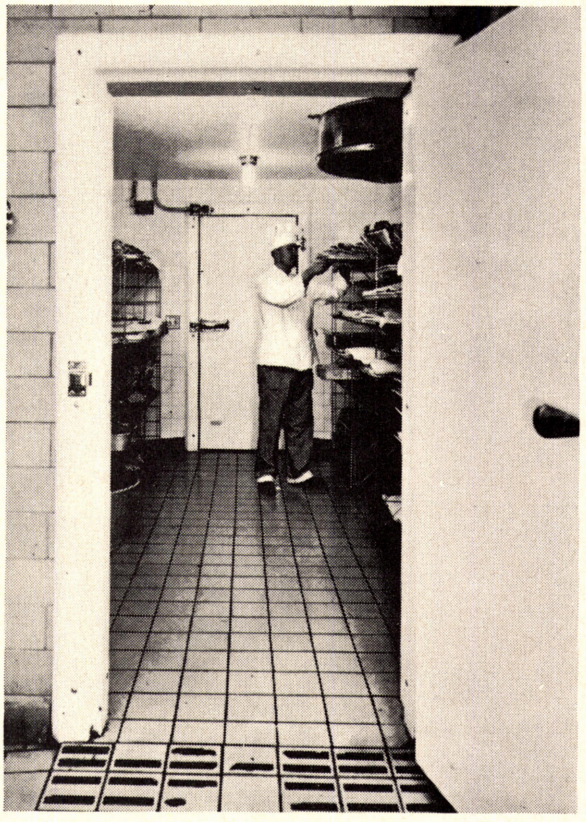

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# NAARCO NEWS

1

## Naarco Fascia now in three new colors, many custom shapes

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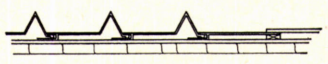

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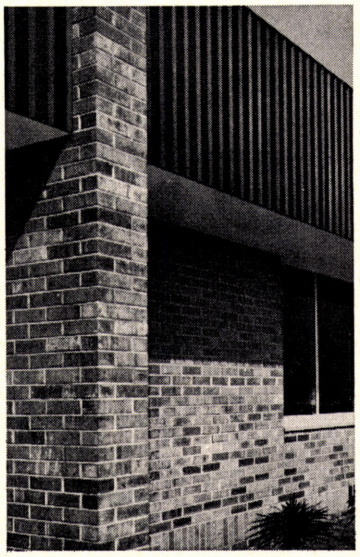

2

## Naarco's chemistry lab... the search for quality

A complete chemistry laboratory for research and testing is one way NAARCO puts teeth into the old cliche "single source responsibility."

Purpose of the lab? NAARCO curtainwall, mullions, windows, and other aluminum products are dependent on many allied products such as caulking compounds, laminated panels, finishes, etc. As a "single source of responsibility" NAARCO wants to be sure all supporting products are of the highest possible quality so the installation is totally satisfactory. And so they test. And test. Result? Only caulking compounds with long life expectancy and good adhesive characteristics are selected thus insuring weather-tight installation. Only laminated panels whose adhesives can endure time or exposure to fluctuating conditions will be used with NAARCO curtainwall sections.

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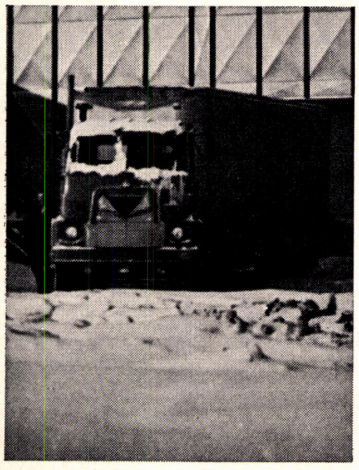
3

## Naarco overnight delivery keeps building on schedule

A shining NAARCO "semi" is a welcome early morning sight to architects and contractors on major construction jobs across mid-America and along the East Coast.



NAARCO's company-operated fleet, of course, means no-delay shipment of materials to the job site. But it has many other advantages too.

NAARCO President, Bob Barnard, says, "We're not in the trucking business by accident. Not only do we save valuable time with overnight delivery but we have greatly reduced partial shipments, lost goods, damaged goods and many other problems that cost everyone time and money."

As another aspect of their "single source responsibility" policy, NAARCO's own fleet cuts red tape and helps architects and contractors meet their completion dates.

4

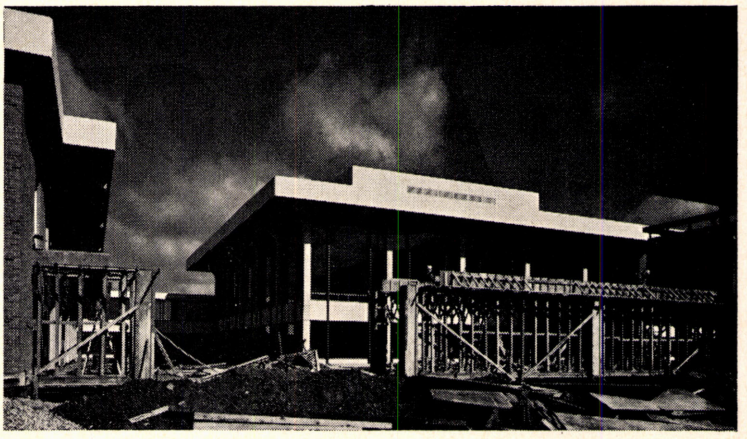
## Naarco adds 14 agents for fast, total service

"Faster info to architects when they want it." Better availability of NAARCO products. Total on-the-job assistance when it's required.

These are the reasons NAARCO recently added 14 new agent-organizations to their marketing team, according to Ross T. Griffith, NAARCO Marketing Vice President. The addition gives NAARCO 45 agents across the U.S.

"Timing is the most critical factor in the agent-architect relationship," Griffith added. "If we're there when the architect wants us, fine. If we're unavailable, forget it. We've put men where it will help architects and contractors get what they want."

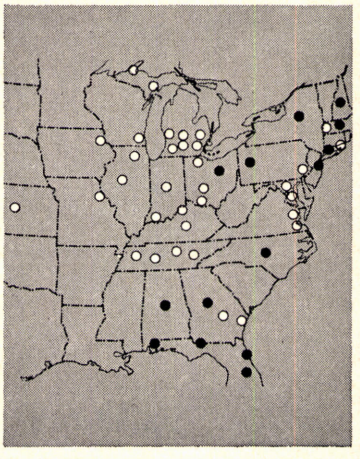
Black dots on the map indicate new agencies. Circles pinpoint where NAARCO agents already serve.



5

## Naarco windows grace new office complex

Standard size NAARCO windows have been creatively, and beautifully used in this new, five-office complex designed for the Scott-Forsman & Co. of Chicago. Architect: Perkins & Will, Chicago.



NAARCO

NORTH AMERICAN ALUMINUM CORPORATION
Kalamazoo, Michigan 49004 · Phone (616) 349-6626

Gentlemen:
Please send me more information on the following articles:
(please check)

1. ☐ 2. ☐ 3. ☐ 4. ☐ 5. ☐

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Firm_____

Street_____

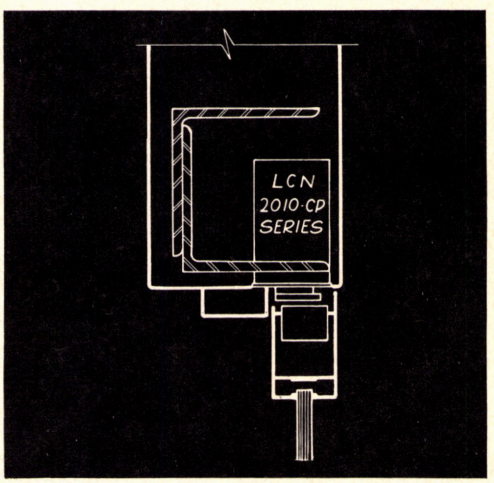
City_____ State_____ Zip_____

*For more data, circle 64 on inquiry card*

IBM

# LCN

## for modern door control




Detail at head for LCN overhead concealed closer installation shown in photograph

### Main points of the LCN 2010 series closer:

**1** Provides efficient, full rack-and-pinion, complete control of the door

**2** Fully hydraulic, with highly stable fluid giving uniform operation over a wide range of high and low temperatures

**3** Easily adjustable general speed, latch speed, back-check and spring power (may be increased 50%)

**4** Closer arm disappears over door in closed position

**5** Available with regular or hold-open arm (choice of 85°, 90°, 100° or 110°)

Full description on request
or see Sweet's 1966, Sec. 19e/Lc

LCN

**LCN CLOSERS, PRINCETON, ILLINOIS**
A Division of Schlage Lock Company
Canada: LCN Closers of Canada, Ltd.
P. O. Box 100, Port Credit, Ontario

PHOTO: IBM Office Building, Seattle, Washington. Architects: Naramore, Bain, Brady and Johanson, Seattle; Minoru Yamasaki and Associates, Birmingham, Michigan.

766




*continued from page 7*

**BOOKS RECEIVED**

1966 BOOK OF ASTM STANDARDS, *Part 21—Paint Varnish, Lacquer, and Related Products—Tests fo Formulated Products and Applied Coatings. America Society for Testing and Materials, 1916 Race St., Phila delphia, Pa. 19103. 682 pp. $11.00.*

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*For more data, circle 65 on inquiry card*

# Wheeling
# quick ones
# you well-pl

# LCN

## for modern door control

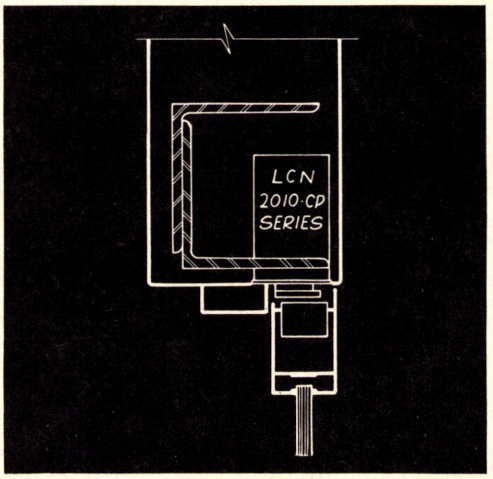


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PHOTO: IBM Office Building, Seattle, Washington. Architects: Naramore, Bain, Brady and Johanson, Seattle; Minoru Yamasaki and Associates, Birmingham, Michigan.

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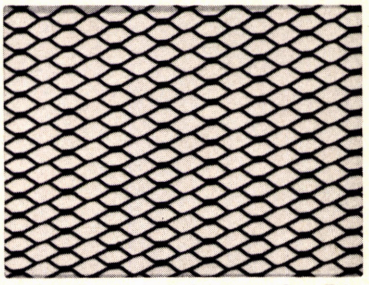
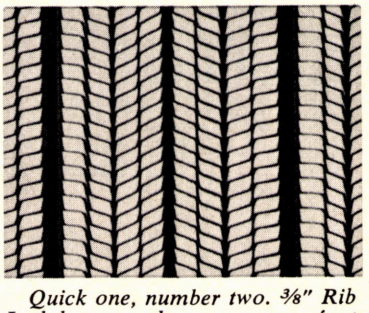
*For more data, circle 65 on inquiry card*

# Wheeling
# quick ones
# you well-pl

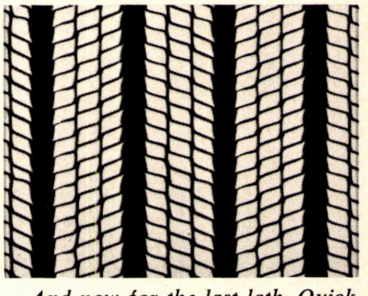
# has three that'll leave astered.



*Quick one, number one. Our Diamond Lath. Provides greater keying action. All sheets are flat with parallel sides and square ends. For wall partitions, ceilings—wherever man hath need of lath.*



*Quick one, number two. ⅜" Rib Lath has more keys per square foot with small inverted rib for sure, easy lapping without "pile-up" of steel. It's extra-rigid, too.*



*And now for the last lath. Quick one, number three. Flat Rib Lath. Smaller openings for positive bend. It resists cracking when structure vibrates.*

All of these Wheeling quick ones will cut easily for fitting. Bend without rupture. Shape to complex ceiling and wall designs.

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**Wheeling**

Wheeling Corrugating Company/Wheeling Steel Corporation
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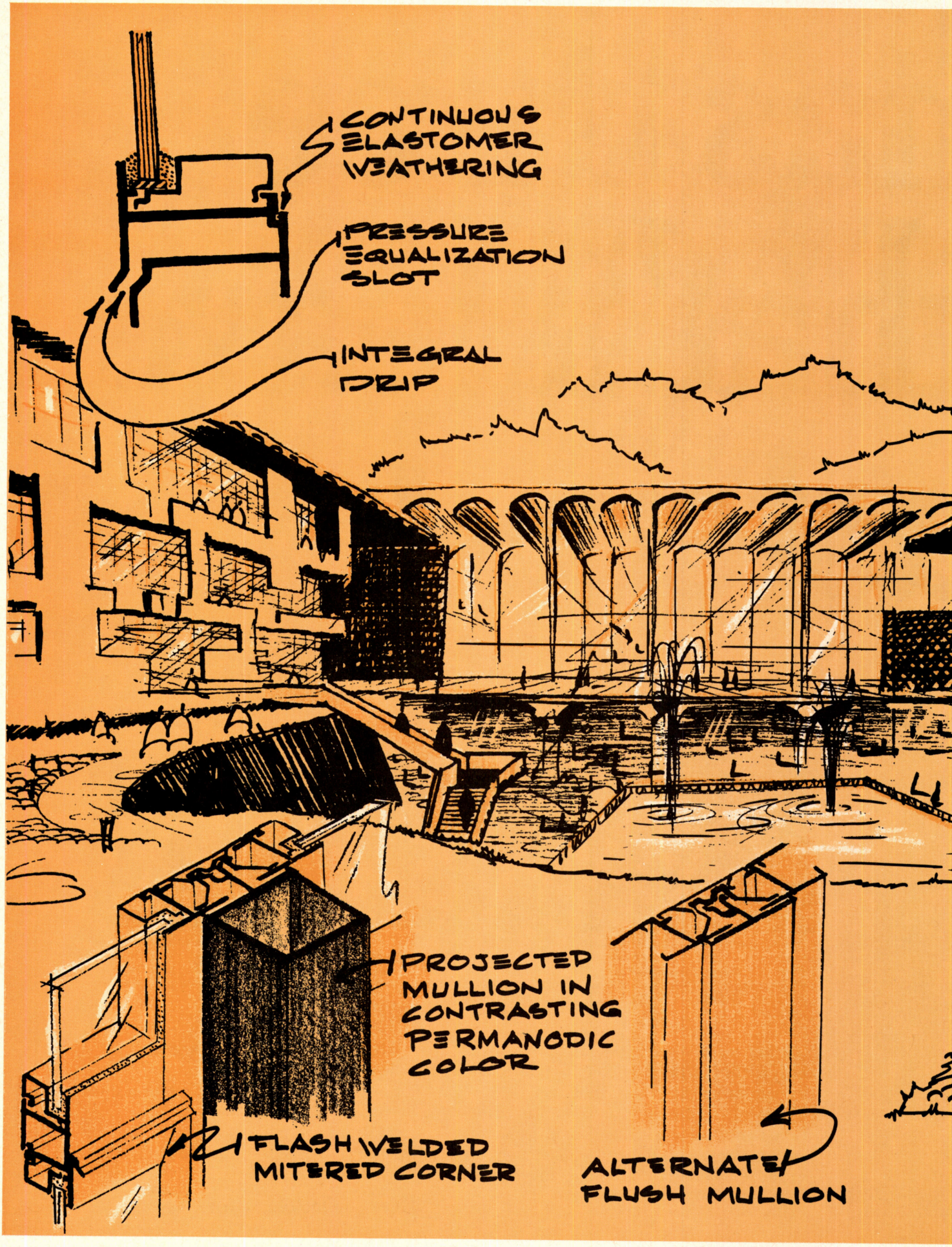
CONTINUOUS ELASTOMER WEATHERING
PRESSURE EQUALIZATION SLOT
INTEGRAL DRIP
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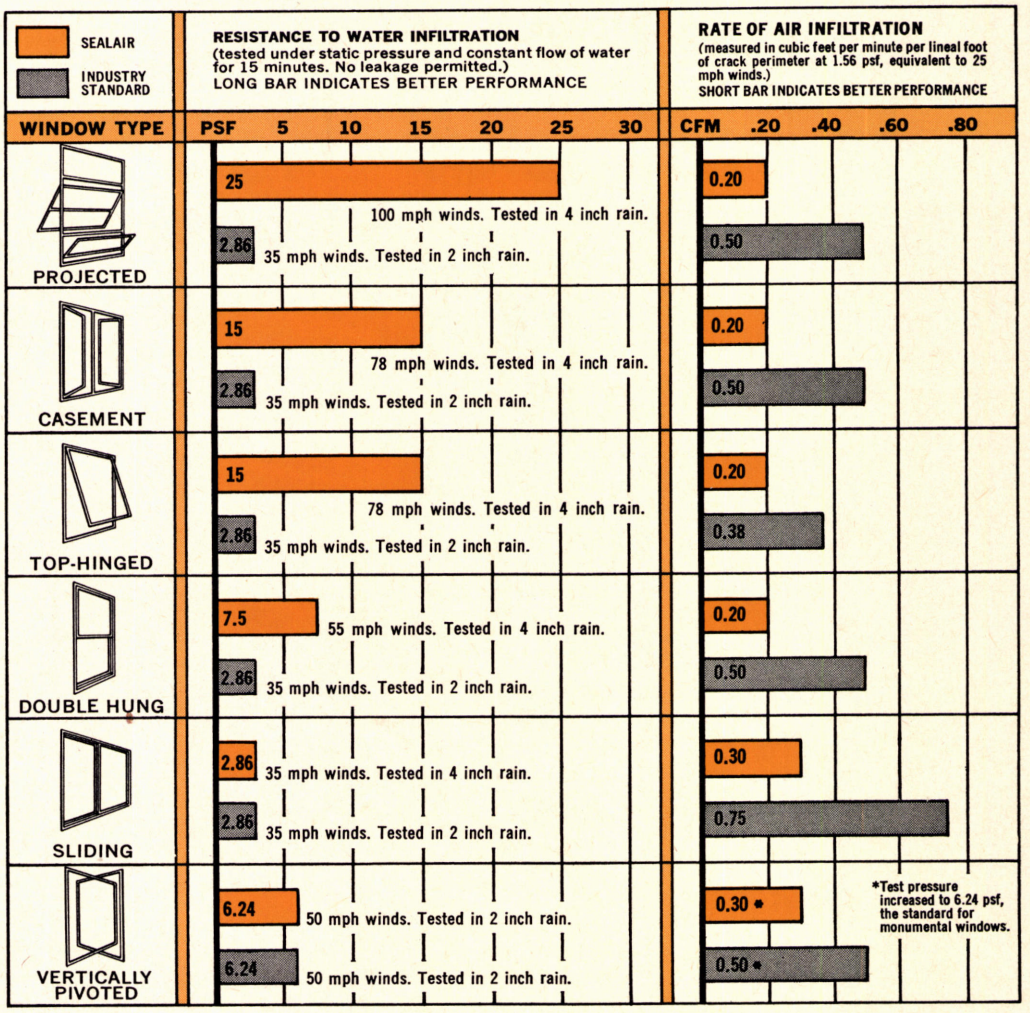
FLASH WELDED MITERED CORNER
ALTERNATE FLUSH MULLION

# All Kawneer Sealair Windows Exceed Industry Standards For Weathering Performance!

Before your firm specifies another window, read this comparison of window performance in Static Pressure Chamber tests against water and air infiltration.




**UNMATCHED WEATHERING PERFORMANCE MADE POSSIBLE BY KAWNEER'S EXCLUSIVE PRESSURE EQUALIZATION SLOT, JOINERY AND ENGINEERING.**

Sealair Projected Windows are watertight, even when subjected to 4-inch rain and winds of 100 mph. That's 774% better than Industry Standards *at twice the amount of water spray required for Industry Tests.* In air infiltration tests, the Sealair Projected was 150% better, with only 0.20 cfm leakage versus the Industry Standard of 0.50 cfm. ■ With Sealair windows, building interiors are free of drafts, reducing loads on heating and cooling systems . . . and free of dust, reducing cleaning expense. ■ What accounts for this far better than standard performance in projected, casement, top-hinged and double hung windows by Kawneer? An ingenious pressure equalization slot that keeps pressure within window sections equal to that outside the building. Hence, no siphoning action . . . no leakage. ■ Choose the finish that's best for your design. 204R1 Alumilite is standard. Or you can add warmth by specifying a *Permanodic hard color in light bronze, medium bronze or black. These optional hard color finishes are non-fading and abrasion-resistant. ■ Write for complete information. Address Kawneer Products Information, 1105 N. Front St., Niles, Michigan.

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Kawneer

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## or a skyscraper

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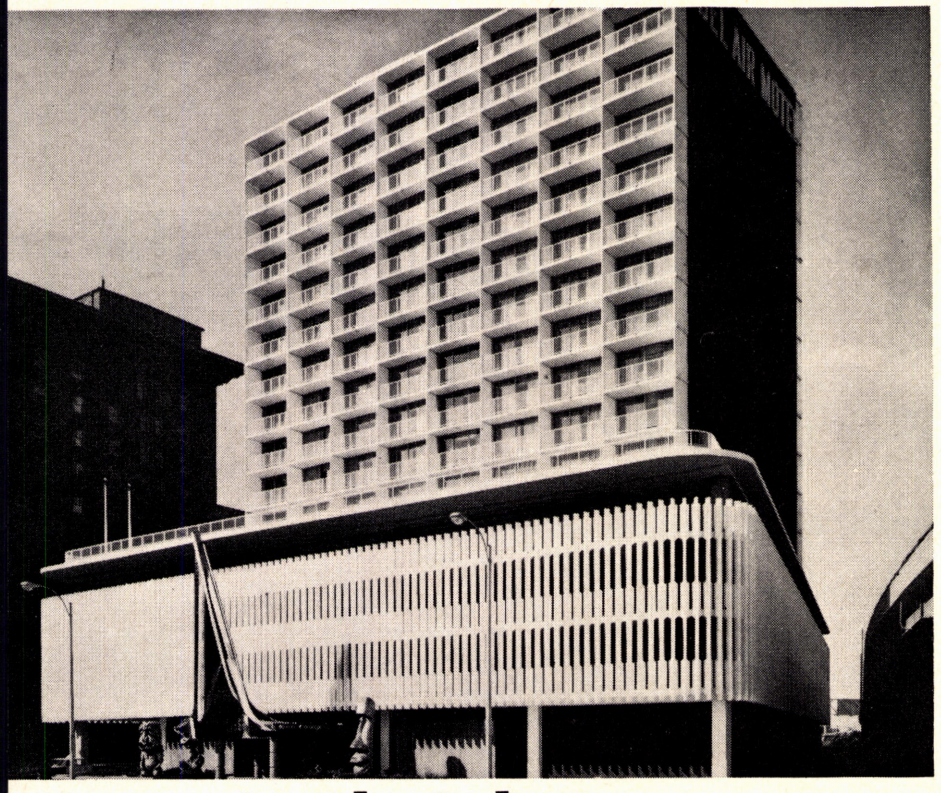
# CONDITIONING THAN COOL-LOTS MORE



## or a motor hotel

el Air East Motor Hotel, St. Louis, Missouri. Owner, Boule-rd Investment Company; Architect, Hausner & Macsai, icago; General Contractor, Westlake Construction Com-ny; Consulting Engineer, William Goodman, Chicago; echanical Contractor, Natkin & Company.

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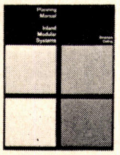

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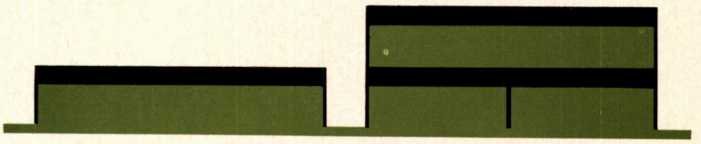
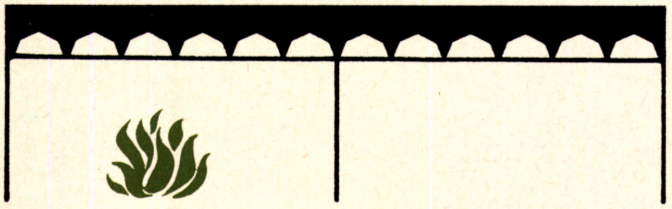
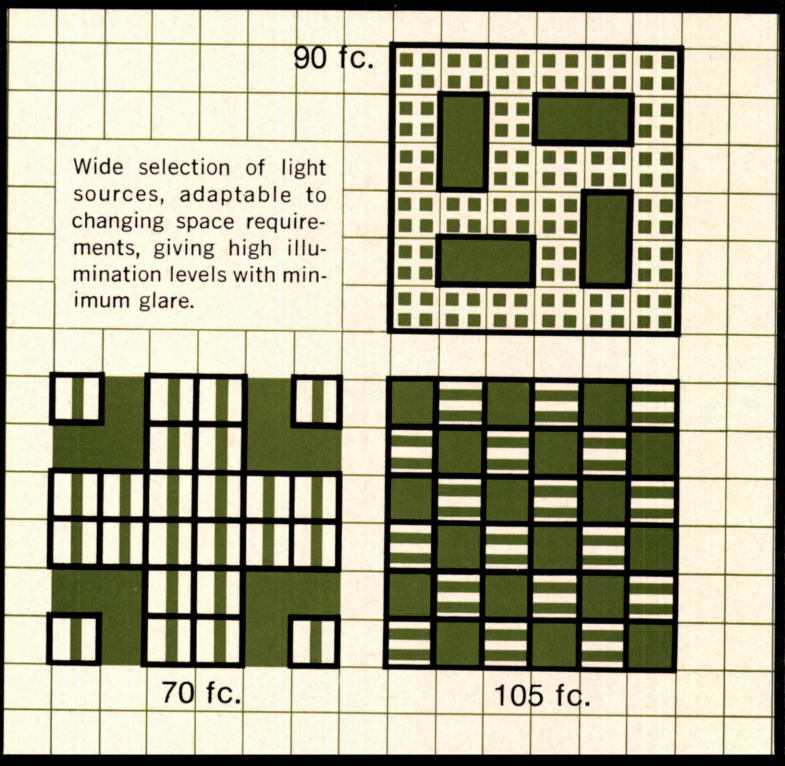
One and two story buildings, with intermediate level changes.



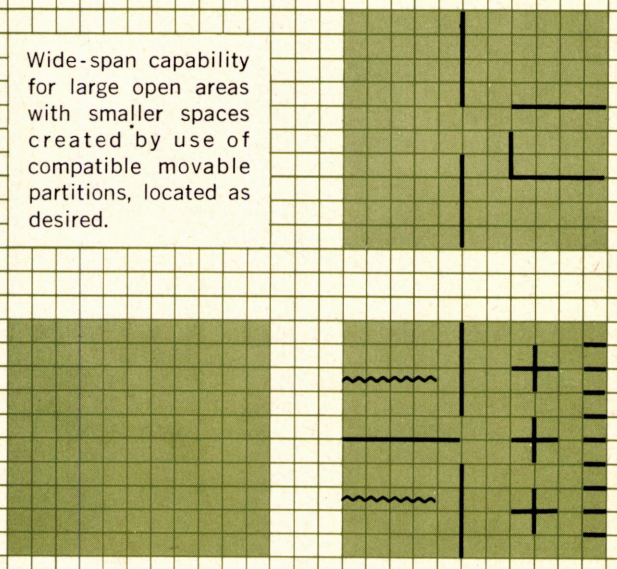
One-hour fire rating capability.



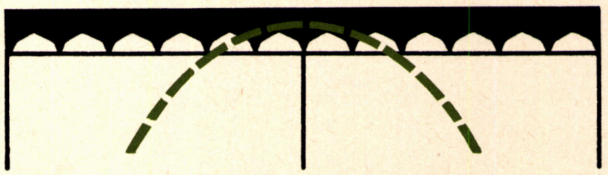
one hour



Wide-span capability for large open areas with smaller spaces created by use of compatible movable partitions, located as desired.

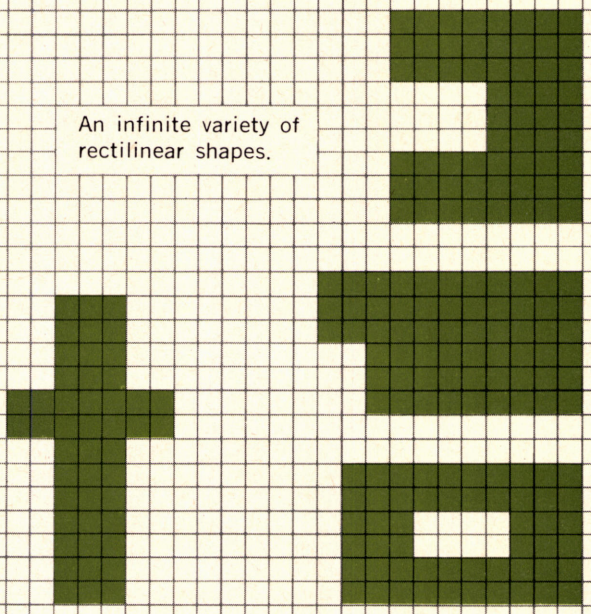


Excellent room-to-room sound attenuation with average noise reduction factor of 32 decibels.

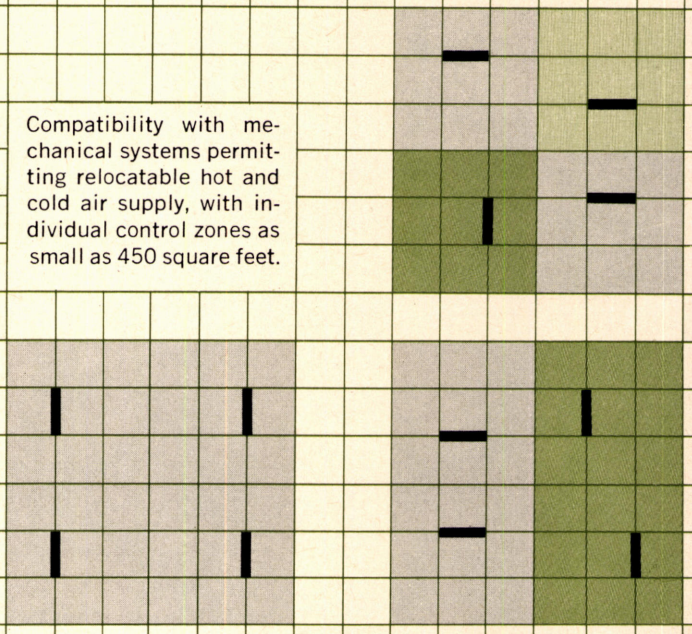


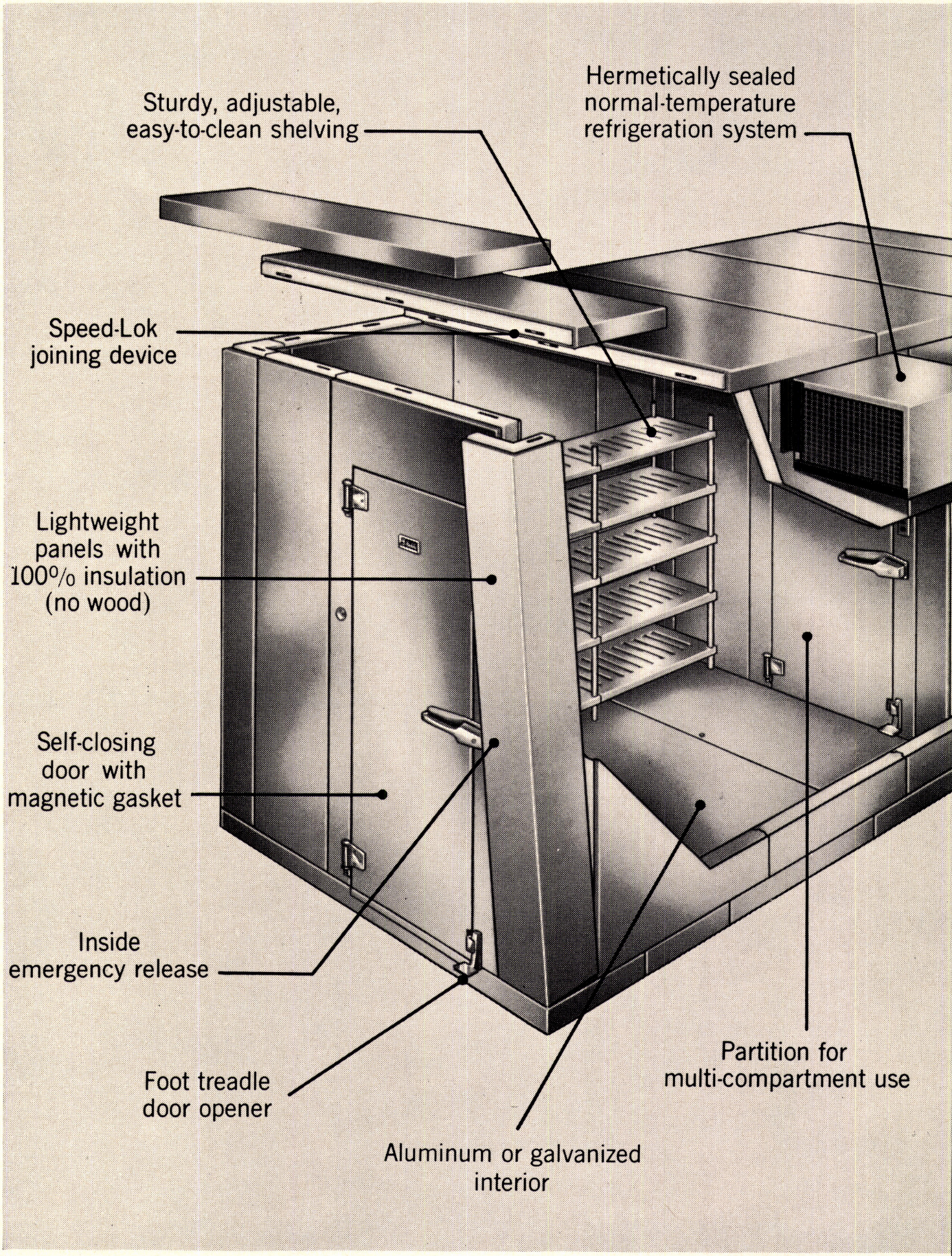
32 dbs.

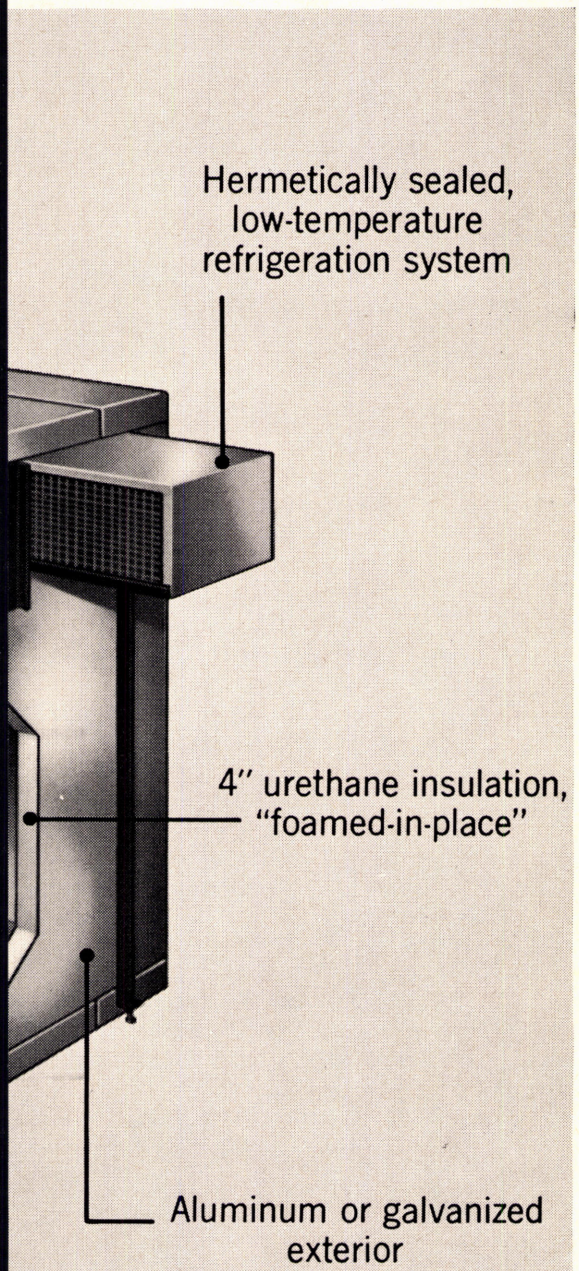
An infinite variety of rectilinear shapes.



Compatibility with mechanical systems permitting relocatable hot and cold air supply, with individual control zones as small as 450 square feet.




Sturdy, adjustable, easy-to-clean shelving
Hermetically sealed normal-temperature refrigeration system
Speed-Lok joining device
Lightweight panels with 100% insulation (no wood)
Self-closing door with magnetic gasket
Inside emergency release
Foot treadle door opener
Aluminum or galvanized interior
Partition for multi-compartment use




# This Bally "exploded view" shatters a myth about Walk-Ins!

Are you among some who still think Walk-Ins are nothing but refrigerated rooms that can be successfully "built-in" by the building trades, or made by local workmen in small carpenter shops?

If so, look closely at the illustration for a change in thinking. You'll see that Bally prefabs combine design and construction methods that can't possibly be included in "built-ins". Many of the unique features have been created for exclusive use on Bally Walk-Ins and are not available on conventional Walk-Ins.

Bally research and development created this wholly new concept of Walk-In construction. They also designed the highly specialized tools, molds, and machines that mass produce these precision formed panels. Users benefit through new high standards of efficiency and economy.

Write today for our new 32-page booklet and a urethane wall sample.

Bally

Bally Case and Cooler, Inc.
Bally, Pennsylvania
Address all correspondence to Dept. AR7.

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*For more data, circle 70 on inquiry card*

On behalf of the President, I am most pleased to extend congratulations to the ARCHITECTURAL RECORD, its publishers, and its staff, on the 75th anniversary of this distinguished publication.

This is, indeed, a historic landmark not only in the life of the magazine, but also in the life of this Nation. In its 75 years, the ARCHITECTURAL RECORD has compiled a unique visual and verbal record of the maturing of this country in the esthetics and design of its structures, its places, and its institutions.

It has been a prime vehicle for disseminating the ideas and ideals of our finest exponents of architectural progress. It has been an inspirational source for the birth of new ideas and new talent. It has infused the public vision with greater appreciation of what this country is capable of creating in its physical environment.

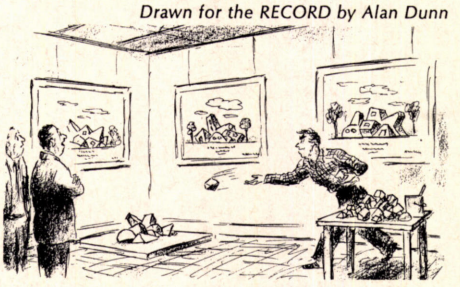
In these times of urban ferment and dynamic growth, there is more to be built and much to be re-designed. The next 75 years will, without doubt, eclipse even our greatest expectations, for it will be filled with ideas and concepts yet unborn. To record this history we are happy that the ARCHITECTURAL RECORD is so enduring and, despite its years, still young.

*Donald F. Hornig*
*Special Assistant to the President*
*for Science and Technology*
*Washington*

**Sheer genius** *Louis Checkman*

*Lecture hall-cafeteria, Brookhaven National Laboratory; Max Urbahn and Seelye Stevenson Value and Knecht, architects.*

*Drawn for the RECORD by Alan Dunn*



*"Sheer genius! What Pollock did for painting he's doing for architecture—"*

Although some of the personnel at Brookhaven National Laboratory suspected it, it wasn't until the attached two items appeared in your May issue (pages 10, 103) that we were sure.

*Philip Ulzheimer*
*Plant Engineering*
*Brookhaven National Laboratory*

**Urban transportation**

Perhaps I shouldn't use the word excellent in view of the fact that you quoted so liberally from my own piece, but I did think you provided good, comprehensive, illuminating coverage for the First International Conference on Urban Transportation (April, pp. 128-129).

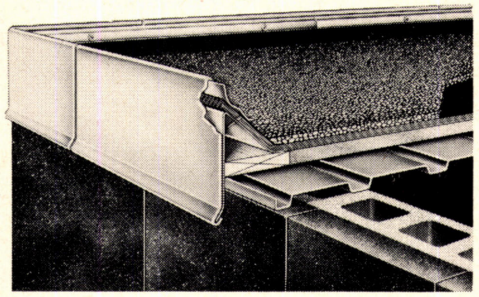
It has been widely considered a most successful project; and, while I am not the kind of person who knows how to parlay an event like that into making Pittsburgh the transit capital of the world, there are others who are working on the project. We are getting a high-level Council established.

Also, Transportation Research Institute has been initiated at Carnegie Institute of Technology through a grant from R. K. Mellon. I have involved this Institute in the planning for Pittsburgh's rapid transit. The Institute is headed

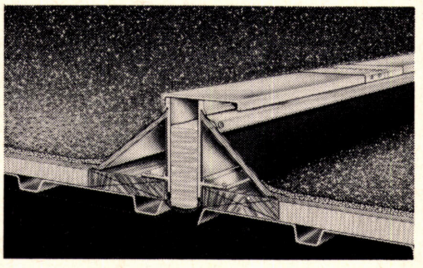
*continued on page 116*

**see SWEET'S 8G-Hi**

**Your decision is easy because the potential trouble and damage caused by a roof leak could be very expensive for your client; the installed cost of the Hickman safeguard System, which insures positive control of roof water at eaves and along expansion joints, is comparable to less effective methods . . . Our 8 pages in Sweet's explain how thermal reaction between roofing felts and metal water dams—the main reason for cracked felts—is neutralized. Make that design decision for Hickman; it is even easier after you see how tar drippings and water stains on walls are eliminated; becomes very easy when you examine the striking fascia profiles which enable you to combine wall beauty with positive roof perimeter protection.**



This cross section from Sweet's, shows how the free-floating fascia interlocks with, but moves independently of, the galvanized steel water dam. The graceful fascia profiles are available in Kalcolors, porcelain and baked enamel.



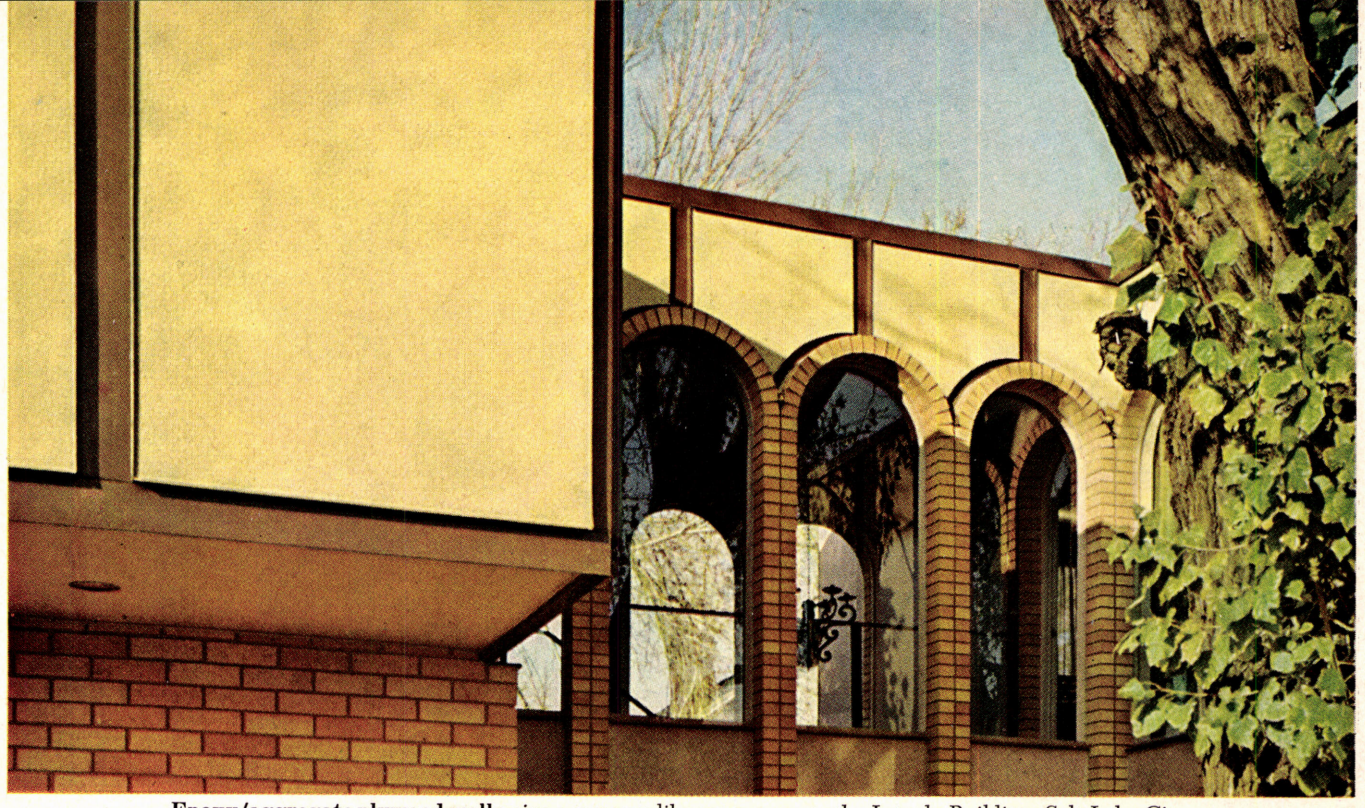
In addition to protection from cracked felts along the water dams, the expansion joint provides safeguards against leakage into the joint itself. A vinyl strip at the bottom, from one roof edge to the other, moves with the roof to form a positive, continuous seal. The extruded aluminum sides and related components, being free-floating, are also independent of thermal reaction between the water dam and felts. Transitions and junctions are factory fabricated.

*In Sweet's there are engineering drawings and sample specs; the roster of area sales reps; a list of typical installations, where Hickman Safeguard System is proving itself (some from 1958).*

**HICKMAN *Safeguard***
**expansion joint**
**fascia, and water dam system (pat.)**

*WRITE FOR EXPANSION JOINT DETAILS AND ADDITIONAL SWEET'S PAGES.*

**W. P. HICKMAN COMPANY, INC.** 2520 INDUSTRIAL ROW. (313) 549 8484
TROY, MICHIGAN 48084



**Epoxy/aggregate plywood walls** give a masonry-like appearance to the Intrade Building, Salt Lake City, Utah. These low-cost walls are available in a wide selection of natural stone textures and colors. (Architect: Roger Merrill Van Frank; Builder: Calvin J. Moss Construction Co., Owner: William E. Buchanan.)

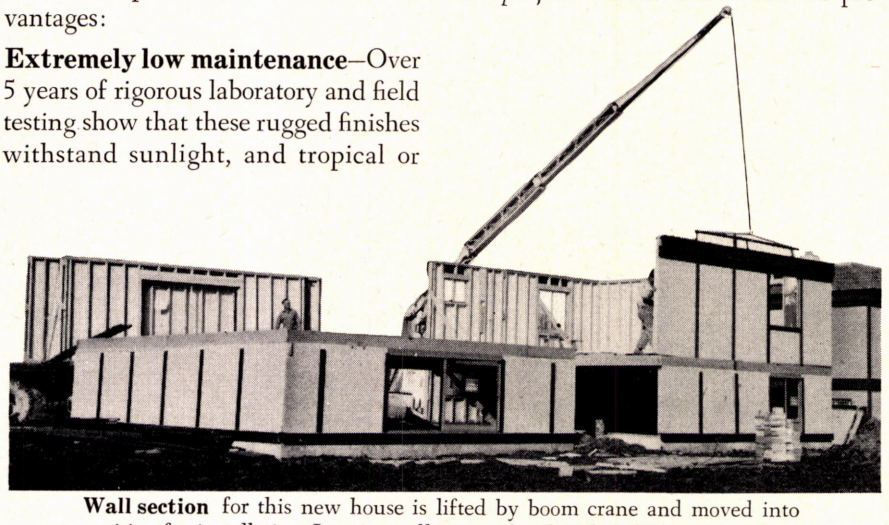
# Epoxy/aggregate finishes based on Shell Epon® resin give plywood siding an attractive pebbled texture—cut building costs

**Factory-finished Hycon 75® Sanspray® siding, manufactured by Hodges Chemicals Co., Burlingame, Cal., will give many years of trouble-free service.**

Now there's a new attractive look for economical plywood exterior siding. It's a remarkably durable finish consisting of natural stone aggregates and Shell Epon resin. Here are the advantages:

**Extremely low maintenance**—Over 5 years of rigorous laboratory and field testing show that these rugged finishes withstand sunlight, and tropical or sub-zero temperatures without cracking. They resist weathering, humidity, salt and fresh water and have an estimated service life of many years. Hycon 75 Sanspray epoxy/aggregate plywood has earned a Certificate of Qualification from the American Plywood Assn., meets FHA standards.

**Low building costs**—This new construction material offers the economy of *prefabrication*. Walls can be pre-assembled in any height up to 16 feet and to any desired width. They can be erected on 6 in.-wide concrete foundations. No painting, priming or staining needed before or after installation. Semi-skilled workmen can easily cut and nail the walls.



**Wall section** for this new house is lifted by boom crane and moved into position for installation. Interior wall is completed with foil-faced fiber insulation and ½ in. dry walls. Prefabricated walls are erected quickly and easily.

**Pebbled texture** of durable Hycon 75 Sanspray epoxy/aggregate plywood flatters the crisp modern lines of the Intrade Building.

**Interested?** Write to Shell on your letterhead at 110 W. 51st Street, New York, New York 10020 and we will refer you to the manufacturer of Epon resin/aggregate plywood siding.

**Shell Chemical Company**
Plastics and Resins Division

SHELL

*For more data, circle 72 on inquiry card*

# How the new age of light means a new age of freedom for you.

Four freedoms, in fact.

First, there's the amount of light, from compact sources, at your command. New G-E high-intensity Lucalox* lamp, for example, delivers as much light as a fifty-foot string of 40-watt fluorescents from an arc the size of a cigarette! Compact G-E Quartzline® incandescents give the light of six 100-watt household bulbs, yet will fit into your vest pocket.

Then there's the freedom to design with color in light for effects never before possible. For instance, new G-E Dichro-Color flood and spot lights give you saturated colors. Richer, brighter colors. New G-E transparent colored bulbs give brilliance and sparkle to signs and let you create dramatic decorative effects.

Freedom number three: Light distribution. Now, with many new light sources, you can put light where you want it. For instance, the G-E Panel fluorescent offers you light by the square foot, to fit many contemporary architectural space modules. You put fluorescent light where you never could before.

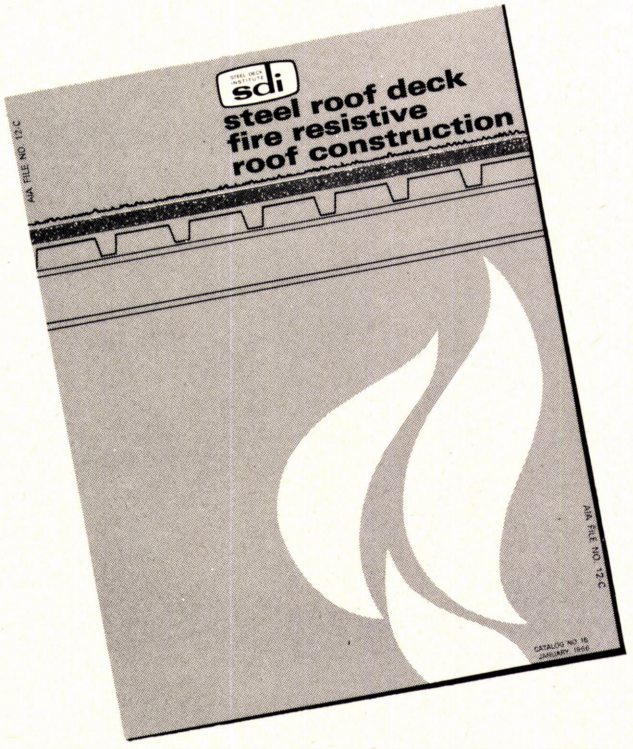
Your fourth freedom in the new age of light is in your design of thermal environment. G.E. developed a concept called Electrical Space Conditioning. It enables you to integrate lighting, heating and cooling into a single system. At Nela Park, home of the famous G-E Lighting Institute, you can inspect an office building that's been converted to E.S.C., using light as a major source of heat during cold months.

Why not visit Nela Park to see all of the ways the new age of light can contribute to a new age of design freedom for you? Call your G-E Large Lamp representative or write General Electric Co., Large Lamp Dept., C617, Nela Park, Cleveland, Ohio 44112.

*Trademark of the General Electric Co.

GENERAL ELECTRIC

*For more data, circle 73 on inquiry card*




# NEW FIRE RATING GUIDE

## Gives complete summary of Steel Roof Deck fire ratings and construction details.

Underwriters Laboratories recently assigned a Steel Roof Deck assembly without concrete covering, a two-hour fire resistance rating. This means you can now save as much as ten to twenty percent over conventional fire resistance roof construction.

This new Rating Guide explains how you can make substantial savings and gives complete information on the recent two-hour Underwriters Laboratories test. All other Steel Roof Deck fire ratings along with construction details are also included.

The Guide serves as a quick reference for your next roof design.

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STEEL DECK INSTITUTE sdi

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Please send me your New Fire Rating Guide

Name..... Title.....

☐ Also send revised edition of True Cost of Full Fire Resistance Construction.
This popular booklet which gives cost comparison examples between "fire-resistance" and "non-combustible" construction has just been revised.

*For more data, circle 74 on inquiry card*




*continued from page 112*

by a very good man, James P. Romualdi, a civil engineer in the Carnegie Tech School of Engineering. He is young enough to be vigorous and imaginative and old enough to have judgment.

*Leland Hazard, Consultant*
*Pittsburgh Plate Glass Company*
*Pittsburgh*

**Progress and politics**

Thank you very much for your splendid coverage of The University of Massachusetts Fine Arts Center. You were very kind and I'm sure your article will be a great help in getting the project funded.

*Kevin Roche*
*Eero Saarinen & Associates*
*Hamden, Connecticut*

I am delighted with the coverage you gave the University's building program. It is most gratifying to have our efforts . . . receive this sort of professional recognition.

If you have seen the Boston papers, you know that we have had some difficult times lately. Having the University featured in such an excellent story in your fine magazine makes up for a lot of bad days.

*Kenneth W. Johnson*
*Treasurer*
*University of Massachusetts*

*The "bad days" began last April when all the Boston papers began to headline politically inspired accusations of excessive use of patronage in the awarding of architectural contracts for state construction. The issue has remained on the front pages for several months and has made public the difficulties faced by the University of Massachusetts in its notable efforts to get good campus architecture from architects selected on the basis of merit. Democratic political foes of Massachusetts' Republican Governor John Volpe launched a state senate committee investigation of the Department of Administration and Finance. Its commissioner, John J. McCarthy who is empowered to appoint architects for state work, has been accused of connivance in his selection of Ritchie Associates, Inc. to design the proposed new medical school for the University to be located in downtown Boston. Peter Volpe, the Governor's brother and president of Volpe Construction Company, is alleged to be under obligation to this firm. The president, treasurer, and board of trustees of the University, in submitting a list to McCarthy from which he was to make a final selection, had named The Architects Collaborative as*

*continued on page 121*

EXIT DOORS

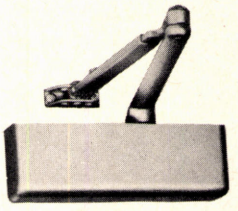
# FOR QUIET BEAUTY IN DOOR CONTROL

## NORTON DOOR CLOSERS

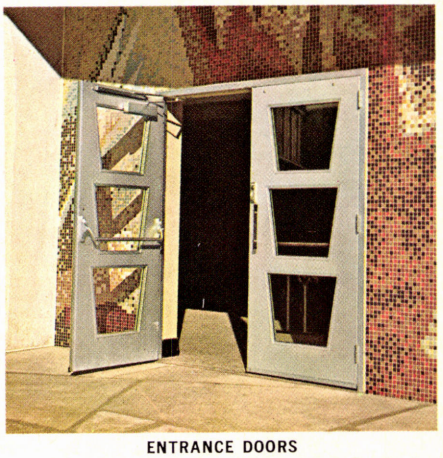
The entire atmosphere of the Dominican Education Center at Sinsinawa, Wisconsin, demands a quiet beauty that is conducive to a contemplative life. The very architectural decor is symbolic of the traditions and cultural background of this institution.

Norton Series 7000 closers with aluminum covers were selected to add subtle beauty to the interior. In selecting these narrow projection closers with covers, it was possible to have perfect door control for all the various locations throughout this building and still accomplish the desired effect.

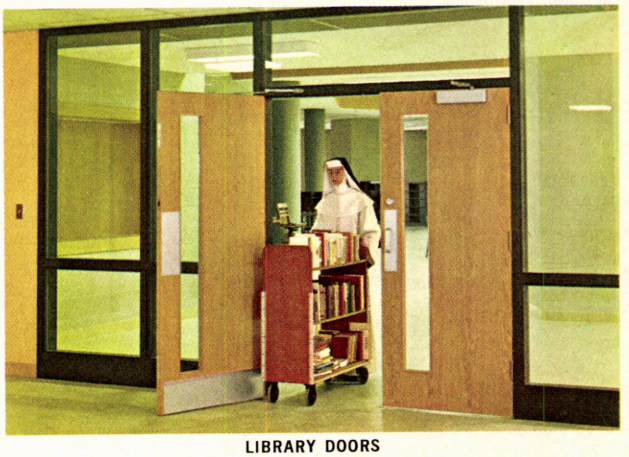
MAIN DINING ROOM DOORS



*Series 7000 narrow projection closers are available with cover to match or contrast any architectural or interior design. Aluminum covers are available in clear aluminum, bright brass, and dull bronze to match door hardware. Also available with wood bonded to the surface of the cover in over 67 native and exotic woods to match room or door paneling. Covers with a prime coat of paint are also available for repainting on the job to match or contrast the interior decor.*



ENTRANCE DOORS



LIBRARY DOORS

AR-76

EATON YALE & TOWNE INC.

**NORTON®** DOOR CLOSER DIVISION

372 Meyer Road, Bensenville, Illinois, 60106

Gentlemen:

Please send me the following literature on Norton Door Closers:

☐ Series 1940 ☐ Series 7000 ☐ Complete Norton Line

Name _____

Title _____

Association _____

Address _____

City, State & Zip _____

**Exit doors** *to the courtyard from the enclosed corridors are controlled by Norton Series 7000 narrow projection closers with covers of anodized aluminum. The closers have been selected to match the aluminum door and triangular window frames.*

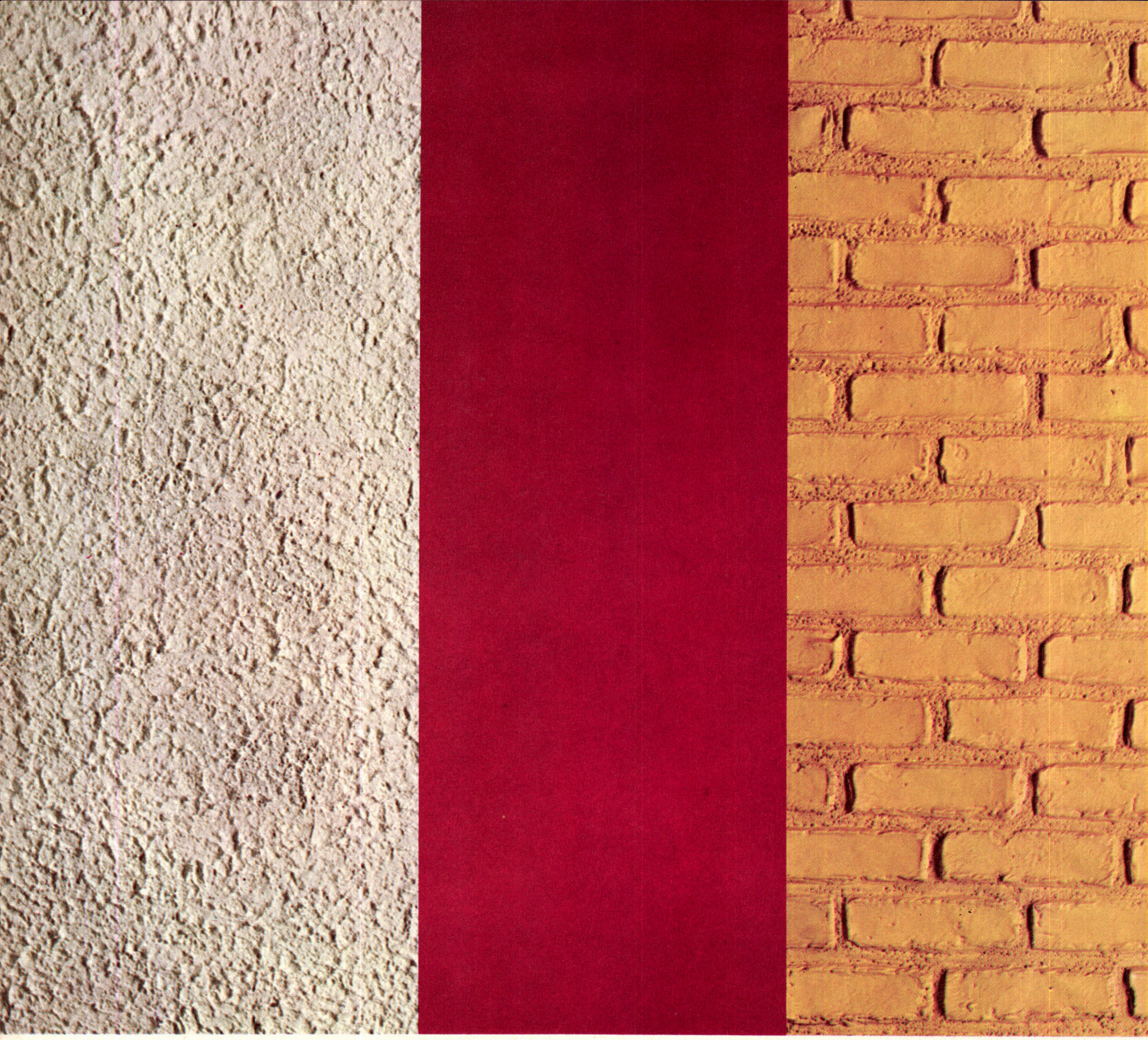
**Main dining room doors** *also feature Norton Series 7000 narrow projection closers. Here the aluminum cover matches perfectly with other hardware to give a striking contrast with the dark finish of the door.*

**Entrance doors** *to the chapel area are controlled by Series 7000 closers with covers. Again, these closers blend in naturally with the modern design of the doors.*

**Library doors** *immediately under the chapel have Norton Series 7000 closers with aluminum covers to match door hardware.*

1120

*For more data, circle 75 on inquiry card*



# Pick a wall. Any wall.

Wallpackette is available, as shown here, with optional Prismascope® automatic on-off control, and a complete line of other accessories.

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Reynocolor 5000 series finishes are available through leading architectural finishers licensed by Reynolds to perform this process to exacting specifications. Call any of the following licensed processors:

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**H. A. Leed**
1685 Dixwell Avenue,
Hamden, Conn. 06514

**FLORIDA**
**Accurate Metal Finishing Corp.,**
3750 N.W. 46th Street,
Miami, Fla. 33142
**Aluminum Finishing Corp.**
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**GEORGIA**
**Southern Aluminum Finishing Corp.**
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**ILLINOIS**
**International Anodizing Corp. of Illinois, Inc.**
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**INDIANA**
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**Engineering Metal Products Corp.,**
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**NEW YORK**
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**OHIO**
**Allen Aircraft,**
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Ravenna, Ohio 44266

**PENNSYLVANIA**
**Mardis Tool & Die Co.**
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Wellsville Pa. 17365

**UTAH**
**Woodshill, Inc.,**
2861 South 1100 West,
Ogden, Utah 88403

**WISCONSIN**
**Marmet Corporation,**
Bellis Street,
Wausau, Wisc. 54401



*continued from page 116*

*their number one choice, teamed with Ellerbe and Company of St. Paul, Minnesota. The architects selected by McCarthy, in addition to Ritchie Associates, Inc. (which incidentally has to its credit the design of $220 million worth of hospitals) are Campbell, Aldrich and McNulty, and Ellerbe and Company. Governor Volpe, to appease his critics, has just appointed a "blue ribbon committee" to study the method of selecting architects for state work. Its members are: Pietro Belluschi; Dr. Nils Y. Wessell, Tufts University president; Charles A. Coolidge, member of a Boston law firm; and C. Clark Macomber, president of the George B. H. Macomber building construction firm.*

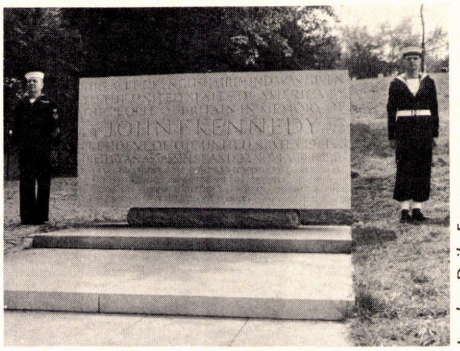
### Record Houses

Congratulations again for another superb *Record Houses*. Besides new graphics and more color, the architecture selected is of particular quality and is varied in approach to the basic problems of house design.

It is refreshing to pick up *one* magazine which reports that all houses being designed today are different and not necessarily of the "cardboard school." *Record Houses* is the most significant recognition of house design in the United States.

*Hugh Newell Jacobsen, A.I.A.*
*Washington, D.C.*

### Kennedy Memorial




*London Daily Express*

I would respectfully point out that on page 36 of the April issue a picture that appears as the memorial to the late President Kennedy, sited at Runnymede is in fact a photo of the memorial provided by the American Bar Association to mark the signing of the Magna Carta. President Kennedy's memorial is beyond this part at Runnymede and is a plain Portland stone with simple engraving standing in a very shady peaceful area.

*B. B. Marks*
*Carshalton, Surrey*

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**HOSPITALS:** CENTRAL SUPPLY, UTILITY ROOMS, MOBILE SUPPLY CLOSETS.

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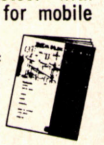
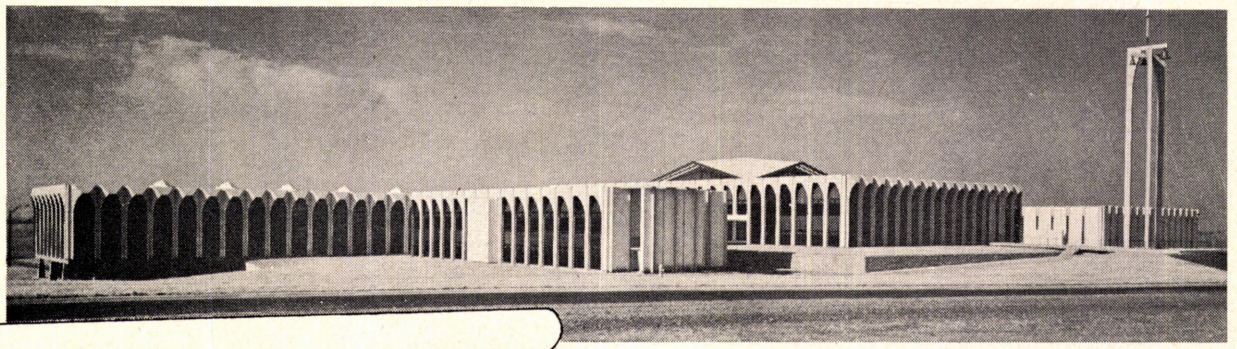


**Market Forge**
EVERETT, MASSACHUSETTS 02149
SINCE 1897

*For more data, circle 77 on inquiry card*



**A HILLYARD SPECIFICATION FOR SEALING AND FINISHING SLATE FLOORS**

*Savior of the World Seminary Chapel, Kansas City, Kansas. Architects: Shaughnessy, Bower and Grimaldi, Kansas City, Missouri.* Cem-Seal was applied for protection during construction and installation of pews. (In progress above). After pews were installed, two thin coats of Super Hil-Brite carnauba wax provides the wearing surface.

# CEM-SEAL® ENHANCES AND PROTECTS SLATE FLOORING... CURES AND SEALS GROUTING

Cem-Seal intensifies the beautiful, deep, natural colors of slate floors and guards against scratching, marring and dulling. Cem-Sealed slate may then be maintained against heavy traffic conditions with Hillyard Super Hil-Brite carnauba wax. Since Cem-Seal is formulated to produce maximum curing of concrete and protect masonry surfaces, it has an excellent function with slate and the grouting—Protecting both against damaging moisture and dirt.

***PRODUCT DESCRIPTION:*** A modified clorinated rubber sealer. Recommended to properly cure concrete. It is commonly used to fill and seal porous masonry-type floors. Protects surface, improves appearance and provides base for final wax or finish coats.

***SPECIFICATION AND HOW TO APPLY:*** Onto a perfectly clean, stain-free floor, apply Cem-Seal in an even coat with lamb's wool applicator. Avoid puddling. After drying thoroughly, apply two thin coats of Super Hil-Brite carnauba wax with a new lamb's wool applicator, again being careful not to puddle. On large, open exterior areas, Cem-Seal may be sprayed.

***DRYING TIME:*** Cem-Seal—two hours in normal weather conditions; Super Hil-Brite wax — 30 minutes.

***COVERAGE:*** 500-700 square feet per gallon depending upon the porosity of the floor.

***TECHNICAL DATA:*** N.V.M.—20%. Viscosity—Gardner A-2—A-5. Color—Gardner max. 6. A clear liquid with no sediment or suspended matter. The product shall comply with ASTM C156-55T, water retention efficiency of liquid membrane forming compounds for concrete curing.

***GUARANTEE:*** When applied in accordance with manufacturer's directions, it is guaranteed to meet all claims made.

***MAINTAIN WITH THESE HILLYARD PRODUCTS:*** Sweep daily with a Super Hil-Tone treated dust mop. Buff periodically. When floor is soiled, clean with Super Shine-All or with Clean-O-Lite (if a cleaner-sanitizer is desired). Traffic lanes may be patched in with Super Hil-Brite carnauba wax and buffed to blend with entire floor.

***APPROVALS:*** All Hillyard products mentioned are listed by the Underwriters' Laboratories as slip resistant.

***EXCEPTIONS:*** Do not use Cem-Seal on light-colored masonry type flooring. Contact Hillyard for specification.

***REFERENCES:*** Sweet's Architectural File, A.I.A. Building Products Register, Hillyard A.I.A. File No. 25G.

**HILLYARD**
FLOOR TREATMENTS
ST. JOSEPH, MISSOURI U.S.A.
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SINCE 1907

*A certified Hillyard Architectural Consultant will gladly discuss with your specification writers the proper, approved procedures and materials for the original treatment of any type floor you specify. He'll also provide free follow-up "job captain" service to protect your specifications. Write, wire or call collect.*

*The most widely recommended and approved treatments for every surface*

For more data, circle 78 on inquiry card

For more data, circle 79 on inquiry card

# The newest advance in long-life finishes protects these four buildings. Its name: KYNAR* 500

Kynar 500 is the base for a new generation of liquid finishes for architectural metals. These liquid finishes provide long-lasting, maintenance-free protection that compares with porcelain enamel and anodized aluminum — with these plus advantages:

- perfect color match — finishes made with Kynar 500 are liquid, can be roller coated onto flat metal stock and post formed; the same color can be sprayed on extruded metal parts. Match is perfect.
- complete range of colors — white and standard colors. Custom colors to fit your requirements can be formulated, depending on the size of your job.
- lower cost — finishes made with Kynar 500 cost less per square foot than any other type of metal protection in the 30-year range!

Before resolving your next job, consider finishes made with Kynar 500 for metal protection. For additional information . . . including test data and cost comparisons . . . write Plastics Department, Pennsalt Chemicals Corporation, 3 Penn Center, Philadelphia, Pa. 19102.

*Kynar is a registered trademark of Pennsalt Chemicals Corporation. Kynar 500 is the fluorocarbon resin used by leading paint manufacturers in new long-life liquid finishes.

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For more data, circle 95 on inquiry card

# New Safety for bathtubs

Kohler offers you bath tubs with SAFEGUARD—the textured bath tub that gives stand-up safety!

SAFEGUARD is slip-resistant to help protect everyone from falls. Especially children and older people.

SAFEGUARD is built into the bottom of Kohler bath tubs. Texture is slip-resistant but smooth . . . comfortable to sit on. Cleans as quickly as lustrous enamel on sides and top.

Available on any Kohler bath tub in many sizes and colors.

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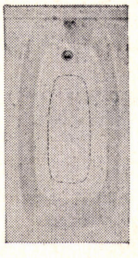

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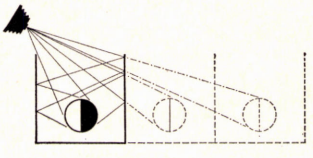

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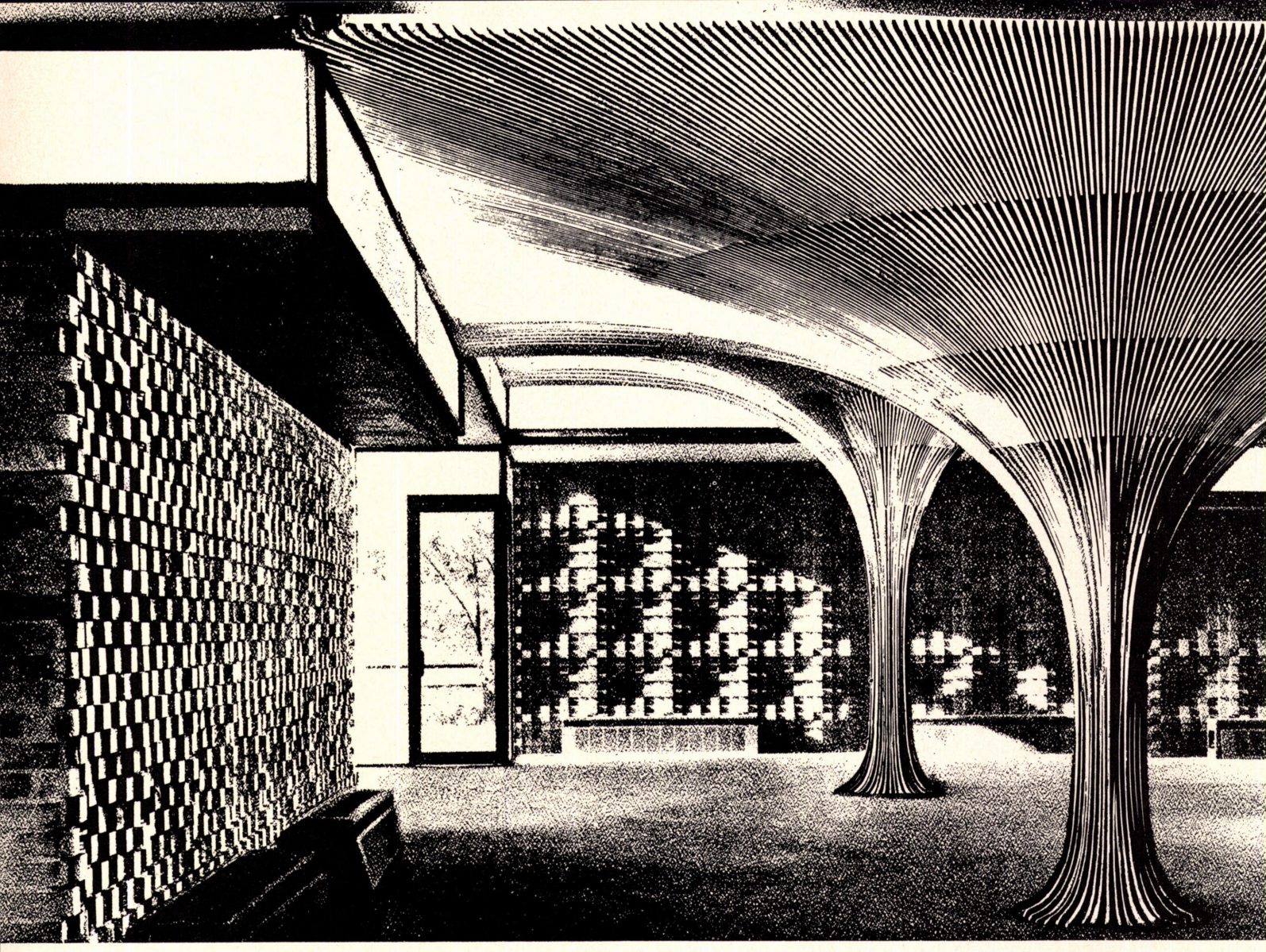

Plastic forms were used for precision casting of these columns. The high-early-strength concrete, made with Lone Star's INCOR® 24-hour portland cement, permitted forms to be stripped the following day. Maximum aggregate size was 3/8".

# A forest of concrete "trees" for a new IBM office building

## Incor® 24-hour portland cement used for cold-weather concreting.

This IBM office building is interesting from any angle, but the really spectacular sight is found indoors. Here some 81 graceful concrete "tree" columns have transformed a vast multi-level office area into an indoor forest.

These concrete trees have a striated surface texture suggesting bark. They are also interesting from a structural standpoint; as an inverted umbrella, each includes a column, a column capital and a 22½-foot-square slab. The diagonally adjacent slabs were prestressed through a common plane of concrete, but aside from that, the trees are independent vertical cantilevers.

Construction of this concrete forest presented an unusual challenge. Color uniformity throughout the exposed, unfinished concrete surface was a requisite. High early strength was required because casting took place in cold weather. **INCOR®**, America's *first* high early strength portland cement, thus played a vital part in the successful completion of this unique, complex and impressive building.

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IBM GARDEN STATE OFFICE BUILDING, Cranford, N.J.; Architect: VICTOR A. LUNDY, New York, N.Y.; Structural Engineers: SEVERUD ASSOCIATES, New York, N.Y.; General Contractor: MAHONY-TROAST CONSTRUCTION COMPANY, Clifton, N.J.; "Incor" Cement Concrete: THORN-WILMERDING CORP., Linden, N.J.

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Seventy-five years ago architects and architecture were facing the beginnings of a major revolution. It was a design revolution, and it led us from an architecture of a handcrafted age—in which the function of a building (however contemporary) was generally clothed in one or another of the accepted historical forms—to the architecture of an industrialized age, in which the design is not just the product of, but generally a very deliberate expression of, our technology. If the development of this modern architecture did not lead to a single hard line of "new architecture"—as, at various times, many architects, critics, and historians insisted that it must—it did lead architects away from their traditional preoccupations and encourage them to explore new design concepts with an open mind.

Today, architects and architecture are seeing just the beginnings of another revolution—very different in its nature but far more important to the future of the profession and the people it is dedicated to serve.

This new revolution is not a design revolution. To be sure, the design revolution that began with the early understandings of the implications of the industrial revolution will go on, perhaps at an accelerated pace, as we begin to understand the implications of today's scientific revolution. It is perhaps useful to consider what has happened so far as Phase I of the design revolution, and what is still ahead—as we learn more about the nature of man, become more sophisticated in our engineering analysis, and are more and more influenced by the breath-taking accomplishments of other disciplines—as Phase 2 of the design revolution. The following 22 pages ("Science and Technology as a Design Influence") consider this second phase both in terms of the pure esthetics of design and in terms of making more effective use not just of our existing technology, but of the greater technological and engineering sophistication that seems sure to come.

The new revolution is a revolution in the whole concept of the architect's role, and therefore in the whole concept of architectural practice.

From a time when the image of the architect was a moustache and lovely drawings on the charette, we are now, as we said in the editorial last month, "increasingly conscious that architects and engineers, in growing numbers, are shoving out into space with an orbit-minded world, eagerly inventing an architectural approach to every problem the world can toss at them." But only a bare beginning has been made, and much more must be done.

The reasons for this revolution are clear—and behind them all are people: more and more of them.

The population is expected to increase between 15 and 20 per cent in the next 10 years and grow even faster after that. Even more important than the overall figures is the fact that the 20- to 29-year-old age group, which does so much of the family-forming and thus directly or indirectly creates the need for most new construction, is going to grow more than twice this fast. (A detailed economic analysis of the predictable growth pattern for the major building types is included on pages 226, 247, 248.)

Philip N. Brownstein, HUD's Assistant Secretary for Financial Management and FHA Commissioner, made the point well: "The extent of the problems and needs might best be grasped if we visualize a population of over 300 million by the year 2000, at least 85 per cent of whom will live in urban areas. These urban areas will consume at least double the acreage now urbanized, and we will have to build as much housing in the next four decades as we have built in our entire previous history." To this must be added everything that goes with people and housing—schools and shopping centers and stores and hotels and recreation areas and industrial plants and hospitals and offices.

The thing that is sometimes hard to remember is that these and other Brave New World statistics are not just statistics—but the preliminary sketches for the design of the environment that we all must live in. There is no one but the architect trained to do this design. If he does not accept this fantastic commission someone else will and none of us are likely to be happy with the results.

And if the design of the building that is going to go on in the years ahead seems like an almost impossible problem, it is only a part of it. For the architect

# THE NEW AGE OF ARCHITECTURE

now needs to take a role much more complex than the design of buildings for which the design program has already been set by others. The architect is now being begged to play a role in setting the goals—the design program — not only for individual buildings but for whole cities—indeed, to help interpret in terms of environmental design the country's broadest economic and social goals.

Robert C. Wood, Under Secretary of HUD, put it this way in a recent speech: "In the 1960's the continuing surge of people to the major metropolitan areas made the conditions of urban life a great national issue. We began to face up to our urban character, and to the realization that urban growth and change were not ending, but only well launched. . . . We must realize that it is not enough to concern ourselves with physical clearance and rebuilding and rehabilitation; they must be accompanied by social rehabilitation as well. . . . I feel we have come to a moment in our history of the urban turnabout, where we choose—or fail to choose—new directions for city building for the next two generations."

As the article beginning on page 189 ("Shaping the Community in An Era of Dynamic Social Change") explores in some detail, this is easier talked about than done. There is still (and always will be) a political jungle between the architect's dream of the prize—"cities of spacious beauty and lively promise"—and what can be accomplished in dealings with local officials and politicians and pressure groups. But at any rate—and for the first time—there is a strong public and private climate of acceptance for something new and better, because for the first time the demand for something new and better has reached the stage where it has become a political necessity to make it a matter of public policy. Architects have long shouted (too often just to each other) for a voice in shaping our total environment. The big audience is now listening, and architects must now speak, even if they do not always like the choice of the hall. If architects do not involve themselves in the kind of direct political action that it takes to get many things done in this political world, others are outside the hall waiting for an opening.

If national concern with the total design of our environment is the most fundamental change facing architects, it is by no means the only major change. On the scale of the individual architectural office, it seems clear that there will be many changes in both the amount and the nature of his work.

In the next 15 years (which really isn't very long) our gross national product will nearly double, consumer expenditures will nearly double, consumers' disposable income will nearly double, capital spending will nearly double. Along with these statistics comes the economists' confident prediction that just 10 years from now the dollar value of new construction will be twice today's $70 billion and—after adjustment for rising costs—the rate of physical building will be at least one and a half times what it is today.

As important as the over-all figures is the fact that, in the boom ahead, architects have a fresh chance to recapture the building types "that got away." For example, there is good reason to believe that the bigger-scale residential complexes now being planned (by developers who are playing for big piles of blue chips) will offer a real opportunity for the architect to get involved in the single-family house market on a much broader scale.

The over-all mix of building types has always been in a constant state of flux, and will continue to change. Further, we are now seeing the beginning of some drastic changes in our concepts of land use—in the directions of taller and bigger buildings, the integrated design of whole neighborhood complexes, new concepts that put buildings and the valuable land on which they stand to work for 24 hours a day instead of just eight hours, and some fresh ideas for enlarging our existing cities and creating new satellite cities. These changes are explored in more detail, beginning on page 215 in "The Changing Job To Be Done."

All of this change ahead points to some very real changes in the patterns of architectural practice—the very concepts of organization for doing business in this new age without losing the firm hand on the quality of design. The article beginning on page 241 explores these changes, and what some firms are already effectively doing about them.

The total of all these changes—of the strong new forces affecting architecture—adds up, in the view of the editors of the RECORD—to nothing less than a New Age of Architecture; and requires a continuing and growing acceptance by offices across the country of the New Role of the Architect. The challenges are enormous—for it will not be enough simply to cope with the changes. Architects cannot, in meeting the new demand for quantity, abandon for one moment their traditional demand for quality and beauty. The stakes are the environment in which we all will live.

*—Walter F. Wagner Jr.*

1

# SCIENCE AND TECHNOLOGY AS A DESIGN INFLUENCE

The architecture of the last 75 years, as it has gradually evolved, has been very different from any architecture that has gone before, and most of the changes had their beginnings in the ever-growing forces of science and technology. But as great as the effects of the industrial revolution have been on architecture and architects, it now seems likely that what has happened so far is but Phase 1 of the revolution. What lies ahead are the effects of today's scientific revolution—new building techniques, more sophisticated structural analyses, new forms—and new concepts.

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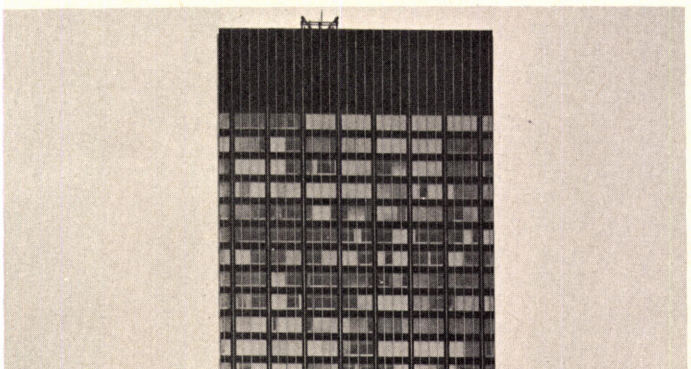
Have developments in architecture faithfully mirrored the growth and emerging dominance of science and technology? Not precisely, nor concurrently, though it is certainly true that the new architecture—as it evolved during the past 75 years—is different in many essential respects from any architecture that went before, and that these differences had their geneses in science and technology. The big question today is not *whether* these great forces will continue to change architecture or not, but *how*. As we move from an era of industrial revolution into an era of scientific revolution, the forces on architecture seem likely not only to be different, but even more drastic.

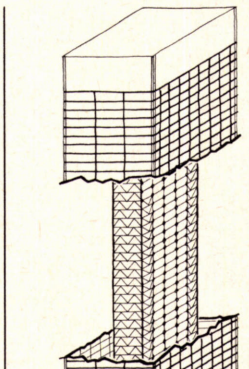
The process of try-it-and-see was traditional in building construction until the 19th century, when creative scientific thinking and methodology were first applied to architectural design. Earlier experiments or adventures in the technology of building were lacking in the accumulation of data and performance standards as we know them today. And of course there was no dream of testing intuitive structural or performance concepts, as architects and engineers can do today with computers or test models.

So far, as structures have evolved through a series of types, the principal development efforts have been directed toward lightness and continuity. Continuity not alone of structure, but continuity of structure and finish, with the finish—exterior and interior—doing its share of the structural job. The expression of pure structure appears unlikely as an eventuality, since human needs and program requirements will invariably fail to fit into the neat, orderly package that pure structure would call up—but architects have been approaching that end more and more closely.

example of one point in time (1954) of this development. It would have been impossible to build this building at any

SCIENCE, TECHNOLOGY, AND DESIGN





Wind bracing in the 53-story Union Carbide Building typifies that of the slender, curtain-wall-clad tower. Since the skin and partitions contribute little stiffness, all wind resistance must be put in the steel frame. Diagonal bracing is used in the core where it will not obstruct circulation. Rigid moment-resisting

Classic example of a building design that made full use of the most sophisticated technology available in its time (1954): Manufacturers Hanover Trust Company, New York City. Architects: Skidmore, Owings & Merrill—Gordon Bunshaft, partner in charge of design.

tects have been making increasingly sophisticated efforts to synthesize and integrate these and all other systems. In contradistinction to the traditional practice of adding the necessary mechanical and electrical elements after the building design is fairly well set, the effort now is to weave these elements—ducts, fittings, pipes, systems, and equipment required for lighting, air conditioning, sun control, sound control, power, communications, etc.—into the very fabric of the building. The task is an involved one, but a great degree of progress is being made with the growing and increasingly effective collaboration not just of architect and engineer, but of architect, engineer, and the suppliers of all the components and systems that go into a building.

This increasing involvement of more and more different people and disciplines in design has been another continuing trend, for as the total design of a building has become more and more complex, the need for a closer and closer association of the architect with a wide range of technical consultants has become more acute. As the design evolution continues into the scientific age, this collaboration (and the need for research) will take on a whole new dimension—and this is discussed in more detail on page 162.

If the industrial revolution has had a dynamic effect on the design of buildings, and the organization of the skills that go into it, it has also had important effects on the actual building process—and this has been a chicken-and-egg relationship. It is easy to argue that the building process has lagged behind the real capabilities of the industry, but it is nonetheless true that real progress is being made (see page 160) in developing and putting into use systems that let us

An example of a design "growing cleanly and precisely and beautifully out of its function and engineering": Verrazano-Narrows Bridge. Sponsoring agency: Triborough Bridge and Tunnel Authority; engineers: Ammann & Whitney—Othar H. Amman, in charge of design. Architectural consultants: John Peterkin, Edward D. Stone, Aymar Embury II, and Daniel Chait.

build even higher performance into our buildings—and to do so more efficiently. And it is doubtless true that with the priority on speed that is essential to all phases of life today, the development of new and better systems for building better and faster will continue apace.

As suggested in the introduction on the previous pages, it now seems appropriate to consider that the effect on design of science and technology has been, to this date, simply Phase 1 of the development of a new architecture.

What is likely to come next?

What is already happening is that more and more architects are being influenced by the new concepts of electronics and atomic energy and automation and cybernetics and computers—just as architects were influenced years ago by the new concepts of the machine.

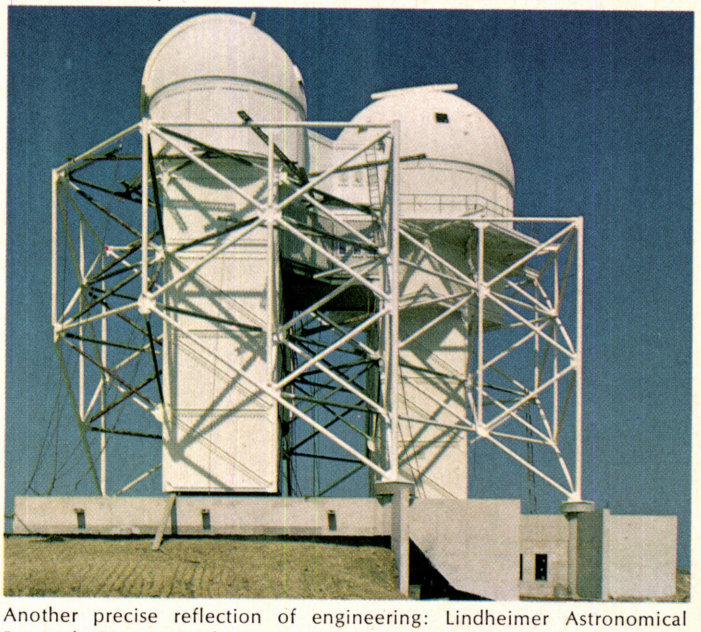
And it is not unlikely to think that just as this scientific revolution may transform the world more radically and completely than the industrial revolution did, it may likewise transform architecture more radically and completely.

This Phase 2 of the development of a new architecture will probably be much more than the obvious: new energy sources, new and more sophisticated structures based on computer analysis, or new communications systems within buildings (no more meetings?) and between cities (no more conventions?).

Its most important impact may be the impact on the mind and the thinking of architects. None of us will ever be the same as we were before we saw close-up pictures of the surface of the moon. No feat of artistic or technical skill seems impossible any more. It is presumptuous to try and anticipate what new esthetic may grow out of this scientific revolution, but easy to predict that a new esthetic will grow. The technical capability to build almost anything we can dream of or design already exists as you will see on the following pages. Architects may continue—as they are doing today—to ride off in all kinds of directions. The new sciences may encourage a new, single "pure" design goal— with buildings growing as cleanly and precisely out of their function and structure as does the pure and precise (and beautiful) Verrazano-Narrows Bridge spanning New York's lower bay.

There are still many questions to be answered: Is there anything wrong with striving to improve precedent, or must there forever be startling forms and unfamiliar spaces?

*Walter A. Netsch, Jr.*



Another precise reflection of engineering: Lindheimer Astronomical Research Center, Northwestern University, Evanston, Illinois. Architects: Skidmore, Owings & Merrill—Walter A. Netsch Jr., partner in charge of design. A 40-inch and a 16-inch telescope, plus related instruments and coudé rooms, are housed in two domed enclosures which are supported by a welded steel pipe structure.

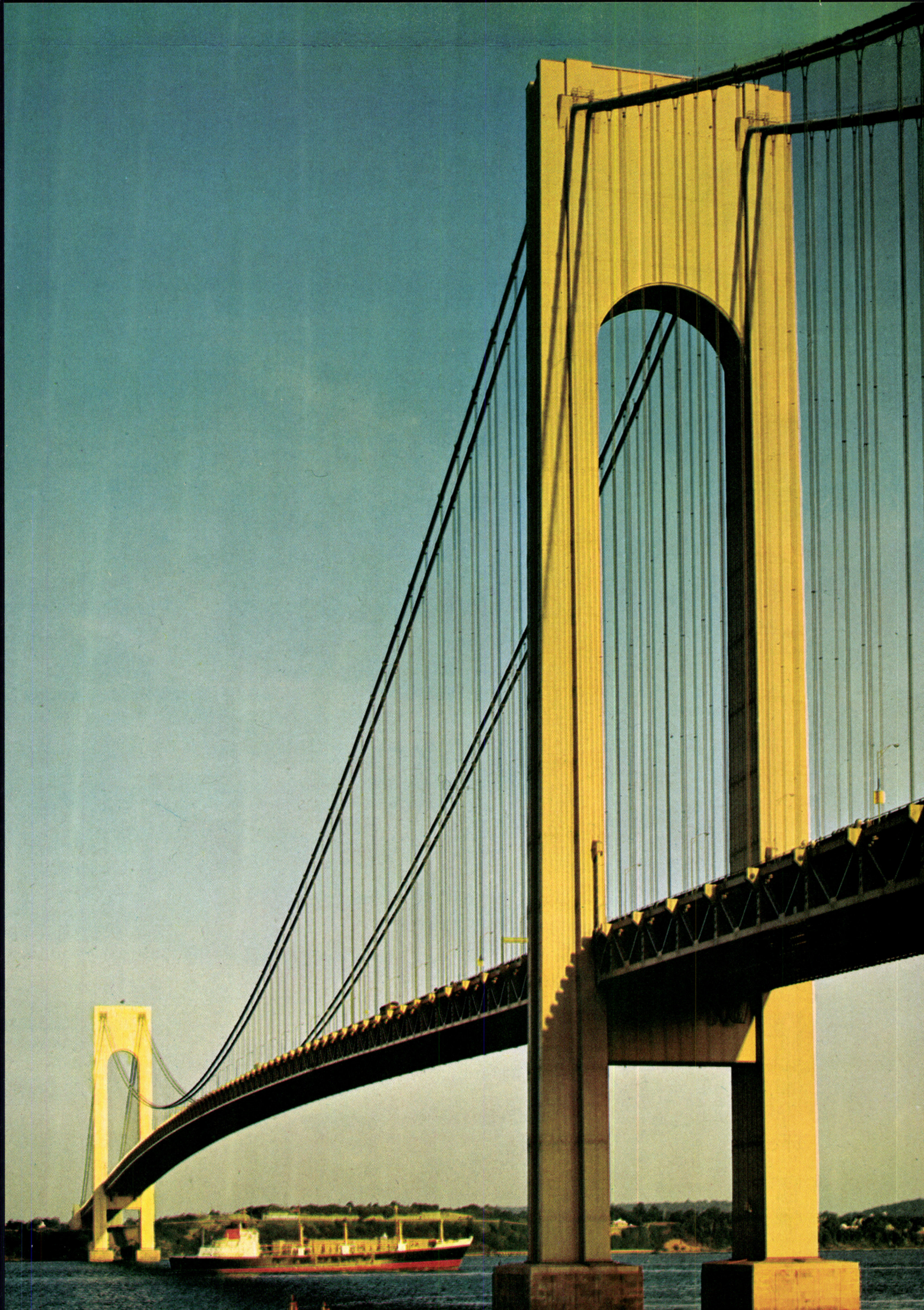
Will architecture choose to control nature to the point that it assumes a certain universality of character, or will the natural environment be allowed to act as a design control?

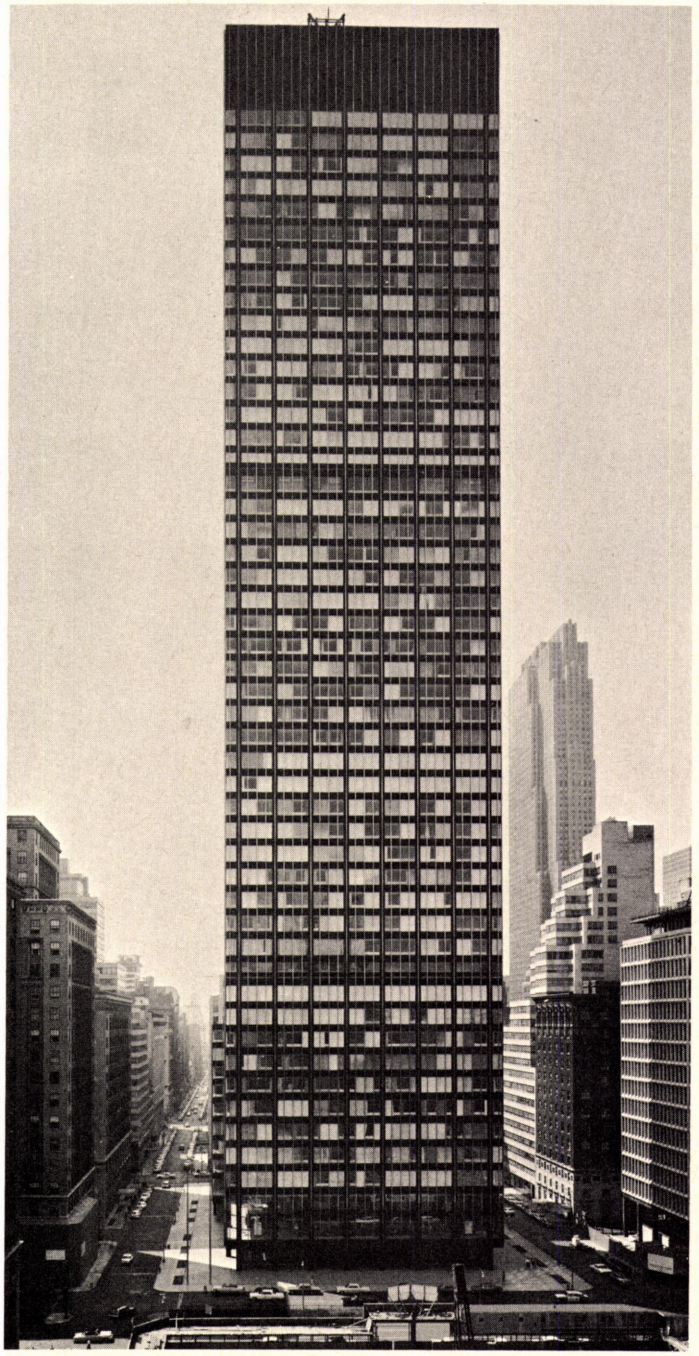
What of craftsmanship? Craftsmanship as we know it may be past, but surely architects are already inventing a new craftsmanship with the new technology.

Many other questions arise—accompanied by concern as to whether or not the rapid increase in the accretion of knowledge and the unprecedented rate at which new and wondrous machines and systems appear are a true indication of any real progress.

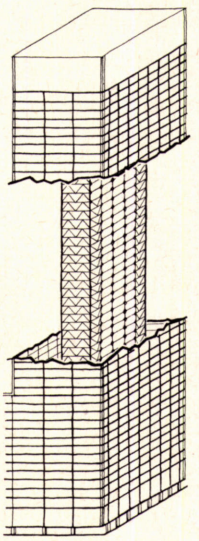
But at any rate, if our architecture is to mirror the civilization which produced it, then architects must lead the effort to understand and respond to the massive changes that are now under way.

*—James S. Hornbeck*

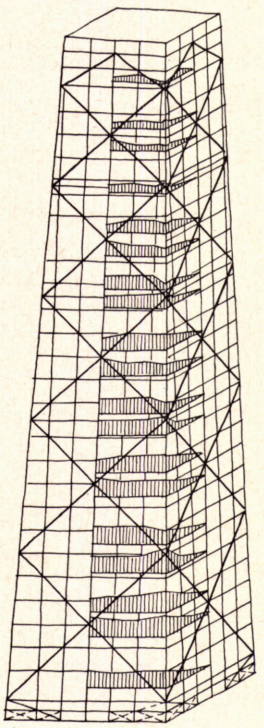




Norman R. C. McGrath



Wind bracing in the 53-story Union Carbide Building typifies that of the slender, curtain-wall-clad tower. Since the skin and partitions contribute little stiffness, all wind resistance must be put in the steel frame. Diagonal bracing is used in the core where it will not obstruct circulation. Rigid moment-resisting connections are also employed in the core and in all of the exterior portion of the frame. Union Carbide Building, New York. Architects: Skidmore, Owings & Merrill; engineers: Weiskopf & Pickworth.



Exterior walls are the sole wind-resisting elements in the 100-story John Hancock Building and the twin 110-story towers of the World Trade Center. In the first case, diagonals make the walls extremely stiff, so the building performs like a monolithic, cantilevered tube (see stress diagram, right). In the second case, the walls are made rigid by a series of very closely spaced columns which, together with spandrel beams, work as Vierendeel trusses. In both cases the cores carry gravity loads only and the floors act as diaphragms to transfer wind loads to the walls parallel to the wind. John Hancock Building, Chicago. Architects and engineers: Skidmore, Owings & Merrill. World Trade Center, New York. Architects: Minoru Yamasaki & Associates; engineers: Worthington, Skilling, Helle & Jackson.

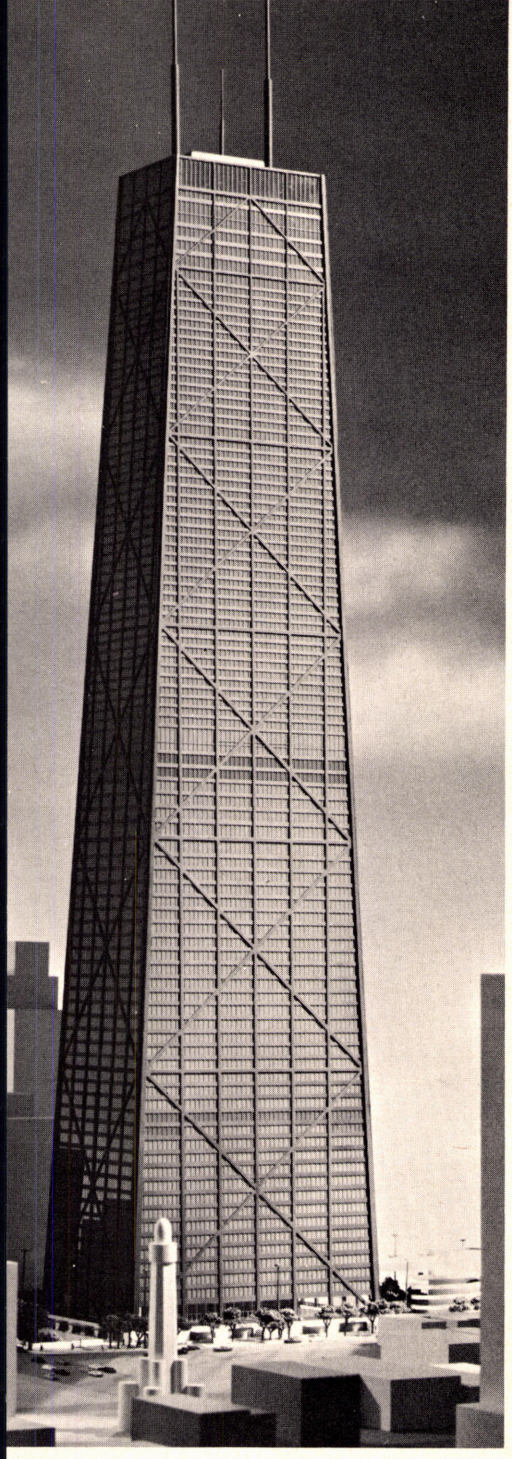
## New structural systems and analysis make a whole new concept in skyscraper design

Seventy-five years ago, the most revolutionary and dramatic change in building structures was the development of tall buildings, and today—with great pressure for more space on scarce and valuable center-city land—the ultra-tall building is the challenge. The important engineering developments are in the handling of wind bracing for these skycrapers.

Once again the structural design of the exterior wall has taken on major significance, but for entirely different reasons than in the days of masonry bearing walls and cast-iron facades. The structural frame for today's 100-story tower simply cannot be designed as it would be for a 50-story building. Nor can it be designed as was the 86-story Empire State Building, which has only 20-foot column spacings and is heavily clad in masonry. (The limestone exterior makes the Empire State more than four times as stiff as the steel frame alone.) The problem is that as buildings have grown taller and clear spans longer, wind bracing has become considerably more expensive and encroached more and more on interior space. In fact, when a tall building has clear spans of over 50 feet, conventional wind bracing borders on being impractical.

For this reason, architects and engineers have perceived the functional and economic logic of once again making the exterior wall a bearing wall, but built of modern materials and with the benefit of modern methods of analysis.

Engineers of the early skyscrapers worried about whether foundations would settle, whether corrosion of steel would weaken the framing, or even whether "atomic changes" might occur during varying loadings. But the tall masonry clad skyscrapers swayed very little. Even the Empire State Building is

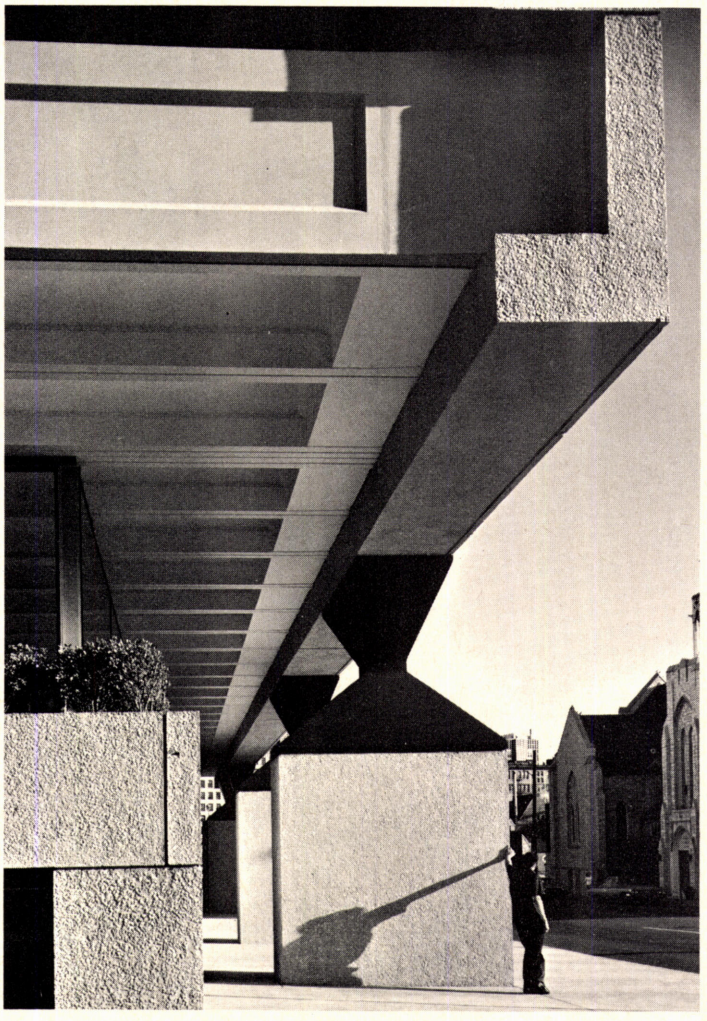


## possible and practical for 100 stories or more

reported to have a maximum deflection of three inches.

But shed of the stiffening cloak of masonry, today's tall steel-framed towers must provide more stiffness in the framing itself. In fact, engineers are concerned lest some structures be too flexible, which could lead to partition cracking and possible "groaning" of the frame which might be psychologically disturbing to the occupants of apartment buildings or hotels. Today's tall building structures resist wind loads by diagonal bracing, by rigid moment connections, or by a combination of the two. Actually, until now, bracing has changed very little conceptually, although considerable sophistication has developed in structural analysis, in the design of wind connections, and in the "tuning up" of a structure during design to make sure that the various elements of the wind-resisting structure are equally rigid.

But when you have the problem of designing the structure for a 100-story building with clear spans of 50 to 60 feet, a new approach has to be taken with wind bracing. In the boldest of the new skyscraper designs—the 110-story World Trade Center towers and the 100-story John Hancock Building—the sole wind-resisting elements are the exterior walls, giving rise to new forms of architectural expression. These buildings behave like tall cantilevered boxes: the windward wall is in tension; the leeward in compression and the side walls in shear. The structural frames for both of these buildings will be sufficiently stiff to preclude racking problems, but the designers have undertaken considerable investigation to assure that building movement will not—as it has been in buildings of much lesser heights—be disturbing to occupants.



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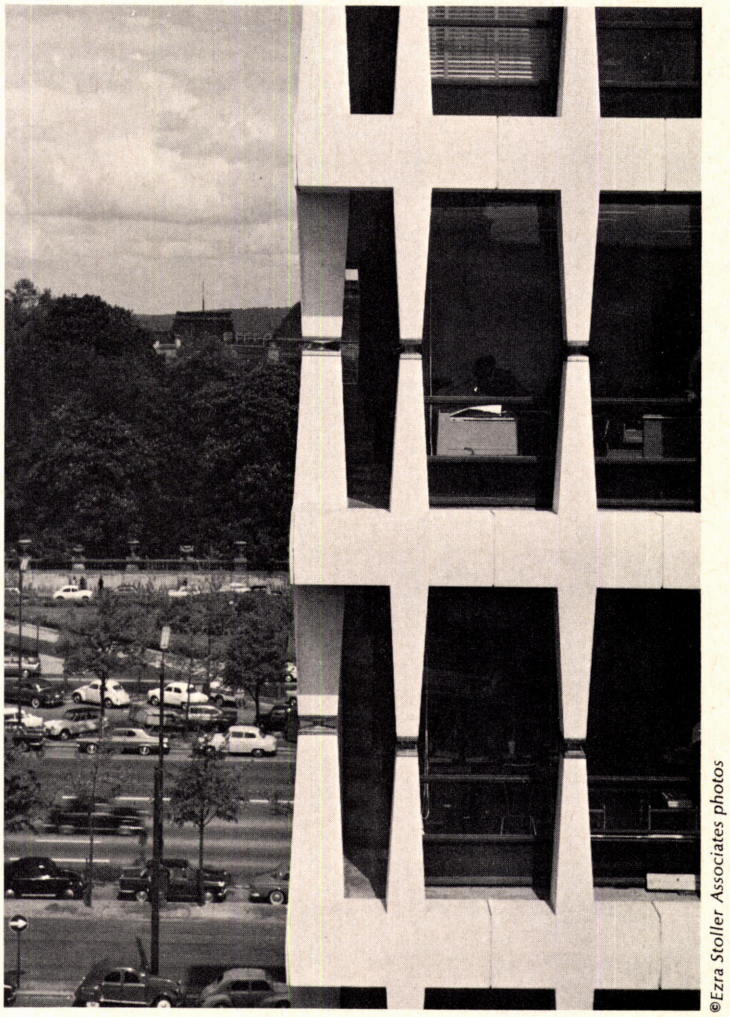

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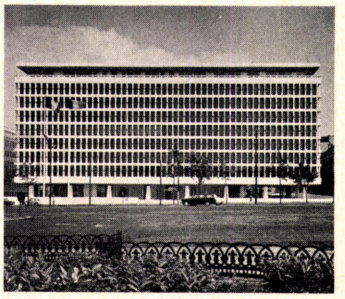
Illustrative of the wide variety of forms the contemporary bearing wall can take are the poured-in-place wall of the American Republic Insurance Company headquarters in Des Moines, above, and the precast grid of Banque Lambert in Brussels, right. In the first example, 98-foot precast T-girders are supported by notches of the wall, which tapers from 21 inches at the top to four feet at the bottom. The core area divides the floor into two 90- by 60-foot column-free spaces. A partition behind the wall blocks off a volume from top to bottom which acts as an air plenum. In Banque Lambert, special bearing plates between the precast elements work in both compression and shear. Both of these buildings are by Skidmore, Owings & Merrill, New York, with structural engineering by Paul Weidlinger.



## The demand for bigger spans has brought back the bearing wall and also led to practical

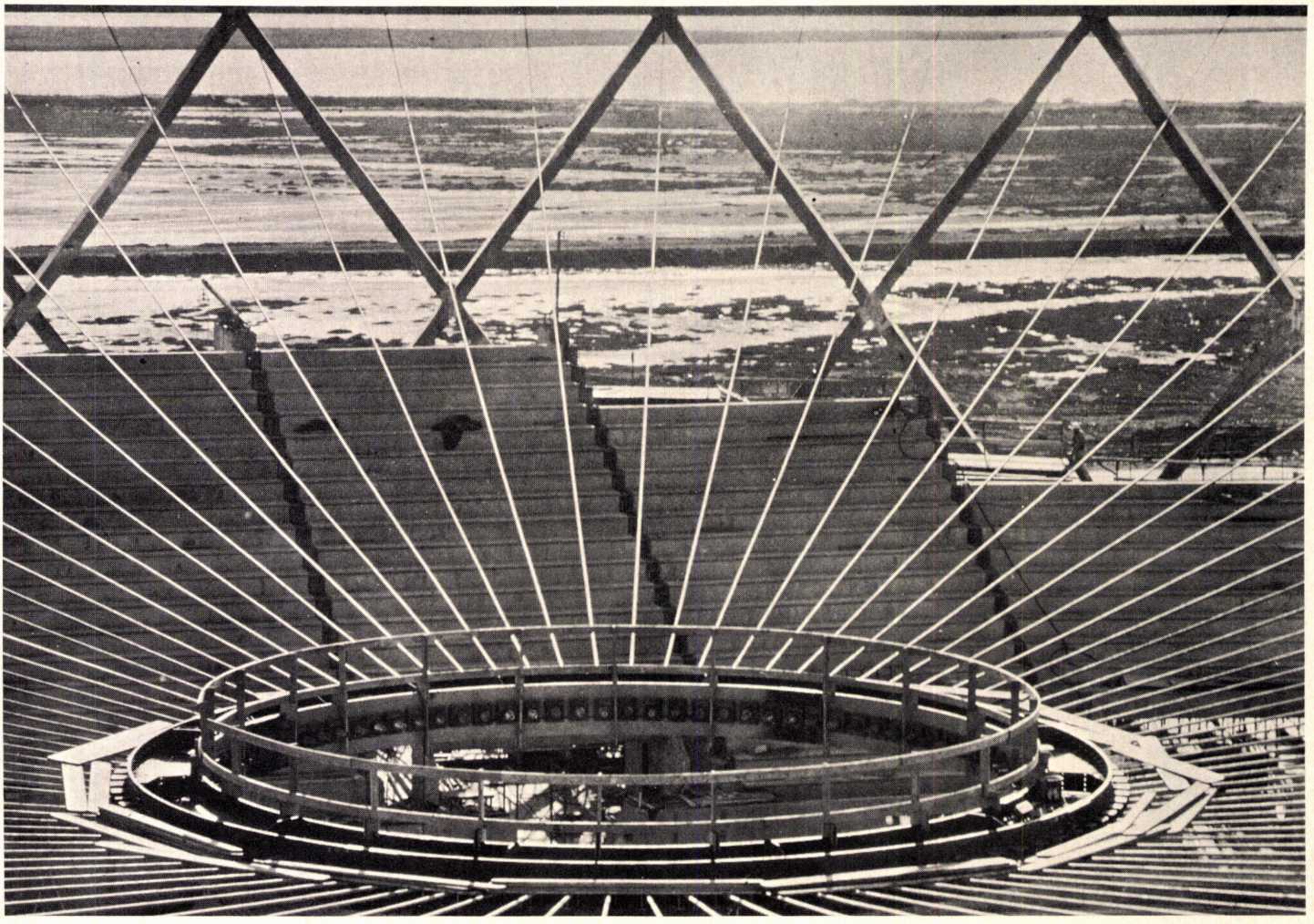
The modern multi-story bearing wall resembles the bearing wall of 75 years ago in only one basic way—carrying a large share of the floor loads down to the foundation. Otherwise, it is considerably thinner, works differently as a structure, and sometimes does double duty by providing a cavity for distributing conditioned air. The obvious trend is for exterior wall elements to perform more functions more efficiently.

The modern bearing wall, in one of its manifestations, is characterized by closely-spaced exterior columns giving a finely-grained structural scale.* This is in contrast to the much wider spacings of conventional framed bays based mainly on a module established by office sizes.

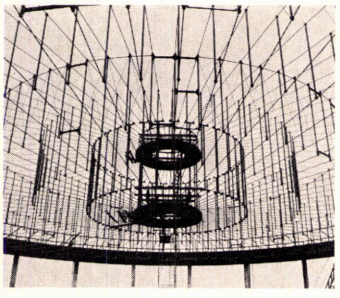
The modern bearing wall may also take the form of masonry or monolithic concrete exterior walls, cores and partitions. For example, the multi-story brick bearing wall—which had not been seen since Chicago's 17-story Monadnock building—has come back slimmed down from feet to inches. This is possible because the new masonry bearing wall is designed to take wind loads in shear—which it does well—rather than overturning. Engineering calculations show that a 25-story brick bearing-wall building can safely withstand wind and gravity loads with walls only 8 inches thick and 15 feet apart appropriate for apartments and dormitories.

In all of these new approaches, there are design as well as engineering advantages: closely-spaced columns offer convenient modules for partitioning and can serve as mullions; deep reveals provide sunshading.

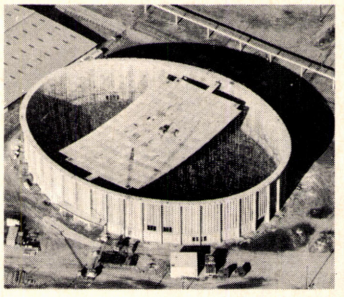
*While the World Trade Center and John Hancock Building exterior walls are bearing walls, in a sense, their design for wind poses problems of a much different nature and magnitude than for the bearing walls in buildings of much lesser height.



Ron Partridge



A great deal of engineering sophistication is built into the modern cable roof. In the example above loads are carried to the ground by a lightweight X-frame which also prevents bending in the compression ring when there are unbalanced loads. The Oakland-Alameda Coliseum by Skidmore, Owings & Merrill, San Francisco; roof consultant, Ammann & Whitney. Struts in the cable roof, left, together with upper and lower cables at different tensions form a self-dampening roof to suppress flutter. Utica Auditorium, Gehron & Seltzer, architects; Lev Zetlin, structural engineer. Flutter is prevented in the 382- by 302-foot roof, at right, by prestressing of the elliptical dish in two directions. A computer was essential to the design. Jack Scott & Associates, architects; T. Y. Lin & Associates, roof consultants.

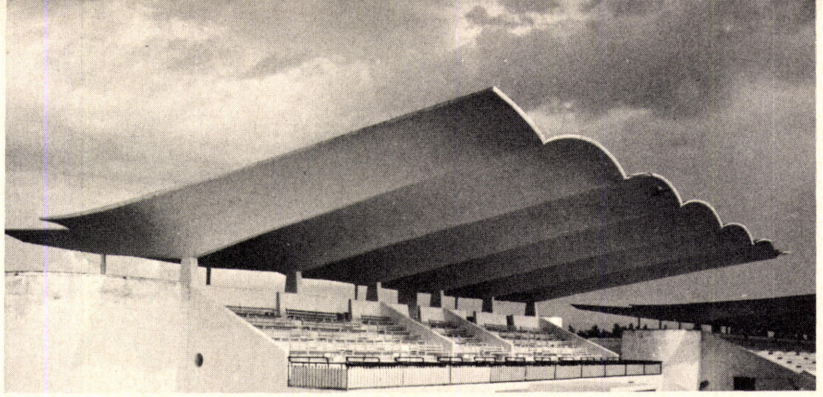


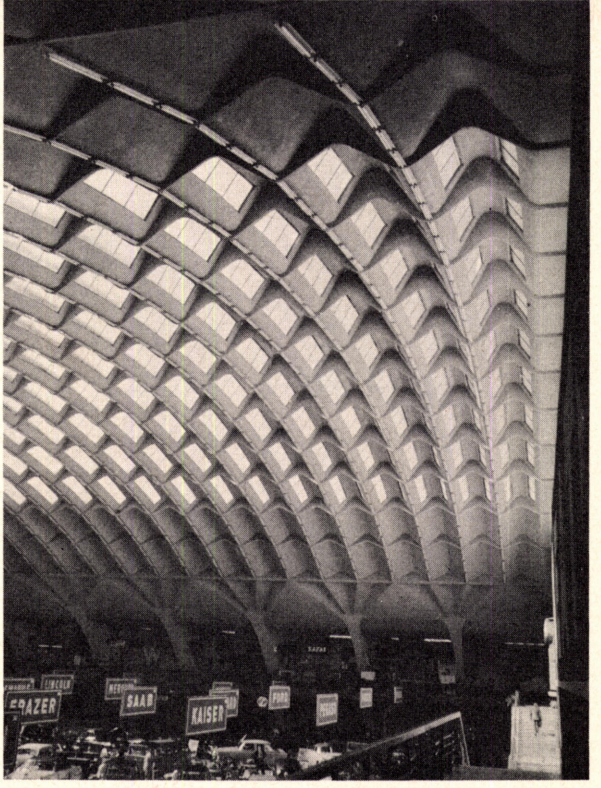
Ray Jacoby

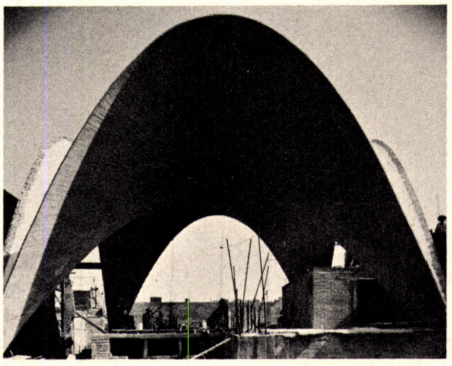
## solutions for bold cable structures

Those brave-new-world structures to shield whole cities from the elements remain out of practical reach. But posed more and more often as a real problem are extra-long-span structures to house huge crowds for exhibitions, extravaganzas and sports events.

Ever since the suspension bridge, designers have been excited by the huge-span potential of tension structures, but thwarted in building application until practical techniques were developed to give stiffness to limp cables. Although suspending cables in mid-air may seem uncomplicated, the strange and potentially devastating effects of unbalanced loads such as wind uplift, snow, and wind-induced vibration kept the cable-suspended roof on the sketch pad until the fifties. The first few cable-supported roofs relied either on weight to load the cables or guys to restrain them. Though daring and ingenious, these structures have been improved upon by more sophisticated techniques of internal damping and various approaches to prestressing. Thus more exotic structural systems and methods of analysis have evolved for the cable roof. Still further, the nature of compression ring forces have been given clear structural recognition and architectural expression in a 420-foot-diameter cable-supported roof in Oakland-Alameda, California (photo, top). The X-frame columns are extremely light since the pull of the cables is taken entirely by the compression ring at the perimeter. But the X-frame is extremely stiff, in effect a circular shell, and unbalanced loads imposed by wind forces are resisted by the X-frame, making possible a very much thinner compression ring than if the columns had been vertical. A glass curtain wall will hang behind the X-frame columns.

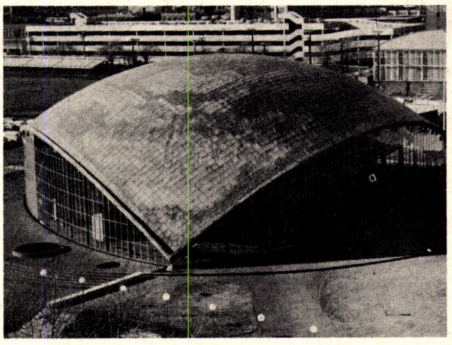




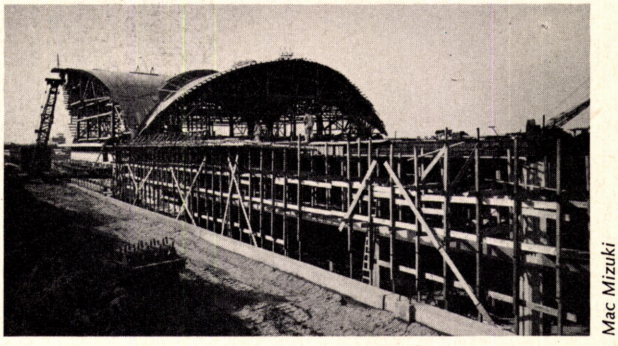


Erwin Lang

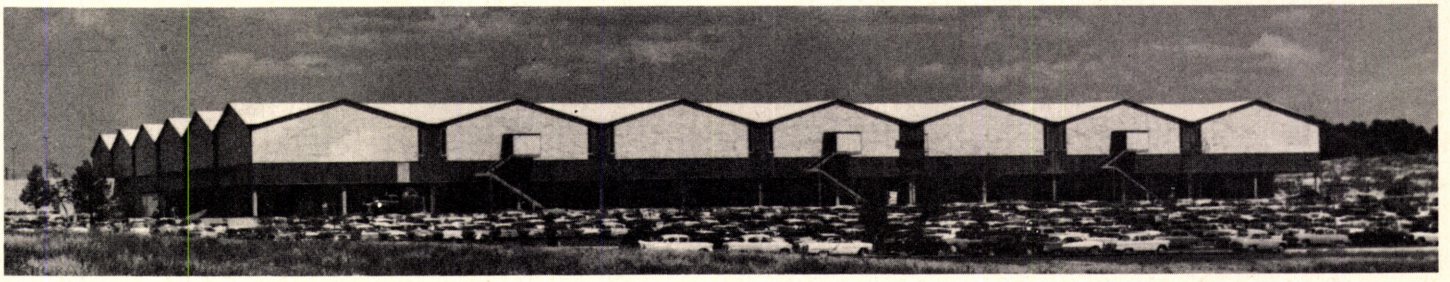
Inspiration for shell architecture in the U.S. undoubtedly came from some of the classic structures by Nervi, Torroja and Candela. Nervi was a pioneer in the use of prefabricated units for shells as in the Turin Exhibition Building, right. One of the best known of Torroja's works is the race course stand roof at Madrid. The ubiquitous hyperbolic paraboloid of Felix Candela is recognized here in the familiar saddle shape. Two intersecting sections form shells for the Church of San Antonio de las Huertas.



Included among the early concrete thin shells of the U. S. are the Kresge Auditorium at M.I.T., left, by Eero Saarinen & Associates; Ammann & Whitney, structural engineers; the Lambert-St. Louis Airport Terminal, right, by Hellmuth, Yamasaki & Leinweber, architects; shell consultants, Roberts & Schaefer, structural engineer Wm. C. E. Becker; and the Texas Instruments Semiconductor plant, below, by O'Neil Ford and Richard Colley, architects; Felix Candela, shell consultant.



Mac Mizuki

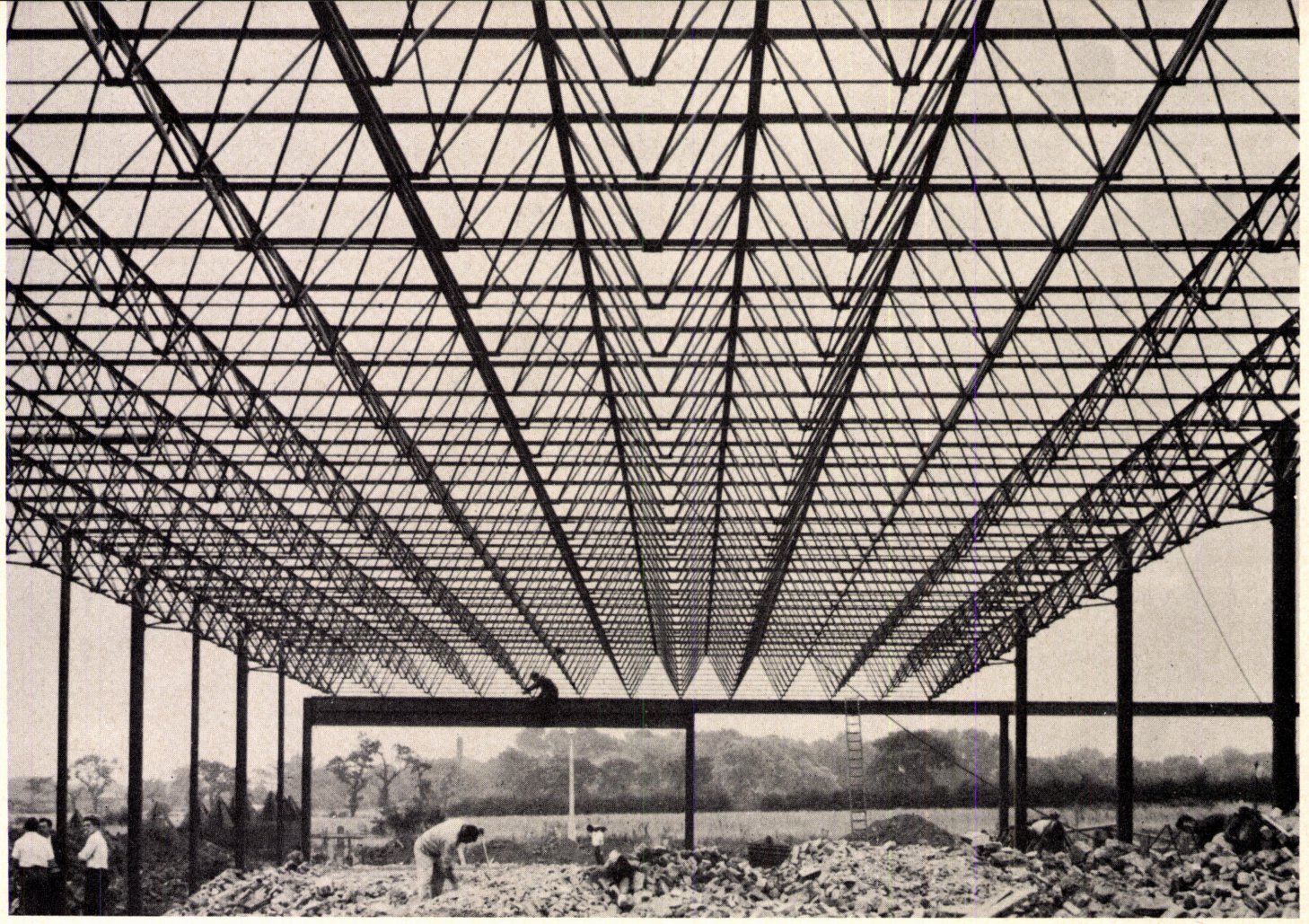


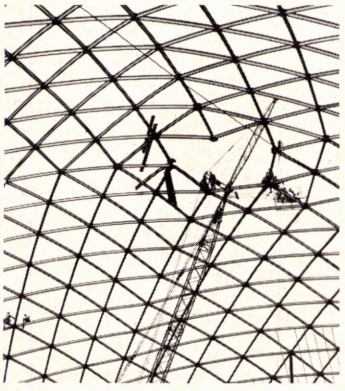
## Out of the theory class into the realistic: thin-shell structures in limitless shapes and

Chances are good that the thin shell will soon be applied with more architectural relevance than it has been on occasion in the past decade. While spheres, cylinders, and hyperbolic paraboloids have been sliced in many ways to yield domes, barrels, umbrellas and saddles, the pervasiveness of shell geometry has no doubt lessened architects' all-out enthusiasm. Besides enforcing a certain planning rigidity of its own, the thin shell also brought with it new problems to be solved in lighting, air distribution, acoustics, insulation and roofing. Further, shells can be tricky to design—for unbalanced snow loads and for unfavorable types of edge support which throw bending stresses into shell edges. This is so even though the mathematics are now well understood and can be handled without much difficulty. Indeed, some architecturally noteworthy shells are not too efficient in theoretical terms.

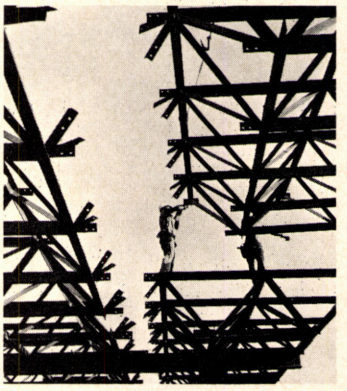
Nonetheless, the thin shell has obvious intellectual appeal, spanning big distances more through direct stresses (compression in concrete, tension in the reinforcement) than in bending, as in a beam or slab. And shells are competitive —or so many would not have been built already. Various approaches to simplifying formwork—putting it on wheels, for example, and using jacks to raise and lower forms—have been tried to cut costs.

The earliest of the thin shells, built in Europe starting in 1925, and many of the classic types in the thirties, were usually for utilitarian purposes—to house factories, markets, and stored materials. Although some barrel shells were constructed here in the thirties for industrial buildings, postwar architectural interest obviously stemmed from exposure to the exciting works of Nervi and Torroja, and later, Candela.





A principal advantage of the lightweight tubular space frame, above, made in England, is speed of construction. Prefabricated tubular steel pyramids, about three-feet deep are bolted together along their common edges, and apexes are interconnected by tie bars. Such slender elements are possible with spans in the range of 40 to 50 feet. (A similar system is marketed here.) But the larger space frames of 200- to 300-foot spans are usually framed from steel shapes, photo, right, with the depth of the space frame running 10 to 15 feet. Connections may be a combination of shop welding and field bolting, or all bolting, with welded joints increasing frame efficiency. The braced dome of structural steel sections offers a very simple structure using mostly repetitive sizes of members. The dome at left spans 300 feet and has a rise of 105 feet. This geodesic dome was designed by Synergetics, Inc. for Carborundum Company in Niagara Falls, N. Y. The space frame, right, was used for the Upjohn Company office building in Kalamazoo: Skidmore, Owings & Merrill, Chicago, architects-engineers.



## space frames with almost no limit on size

Not too many years ago, about the only manifestations of three-dimensional framed-space structures were tooth-pick-like models, and, in odd contrast, demonstration hardware of highly-complicated connectors. But today, linear space frames, some over 300-foot clear span, and braced domes, one over 600 feet, are in useful service. Paradoxically, however, as analytical methods have evolved and connection techniques been refined in order to further trim the poundage of structural members, the over-all cost has not come down as much as hoped, especially for linear space frames. The problem still seems to lie, as it did in the very beginning, with the cost of connections and erection. When the span for a linear space frame is several hundred feet, a welded connection will allow the least material in web and chord members. But bids for welded linear space frames come in too high for comfort, most engineers report. Even when the frame is designed around bolted connections, prices are quoted conservatively because of various unknowns due to the novelty of design. Indeed, it has not been unusual for theoretical efficiency to be compromised to connections which are less costly and which simplify the construction process. Some of the lighter space frames use proprietary connectors.

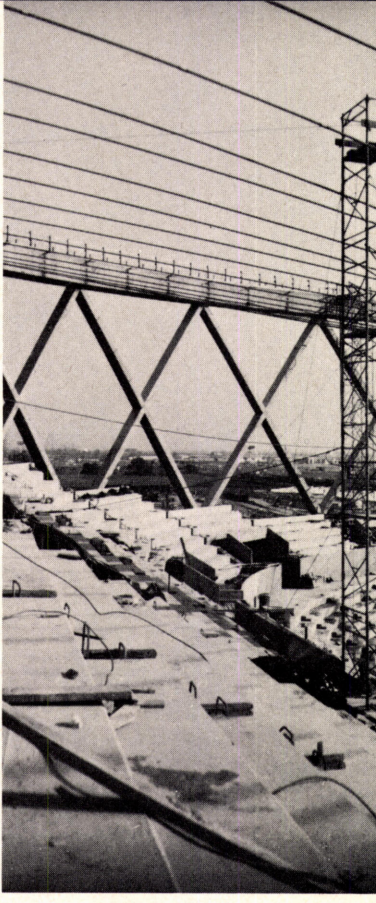
In the past decade the geodesic geometry of R. Buckminster Fuller has shifted from the military radome and the classroom experiment to commercial application. Quite a few domes have been done for auditoriums, and several for industrial use. One type based on the octahedron is very easy to erect: sections of the dome are fastened together like a skirt around a central mast; more sections are added as the finished portion is hauled up the mast.

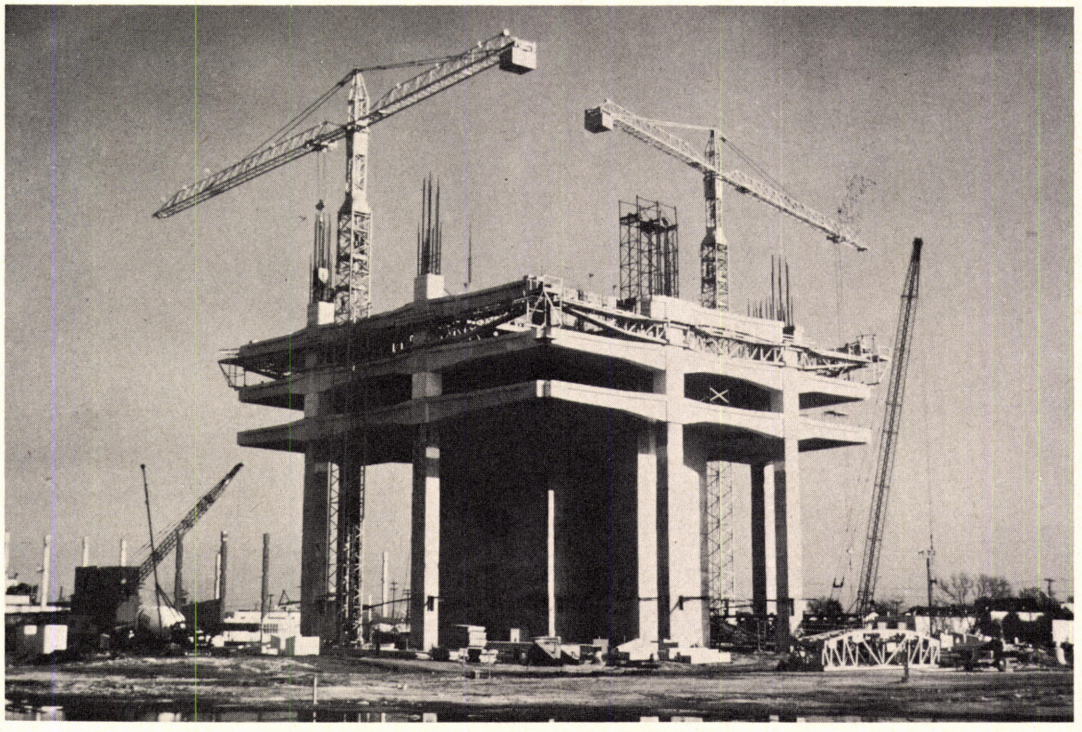
Werner Stoy

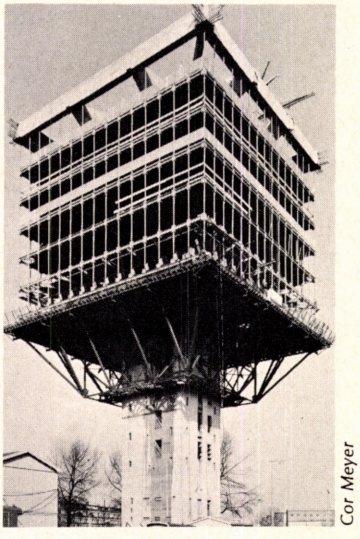
Left: an entire aluminum goedesic dome is erected by means of a tall guyed mast. As the dome is hauled up the mast, panels are added in ever-enlarging circles. This is the original Kaiser dome in Honolulu.

Right: note the exceptional construction simplicity of the suspension roof for Oakland-Alameda Coliseum. Thin precast ribs which will support the roof deck and a mechanical canopy are set in position by a movable tower crane.

Below: tower cranes lift precast sections for the cantilevered girders and concrete for pouring into precast boxes surrounding column reinforcement of the Gulf Life Insurance Company Building by Welton Beckett & Associates. Steel strongbacks support precast sections until they are post-tensioned. Structural engineer for the 27-story building is Richard Bradshaw.







Cor Meyer

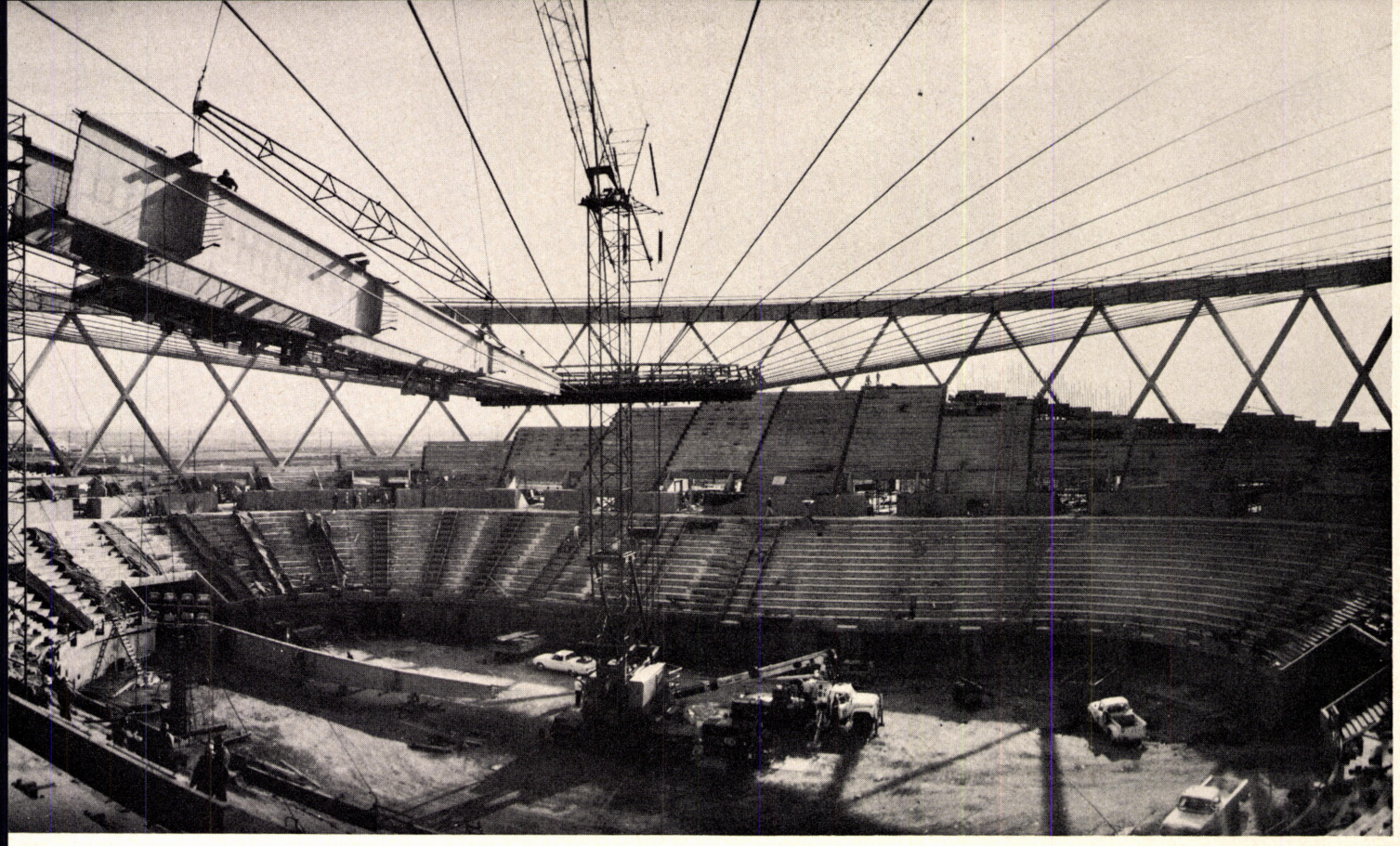
## New lower-cost, mechanized building techniques and the desire for design flexibility:

While there is of course plenty of room for more improvement, considerable progress has been made in mechanizing construction processes. Tower and climbing cranes; slip-forming, drop-forming and lift-slab; on-site and off-site precasting —all have played a part not just in cutting costs and reducing on-site labor, but in changing the face of architecture. Gone from many construction sites is the forest of staging lumber, which involves so much costly hand labor. Serious thought is being given in this country to jacking techniques (tried first in England) which permit a multi-story building to be constructed all at ground level, top floor first, with successive stories slipped in as the previous story is pushed up, so that the whole building is put together at ground level.

More and more often, new engineering concepts are fostering new approaches to the construction of buildings. For example, the spider-web-like system of cables of a suspension roof provides ready-made skyhooks for roof panels or structure. The design of high-rise buildings for use of poured-in-place and precast concrete stimulated the application of climbing and tower cranes.

Some of the new construction methods used here borrow from European experience—particularly the use of tower cranes which is one of the hallmarks of industrialized, prefabricated housing in Europe and England. Slip-forming, limited 20 years ago to chimneys and silos in Europe, got off to a slow start in the U.S. 10 years ago. But the growing use of load-bearing, shear-resisting concrete cores in multi-story-building design makes slip-forming a natural because of the simplicity of forms and faster rate of construction.

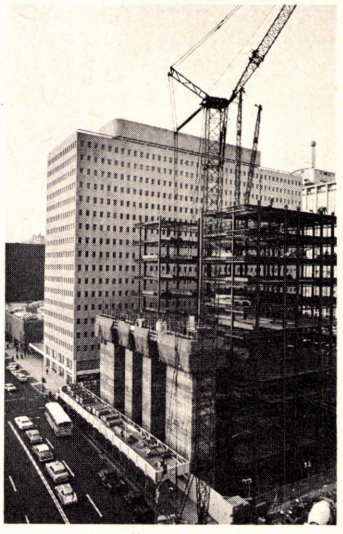
Labor costs have been rising at a much faster rate than

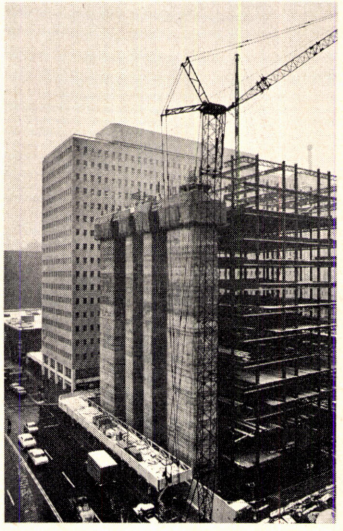


Moulin Studios

Left: still another approach to cutting the cost of erecting floors in multi-story buildings is the drop-form technique developed in Europe and used in the U.S. for the Lincoln Life Insurance building in Louisville. The platform drops down the core after the floor is erected and hung from a cantilevered roof girder.

Right: slip-forms slide skyward to mold four concrete cores for a 21-story IBM building in Philadelphia by Vincent Kling. Pouring is continuous as hydraulic jacks pull the forms up by their bootstraps. Again the tower crane is ideally suited to the construction process. Engineers are Jackson & Moreland.





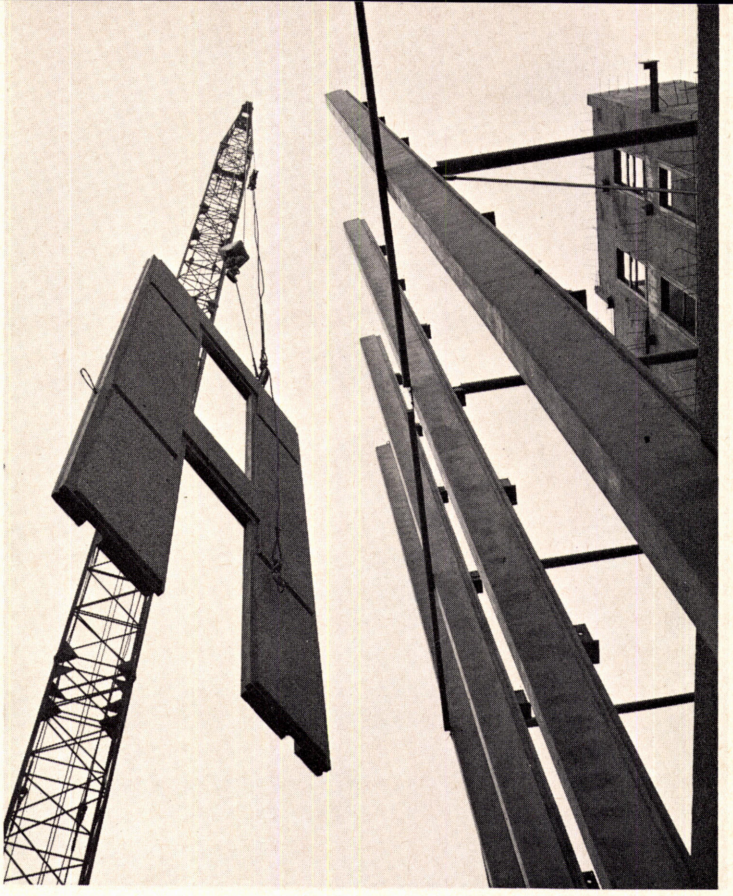
*Lawrence S. Williams, Inc. photos*

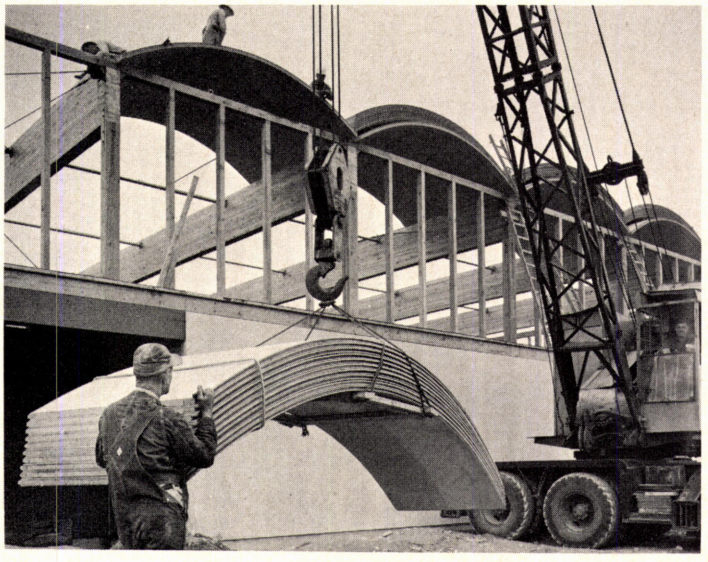
## a chicken-and-egg relationship

material costs, so the move from hammer-and-shovel operations has to continue to accelerate. But at the same time a prudent entrepreneur introducing any new system will make sure that his system is in tune with contractor skills and equipment and labor practices. Packaged bathrooms are not uncommon in European industrialized housing, and a packaged bathroom of plastic will be used in the 158 housing units of Habitat 67 being built in conjunction with Expo 67 in Montreal—but no one in this country has had any meaningful success with such a program. The construction industry is still geared more to on-site than factory operations; construction capital has been invested in site equipment which can be moved anywhere—rather than highly mechanized, but static, factory production lines.

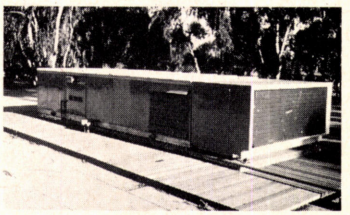
While Europeans have led the way in the industrialization of high-rise housing, their architects, unfamiliar with building practices in the States, are immediately impressed on their first visit here with the fantastic number of standard products in the American designer's lexicon — windows and wall panels, partitions and ceiling systems, cellular floors, lighting fixtures and air-conditioning units, and so on goes the staggering list.

Implicit in many of the new building systems is a higher degree of dimensional precision. The day has waned when a few more chunks of masonry can be added to make corners meet. Too many components have to come together in one spot with little room for dimensional variation. Highly sophisticated structures depend on precise construction for proper behavior under load—and the building techniques continue to emerge to handle these new standards.





The trend to larger and more systems-oriented components is involving a wide variety of materials and equipment. For example, the time-honored long-span steel joist performs a more sophisticated role in the S.C.S.D. components program than it has in simple work-a-day structures. First, in S.C.S.D., the joist comes with more pieces in a conveniently shipped package — two joists hinged to two sections of steel decking, folded flat. And the steel roof decking is designed to work compositely with the long-span joists, to resist earthquake effects. In concrete components, many standard shapes have been developed, but at the same time the nature of the construction process allows custom-designed components for individual buildings. The lumber industry takes advantage of water-resistant synthetic adhesives to produce engineered plywood components and laminated beams. The plywood components range from stress-skin panels to box girders, with production being supervised by a quality control organization. In the equipment field, air-conditioning packages are coming in larger and larger capacities complete with all necessary controls. In this way field labor costs can be reduced and errors in installation minimized.



## Components: the goal is now flexibility and compatibility

The search now is in earnest for more components that can be combined into integrated structural, mechanical, lighting and acoustical systems to suit the special needs of different building types (especially those in which components are likely to be repeated often)—but still not stultify architectural design. The most-mentioned incentive to the manufacturer to develop and tool up to produce these components is a guaranteed minimum building volume. This mass purchasing concept has worked in England for their prefabricated-school program, and apparently has met with success in California's School Construction Systems Development project. The approach, to be fully successful, requires careful delineation of performance requirements, with sound technical as well as architectural basis. For example, besides architectural compatibility, the performance specifications should anticipate quality and economy of operation of mechanical and electrical components. Basic, of course, to the rational development of the performance specifications is the determination of what degree of flexibility in range of sizes and alternative components can literally be justified. The hazards of asking for too much flexibility are higher costs and compromises in optimum operating characteristics of mechanical and electrical equipment.

The technical success of England's prefabricated school program, the most familiar portion being known as C.L.A.S.P., has been attributed to the continual refinement of building components by a large group of staff architects who were able to follow through on problems arising in the field, compare the relative success of various proprietary approaches, and provide feedback information to the various manufacturers.

## Needed: still closer ties between architect, engineer, and manufacturer

Improvement in the physical performance of building components can advance much faster if the communication between architects and engineers and product manufacturers is more intensive and their collaboration more effective. The interaction of the vast array of new systems, equipment and materials poses at once a host of new opportunities, but also unresolved problems. It is apparent that a greatly increased exchange of ideas and information is called for on the merits of existing products and on future needs. More and better technical data from the manufacturer and feedback of use experience from the architect and engineer are essential to the effort. More attention must be paid to the gray areas of problems not properly defined and deleterious phenomena unrecognized. More must be learned about user needs in the environmental areas of heat, light and sound. More data is needed on how buildings perform in such diverse areas as weathering, energy consumption and owner satisfaction.

The basis for most building design problems today is the interaction of components and systems. In the past these could be pretty much independent of one another—structure, heating, lighting, enclosure—but no longer. Some of these interactions are fairly obvious—the influence of considerably higher lighting levels on air conditioning for example. In this case engineers have turned a potential liability into a positive feature by reclaiming the waste heat for reuse. Other areas involve complex factors less well defined, particularly those involving effects of air temperature, sun and wind. The massive building of the past saved the architect from many problems: movement was small, outdoor cyclical temperature effects were smoothed out by mass, deep reveals provided built-in sunshading, heavy partitions braced buildings and shut out unwanted noise. When the lightweight skin came along, traditional glazing methods were found unsuitable, and in response to this difficulty, manufacturers developed new glazing compounds, gaskets and panel sealants. But while these new materials are flexible, it has been difficult to anticipate how much movement should be provided for in the use of large areas of glass and large building panels.

Nowhere are the interaction effects noticed as much as in the systems for environmental control. For example, the nature of the shell may fix what kind of air-conditioning system is possible. If the wall has low heat resistance and responds very quickly to changes in the weather, then the perimeter air-conditioning system has to follow in kind. Also, air conditioning and sound are related in several ways: Too much whoosh from the diffusers may be annoying, but occasionally a whisper of air may be useful as masking noise to perserve privacy. On the other hand, cross-connections of duct-work can spoil privacy. And while a number of these parameters are solved in the planning stage, obviously they are product design parameters as well.

Radical changes in building function and space use, building structures, environmental control, the effect of materials being pushed to their physical limits, the proliferation of new materials, and changes in construction practices have all contributed to uncertainties in the conceptual use of materials, in detailing and specification, and in the testing to prove performance of products.

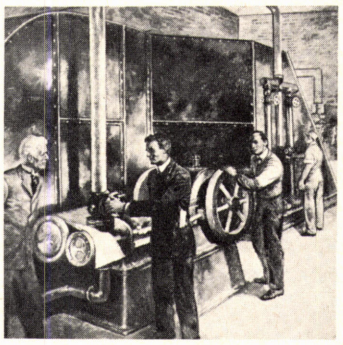
Roofing is a good case in point. In industrial buildings, the trend to lightweight, flexible structures—acres of flat area, and the occurrence of tremendous temperature differentials, inside to out, presented a whole new set of problems for the built-up roof. Fortunately, the quantitative effects of these factors are being determined through laboratory and field testing, leading to new approaches to roofing design.

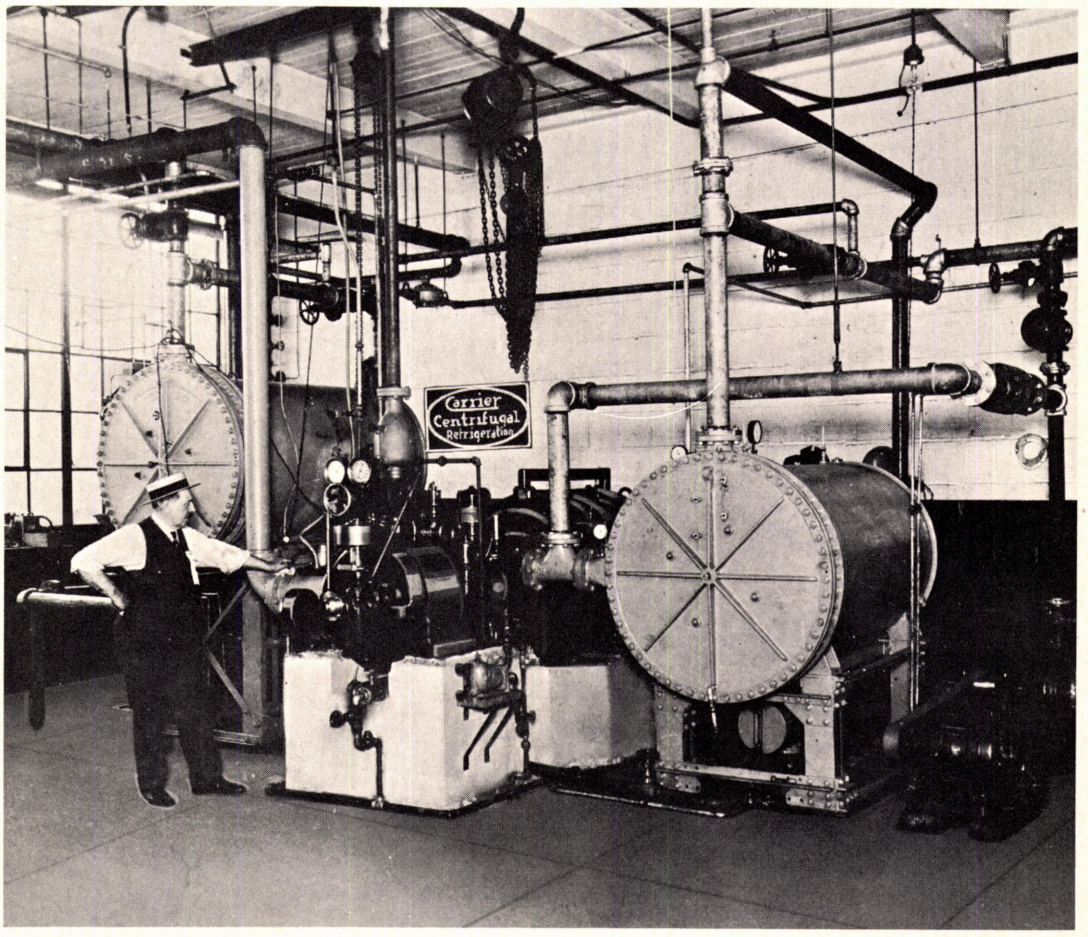
Movement of buildings and their components due to wind, sun and temperature change has challenged building designers and product manufacturers as much as any of the physical phenomena at work on buildings. On occasion designers have been tempted to push materials beyond realistic limits, have not taken into account the nature of on-site installation procedures, or have not realized that allowance for movement had to be provided. For example, the design of high-rise structures with exposed-concrete columns must allow for changing lengths of these columns as temperature changes; otherwise partitions and slabs may crack.

Much research is done within the building industry or in some way related to it dealing with products and systems. Less is conducted on environmental criteria and on natural hazards such as wind and fire. Obviously in some of these areas it would be helpful to have new information—new data or at least procedures directly related to building use. This is the case with wind effects on buildings. The design procedures now are based in large part on mathematical presumptions that much of the time do not represent actual conditions, especially in built-up areas. Even though weather bureau data could be more complete for developing wind-load values with more similitude to actual conditions, it still should be possible to work out values on a statistical basis which would give a more sound basis for wind loads on structures. But much more fundamental investigation is needed into the effect of gusts on windows, wall panels and roofs. While the effects of suction on the leeward side of buildings is generally recognized, the magnitude of these suction forces for buildings of various configurations and different surroundings cannot presently be precisely determined.

In other areas, new basic data and procedures are not as much needed as collection of use data and performance, and a prime example is mechanical systems. Testing and metering of existing installations could be of tremendous value in making improvements in system selection, control methods, response to changing loads, and energy usage. Probably the most nagging problem with mechanical systems is physical co-ordination and space utilization, which calls for a greater investment in design time and an earlier and more fruitful collaboration between architect and engineer. While mock-ups are frequently helpful in working out physical co-ordination or making modifications to improve appearance in architectural details and lighting, they are of little value in determining performance of mechanical systems, except in limited areas such as air-flow patterns and noise levels.

This kind of research—the kind needed in the face of the increasing complexity of building components, the complexity of the systems into which they must fit, and the rapid change in the concepts which give rise to new products and systems—requires a new kind of collaboration: not just architect and engineer, but architect, engineer, and the highest level of technical skill available in the industries that supply everything that goes into building. This has been a complex dialogue to set up, but it is gaining effectiveness. *—Robert E. Fischer*



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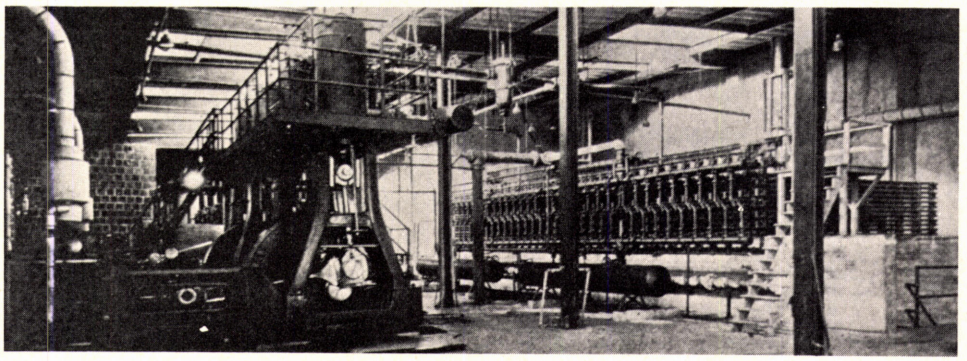
*photos courtesy Carrier Corp.*



## Mechanical and electrical systems are developing toward the total integration of the

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## Needed: still closer ties between architect, engineer, and manufacturer

Improvement in the physical performance of building components can advance much faster if the communication between architects and engineers and product manufacturers is more intensive and their collaboration more effective. The interaction of the vast array of new systems, equipment and materials poses at once a host of new opportunities, but also unresolved problems. It is apparent that a greatly increased exchange of ideas and information is called for on the merits of existing products and on future needs. More and better technical data from the manufacturer and feedback of use experience from the architect and engineer are essential to the effort. More attention must be paid to the gray areas of problems not properly defined and deleterious phenomena unrecognized. More must be learned about user needs in the environmental areas of heat, light and sound. More data is needed on how buildings perform in such diverse areas as weathering, energy consumption and owner satisfaction.

The basis for most building design problems today is the interaction of components and systems. In the past these could be pretty much independent of one another—structure, heating, lighting, enclosure—but no longer. Some of these interactions are fairly obvious—the influence of considerably higher lighting levels on air conditioning for example. In this case engineers have turned a potential liability into a positive feature by reclaiming the waste heat for reuse. Other areas involve complex factors less well defined, particularly those involving effects of air temperature, sun and wind. The massive building of the past saved the architect from many problems: movement was small, outdoor cyclical temperature effects were smoothed out by mass, deep reveals provided built-in sunshading, heavy partitions braced buildings and shut out unwanted noise. When the lightweight skin came along, traditional glazing methods were found unsuitable, and in response to this difficulty, manufacturers developed new glazing compounds, gaskets and panel sealants. But while these new materials are flexible, it has been difficult to anticipate how much movement should be provided for in the use of large areas of glass and large building panels.

Nowhere are the interaction effects noticed as much as in the systems for environmental control. For example, the nature of the shell may fix what kind of air-conditioning system is possible. If the wall has low heat resistance and responds very quickly to changes in the weather, then the perimeter air-conditioning system has to follow in kind. Also, air conditioning and sound are related in several ways: Too much whoosh from the diffusers may be annoying, but occasionally a whisper of air may be useful as masking noise to perserve privacy. On the other hand, cross-connections of duct-work can spoil privacy. And while a number of these parameters are solved in the planning stage, obviously they are product design parameters as well.

Radical changes in building function and space use, building structures, environmental control, the effect of materials being pushed to their physical limits, the proliferation of new materials, and changes in construction practices have all contributed to uncertainties in the conceptual use of materials, in detailing and specification, and in the testing to prove performance of products.

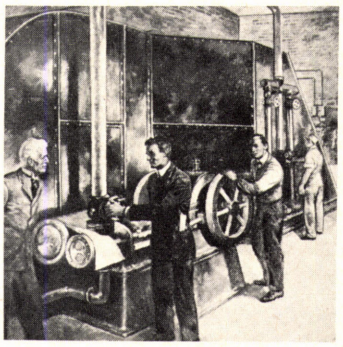
Roofing is a good case in point. In industrial buildings, the trend to lightweight, flexible structures—acres of flat area, and the occurrence of tremendous temperature differentials, inside to out, presented a whole new set of problems for the built-up roof. Fortunately, the quantitative effects of these factors are being determined through laboratory and field testing, leading to new approaches to roofing design.

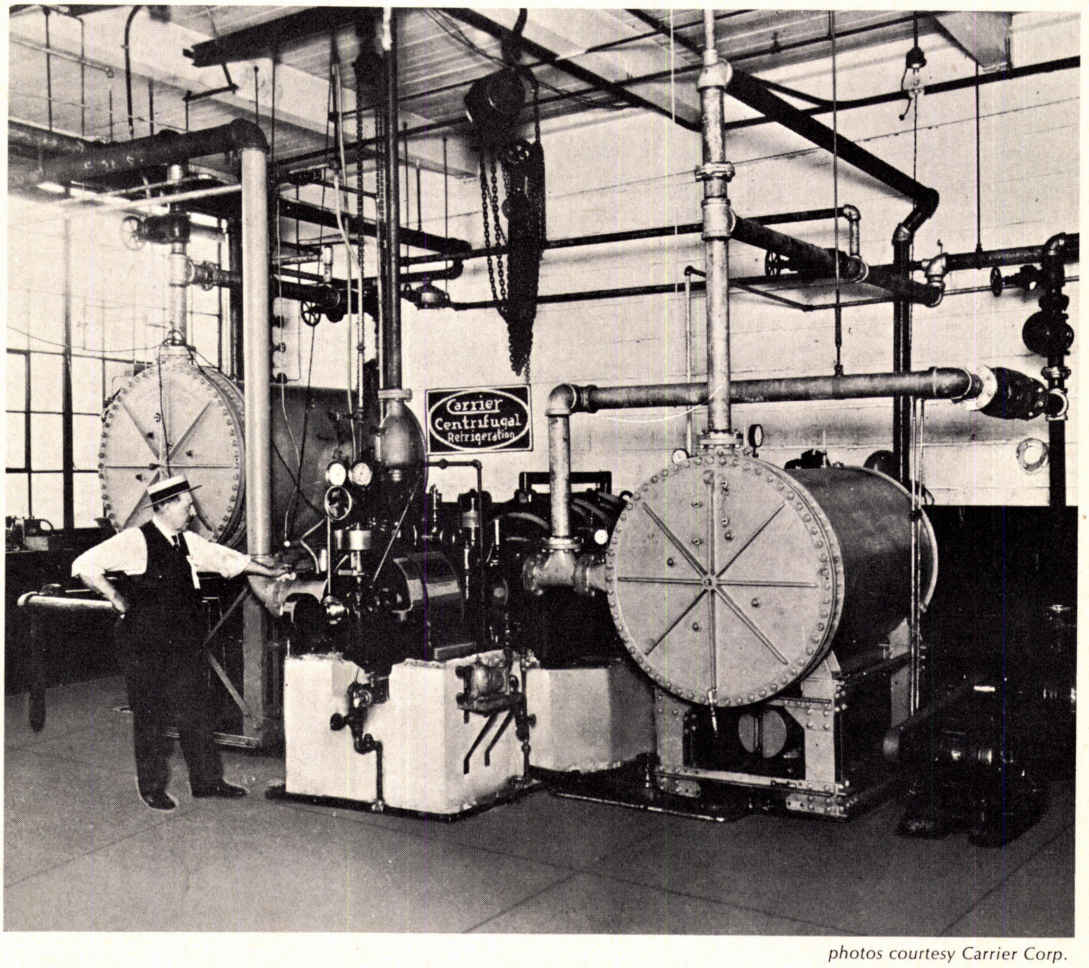
Movement of buildings and their components due to wind, sun and temperature change has challenged building designers and product manufacturers as much as any of the physical phenomena at work on buildings. On occasion designers have been tempted to push materials beyond realistic limits, have not taken into account the nature of on-site installation procedures, or have not realized that allowance for movement had to be provided. For example, the design of high-rise structures with exposed-concrete columns must allow for changing lengths of these columns as temperature changes; otherwise partitions and slabs may crack.

Much research is done within the building industry or in some way related to it dealing with products and systems. Less is conducted on environmental criteria and on natural hazards such as wind and fire. Obviously in some of these areas it would be helpful to have new information—new data or at least procedures directly related to building use. This is the case with wind effects on buildings. The design procedures now are based in large part on mathematical presumptions that much of the time do not represent actual conditions, especially in built-up areas. Even though weather bureau data could be more complete for developing wind-load values with more similitude to actual conditions, it still should be possible to work out values on a statistical basis which would give a more sound basis for wind loads on structures. But much more fundamental investigation is needed into the effect of gusts on windows, wall panels and roofs. While the effects of suction on the leeward side of buildings is generally recognized, the magnitude of these suction forces for buildings of various configurations and different surroundings cannot presently be precisely determined.

In other areas, new basic data and procedures are not as much needed as collection of use data and performance, and a prime example is mechanical systems. Testing and metering of existing installations could be of tremendous value in making improvements in system selection, control methods, response to changing loads, and energy usage. Probably the most nagging problem with mechanical systems is physical co-ordination and space utilization, which calls for a greater investment in design time and an earlier and more fruitful collaboration between architect and engineer. While mock-ups are frequently helpful in working out physical co-ordination or making modifications to improve appearance in architectural details and lighting, they are of little value in determining performance of mechanical systems, except in limited areas such as air-flow patterns and noise levels.

This kind of research—the kind needed in the face of the increasing complexity of building components, the complexity of the systems into which they must fit, and the rapid change in the concepts which give rise to new products and systems—requires a new kind of collaboration: not just architect and engineer, but architect, engineer, and the highest level of technical skill available in the industries that supply everything that goes into building. This has been a complex dialogue to set up, but it is gaining effectiveness. *—Robert E. Fischer*



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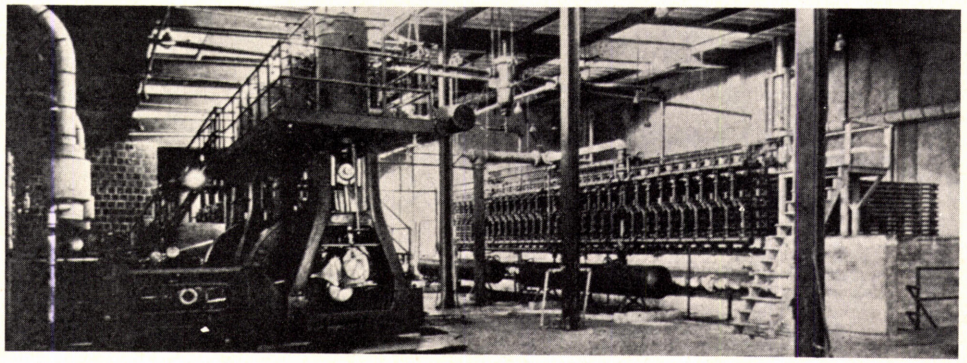

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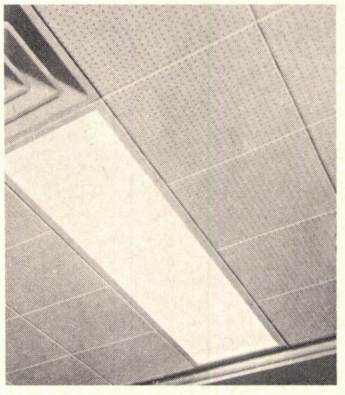
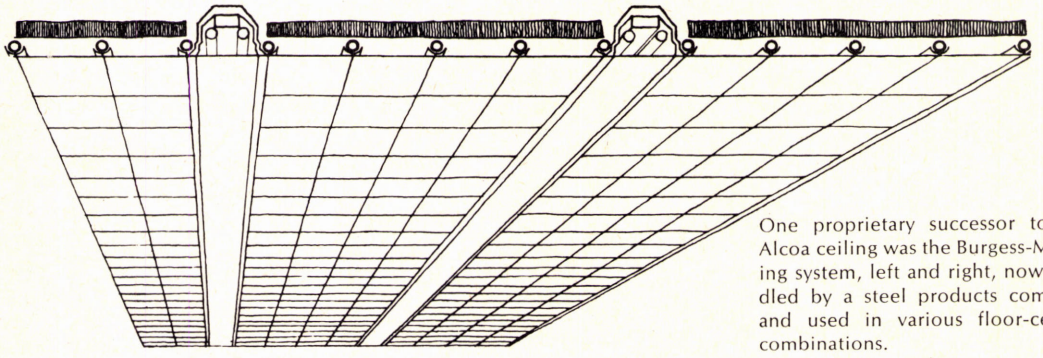
Meanwhile, advances continue to be made toward a

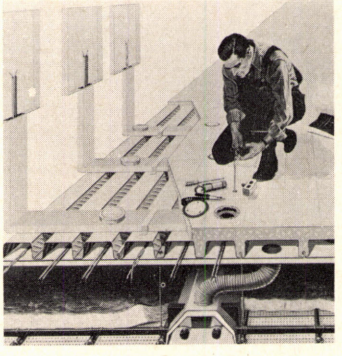
*photos courtesy Alcoa*

Milestone in air conditioning, making way for the fully integrated ceiling system for heating, cooling and lighting, was this 1952 installation in the Alcoa Building in Pittsburgh. This first large-scale application of combined radiant heating and cooling was designed by Jaros, Baum and Bolles extending earlier work by Charles Leopold. A pipe grid to which acoustical pans are fixed carries heated or cooled water. Half the cooling load is carried by the ceiling grid, and ducted outlets carry the rest. Architects: Harrison & Abramovitz.





One proprietary successor to the Alcoa ceiling was the Burgess-Manning system, left and right, now handled by a steel products company and used in various floor-ceiling combinations.



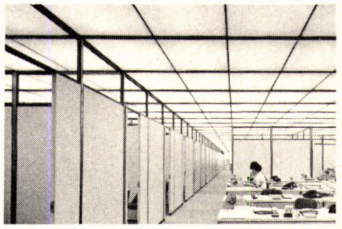
## building as an organic unit

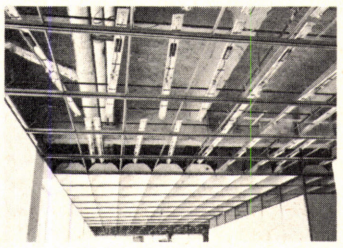
more organic integration of mechanical and electrical systems so that they are more related to the fabric and structure of buildings and to the thermal loads imposed on them. Mechanical components are being more carefully matched in a trend to larger and larger packaged systems.

Perhaps the most pressing of the immediate problems is more emphasis on total system design so that components will work efficiently through both daily and seasonally fluctuating weather and occupancies.

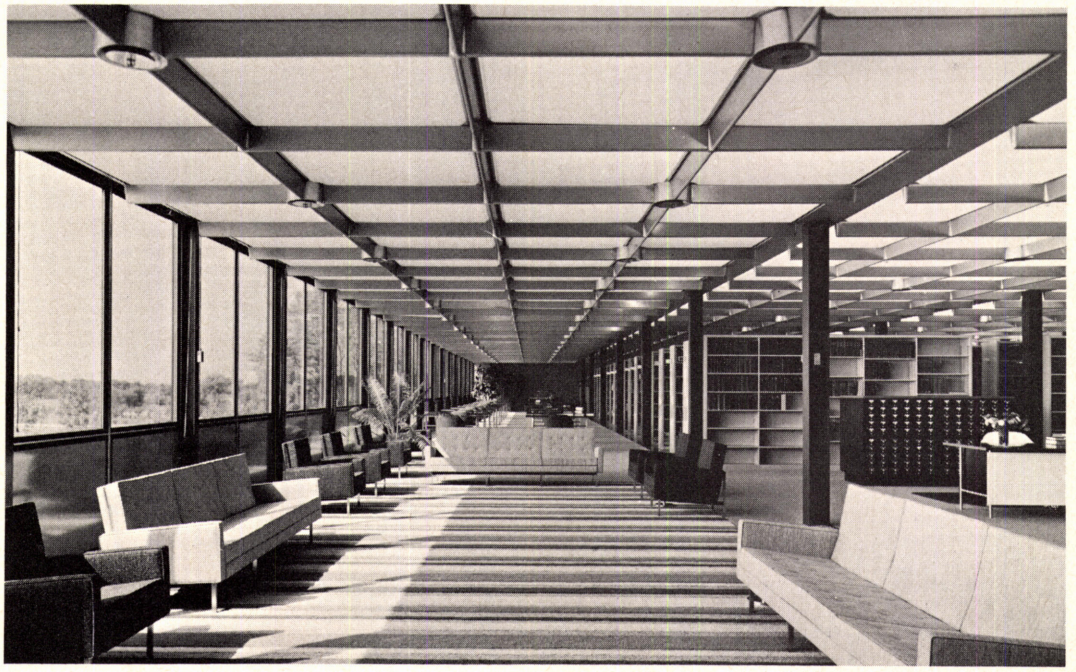
The mechanical and electrical share of total building budgets has increased over the past half century from 20 to 30 to over 50 per cent in commerial buildings and to well over that ratio in some industrial buildings. With total integration of the building and its mechanics, there may be less discernible dividing lines in costing out the various systems, but the basic increase of continuously rising standards of performance will continue to be felt. Manufacturers have been the prime movers in the research and development that has made new systems possible, and they continue in that role. So we have high-velocity, dual-duct systems and three- or four-pipe, chilled- and hot-water, forced-circulation systems, and we live with their problems of mixing boxes, noise control, and terminal balancing. Manufacturers and engineers are solving these problems very well, while architects reap the benefits of holding the 12-foot floor-to-floor structural module. In the totally integrated systems of the future, architects will find that problems of preliminary planning must be approached on a broader front of communication among the structural, mechanical and illuminating disciplines. Much of the technology that will be applied to systems is at hand.

©photos by Ezra Stoller



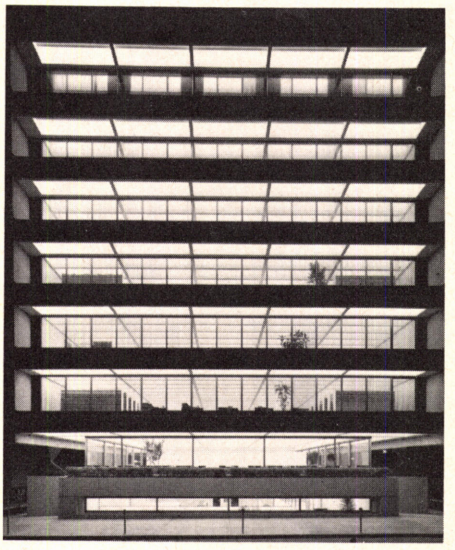


A first in lighting-cooling-partitioning flexibility was the ceiling of SOM's Union Carbide Building, for which Syska & Hennessy were consulting mechanical and electrical engineers. This system of continuous fixtures marked by a grid which functions for both air supply and partition anchoring was fully described in the February 1960 RECORD.



Pioneer of the integrated ceiling, above, is at Saarinen's General Motors Technical Center, completed in 1956. Framed- and hinged-plastic panels diffuse light. Wood-and-metal framing grid carries ductwork and sprinkler system and provides acoustical treatment. Details were published in the RECORD, May 1956.

Total integration of structural, air-conditioning and lighting systems is found in the Republic Insurance Company Building, left and right, in Des Moines designed by Skidmore, Owings and Merrill and completed in 1966. Precast, prestressed T-beams span 98 feet between tapered bearing walls on two sides. Beams form troffers through which round air ducts run from wall to wall. Lights mounted on top of ducts reflect from white-painted troffers. Adjustable slots run along the bottom of the ducts as air diffusers. Vertical partitions at outside walls form tapered plenums for air supply and return to mechanical space at top floor. Syska & Hennessy were mechanical consultants. W. M. C. Lam was the lighting consultant.



"Good lighting must be good architecture," says lighting consultant William M. C. Lam, and there are few who would dispute him. In the visual sense, he points out, light *is* architecture. Everything we see is in terms of light.

Ten years ago, the architect usually took one of two approaches to lighting: Either he wanted to hide light sources altogether; or else he wanted to choose fixtures that were esthetically pleasing. The result was that we had the recessed downlight school or the luminous ceiling school; and for decorative effect we had the bullet-shaped fixtures, the pendant globes, the pierced brass shades and Italian glass.

Meanwhile illuminating engineers were recommending higher and higher footcandles on working surfaces which meant more and more watts per square foot with consequently higher and higher loads on cooling systems. The integrated ceiling system, in which heat can be removed from lighting fixtures quickly and easily, came as a natural development. In such systems the heat can be either used for supplementing heating systems in cold weather or discarded as an unwanted load in warm weather.

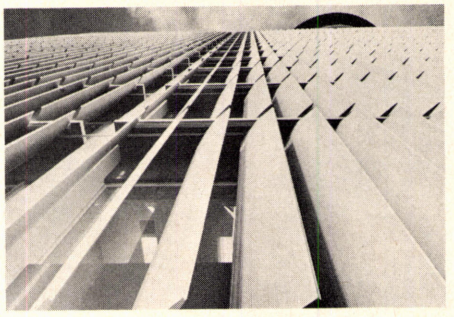
But the battle of the footcandle was not resolved by simple increase for the human eye is a marvelously adaptive organ, and the purposes of lighting are marvelously varied. As the visual sciences advance, we can expect perception and human comfort to dominate criteria which now lean so heavily on numerical levels of illumination.

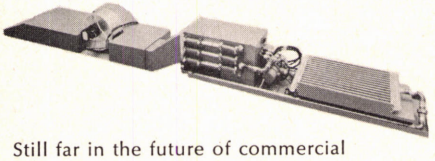
Multistate blackouts of electric utility systems, of recent dramatic memory, served to focus the attention of architects, engineers and owners on energy-supply systems for critically dependent spaces such as hospitals, computerized control

Hedrich-Blessing photo

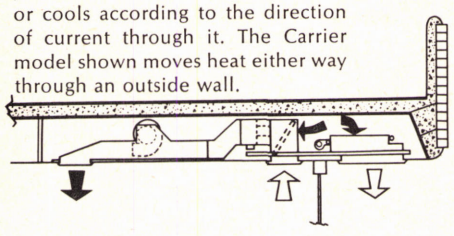
Forerunner of the integrated ceiling, left, is found in a variety of treatments designed in 1958 for the Cleveland Illuminating Building and described in the June 1958 issue. Carson & Lundin were the architects; McGeorge, Hargett & Associates, engineers, with Jaros, Baum & Bolles consulting. Shown is general office space with inner-zone air outlets. Outer zone is separately supplied by high-velocity system.

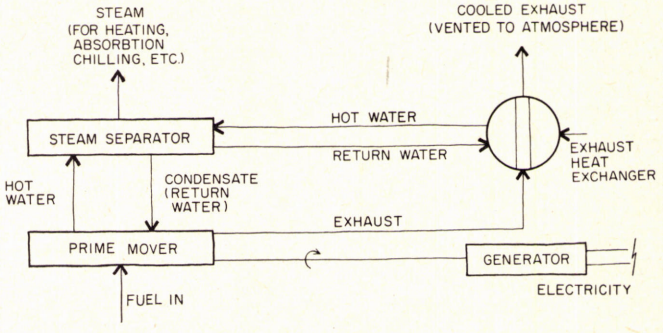
Control of sun loads on air-conditioned buildings engages the increasing attention of architects and engineers as the glass wall and soaring operating costs have their effect. Perhaps the ultimate in shading devices are the movable louvers of the Ala Moana building, right, in Honolulu, which automatically close as sun strikes the wall. The building, designed by John Graham and Company was described in the May 1962 issue.





Still far in the future of commercial application, but here in prototype models, is the heating-cooling device without moving parts which uses the Peltier effect whereby a junction of dissimilar metals heats or cools according to the direction of current through it. The Carrier model shown moves heat either way through an outside wall.






GENERALIZED TOTAL ENERGY SYSTEM

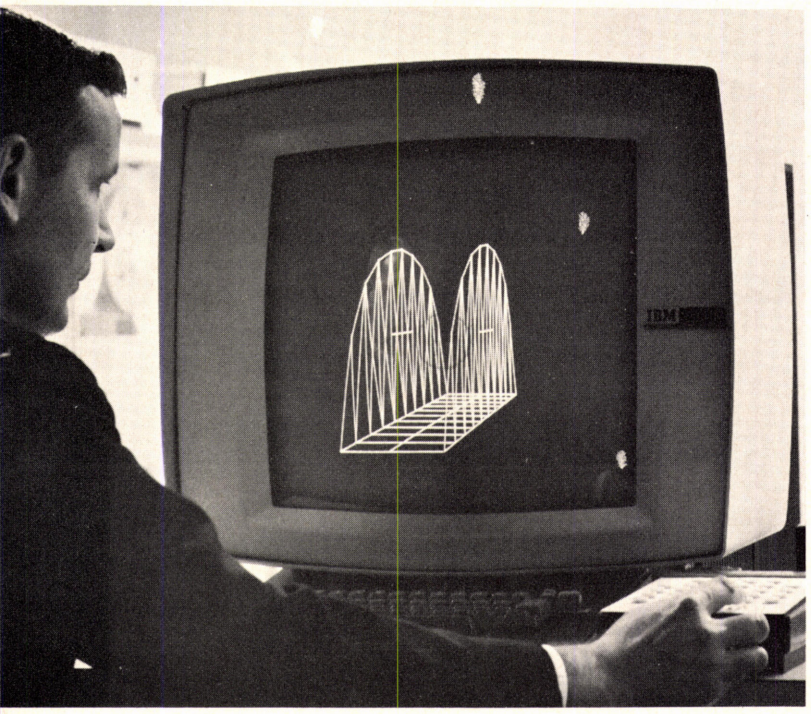
Where the balance of energy requirements for heating, cooling, lighting and electric power works out so that waste heat from the prime mover of an electric generator is approximately the amount required for other purposes, the total-energy system is finding increasing acceptance. Architects and engineers are gaining experience in these systems. . . . As they learn more about compatible devices for salvaging heat from higher lighting loads and other wastes, use of these systems will increase.

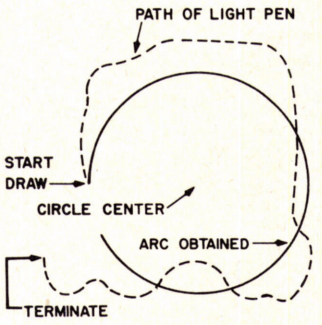
centers and even tall buildings where elevators are the only real means of egress. Islands of light stood out where either standby power generators were in operation or a so-called total-energy system was performing its accustomed role independently of utility power.

In total-energy systems, there is an obvious first need for balance in the energy requirements for heating, cooling and electricity. There is a not-so-obvious requirement of standby capacity in both prime mover and generator capacity for those inevitable periods of shut-down for maintenance of all moving machinery. In spite of this, however, there are more and more situations where total energy is a logical provision.

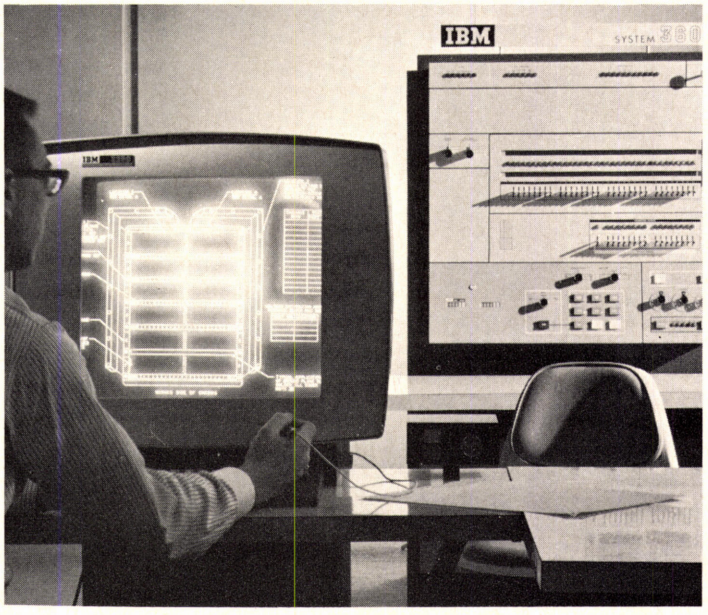
Electricity and gas are playing a larger role in the heating and cooling of new buildings for a variety of reasons. In residential applications, the reason is partly a matter of convenience and partly the fact that the cost of traditional fuels has risen faster. Secondly, it has been found that fuel consumption is not as high as ordinary heat-flow calculations indicate. Thirdly, houses are better insulated, tighter, and, in some cases, smaller in cubage than those of the past. In larger buildings, particularly commercial buildings, the use of energy internally for lights and equipment has grown so much that these buildings sometimes can almost heat themselves, thus only a small amount more of electricity does the whole job resulting in all-electric facilities.

Architects and engineers are just beginning to get experience in these areas. The technology is available, but engineers need more experience in selecting compatible equipment and in analyzing the economics. —*William B. Foxhall*



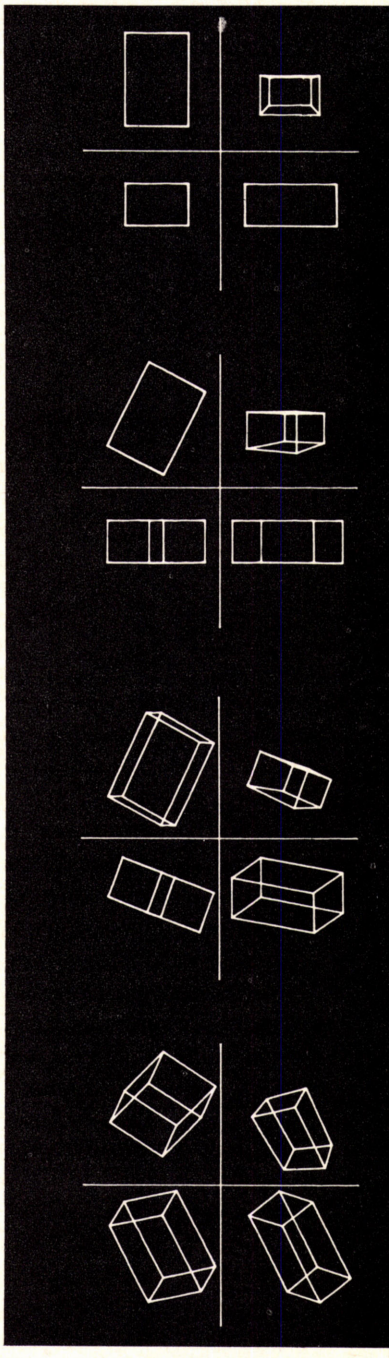



Left: a bridge is shown is perspective on a cathode-ray tube display. The equipment illustrated would be typical of that needed for the computer-drafting techniques that are based on the Sketchpad program. In Sketchpad, the operator draws on the cathode tube with a pencil-like light amplifier. The path of the light pen, above, can be formalized into straight lines and perfect geometrical figures by the use of preprogrammed constraints. See also illustrations October 1965, page 85.




Right: the additive rotation of three-dimensional Sketchpad drawings. Quadrants display plan, two elevations and perspective.

Far right: a perspective drawn by a computer in which the hidden lines have been automatically erased by the computer program.



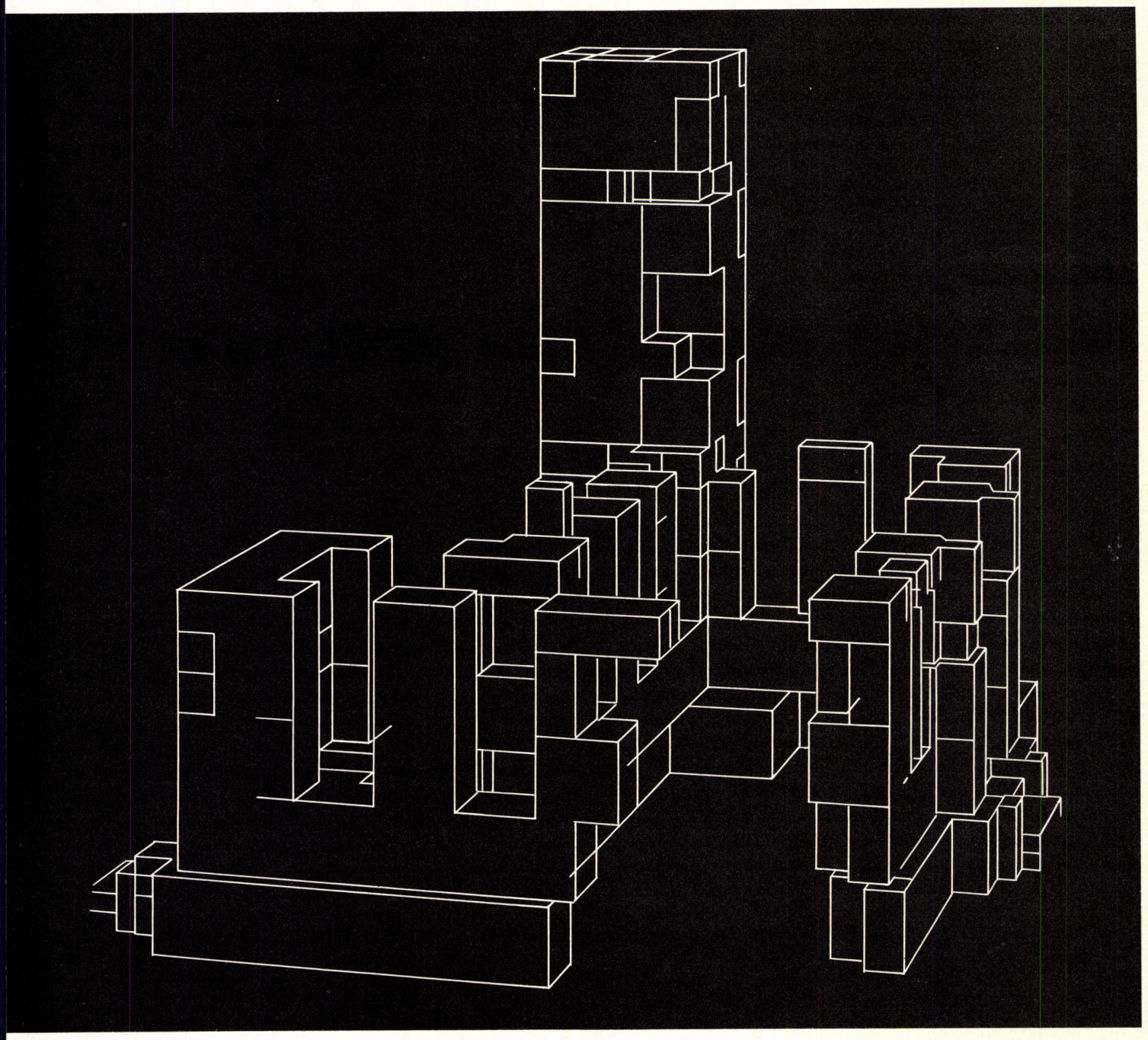
## The computer revolution: how does it affect architecture...

The computer has been hailed as a panacea for all architectural problems, and denounced as a threat to design originality. The computer is not a cure-all, although its potential uses are widespread; it could indeed become a threat if these potentialities are misused.

**Computers could soon be doing working drawings,** or might one day eliminate them altogether. An important basic invention, still comparatively unknown in the architectural profession, is the Sketchpad program, which makes it possible to draw with a pencil-like light amplifier on the face of a cathode-ray tube (similar to a television screen) and have the drawings registered in the computer memory. In this way, an architect could, without the assistance of a computer programer, make drawings that could then be modified, changed in scale, duplicated, repeated, and stored in the computer memory in such a way that the printing out of a complete set of working drawings would only occupy a few minutes at the conclusion of the design process.

The equipment needed for such a working-drawing system is, or soon will be, commercially available. An architect could order it tomorrow and have it sitting in his office within a year and a half. But such equipment will be little more than an expensive toy, until the correct master programs have been written. The development of such programs is costly, and, at the moment, if the architectural profession would like to have the benefits of an automated working-drawing process, it must pay the development costs itself.

The question arises whether it is worth the effort and cost to computerize the conventional working drawings of today. The potential amount of time saved might well justify



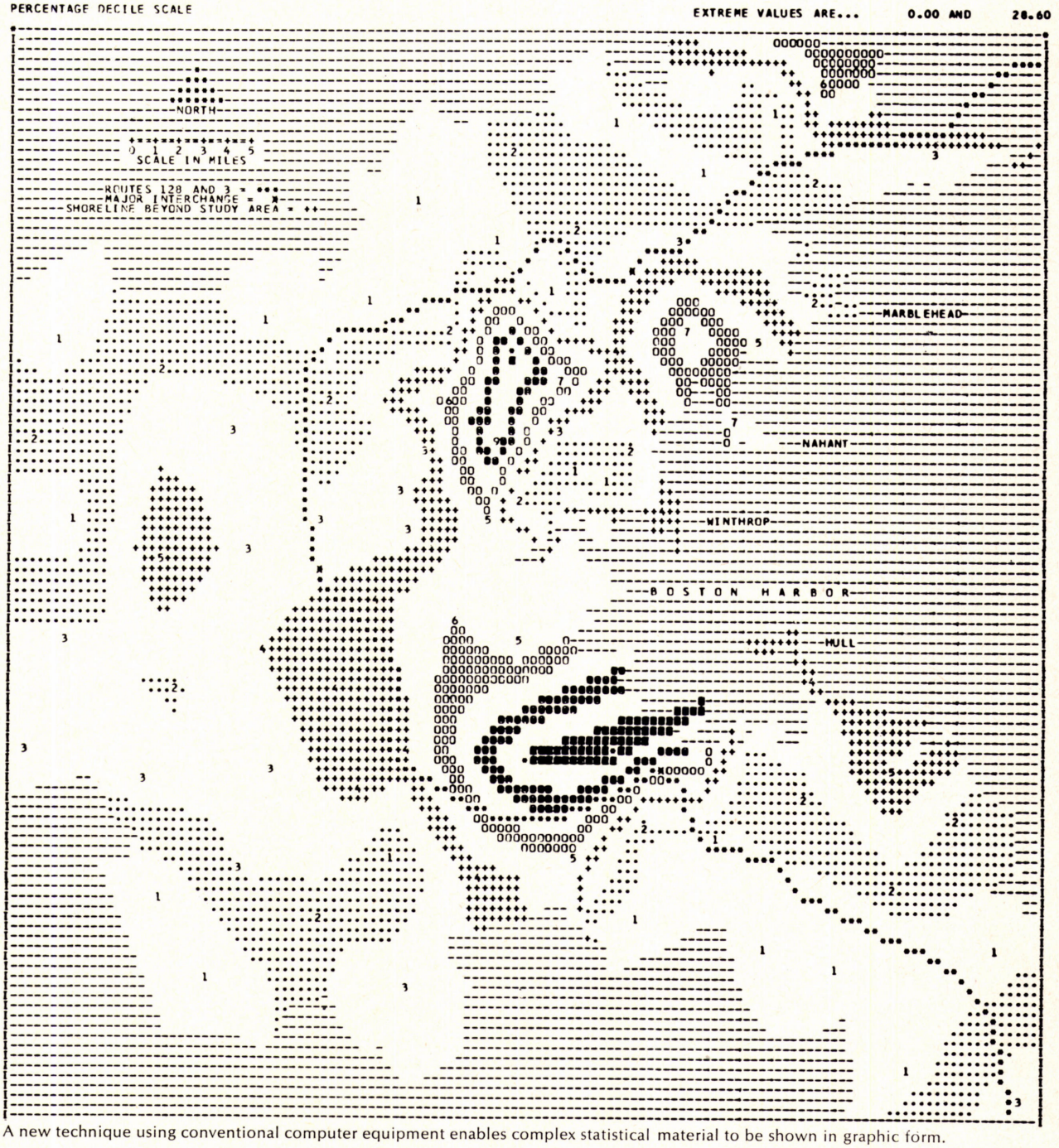
## ...and how can architects best exploit its powerful potential?

all the expenditure in the long run, but is every feature of the working drawing indispensable? How much of the building really does have to be shown graphically? The ability to describe complex geometric figures mathematically, which is implicit in the computer, might one day greatly reduce, or even eliminate, graphic presentation in contract documents.

**Routine engineering calculations** are already being done on the computer through the use of master structural and mechanical engineering programs. The use of the computer permits quick calculations during the design process and frees the engineer for more complex work. The computer has already made possible new types of construction that would not have been attempted even a few years ago (see page 154).

**Computerized specification writing** solves some problems, but brings out new ones. The computer's ability to retrieve information instantaneously makes automated specification writing a natural possibility. The difficulties lie in the unsystematic nature of so much specification writing today: the lack of close parallels from topic to topic, or any agreed-upon division between information that should appear on the drawings and information that need only be in written form.

**Many management problems** can be solved with the computer's help. The use of automated techniques for processing payrolls has become routine; so has the use of computer-calculated, critical path network diagrams, for both construction management and the division of time within an architect's own office. Some large architectural offices have already found that the costs of renting a small computer—rather than buying time on an outside machine—are fully justified by the engineering and management uses to which it can be put.




A new technique using conventional computer equipment enables complex statistical material to be shown in graphic form.

**The complexities of city planning** provide a natural field for computerized techniques. The computer print-out, above, was produced through a technique developed by Professor Howard Fisher of Northwestern University. Using conventional computers already in use, the SYMAP program makes it possible to show large quantities of complex statistical material in graphic form. The computer could also be used to keep up-to-date inventories of physical conditions in buildings and neighborhoods, and might well be usefully employed to coordinate impending governmental decisions.

**The use of the computer in architectural design** can either enlarge the horizons of the designer, or shrink them disastrously. The speed with which working drawings could be done on computers might encourage the rapid production of routine standardized solutions. If imaginatively used, however, the computer could be a powerful design tool. The Sketchpad program makes it possible to study buildings in perspective continuously as they are designed, and to make accurate drawings of complex curved surfaces in a very short time. Optimization techniques, using computer calculations, are already being employed to help answer questions about economical story heights for office buildings or the most satisfactory combination of uses for a given tract of land. The computer also makes possible complex design investigations like those developed by Christopher Alexander (April 1965, page 177).

In short, the potentialities of the computer are still within the control of the architects; if architects fail to act, however, others may use the computer to invade the architectural field.

*—Jonathan Barnett*

2

# A NEW MEANING OF MODERN ARCHITECTURE

Architectural history has always taken a narrow view of significant events in the development of the "new architecture." Instead of a "progressive" current, so dear to the hearts of historians, it might be more instructive to reclassify the meaningful examples of what actually has been happening.

# AMERICAN ARCHITECTURE SINCE 1891: INSTEAD OF A NEW STYLE, A COMPLEX DEVELOPMENT OF FOUR DIFFERENT POINTS OF VIEW

The most consistent aspect of American architecture during the last 75 years has been the dissatisfaction of historians and critics with both the past and present state of the art. American architecture has been criticized for its lack of individuality, because it was not sufficiently expressive of modern life, and also for its lack of uniformity, because it was composed of too many different approaches to design.

The basis for much of this criticism was the theory that American architecture suffered from the lack of a suitable modern style, and the belief that this concept of style, which had been used originally to explain the development of medieval architecture or to describe the kind of building prevailing in Rome at the time of Sixtus V, would hold true unmodified in an age of much greater complexity, faster communication, and historical self-knowledge.

It is extremely significant that the exhibition devoted to Gropius, Mies, Oud and Le Corbusier that appeared at the Museum of Modern Art in 1932 should have been billed as "The International Style," rather than simply as the work of four innovative architects. The text accompanying the exhibition actually asserted that "today a single new style has come into existence," a phrase which would have to be classified as a daring prediction, not a historical observation.

The coiners of the term "International Style" were not just writing history, they were hoping to influence the course of future events as well. Other well-known histories, like Siegfried Giedion's "Space, Time and Architecture," also made it clear that the authors were trying to create a historical framework that would influence current and future building.

The view of history that these writers formulated has gradually degenerated, in the hands of less sophisticated authors and commentators, to the point where it has become essentially mythological, rather than historical; and this myth has become more and more removed from reality.

It is not the intention of this article to challenge the well-documented researches of gifted historians like Siegfried Giedion, or to add yet another rigid and uncompromising theory to the historiographical debris which already surrounds us. Instead, it is simply proposed to put aside the myth for a moment, and to dispense with the preconception that a uniform architectural style, such as historians observe in less complicated periods, is a necessary pre-condition for a healthy architectural epoch.

Did the development of American architecture really grind to a halt soon after the World's Columbian Exposition of 1893, not to revive again until the late 1930's? The architects working in the intervening years certainly did not think so, and if you look at their work in the pages of ARCHITECTURAL RECORD, you will see a number of different lines of development being pursued during the same period of time. Most historians would agree that these lines of development first entered the history of architecture at the end of the 18th century. What may be more surprising, and more controversial, is that these different approaches offer valuable clues to the understanding of architecture today.

At least four different attitudes toward architecture are clearly visible during the past 75 years, and they are twisted together like the strands of a cable, so that sometimes one dominates, and sometimes another.

There is the classical theory of the orders, the axis and the rules of composition, as codified at the Ecole des Beaux Arts. This aspect of recent architecture, usually called *"The Academic Tradition,"* is summarized on page 174.

We shall use the phrase *Structural Rationalism* to describe that portion of recent building on which the historians of modern architecture have concentrated most of their efforts. This point of view is described on page 176.

A third important architectural attitude is the one which is sometimes described as "the picturesque," where buildings are seen as a series of spatial and visual experiences. On page 178 this kind of achitecture is called *Scenographic,* meaning buildings designed for their effect upon the viewer.

The last important architectural "strand" can be labeled the *Domestic Vernacular,* in which buildings are designed for comfort, convenience and an informal way of life. This tradition, which is described on page 180, began in England, but it has always been at its strongest in the United States, where it has appeared usually, but not always, in houses and small buildings.

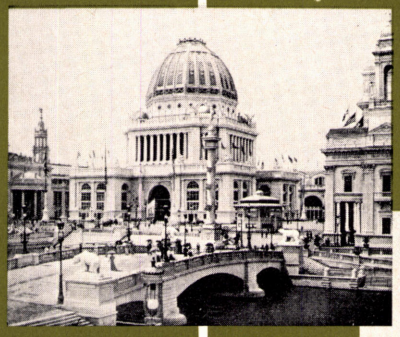
These four basic attitudes provide a framework for understanding the apparently conflicting story of American architectural events since 1891, without discarding whole groups of buildings simply because the historian does not happen to like them.

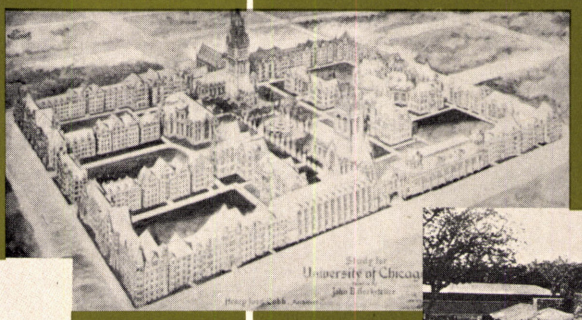
ACADEMIC TRADITION

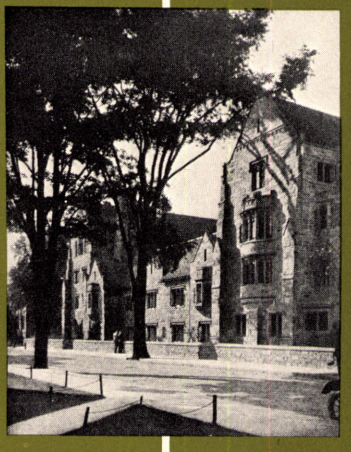
STRUCTURAL RATIONALISM

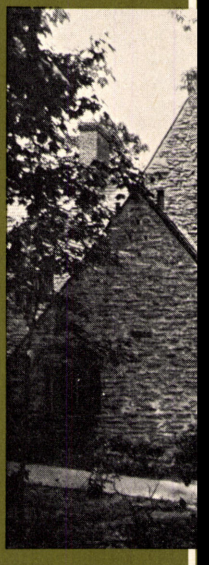
SCENOGRAPHIC DESIGN

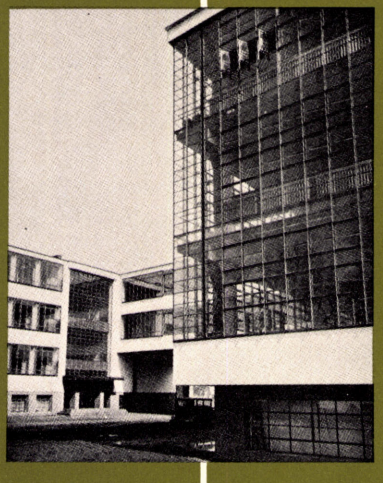
DOMESTIC V

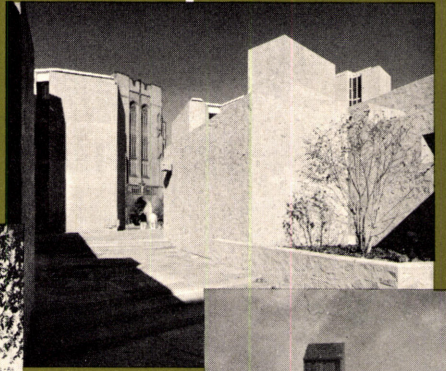


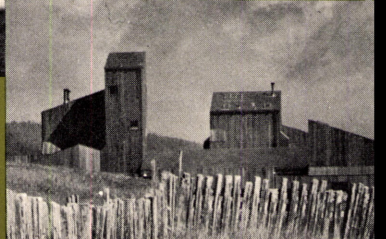








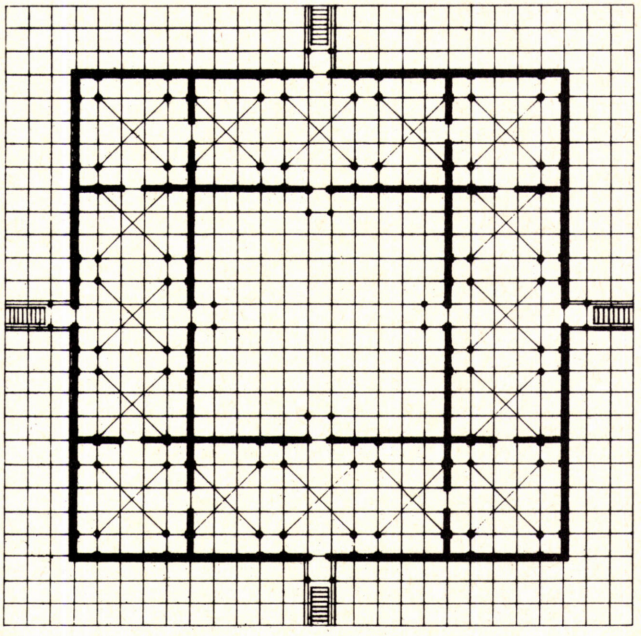




## ACADEMIC TRADITION:
## the orders, the module, and the art of the plan

The Academic Tradition preserved many of the elements of late Renaissance design, but replaced the visual order of the Baroque with a basically intellectual system of geometrical and proportional relationships. The use of the orders, although it was a conspicuous feature, was never as fundamental to Academic design as modular planning, the ability to create large compositions, and the development of a hierarchy of building types.

**Modular planning began in the early 1800's.** The first modules were based on column diameters, but in the French academies the module soon became a regular geometric unit that was used to give order to the plan. The drawing by Durand, at left, shows a modular system in which large and small vaulted spaces are arranged in a manner which is strikingly similar to the "servant" and "served" spaces of buildings by Louis I. Kahn. A more familiar comparison is the relationship of the work of Mies to that of the German academic architect, Schinkel. In both cases the common bond is the geometrically ordered plan, which becomes the controlling element of the design. Such plans occur frequently throughout the last 75 years, both in such obviously academic designs as George B. Post's Wisconsin State Capitol and, in a slightly more sublimated form, in Frank Lloyd Wright's Imperial Hotel.

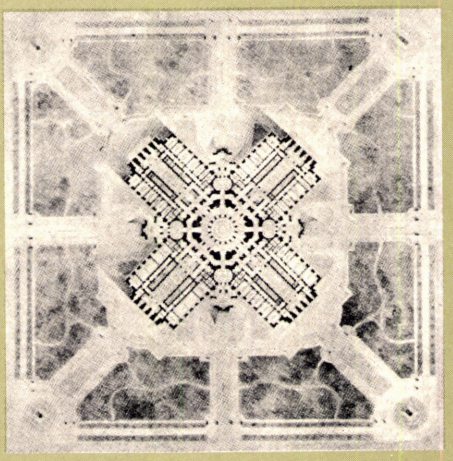


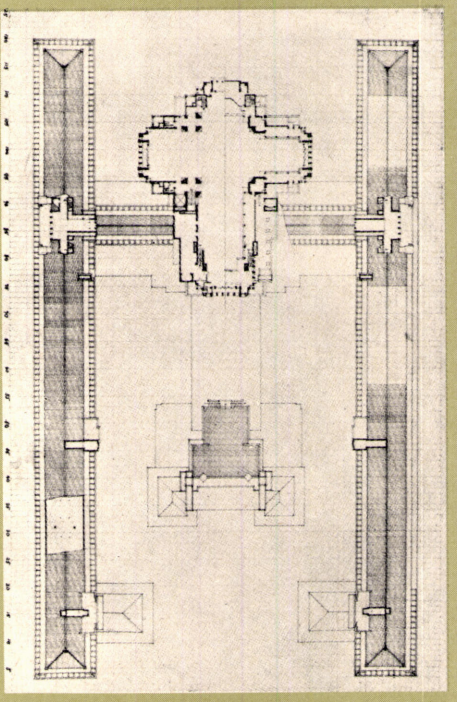
Modular plan by J. N. L. Durand, first published in 1806.

**Large-scale compositions were the strongest asset of academic design.** The extension of the Academic plan to large-scale problems received a tremendous popular success in the United States as a result of the World's Columbian Exposition in 1893. The White City around the lagoon inspired numerous civic centers throughout the country, and the indefatigable efforts of men like Daniel Burnham made the concepts of Academic architecture the common currency of American civic design. Unlike the actual buildings of the White City, which have long been "discredited," the use of the axis, the vista, the lagoon and the circle have continued unchallenged in landscape architecture and city planning; and the new Pennsylvania Avenue plan is in the same tradition.

**The hierarchy of building types,** in which the most important elements occupied a central position, was a basic Beaux Arts tenet. The Temple and Basilica were the precedents for the most significant structures, and the more utilitarian products of the Roman empire inspired ordinary buildings. H. H. Richardson's use of the elevation of a Roman aqueduct for his Marshall Field Warehouse makes this building as academic as the more obviously classical Chicago Fair.

Left: The orders were never a fundamental part of Academic design. The Corinthian columns of McKim, Mead and White's Knickerbocker Trust Company (published in the RECORD in May 1904) look almost as if they were independent of the rest of the building. If they were stripped away, something not unlike Skidmore, Owings and Merrill's Manufacturer's Trust Company would be left underneath.

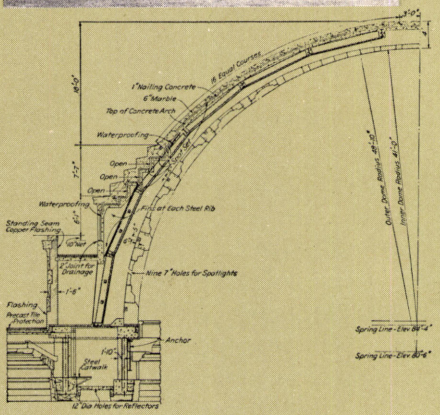




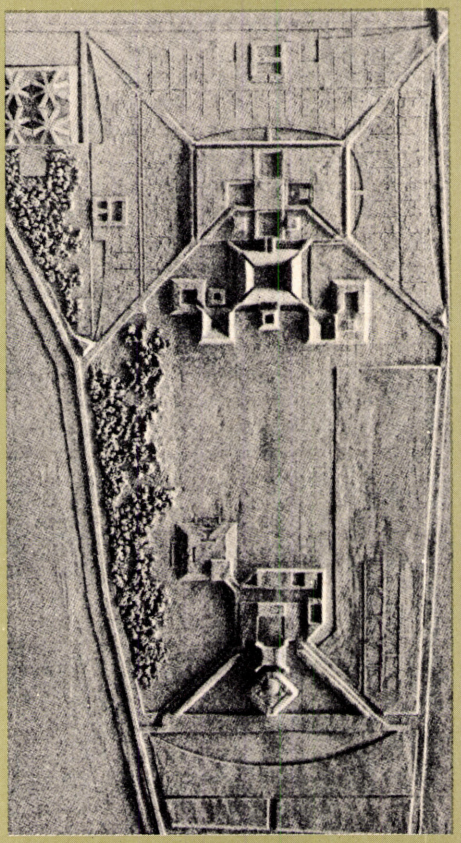
Above: The Wisconsin State Capitol, by George B. Post (August 1917) has an ingenious Academic plan underlying a more conventional Academic exterior. Frank Lloyd Wright's Imperial Hotel (April 1923) also is based upon a modular grid and uses the Academic system of axial symmetry.

Left: By the time the Los Angeles Olympic Stadium was designed by Parkinson and Parkinson (December 1931), Academic design was being stripped of all classical ornament.

Below: The Jefferson Memorial by John Russell Pope retained the orders, but it was still a modern building in one important respect: neither the Romans nor the French academics could have attempted a structure like this at such a large scale. Steel construction makes it possible. (Illustrations from Theodore Crane's *Architectural Construction*, courtesy of John Wiley & Sons).



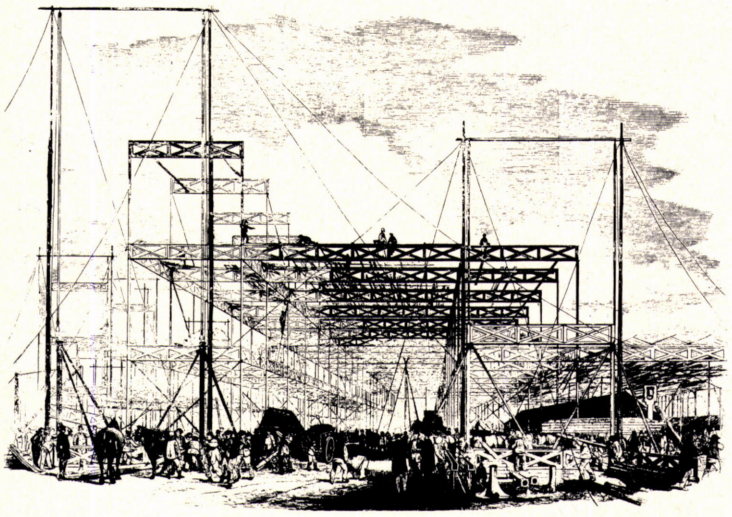
Right: Louis I. Kahn's plan for the second Capital of Pakistan, at Dacca, makes use of a line of development that was implicit in Academic design, the geometry of the diagonal. The plan of the Wisconson State Capitol, above, shows an awareness of this possibility, but it took Kahn's unconventional approach, plus his thorough understanding of Academic design, to develop it (Illustration courtesy of *Perspecta*).



## STRUCTURAL RATIONALISM: the clear expression of materials and construction

Renaissance architecture had been closely determined by the limits of masonry construction; the advent of new industrial materials changed all the possibilities and made structure a significant problem of architectural expression rather than something that could be taken for granted. Many historians have told how architects began to devise buildings which made the new structural logic a basic part of their design. Gradually a point of view grew up that found the expression of this new kind of structure to be the most significant aspect of architecture, and the expression of other qualities came to be looked upon as romantic and essentially frivolous. This doctrine of Structural Rationalism has always been stronger in Europe than in the United States, but it became well known in America through the influence of European architects and the many historians who themselves held an essentially Structural Rationalist point of view. The basic characteristics of this attitude towards design were the expression of the skeleton, the articulation of elements, and the frank use of industrial materials.

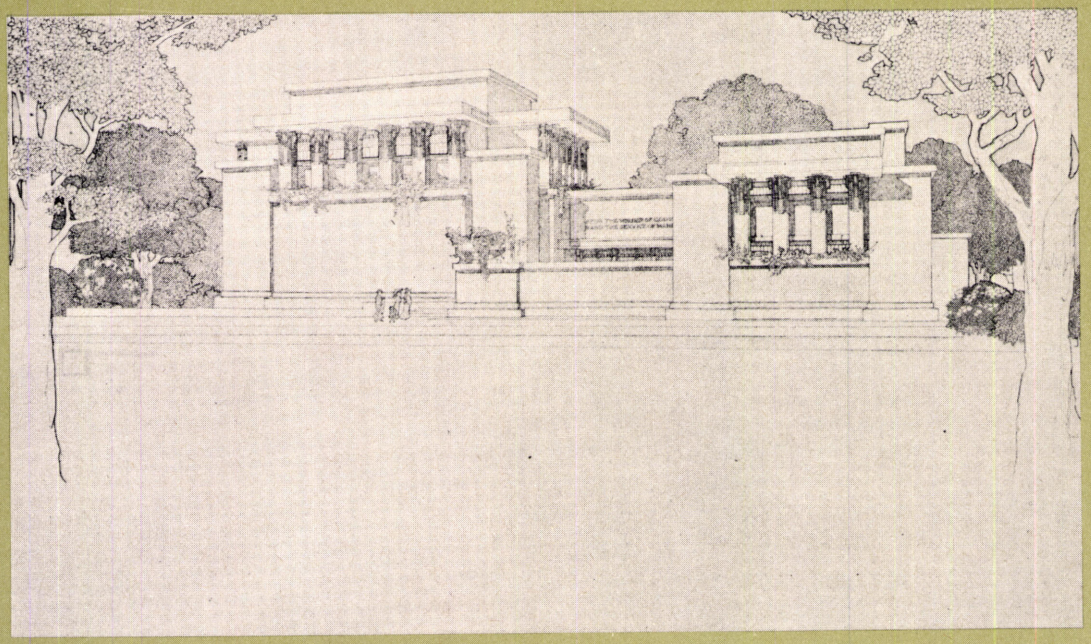
**The expression of the skeleton created new design possibilities.** The use of high-strength materials like steel made possible the separation of support and enclosure, which had been combined in the masonry wall. The supporting structure could be reduced to a more or less regularly spaced skeleton; enclosure could be a "curtain wall" or need not be parallel to the column line at all. The expression of this new condition through the use of glass, masonry infill panels and similar means became a major new theoretical problem.

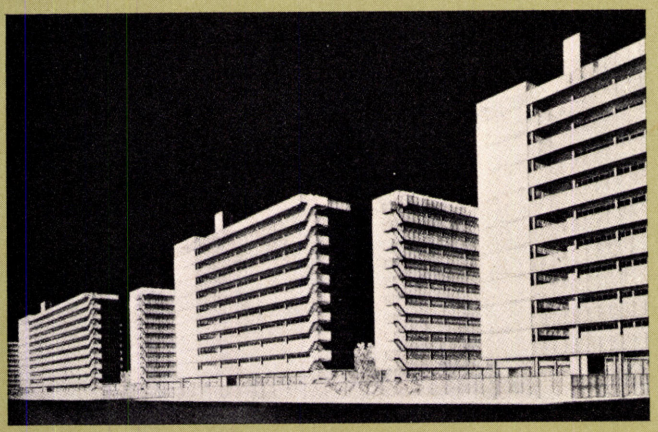


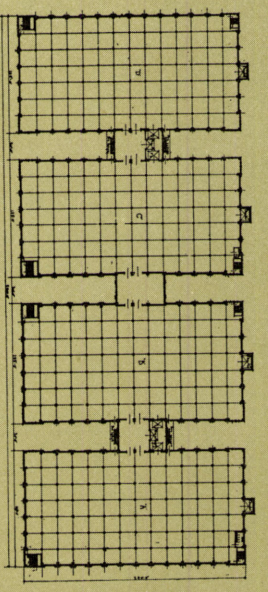
The Crystal Palace under construction in 1850.

**The articulation of elements became very important.** The fabrication of parts of the building as structural units led to a new consciousness of the individual nature of each building element. Connections became very important both at small scale, in the design of details, and in such large questions as the junction of roof and walls. Wright's Unity Temple, designed of reinforced concrete in 1906, shows this attitude very clearly. The roof is supported on columns that are not visible from outside, making the roof plane seem to hover over the massive walls.

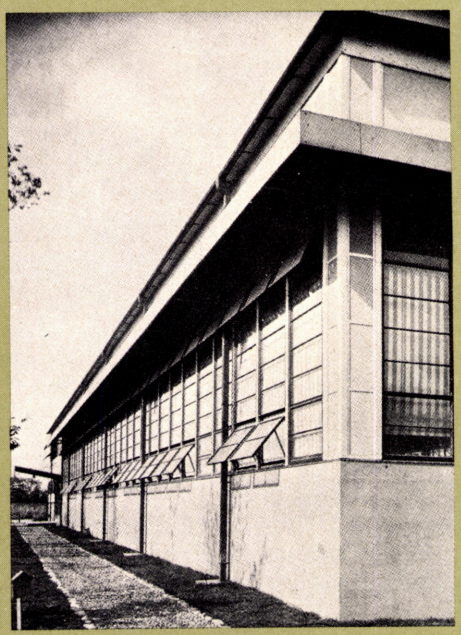
**Industrial materials made architects self-conscious.** New types of fabrication seemed to call for new approaches to such design problems as windows, doors and furniture, and the Structural Rationalist tended to make this point by taking the routine utilitarian products of industrial technology and giving them the status of *objets trouvés*.

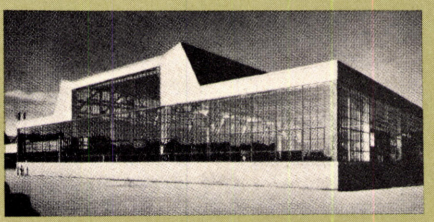






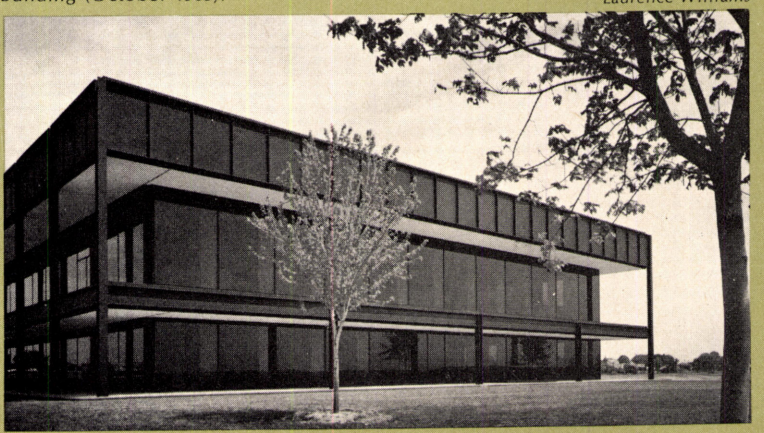
Structural Rationalism did not really disappear from the United States after 1893. Above: Wright's Unity Temple was a fully developed expression of reinforced concrete (ARCHITECTURAL RECORD, March 1908). Right: Frame construction continued to be as well understood in the U.S. as it was in Europe. The plan illustrated belongs to the Montgomery Ward Warehouse designed by S. Scott Joy, (January 1919). Left: This apartment project by Howe and Lescaze rivals the best C.I.A.M. work of the period (March 1932). Below: The Dodge factory by Albert Kahn is a late example of a series of industrial buildings which excited great interest both in Europe and America. At left: an office building in Tokyo by Antonin Raymond (January 1933).





The expression of structure is, of course, still an important design influence today. A good example is Skidmore, Owings and Merrill's Armstrong Headquarters Building (October 1965).

*Laurence Williams*

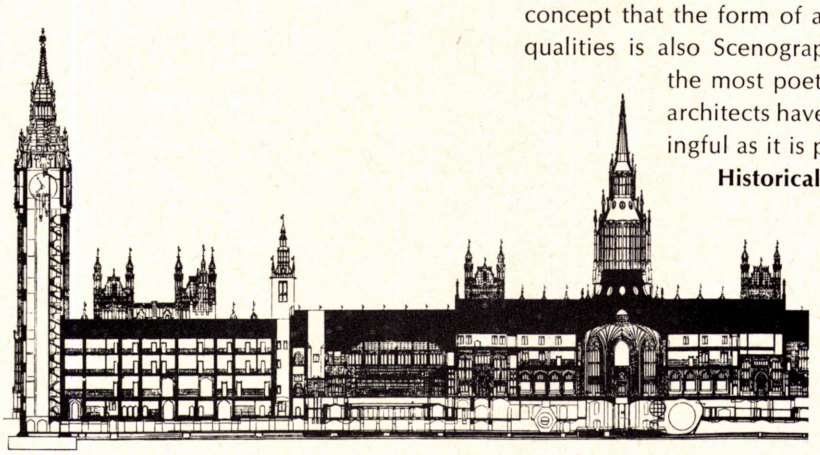


## SCENOGRAPHIC DESIGN: the sequence of spaces and the association of ideas

The architecture of the Renaissance and earlier periods took account of the reactions of a visitor to a building only in the most general way; the organizational pattern of the building itself was paramount. The development of the "picturesque" point of view at the end of the 18th century, however, has had a considerable effect on architecture since then, leading to increased interest in what a visitor could see at various points both within the building and outside of it. The concept of architectural space as something to be experienced sequentially, an interest in the interplay of light and shadow, and attention to intellectual concepts that can be associated with the building are all characteristic of such Scenographic Design.

**The sequence of spaces provided a new experience.** The popularity of landscape painting in the late 1700's heightened the architect's consciousness of massing as it would be viewed on the approach to the building, and concepts like that of the "sublime" made him interested in the emotional shock value of spatial changes and surprises. The British Houses of Parliament has been given its ceremonial character through this kind of Scenographic effect, and the irregular silhouette and complex section which were characteristic of the Houses of Parliament are still being employed today to impart a Scenographic character to buildings. Paul Rudolph's Art and Architecture building at Yale University is a good example of this kind of architectural experience.

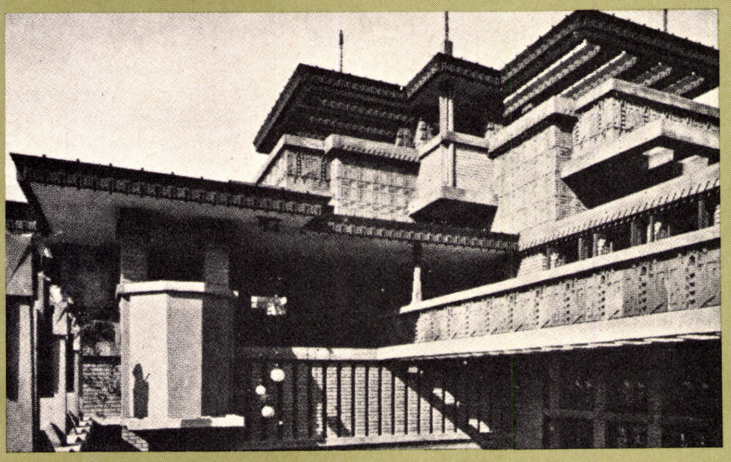
**Light and shadow were manipulated consciously.** The concept that the form of a building is revealed by its optical qualities is also Scenographic. Le Corbusier probably made the most poetical statement of a view that many architects have held: that a building is most meaningful as it is perceived visually.



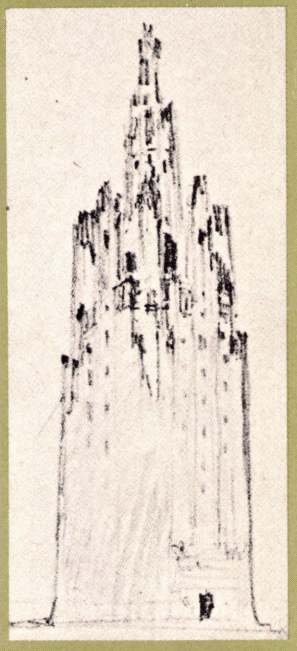
Section of Barry and Pugin's British Houses of Parliament shows Scenographic silhouette and complex spaces.

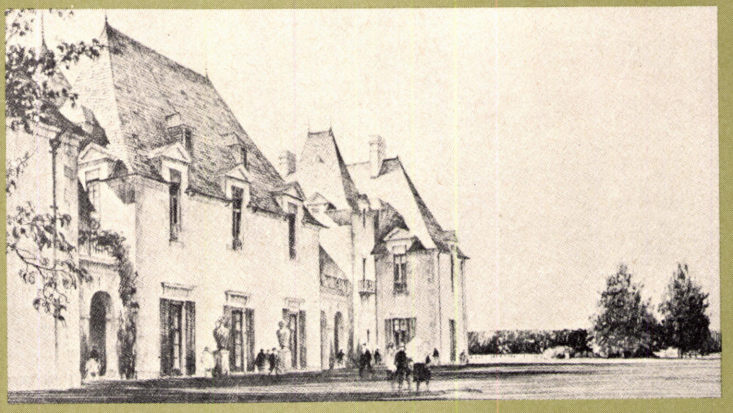
**Historical ornament called forth the associations.** From the end of the 18th century, various historical styles were employed by the architect for the sake of the associations they would call up in the mind of the beholder: Gothic for religious buildings, Roman to express a Republican form of government, and so on. This Scenographic stylistic language has always caused both architects and art historians some uneasiness, because it uses historical forms, outside of their original context, purely for emotional and intellectual effect.

There has been a great deal of talk about a style "appropriate to our own age," and this is of course also a Scenographic concept, as is Futurism or the belief that buildings should look like machines.

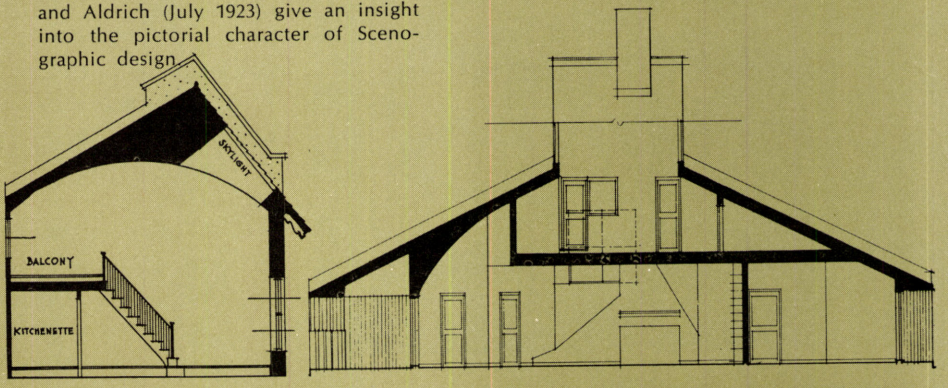


Both Frank Lloyd Wright's Midway Gardens and Bernard Maybeck's colonnade for the Panama Pacific Exposition (November 1915) were designed primarily for their effect upon the viewer.

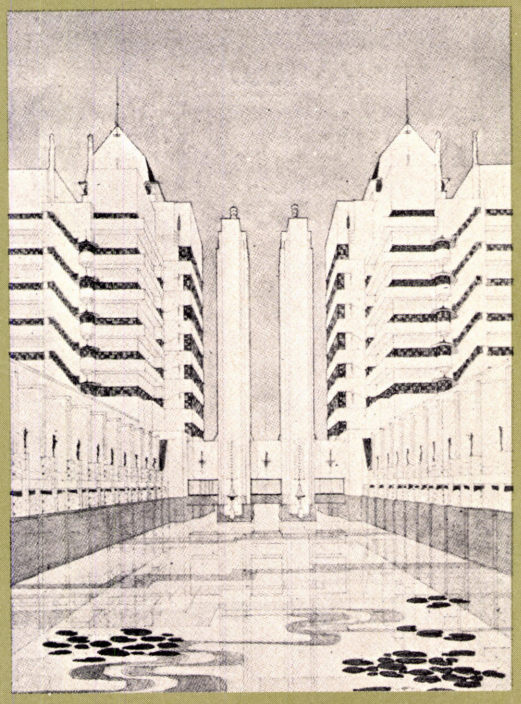




Raymond Hood's early sketch for the Chicago Tribune Tower (published in the RECORD in March 1926) and Chester B. Price's drawing of a house by Delano and Aldrich (July 1923) give an insight into the pictorial character of Scenographic design.




A studio by Emery Roth (July 1921) and a recent house by Robert Venturi both show a Scenographic manipulation of the section and of light sources.



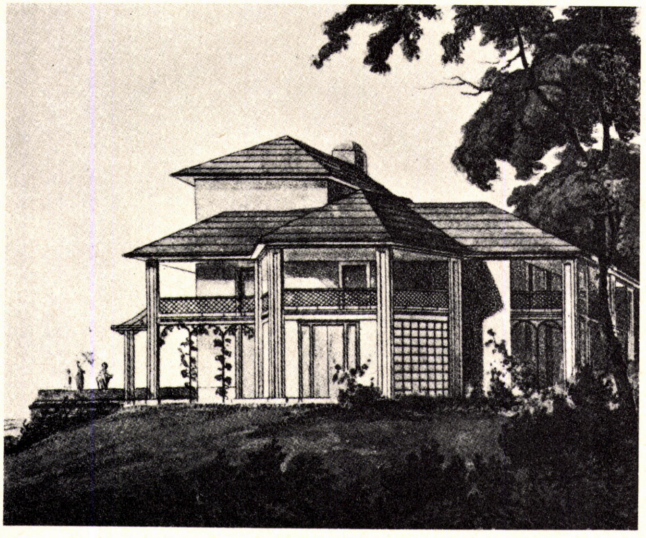
The project for a polytechnic school, by a Dutch architect named J. B. Vinckers who was working in the U.S., makes modernism into a Scenographic vision of the world of the future. Some recent buildings, like Paul Rudolph's School of Art and Architecture at Yale, continue to show the irregular silhouette and complex section characteristic of Scenographic Design.

## DOMESTIC VERNACULAR:
## comfort, convenience, and integration with landscape

The detached house of moderate size is really a modern invention, and it evolved for the most part in Europe and America. The point of departure was the farm house, but the new house type began by following a more or less symmetrical plan, derived from the Palladian mansions of the rich, and then acquired certain Scenographic features: the low, wide roofs of the Swiss Chalet, the tower of the castle or Italian villa, the bay window from the Tudor period, and the veranda, which the English brought back from India.

These disparate elements, originally stylistic, became in time the common language of domestic design; and, unless the intent of the architect was purely Scenographic, would appear whatever the ostensible style of the house might be.

Henry-Russell Hitchcock has documented the continuity of this domestic vernacular from the *Cottage Ornée* through a century of development—which included a close association with the Arts and Crafts movement—to the general distribution of this type of house throughout the United States. The broad eaves, bay windows and verandas appeared equally in houses that were considered "Colonial" (although these features were unknown in Colonial times) and in the "Prairie" houses of Frank Lloyd Wright.

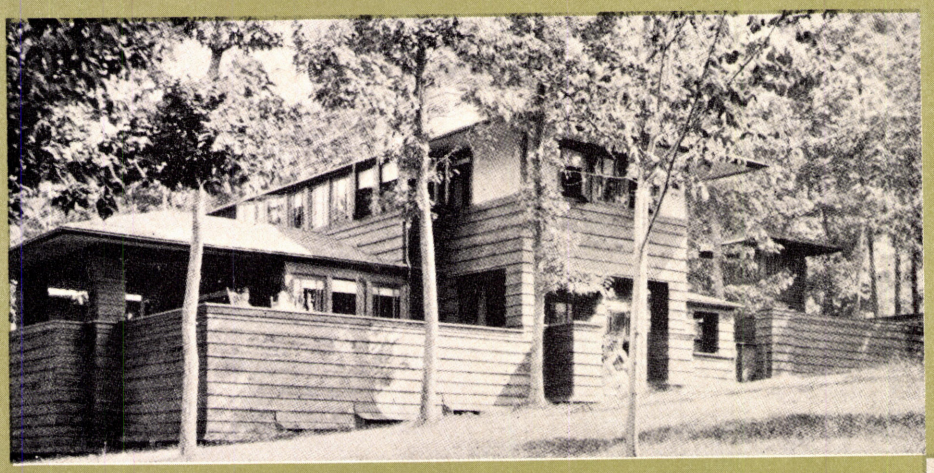


A *Cottage Ornée* by J. B. Papworth first published in 1818.

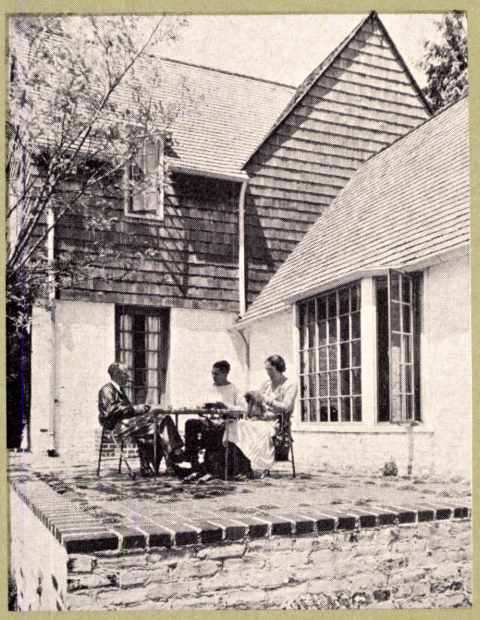
**Natural materials were no longer considered inferior.** As the domestic vernacular evolved, a preference grew for the frank expression of natural materials, such as brick, and wood shingles, that had once been considered inferior to cut stone, or even stucco, but which came to be associated with domesticity and informality.

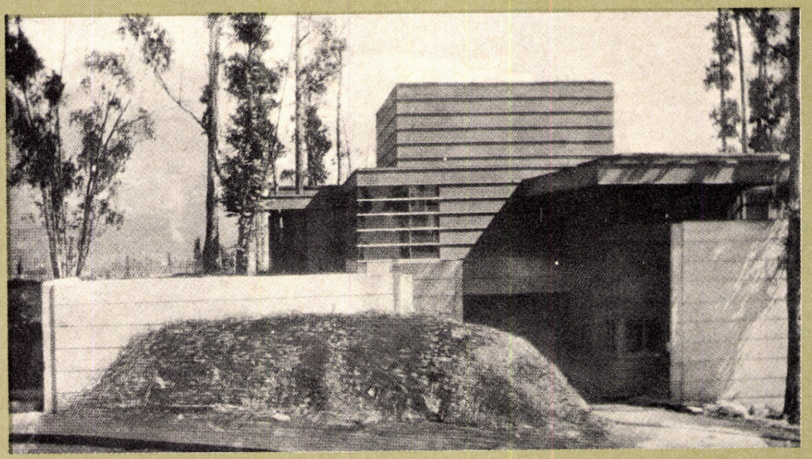
**Convenient plans were invented.** The idea that a kitchen should be located adjacent to a dining room, and not in an outbuilding, is a modern innovation, as is the whole concept of convenient circulation which has now become such an important design consideration. Rooms in Renaissance buildings were arranged in suites, and the last rooms in the series could only be gained by going through all the others. A relatively small number of circulation patterns have evolved for domestic buildings, which underlie the considerably greater variety of exterior expression.

**The relation to the landscape became important.** The concept that a house should be related to the landscape, rather than placed on a podium or within geometrical gardens, is also modern, and has become identified with almost all American domestic buildings through the use of verandas, terraces, large amounts of glass and naturalistic landscaping.



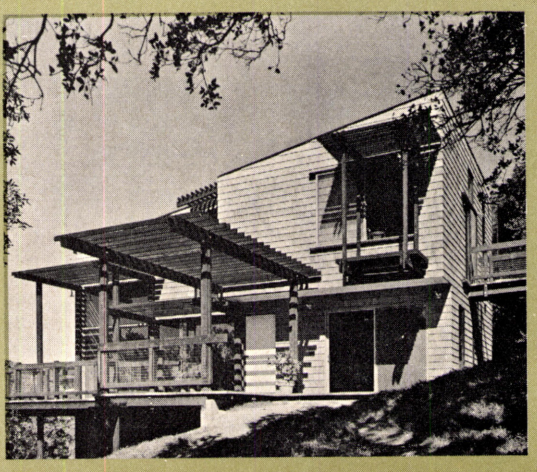
Frank Lloyd Wright's houses, like the C. S. Ross house of 1902, used the domestic vernacular with a virtuosity that has never been equalled; but, particularly on the Pacific coast, the Domestic Vernacular became the vehicle for many highly original buildings, like the apartments, at right, by Edgar Mathews (ARCHITECTURAL RECORD July 1906).





Above: R. M. Schindler's How House (January 1929) shows a European-born architect's interpretation of the Domestic Vernacular, which appears in a more typical form in the house by Harold Doty, at left (August 1932).

A house by Joseph Esherick, below left, that was published in 1949, and a recent house, also by Esherick, show the continued use of the Domestic Vernacular to the present time.



## THE REAL MEANING OF MODERNISM: INSTEAD OF HISTORICAL PRECEDENTS, THE ABILITY TO INNOVATE

Because Academic Architecture, Scenographic Design, and the Domestic Vernacular were as influential during the past 75 years as Structural Rationalism, any attempt to describe these years as a battleground between the traditionalist and modernism would be a vast over-simplification. Nevertheless, the disappearance of the historic styles from general use certainly constituted the most conspicuous architectural event of the period. In order to assess the real significance of this change, it is important to remember that a "Gothic" or "Classic" building designed during the 19th or 20th centuries is fundamentally different from the actual products of the middle ages or the Renaissance. The difference lies in the subordination of the Gothic or Renaissance detail to whatever point of view—Scenographic, Rationalist or Academic—governed the design of the building, or in the employment of such detail as an incidental aspect of an essentially non-stylistic vernacular.

Why, then, did architects continue to use historical detail?

It is difficult now to reconstruct the belief, still prevalent in the 1890's, that innovation was not possible in architecture. Renaissance architectural theorists, like Palladio, presented their conclusions as an attempt to bring back the standards of a golden age that had existed during classical times. Architectural design was viewed as the correct application of certain basic rules; and, in Palladian England, during the 18th century, even the innovations of the Italian Baroque were looked upon with horror.

The first archaeological discoveries at Pompeii and Athens began to throw doubt on the systematic nature of classical design, however, just at the time when a new attitude towards architecture was beginning to evolve. This modern attitude was the belief that each individual building deserved a separate and original solution, and not merely a traditional, typical solution that had been modified to suit the particular circumstances. This approach was in direct conflict with a fixed concept of correctness.

The movement away from "correctness" began with the concept that there should be a different set of rules for each different kind of problem: "Chinese" rules for garden pavilions, for example, "Gothic" rules for churches, or for buildings in which structure was important, and the Academic Tradition for public buildings. Later, as architects experimented more and more, combinations of different historical styles began to appear on a single building. Such fragmentation looks confusing to the art historians who judge recent buildings solely by the stylistic criteria they have evolved for other periods; but it was a perfectly natural process of change.

However, the use of so much quotation from different historical periods set up conflicts between the appearance of a building and its use, and between the appearance of the building and its means of construction, that had never been present in architecture before. Without taking the censorious attitude of some historians, it is possible to say that, as architects became more sure of their ability to make innovations, they leaned less and less upon historical detail. Today these conflicts have been in large part resolved by abandoning historical detail altogether. This process was not, however, an evolution towards a new set of uniform rules, but an incident in the development of modern architecture's very complex approach to form.

A large part of this evolution took place within the past 75 years, in stages which, despite the lack of a uniform "style," have their own identifiable historical characteristics, and which are shown pictorially on the following pages.

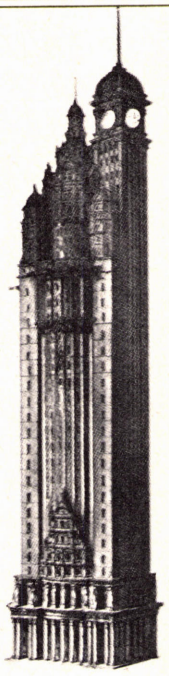
During the period between the 1890's and the First World War, architects were concerned with the expression of new materials, large scale developments like the McMillan plan for Washington and the Craftsman house.

The years between the First World War and the great depression saw the first major schemes by American architects using architecture for the improvement of society. It was also a period of great refinement of historical detail, which most architects of the time felt represented the flowering of an American Renaissance.

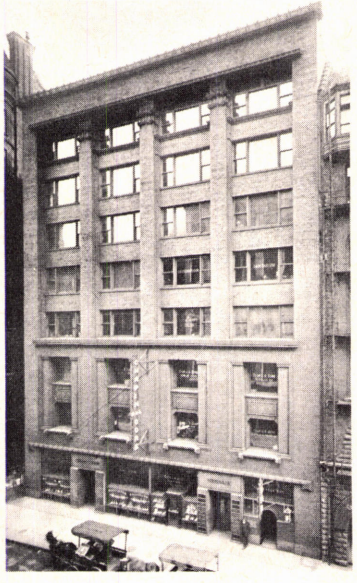
The following decade, which ended with Pearl Harbor, saw the historic styles employed more and more in museum-like settings such as The Cloisters and Williamsburg, and less and less in every-day life. There was a parallel development of a kind of modernism which was closely allied to concepts of a new social order.

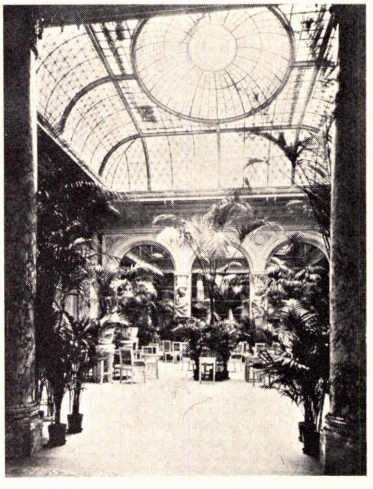
A brief flurry of interest in a utopian Post-War World of prefabricated housing and creative land planning was soon engulfed by pragmatic development. The influence of the great European modernists began to be felt, however, and some of the talented young graduates they had trained began to practice on their own.

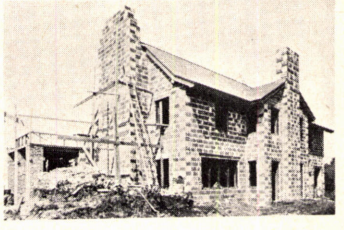
# 1891-1914: new materials and the principles of composition

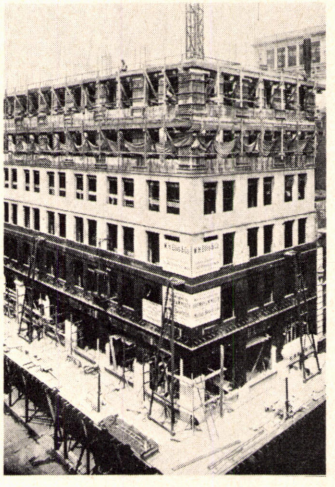


Louis Sullivan's theories about the skyscraper, as shown in his 1892 design for the Trust and Savings Building in St. Louis at right, dealt with the expression of those elevations that were visible from the street. The concept of the tall office building as a free-standing tower developed later, mostly in New York. The confusion of Barney and Chapman's project for the New York American Building, at left, points up the innovative qualities of Cass Gilbert's Woolworth building, with its integrated structure and clearly expressed elevations.

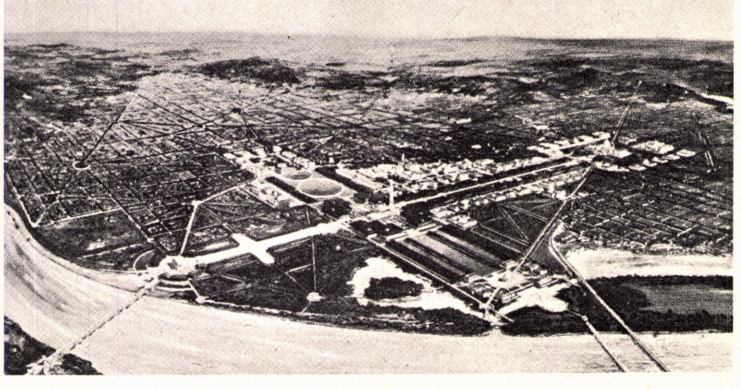






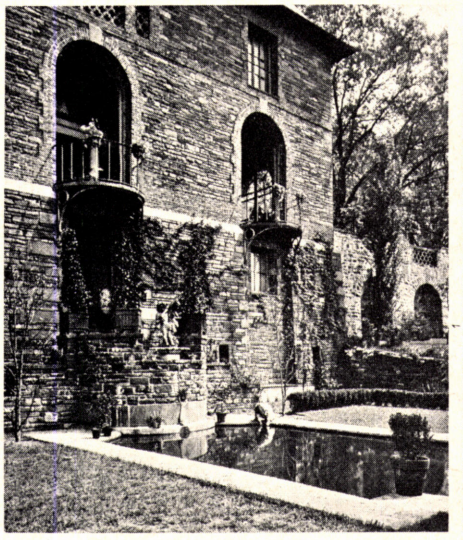


Far left: An office building in Chicago, by R. E. Schmidt (February 1908), reflected the continuing problems of expressing steel construction. At left: the palm court of H. J. Hardenbergh's Plaza Hotel in New York (November 1907) continued the tradition of the glassed-in conservatory. Maginnis and Walsh designed a house in concrete block (May 1909) and Elzner and Anderson's Ingalls Building in Cincinnati was constructed of poured concrete (June 1904).

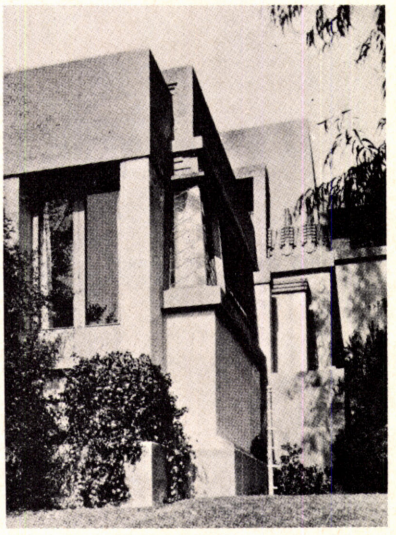


Architectural compositions at a new scale were developed in the highly Academic design of the McMillan Plan for Washington (May 1902) and in Ralph Adams Cram's Scenographic Princeton Graduate School (January 1909).

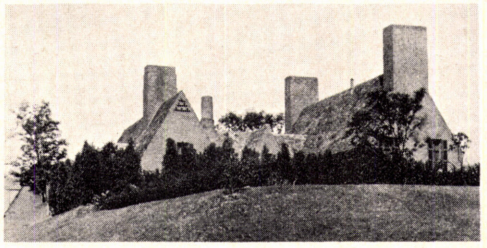
# 1914-1930: the search for tradition and the growth of social consciousness

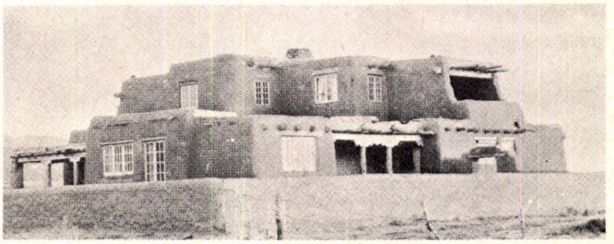


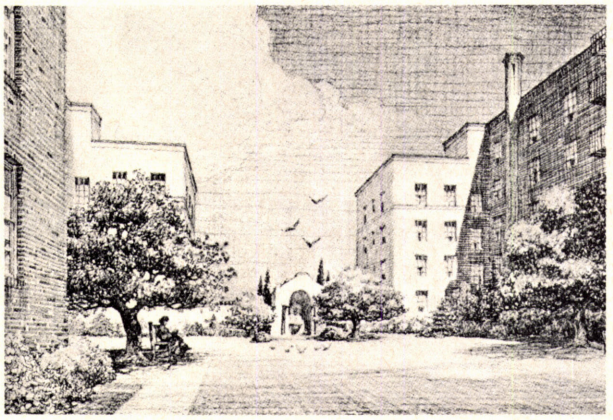
Far left: The "pastoral" design of George Howe's own house (August 1920) and, left, the translation of classical formulas in George Maher's Winona Bank (January 1917) were symptomatic of the search going on during this period for qualities of taste and refinement that could be established in a new American tradition.

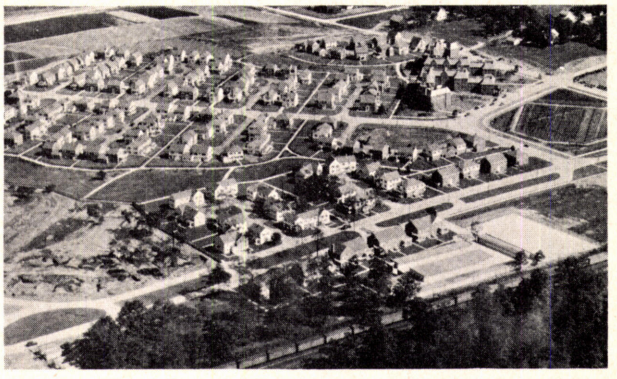


Right: The Edgar Kaufmanns, later to build Falling Water, commissioned a Scenographic house by Janssen and Cocken (July 1930), while Wright himself, in the Barnsdall house, far right, was preoccupied with problems of mass and Aztec detail (July 1928). Others, seeing the similarity to new work in Europe of the Pueblo Indian style thought it should be revived in America (August 1923).



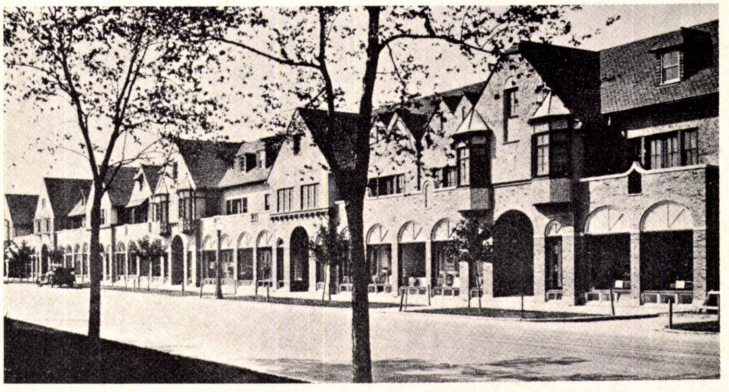




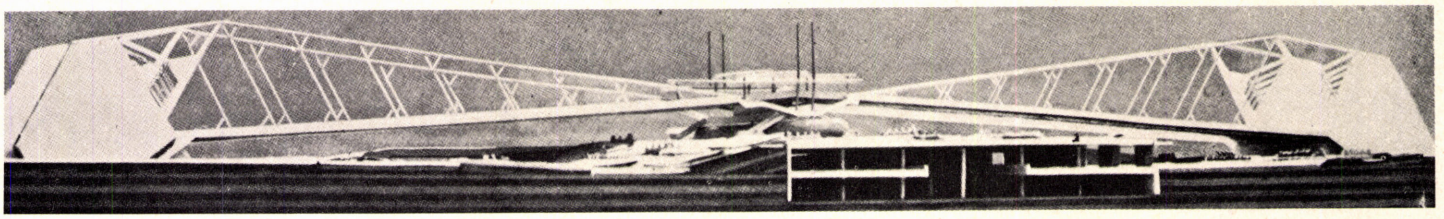


Another type of social involvement came as architects were asked to design subdivisions and "industrial villages" like Guilford Terrace in Baltimore by Flournoy and Flournoy (below left) and Kohler, Wisconsin, by Richard Phillip (April 1931).

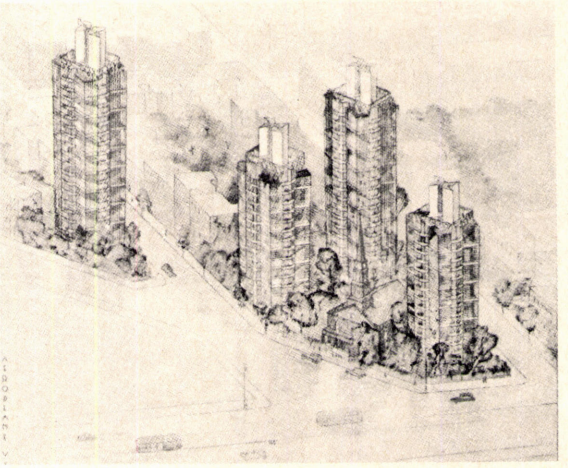
Above: Andrew J. Thomas' housing in Bayonne, New Jersey (August 1929) and, at right, Clarence Stein and Henry Wright's Radburn (March 1930) were the architectural expression of a new social consciousness.

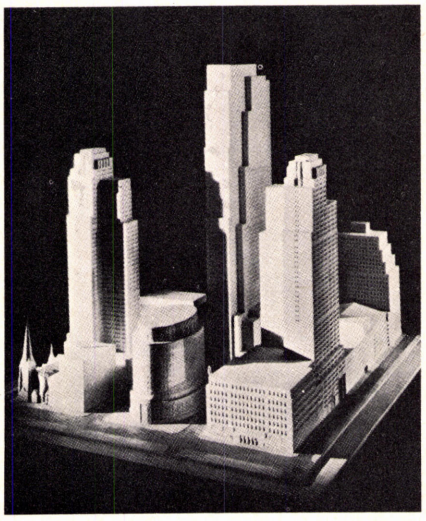


# 1930-1941: brave new world and colonial Williamsburg

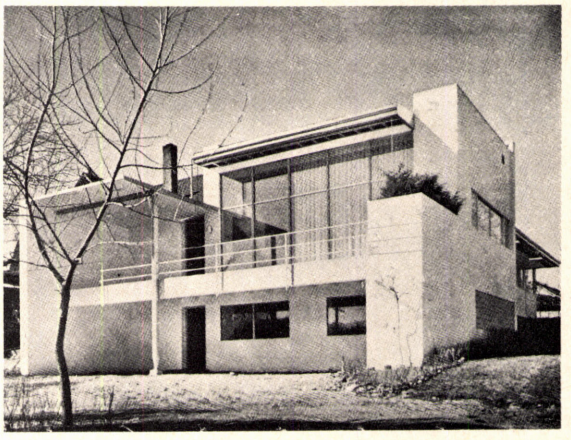


Above: The monorail station and highway overpass of Frank Lloyd Wright's Broadacre City (April 1935) and, at right, his St. Marks Towers project (January 1930) were part of Wright's comprehensive vision of a new type of life that could be made possible through architecture.



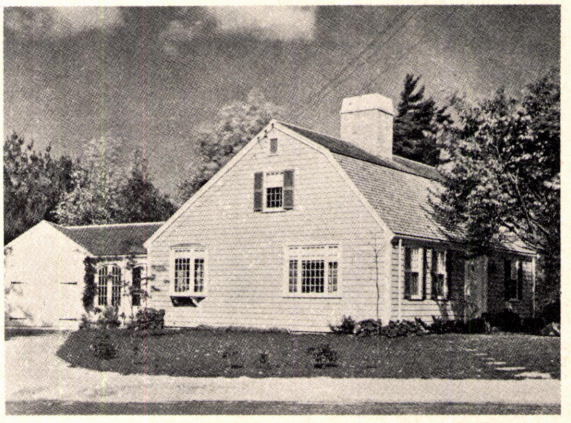


Above, left: Rockefeller Center, shown in an early study model, was one large-scale urbanistic project that was actually carried out. So was Chatham Village in Pittsburgh by Ingham and Boyd with Clarence Stein and Henry Wright, but this financially feasible and worth-while prototype has found few imitators. (Illustration from *Towards New Towns for America* by Clarence Stein, courtesy of Reinhold publications.)



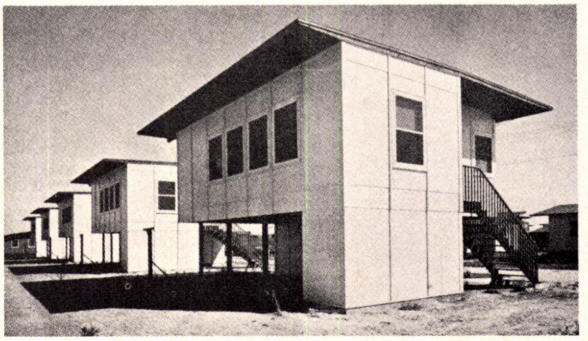
*F. S. Lincoln*

Left: The Williamsburg restoration (December 1935) by architects, Perry, Shaw and Hepburn, was a most impressive manifestation of the Scenographic aesthetic. Tremendously scholarly in every detail, it could only have been built in the thirties.

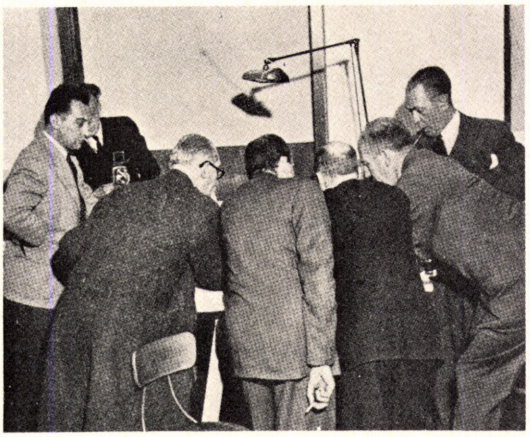


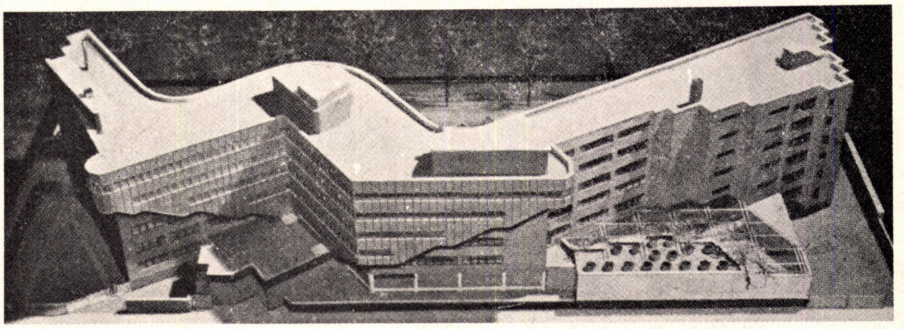
The house, above right, by Harris Armstrong paralleled work being done in Europe at the same time (November 1936). Most Americans, under the spell of Williamsburg, preferred houses like the one by Royal Barry Wills, at right (May 1943).

## 1941-1950: the postponed millenium and the influence of the European modernists

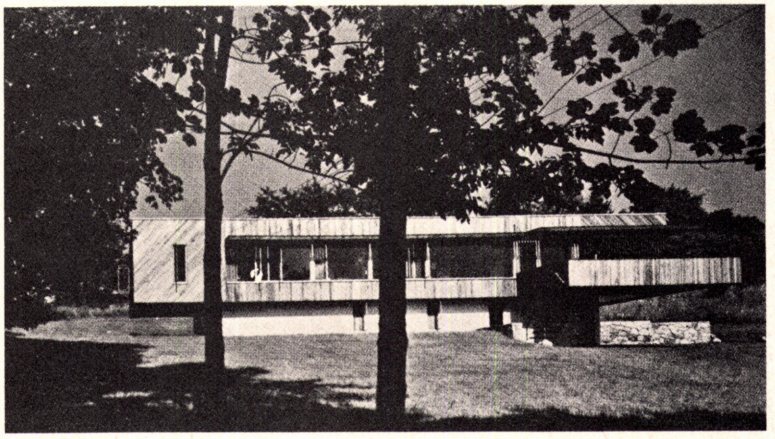


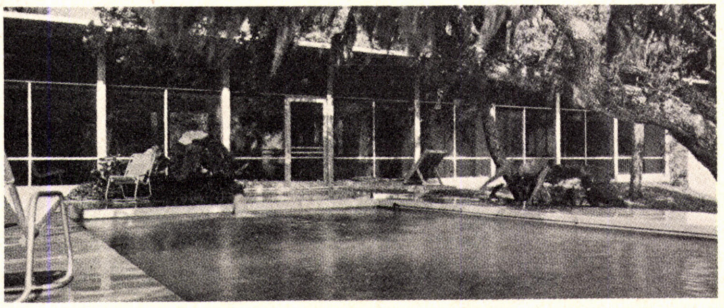
Above: The Thomas Holden house by Jean Labatut gave modernism a Scenographic aspect. During the War, however, architects turned perforce to new kinds of construction, like the prefabricated housing, above right, by W. W. Wurster, (January 1942) and airfoam houses (July 1944).

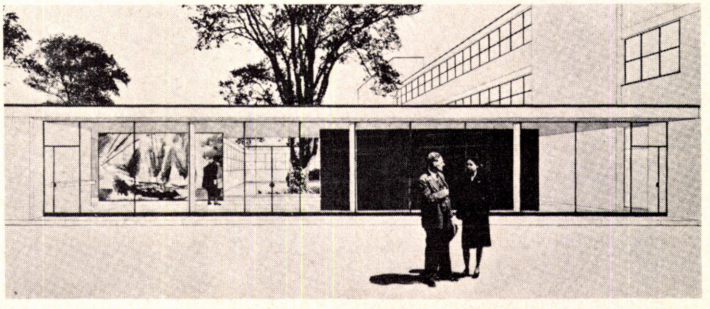




After the War, the influence of the European modernists began to be more widely felt. Le Corbusier came to consult on the U. N. (April 1947), but felt that he was unable to control events. Aalto designed a dormitory for M. I. T. (December 1947) and Marcel Breuer built his famous house (October 1948). A younger generation of American architects, whose work showed the influence of the Europeans, were beginning to establish their practices, as evidenced by the house by Twitchell and Rudolph, below left, (January 1950) and the project for a hospital in Waterloo, Iowa by Skidmore, Owings and Merrill (August 1946).







## MODERN ARCHITECTURE TODAY

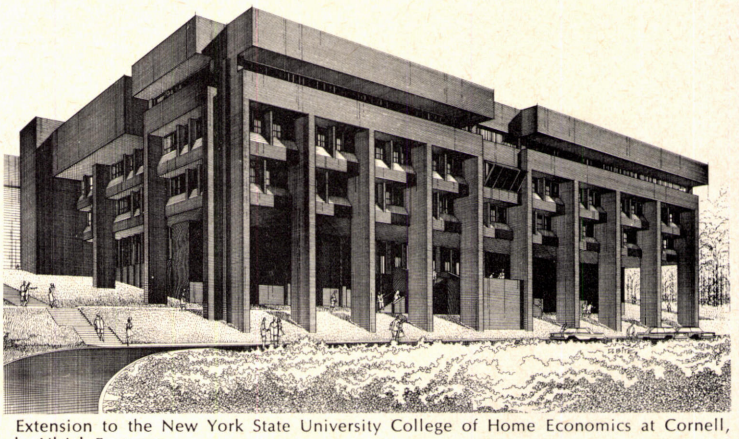
American architecture exhibits the same complexity today that it did in 1891, and the four points of view that were strong design influences when the RECORD began publication are still very much in evidence, despite a process of growth and change that has brought much technological progress and the general disappearance of historical ornament.

**The Academic Tradition today.** Although prefabricated Doric columns are listed in Sweets Catalog, the use of the orders is no longer very widespread. The concept of a cornice, column, and base, however, is still used to control the elevation of many buildings, like Ulrich Franzen's College of Home Economics at Cornell, Yamasaki's Woodrow Wilson School of International Affairs at Princeton, and John Carl Warnecke's design for the Hawaii State Capitol. Academic plans underlie many of the buildings by Mies, as well as designs like Philip Johnson's Dumbarton Oaks Museum, while the architecture of Louis I. Kahn continues to assimilate elements of the academic vocabulary.

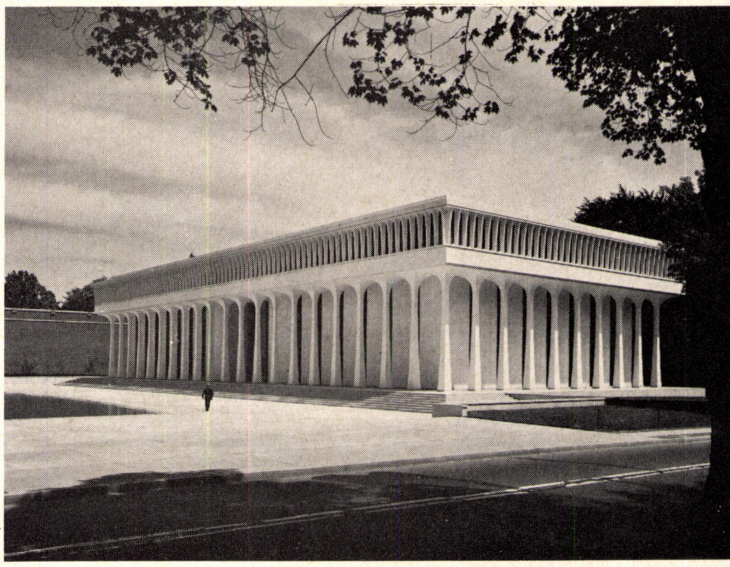
**Structural Rationalism today.** The prefabricated curtain wall, as developed in the architecture of Mies, at the U.N. building, and in the practice of Skidmore, Owings and Merrill, is still the most widespread manifestation of Structural Rationalism, although the forms of many other kinds of building are also determined by their structure. By extension, many architects are beginning to think of city planning problems in structural terms, with the street networks, utility lines and vertical circulation considered as a skeleton for future development. This concept, already influential in Europe and Japan, is rapidly being publicized in the United States, although no large-scale example has been built.

**Scenographic Design today.** The process of Scenographic design continues to be much as it always has been, although influences drawn from unornamented Italian hill towns and Greek Island settlements have replaced the Cotswold villages and Norman farmyards that were so popular during the twenties. Eero Saarinen's Stiles and Morse Colleges at Yale are clearly designed from a Scenographic point of view, with the spectator's viewpoint considered both in the sequence of exterior spaces and in the outlook from each of the rooms. Sert, Jackson and Gourley's married student housing at Harvard is also Scenographic, with its irregular massing and the manipulation of the facades to produce an interplay of light and shadow. The use of historical detail for the associations it evokes.

### 1950—Amid innovation, four traditions...

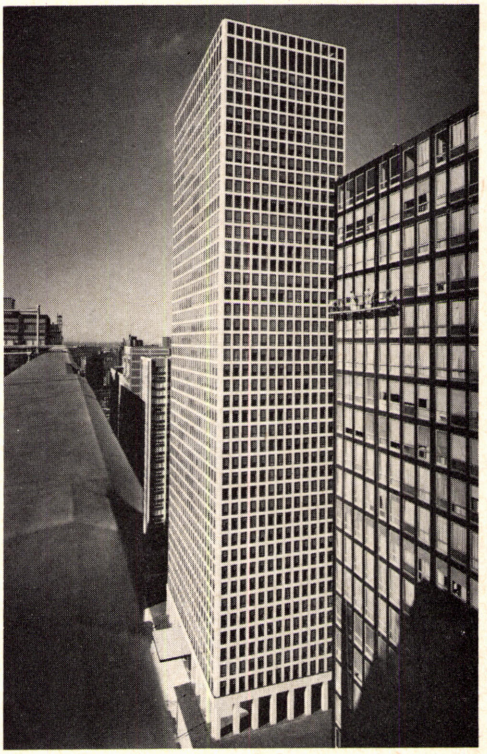


Extension to the New York State University College of Home Economics at Cornell, by Ulrich Franzen.



*Joseph W. Molitor*

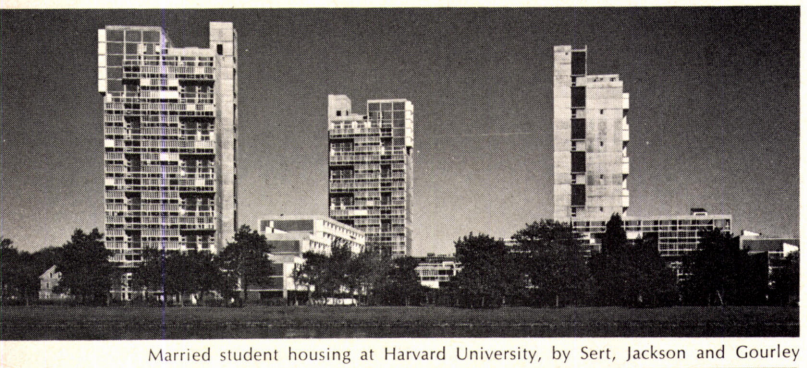
Woodrow Wilson School of Public and International Affairs, Princeton, New Jersey, by Minoru Yamasaki.



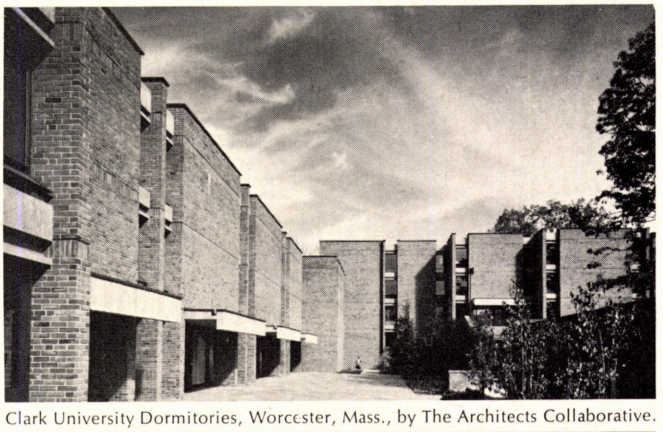
*Hedrich Blessing*

Lake Shore Drive Apartments by Ludwig Mies Van der Rohe (right) and Dewitt-Chestnut Apartments by Skidmore, Owings and Merrill.

## ...are still in evidence.

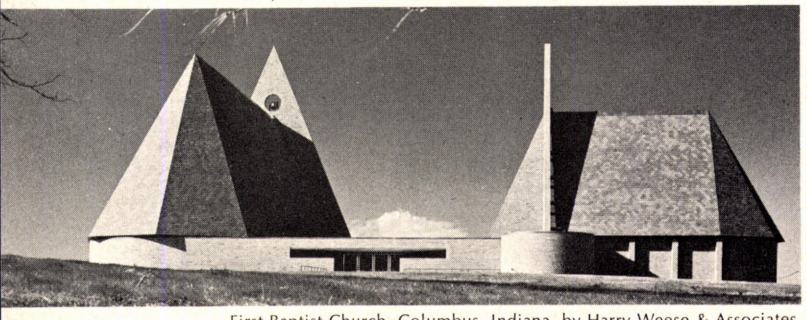


Married student housing at Harvard University, by Sert, Jackson and Gourley



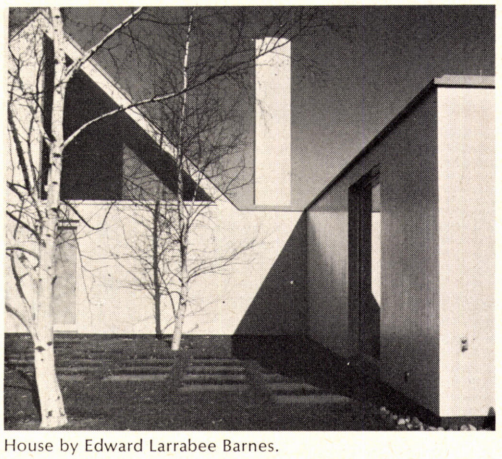
©Ezra Stoller Associates

Clark University Dormitories, Worcester, Mass., by The Architects Collaborative.



Balthazar Korab

First Baptist Church, Columbus, Indiana, by Harry Weese & Associates.



Ueli Roth

House by Edward Larrabee Barnes.

Joseph W. Molitor

"Stornoway," Ligonier, Pennsylvania, by Winston Elting.

now seems to be confined mostly to American Georgian, although an effective transliteration of neo-Gothic design characterizes some of the churches of Pietro Belluschi and the Baptist church at Columbus, Indiana by Harry Weese.

**The Domestic Vernacular today.** The convenient and informal plans, natural materials and strong relation to the landscape of the Domestic Vernacular are still very much in existence, and, in the work of architects like Edward L. Barnes, Winston Elting, and Moore, Lyndon, Turnbull, Whitaker, continue to find a refined and sensitive expression. Scenographic designs for domestic buildings are still in evidence as well; some are "Colonial," but it could be argued that a house disguised as an office building is as Scenographic as an office disguised as a house.

**The purpose of a new attitude towards architectural history.** It should be said again that the existence of four points of view—Academic, Rationalist, Scenographic, and Vernacular—has been stressed as an antidote to a simplistic or partisan approach to recent architectural history. The categories are not rigid, and they are not necessarily either all-inclusive or permanent. They do make clear, however, that the kind of diversity associated with the "eclectic" use of historical ornament is still very much present in modern architecture.

The ability to make important design innovations has not created uniformity. In the myth, the "modern architecture" of the thirties was not just a tiny statistical minority of the building being done at the time, but a uniformly distributed style. The myth then goes on to suppose that, as one commentator put it, "Modern Architecture was too pure to live," and elaborate explanations, under titles like the New Formalism, New Brutalism, New Romanticism and New Empiricism, were invented to describe what had taken its place. Each of these explanations would seem to contain an element of truth, and perhaps, some day, the mythologists will be ready to admit that these tendencies were not new, but had been present all along. We can only conclude, as Fiske Kimball and George Edgell did some 40 years ago, that "architecture will remain a living art, not less expressive of the complicated texture of modern life than it has been of the life of earlier and simpler periods." It is therefore important that our expectations of future architecture not be founded on false assumptions fostered by too limited a view of architectural history. *—Jonathan Barnett*

3

# SHAPING THE COMMUNITY IN AN ERA OF DYNAMIC SOCIAL CHANGE

Architects and engineers have the capacity to solve the major technical problems of our deteriorating physical environment. They can rid the air and streams of pollution, design improved transportation systems, and plan satellite cities. This knowledge has yet to make a significant mark upon the land, because the public mandate required to force government and industry to focus upon these needs has not been marshalled. In an era when the public and private sectors are responding to the conflicting goals of opposing social groups, with chaotic results, it is the responsibility of the professional to work with his fellow citizens toward the definition of environmental goals for which a great public consensus can be created.

One of the reasons I voted for Roosevelt in 1932 was that the capitalists were polluting the streams. One of the things that gave me pause about the choice, only eight years later, was that the capitalists were still polluting the streams." Twenty-six years have passed since John Dos Passos glimpsed this unhappy truth and today the capitalists are *still* polluting the streams. So is government, at all levels—Federal, state and local.

Capitalists and governments pollute the streams and the air because they are caught in dilemmas produced by conflicting goals. The capitalist would rather catch fish than poison them, but on the other hand he thinks he cannot stay ahead of the competition if his company is paying for an expensive waste disposal system and his competitor is pouring it into what was once a trout stream. The Federal government has good reasons for locating an atomic energy plant on a great bay which has long been the center of a popular recreation area; but the fact that such a plant will raise the temperature of the water for miles around, destroying many kinds of marine life, bothers Secretary Udall, not the Chairman of the Atomic Energy Commission.

This inability of the American people to decide what they are trying to accomplish and to establish priorities affects every aspect of national life—the conduct of the war in Viet Nam, the space program and the urban design goals of the Great Society. Our confused public policy limits the roles of men who are capable of handling those problems which are solvable in technical terms—inadequate systems of transportation, conservation of resources, water supply, low-cost housing, and control of pollution—but which require a difficult-to-reach political consensus for implementation. The architect and planner, however broad his skills may be, is usually forced to be content with devising practical, limited, short-term buildable schemes for those of his clients who have their hands on the real estate, and sketches of obsolete Utopias for those who do not. Fortunately there is hope and evidence that a broad political consensus is in the process of formation which will demand that the rapid deterioration of our physical environment be arrested, that our cities become habitable once more, and our communities more humane. It is no longer possible to keep the poor out of sight, by packing them into tight little ghettos, while the rest of the city dwellers lead an urbane life. The ghettos are encroaching upon and beginning to surround those institutions which attract the ambitious and the cosmopolitan. It is no longer possible for the affluent to escape easily to the rapidly disappearing countryside, as traffic jams get worse and pollution spreads. The dissatisfaction with the environment is beginning to cut across class lines and transcend special interests. Government at all levels is beginning to realize that it must respond to the concerted public will with shaping ideas and genuine accomplishment. It is seeking help from every quarter, and architects and planners are beginning to receive more opportunities than ever before to contribute their knowledge to the achievement of solutions and to the establishment and articulation of long-term, community-wide goals which can be broadly shared.

Government itself, however, creates policy in response to pressure and is more adept in the art of appearing to satisfy opposing short-term interests, than it is in the more difficult game of initiating ideas behind which a large consensus could be formed.

Government responds to the conflicting aspirations of its constituents by setting up a Federal agency for each set of complementary goals, to work at cross purposes with other Federal agencies established to appease different elements of the population. Cities receiving Federal funds are encouraged to follow policies which are often incompatible with the grand affirmations proclaimed from Washington. The Housing and Home Finance Agency, predecessor of the Department of Housing and Urban Development (HUD) financed the flight to the suburbs with FHA-insured loans, tempted the middle-class evacuees back with Urban Renewal Administration subsidies to developers for the construction of middle-income apartments, and added new units to the low-rent housing supply through the Public Housing Administration while the URA systematically removed older low-rent units through slum clearance. The new Cabinet-level Department of Housing and Urban Development has been formed as a co-ordinating agency for government bodies already established to pursue incompatible goals. Its ability to accomplish the much-to-be-desired co-ordination remains to be shown (though it is much too early to be either optimistic or pessimistic).

Should architects and planners take hope in President Johnson's eloquent concern for the nation's physical and social environment, and assume that goals are being focused at last? Architects making after-dinner speeches to each other tend to start these days with excerpts from LBJ's special message to Congress on improving the nation's cities, in which he first launched his demonstration cities program, again requested $30 million to fund the controversial rent-supplement program and repeated the need for Federal help to encourage the creation of whole communites or satellite cities. "1966 can be the year of rebirth for American cities," said Mr. Johnson. "This Congress, and this people, can set in motion forces of change in great urban areas that will make them the masterpieces of our civilization. . . . We know that cities can stimulate the best in man, and aggravate the worst. We know the convenience of city life, and its paralysis. We know its promise, and its dark foreboddding. . . . If we permit our cities to grow without rational design—if we stand passively by while the center of each city becomes a hive of deprivation, crime and hopelessness—if we devour the countryside as though it were limitless, while our ruins—millions of tenement apartments and dilapidated houses—go unredeemed . . . if we become two peoples, the suburban affluent and the urban poor, each filled with mistrust and fear one for the other . . . if this is our desire and policy as a people, then we shall effectively cripple each generation to come. . . . The prize—cities of spacious beauty and lively promise, where men are truly free to determine how they will live—is too rich to be lost because the problems are complex." The after-dinner speaker quoting the President then exhorts his audience to rise to the great challenge as only architects can, and prove that they are undaunted by complexity. The speech over, everyone goes home happy to have been reminded that the problems of the urban environment are profoundly and compassionately understood by the occupant of the highest office in the land. The next morning the architect reads in his daily newspaper that the House Appropriations Committee has voted to cut the entire $30 million in contract authority the Administration sought for its new rent-supplement program, part of a total of $45 million pared from the budget for HUD. He discovers that public works spending has been cut 3 per cent across the board as an anti-inflationary measure and that housing starts will drop about 5 per cent due to tighter money and a hotter war. He learns, on the other hand, that the $4.8-billion supplemental defense authorization bill was passed by an overwhelming vote in Congress and signed by the President, raising defense spending to approximately $59 billion this year. If he reaches the editorial page, Walter Lippman will tell him that "the epochal task of remaking the physical structure of American society in order to make it habitable by a radically changing population cannot be carried on simultaneously with the war in Viet Nam. . . . War, with its horror and its fascination, is to internal reform and development as a public execution is to a parent and teachers meeting." The daily news of drastic budget cuts and delays in launching those Great Society programs which many believe to hold so much promise for the concerns of architecture becomes significant when compared with accounts of the rapidity with which Congress authorizes expenditures for the space race. In May of this year an authorization of the expenditure of more than $5 billion for the fiscal year beginning July 1 was passed by the Senate in five minutes, which is at the rate of about $1 billion a minute. "It is my view," said Pennsylvania's Senator Joseph Clark, "that our national priorities are substantially out of order, when the Senate, in the course of five or ten minutes, passes a bill to send a man to the moon" when the nation's problems "are on earth." LBJ's domestic goals, however, will not gain priority over space without a public mandate.

There has been some doubt that HUD's first major new program, the Demonstration Cities Act of 1966, will be passed by Congress this year. Under this plan, a city or town applying for Federal aid would select one or possibly two blighted neighborhoods and submit an over-all proposal for massive social and physical rejuvenation. If the Federal government approves the objectives of the plan, it pays 80 per cent of the city's one-third share of this renewal. The program requires funding of $2.3 billion for the first six years averaging $400 million per year. These large sums were not included in the President's budget for fiscal 1967. He asked for only $12 million as a start to help those cities which pass the first stage of the selection process to draw up detailed plans for the expenditure of larger amounts to come.

*text continued on page 204*

*Sheldon Brody*

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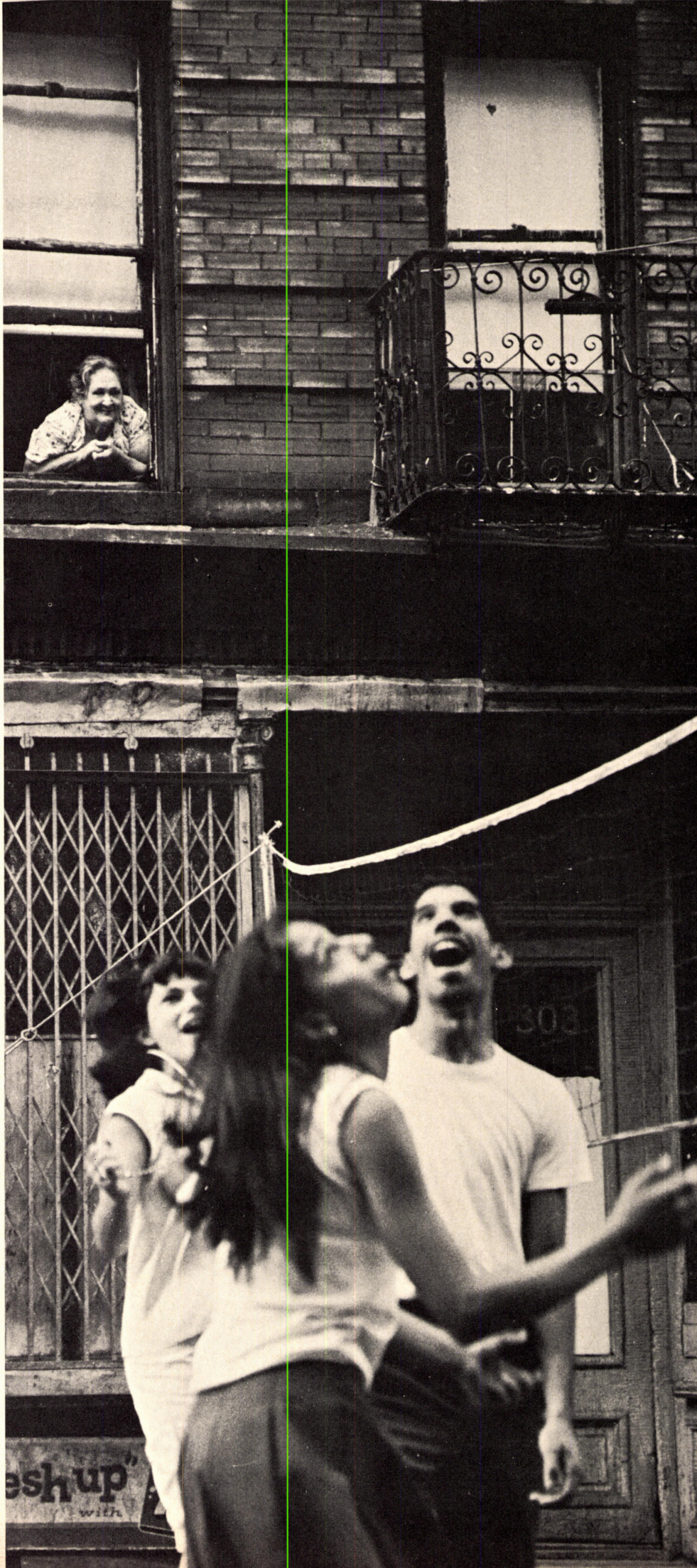
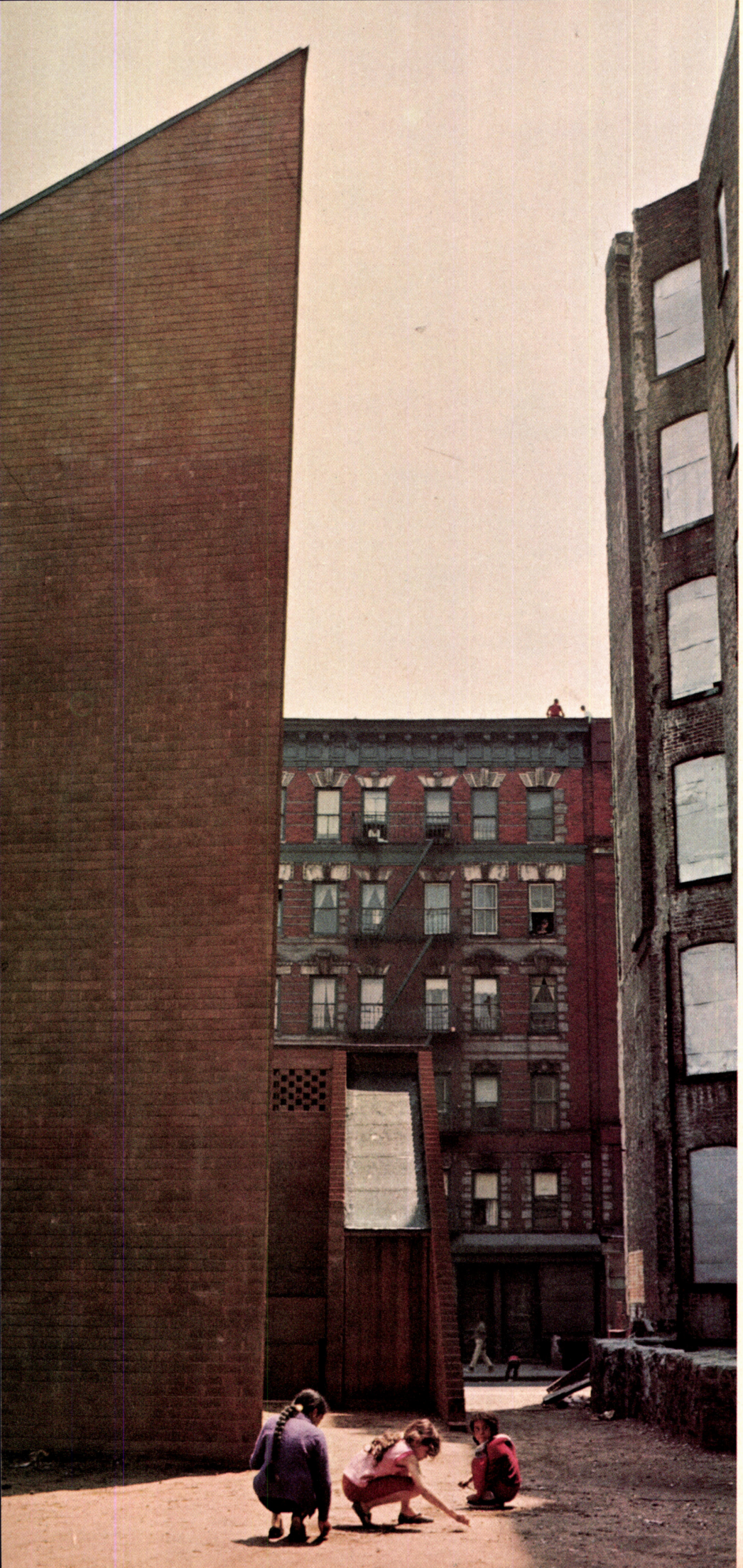
*Sheldon Brody*

# Planning with the poor: reality or charade?

Architects and planners engaged in urban renewal projects spend many hours working with neighborhood organizations which consist mainly of slum dwellers, banded together to protect what they perceive as their interests, and to strive for what they consider their rights. For some professionals who work with the poor, this activity expresses a moral commitment to help eradicate human misery, or achieve social justice; for others it may be a loving response to people who remain undaunted by the squalor they inhabit. For all designers of the urban environment, whatever their motivation, planning with the poor is becoming a political necessity. Slum dwellers, having observed the sufferings of others, now feel that urban renewal means "Negro removal." Once a district has been designated for renewal, its inhabitants, led by leaders from the churches, settlement houses, the civil rights movement, or other organizations, are ready to face the invading planning and redevelopment agency, organized to the teeth. If rehabilitation combined with vest-pocket public housing forms the major part of the redevelopment agency's renewal plan, thereby leaving the neighborhood essentially intact, "planning with people" turns out to be a happy and constructive experience for all concerned. If the redevelopment agency's plan for the renewal area is to replace the slum dwellers or small shop keepers with middle-class residents lured back from the suburbs by middle-income apartment construction, or with office workers in glistening new commercial towers, "planning with the people" takes the form of dialogues between the planning and redevelopment agency and a different group altogether, the "civic leaders." A higher social class, their goals are long-term, community-wide and public-spirited, in con-





## In East Harlem a Protestant parish instructs its congregation in community action

trast to the aspirations of the poor, which are short-term, neighborhood oriented and private.

The organized poor, when left out of such planning dialogues, raise their new-found voices, and thereby achieve major delays in urban renewal, sometimes halting a project completely. Their steady political ascendance casts a shadow on the architect and planner's vision of the city beautiful, rising from preassembled tracts of former slumland and re-inhabited by those who consider themselves society's "backbone": the art and music loving, politically responsible, high tax paying, eminently desirable middle class. It can be argued that if city governments increasingly accede to the demands of the poor and their leaders for piecemeal rehabilitation of badly deteriorated housing stock to the neglect of public housing and large-scale renewal projects, the supply of new apartments for an expanding population will be severely limited and other essential changes will be drastically slowed down. In consequence the over-all decline will accelerate and all who can will move away leaving the city to the helpless.

Architects who are striving to develop better-designed low-cost high-density housing know that a city to renew itself must adequately rehouse those it dispossesses.

The brick prow in the photograph at left belongs to the Church of the Resurrection designed by Victor Lundy and built by the East Harlem Protestant Parish in Metro-North.

The Protestant church has been a major catalyst for community participation in the renewal of this neighborhood. The tenement is one of six being remodeled by United States Gypsum at a total cost of $1.25 million. Planning for the entire Metro-North area is being done by Whittlesey & Conklin.

*Sheldon Brody*

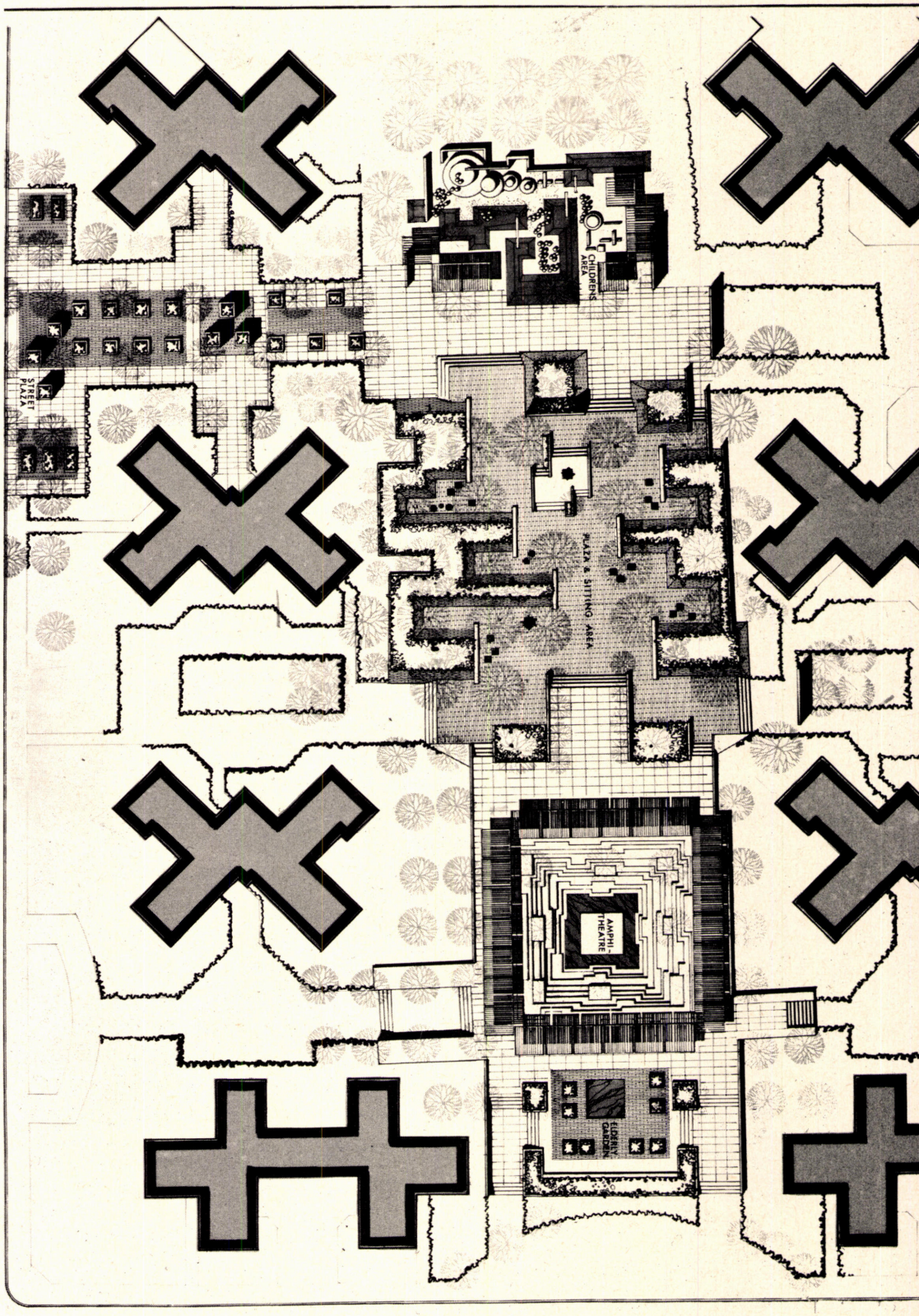
*R. S. van Santen*

## Landscape architect Paul Friedberg creates handsome public spaces for Lower East Side public housing

The New York City Housing Authority, like public housing authorities in every city, spends much time and effort convincing the tax payer that high-density, high-rise public housing is not the blighting influence that its critics claim. The latter, in condemning all projects, point to the asphalt-covered spaces, into which the apartment towers are set, note the tired grass, the Keep-Off signs and the link-chain fences, and declare such surroundings inhuman, which they are, and assert that no more high-density public housing should be built, which doesn't necessarily follow. The public housing authorities counter this criticism by fixing up certain highly visible public spaces as best they can with concrete tables shielded by striped umbrellas made of metal, thus achieving a grim proletarian parody of the country-club terrace; and with "play sculpture" most of which is aptly described by New York Times critic Ada Louise Huxtable as "an adult conceit, frequently of surpassing ugliness, that foists a pretentiously false estheticism on those too young to protest."

Now that Paul Friedberg, in collaboration with architects Pomerance & Breines, has displayed his immense talent in this genuinely distinguished solution for the previously neglected open spaces of Jacob Riis Houses, the New York City Housing Authority and all advocates of high-density public housing can assert that this type of land use can help transform public housing developments into real communities.

Physical design, as such, is currently being downgraded by some of the social planning fraternity as irrelevant to the establishment of desired community values. Perhaps this is because so much of it is bad. A research grant should be made to a team of sociologists to measure the

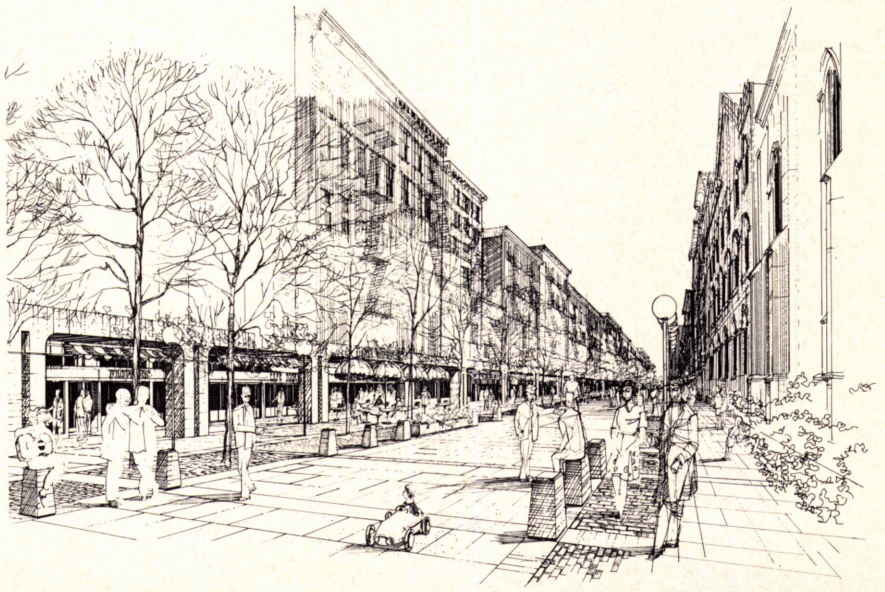


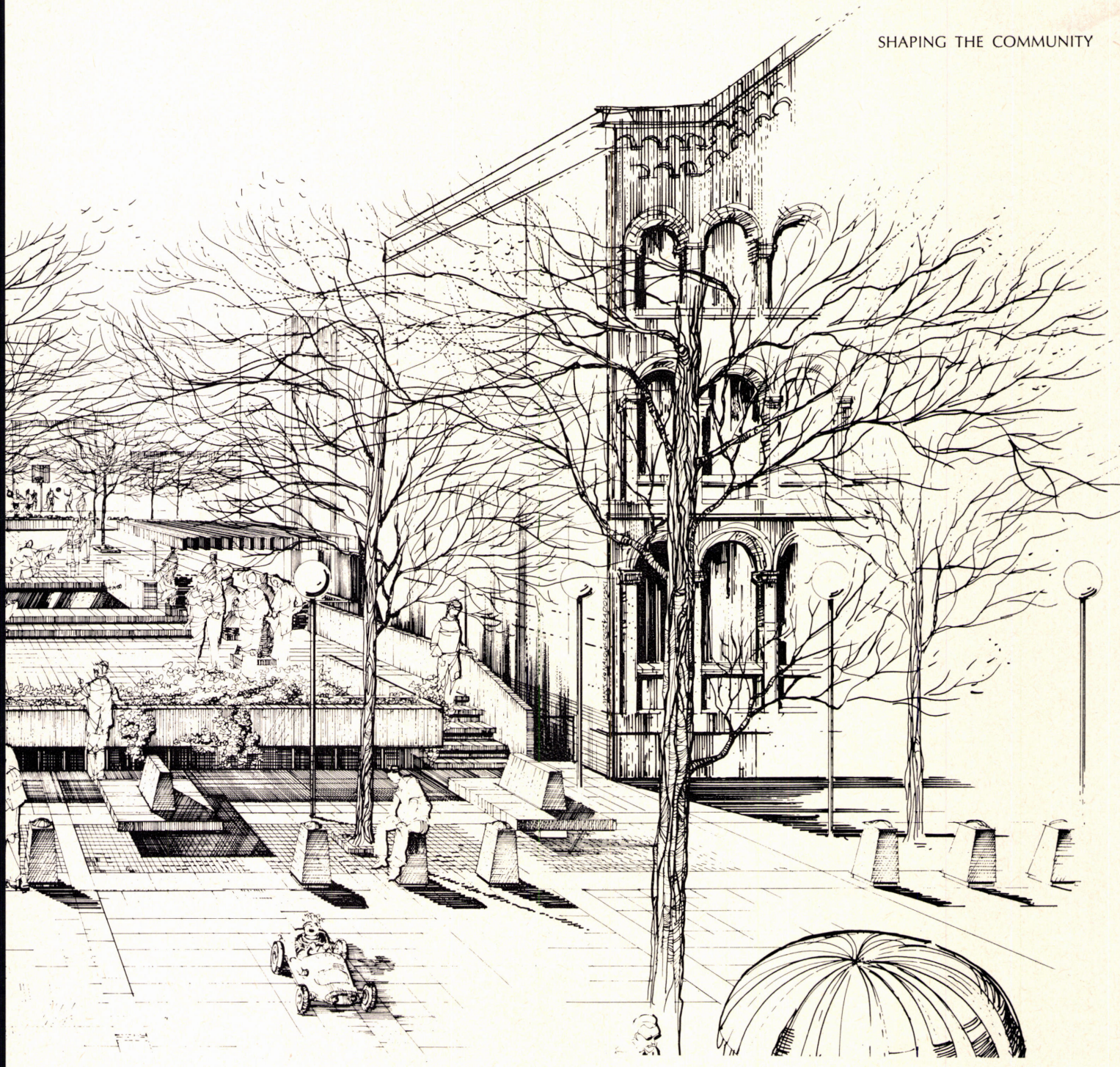
## Architects of Riis Plaza promote "park streets" to link their project with nearby park

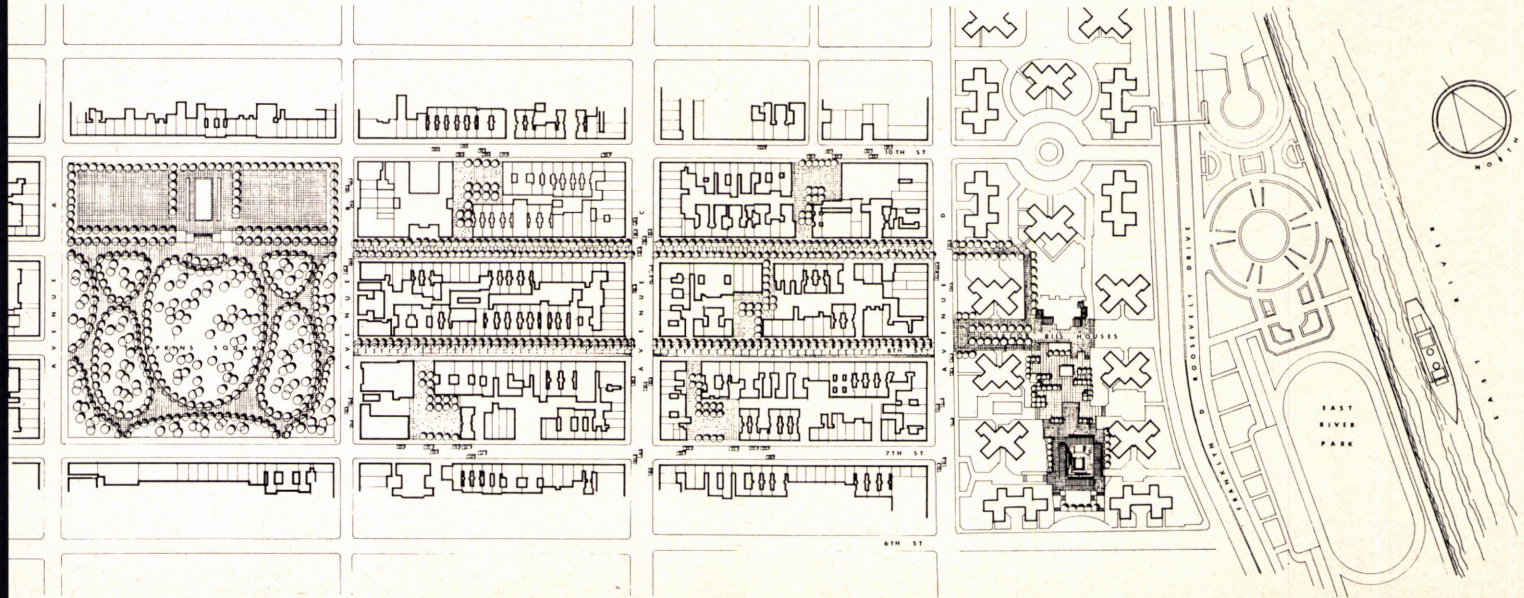
short- and long-term effects of Riis Plaza on the inhabitants of the public housing and the surrounding slum. The study might reveal a significant improvement in what the social scientists would call the "urban life style." It could help establish in the minds of the intellectual community what architects have always instinctively known: physical design of the urban environment is essentially a sociological technique as important as any other in the achievement of the humane life.

"We began," said Friedberg, "by removing all lawn areas and sensitive plant materials which need fences and signs for their survival and replaced these areas with textured paving. The esthetic and functional quality of spaces was maintained by the use of sculpture and the terracing and embanking of the site itself."

Riis Plaza comprises a two-acre site and was financed with a $900,000 grant from the Vincent Astor Foundation. It is only two short slum blocks away from Tompkins Square Park which is being renovated by the city. Pomerance & Breines and Paul Friedberg have conceived the idea of linking the two recreational areas by permanently closing two streets to through traffic and parking, and landscaping them with the same rich inventiveness the designers have displayed in Riis Plaza. One level of parking would be provided under each of four plazas shown in the site plan, which are adjacent to the streets on the north and south which will remain open to traffic. The proposed terraced plazas will be developed as suggested in the sketch, top right. The park streets, bottom right, will be accessible only to fire trucks, delivery vans and garbage trucks. Sidewalks, depressed road bed and gutters will be removed and the whole street from building to building can become a pedestrian area.



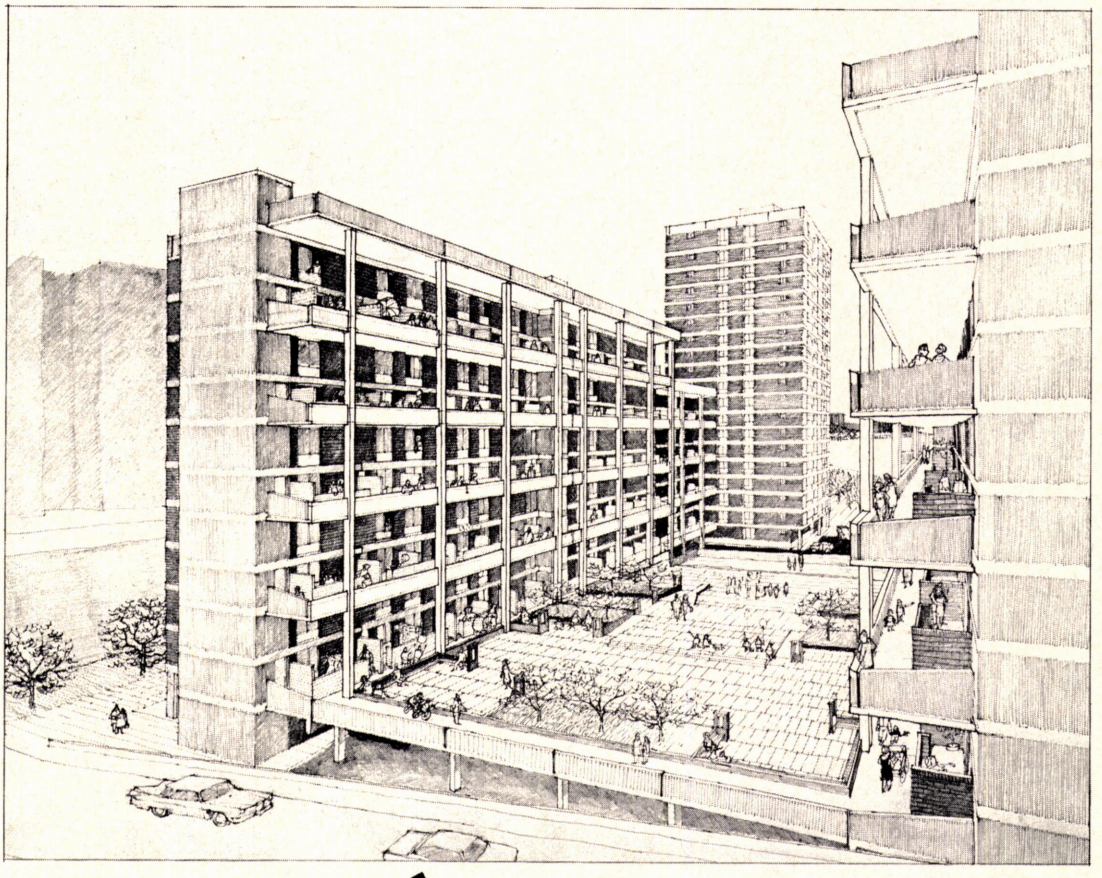


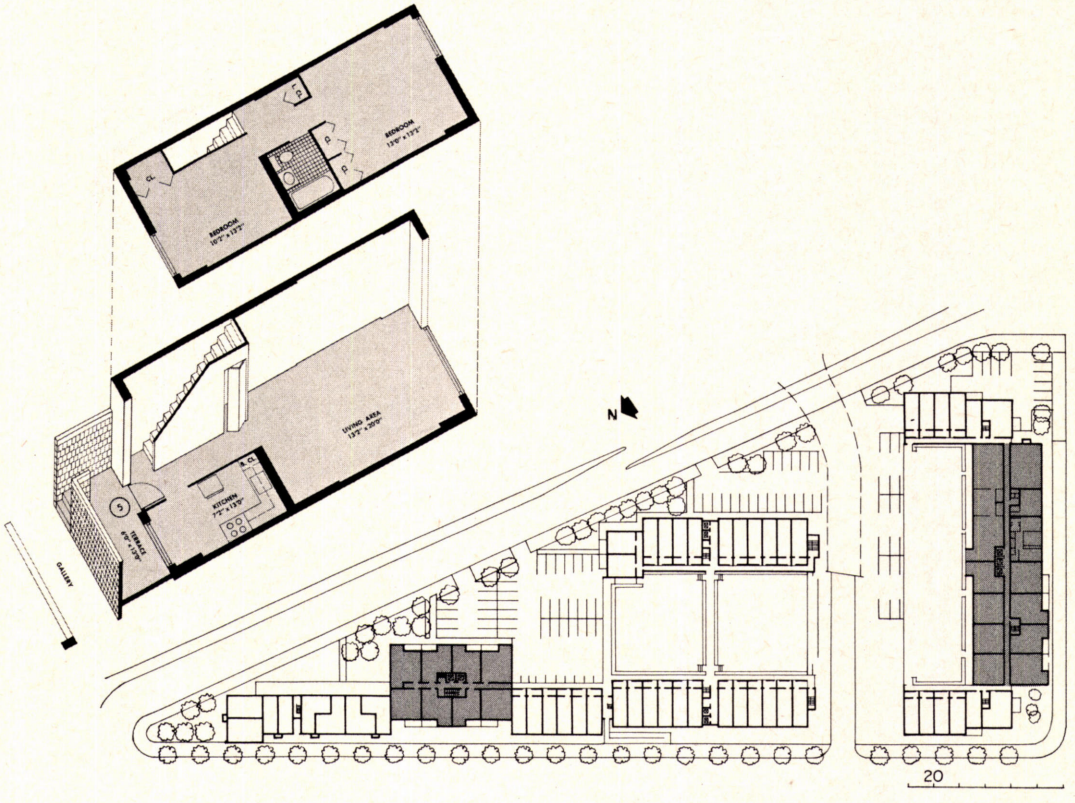

10TH ST
7TH ST
6TH ST
FRANKLIN D. ROOSEVELT DRIVE
EAST RIVER PARK

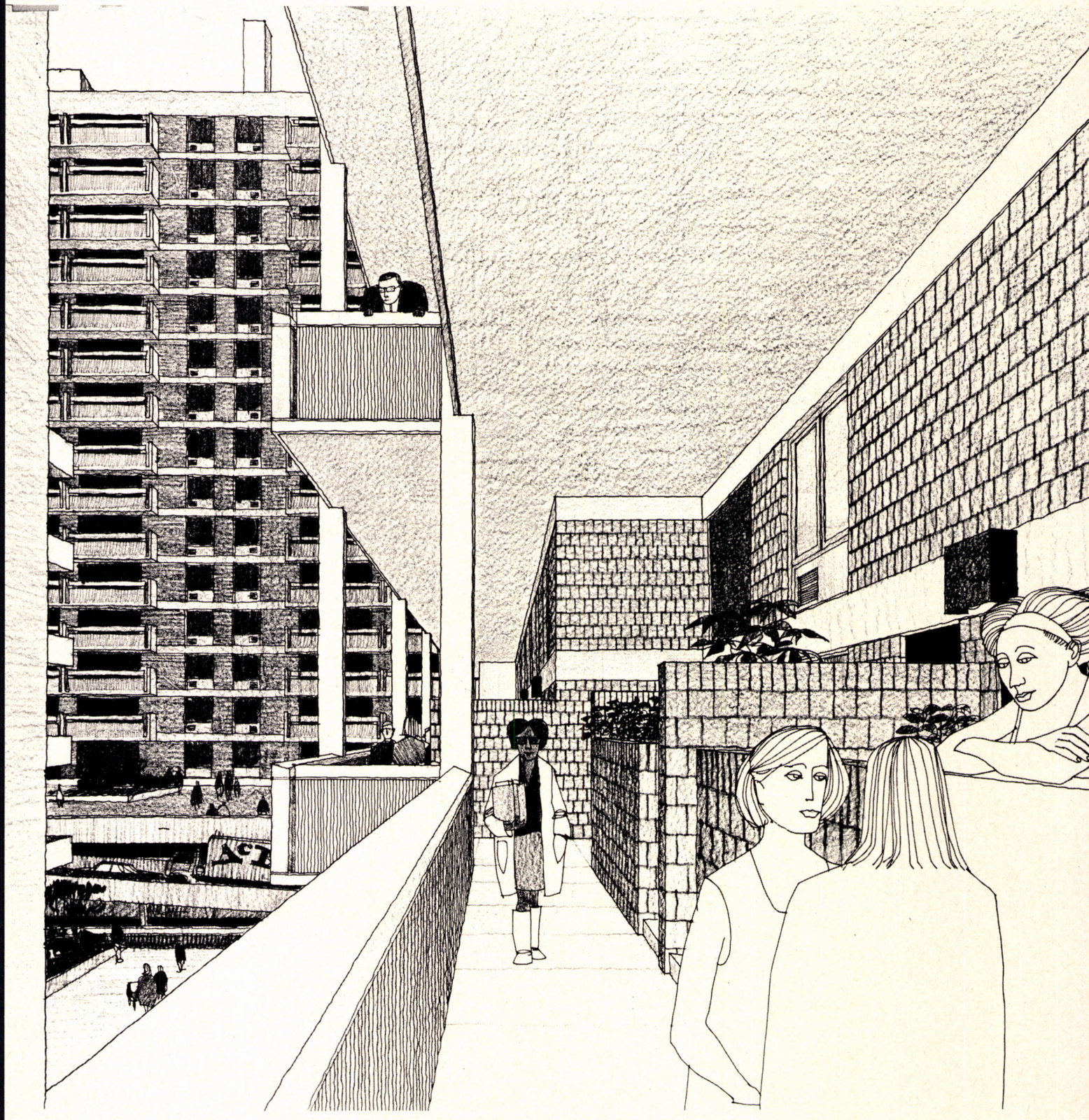
# High-density housing: A limited profit middle-income project breaks the pattern

Riverbend, a $13.9-million, 624-family moderate-income cooperative to be constructed in Central Harlem under New York City's Limited Profit Housing Companies program, and supervised by the Housing and Redevelopment Board, has been designed as cheaply as possible within strict government limitations on profit, mortgages and rentals, for a limited profit sponsor, the HRA Construction Corporation which is also acting as general contractor. Davis, Brody Associates wished to create a dense housing fabric, on the 3.7-acre site, rather than to assemble the required number of units into towers set in open spaces. The proposed site is adjacent to two housing developments of the latter type, a configuration which the architects thought it best not to repeat further. They also wished to avoid the high-tower, low-townhouse solution and achieve a better-scaled arrangement of not-so-high and not-so-low elements. They have arranged eight structures on the perimeter of the site in a manner well related to the grid pattern of the surrounding streets. The buildings present a unified urban street facade, but are so arranged that the open spaces for recreation are formed within the complex above the street-level parking garages. The plan does not invite the community to share its recreation space as does Riis Plaza, but it does offer its middle-income occupants a degree of privacy and screens them from the traffic noises of the Harlem River Drive and East 138th Street.

Six of the buildings will range in height from eight to eleven stories and will contain duplexes of two and three bedrooms. The duplex apartments will be linked to the corridors and elevators of the 16- and 19-story tower buildings by open galleries which the Housing and Redevelopment Board calls "sidewalks in the sky."



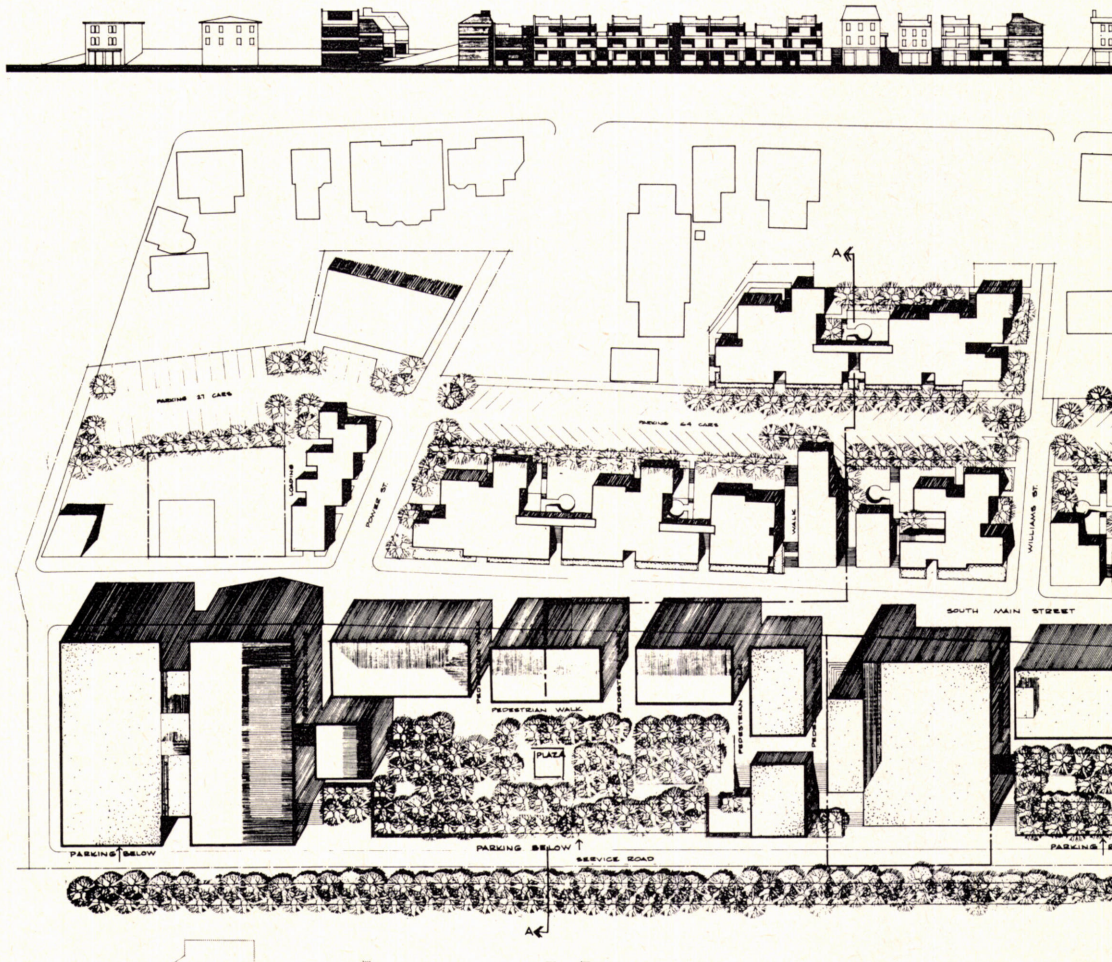


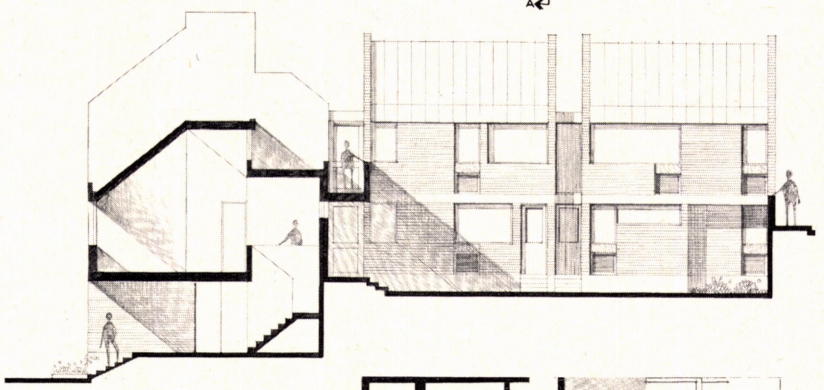


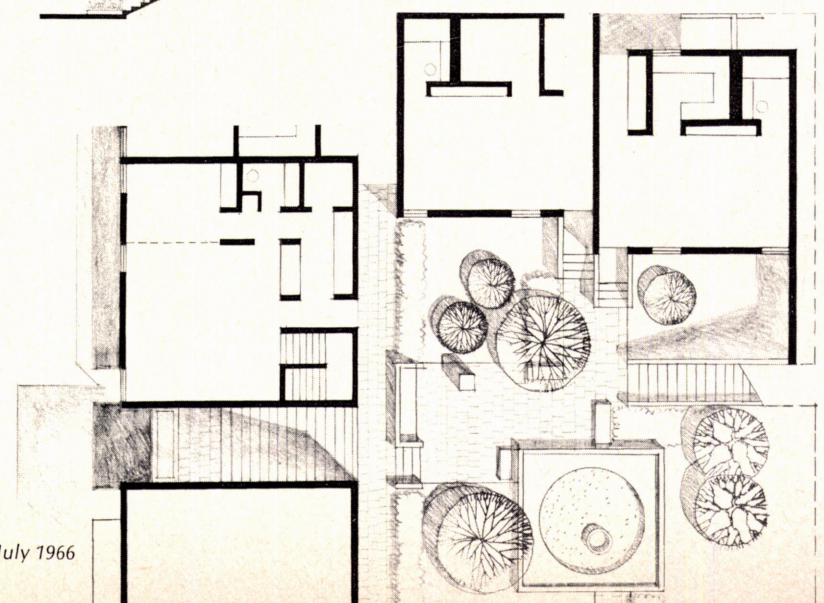
# Preserving the significant past — current Federal policy and a local example

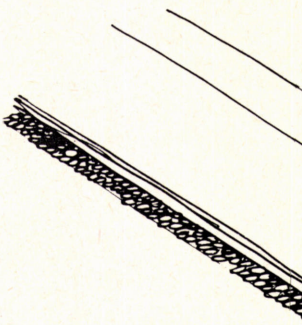
More and more citizens, led by architects, architectural historians and other preservationists, are finding that the environment is changing a bit too fast for them, that their inheritance of buildings from the past is being rapidly squandered. In response to this the Department of Housing and Urban Development and the National Trust for Historic Preservation have disclosed a new approach to the preservation of historic sites. Any community with a preservation problem may, through its local urban renewal agency, request help from HUD, which will refer the problem to the National Trust which then dispatches a Preservation Advisory Services Panel of architects, city planners and urban renewal experts to give advice. The recommendations of the panel, however, are not binding on the local urban renewal agency.

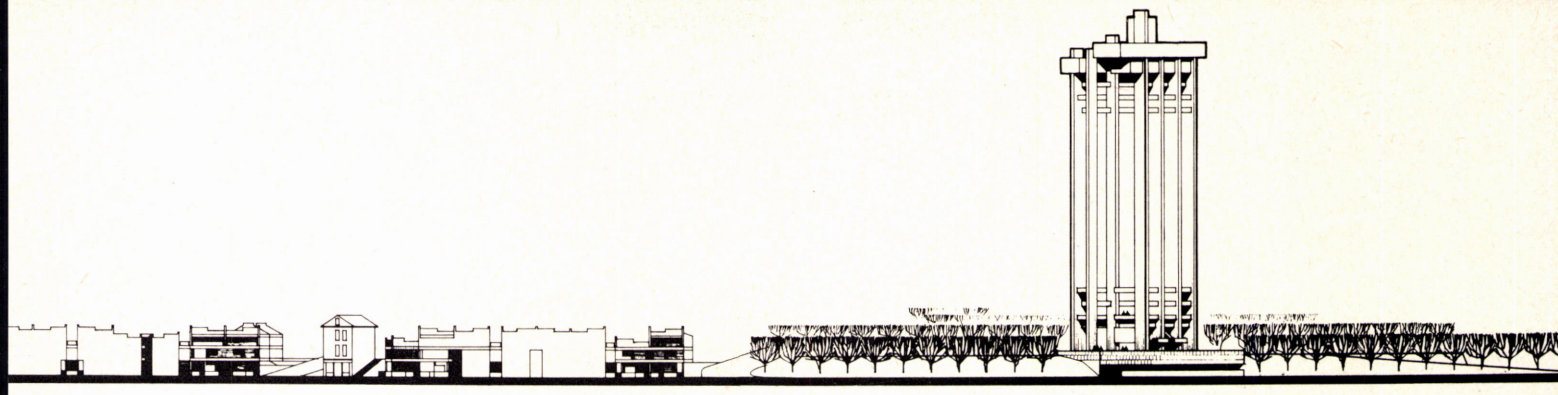
In Providence, Rhode Island an active citizens organization, the Providence Preservation Society, which has fought long and successfully to preserve the city's heritage, has been invited by the Providence Redevelopment Agency, the city's constituted urban renewal authority, to become the sponsor for the renewal of a 12-acre portion of the waterfront. This group has been joined by a New York real estate man and developer, Edward Sulzberger, who agreed to become co-sponsor because of his interest in the community as a trustee of Brown University. His architects, Horace Ginsbern Associates, and Millman & Sturges Associate Architects, have produced a $10-million plan for the area which skillfully inserts 221d3 housing units, a high-rise apartment building and a shopping center into an existing network of 20 historic buildings to be preserved and restored. According to project designer Richard A. Coats, the 221d3 units were designed to the minimum Federal standards.

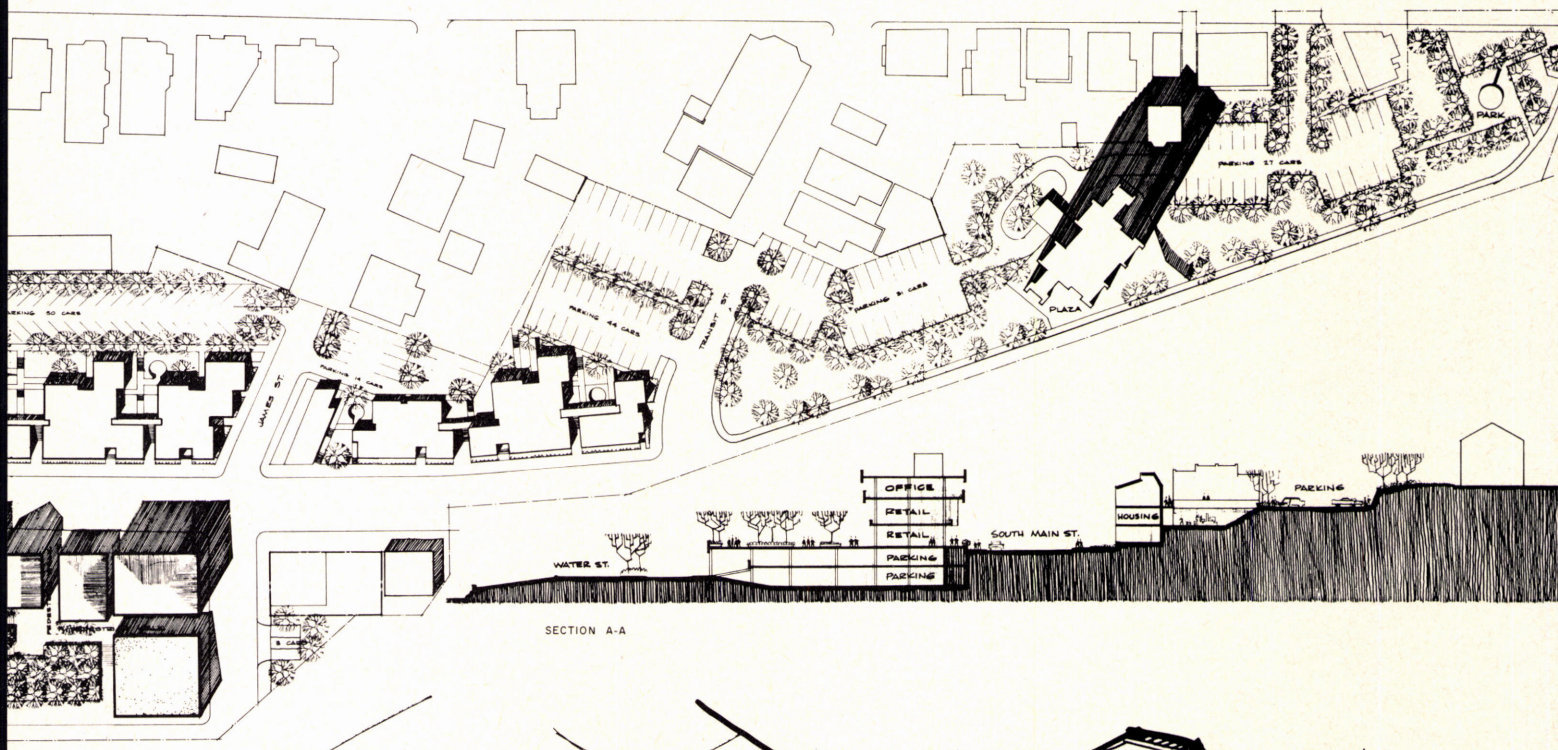


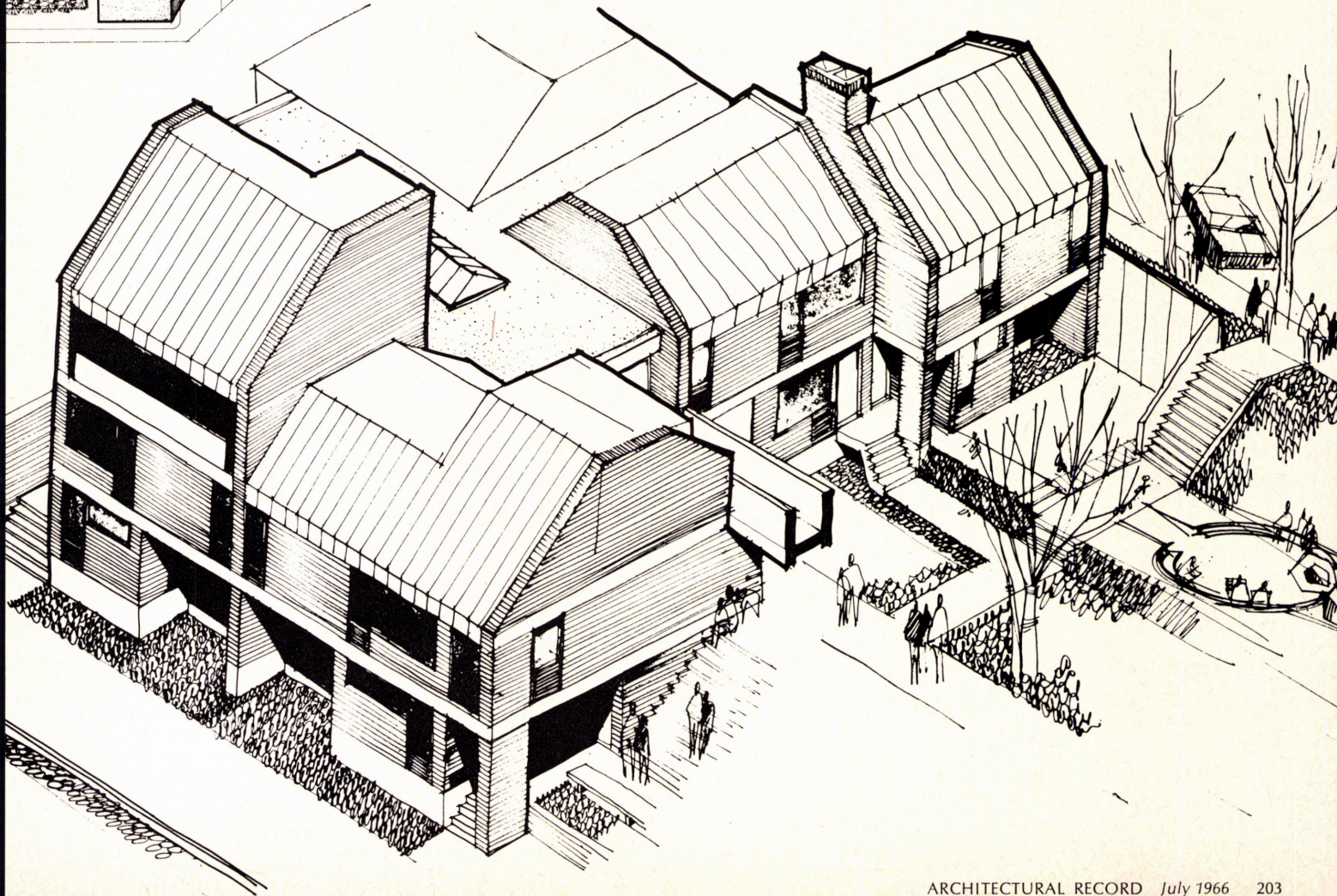







PARK
PLAZA
PARKING ST. CARS
PARKING 44 CARS
PARKING 50 CARS
JAMES ST.
OFFICE
RETAIL
RETAIL
PARKING
PARKING
WATER ST.
SOUTH MAIN ST.
HOUSING
PARKING

SECTION A-A



*continued from page 191*

Expert opinion on all sides is in disagreement as to the merits of the demonstration cities program. James Q. Wilson, who is Associate Professor of Government at Harvard and Director of the Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard University asserts, in the latest issue of The Public Interest, that the bill does not make clear what is to be demonstrated, nor how the new program will relate to existing urban renewal and public housing programs. In the 60 to 70 communities of all sizes which will be picked for the "demonstration" it is planned to add to the supply of low- and moderate-cost housing. Evidently the new program will cooperate with the PHA in supplying what the rest of the urban renewal program is removing. Services to "poor and disadvantaged people" will be stepped up and all existing policies at the local level are to be co-ordinated. Wilson points out that this will not be easy "since the programs to be co-ordinated are run by separate bureaucracies with different and often competing sources of political support at the Federal as well as the local level."

The demonstration cities program was developed in part by academic critics of the urban renewal program who were invited by the President to form a "task force" on urban problems. There is good reason to believe that the new legislation has been devised not to co-ordinate the existing housing and urban renewal programs but to challenge them, in the same fashion that the poverty program challenges the old-line public and private welfare agencies at work in the cities. The whole point of the demonstration cities program may be to put social goals ahead of physical goals and unseat the present construction-minded urban renewal coalition in the cities—the downtown department store owners who want to use urban renewal to clear out nearby downtown slums packed with bargain-basement customers at best, and build large-scale, middle- and high-income apartments for the charge-account set; the mayors who want to increase the tax base; and the bureaucrats long in power. These citizens, according to Wilson, are to be replaced by a new urban power coalition of the poor, the intellectuals and bureaucrats struggling for power.

The A.I.A., official spokesman for solvers of physical rather than social problems, supported the new legislation and President Morris Ketchum Jr. told the House Subcommittee that the A.I.A. was "extremely enthusiastic" about the bill. No one at the Octagon seemed to suspect that the demonstration cities program's dark purpose was to leave architects out in the cold with the old discredited large-scale construction-oriented urban power coalition. Robert C. Weaver, Secretary of the Department of Housing and Urban Development probably helped allay any such fears by emphasizing in his speeches to those who would be concerned, those sections of the legislation which recognize the importance of design quality, comprehensive metropolitan planning and improved building technology. Of the latter he said, "the program will encourage cost reduction techniques and new construction technology wherever feasible. If building codes interfere with the use of such improved techniques then these codes should be modified to permit the program to proceed. This nation is long overdue in putting its best technological resources to work on urban problems, and we have been too complacent about yielding to restrictive codes and building practices."

Although all cities, towns and suburbs will want the money if the Demonstration Cities Act of 1966 is passed by Congress and funded, there are sharp arguments over the strings attached. In commenting upon a provision making extra dollars of slum clearance money available to cities that design their new neighborhoods to promote racial integration and to discourage segregation by income, Representative Fino, a New York Republican, went so far as to say "the money is fine but not the social experiments." Civil rights leaders, on the other hand, believe the experiments don't go far enough in embracing the entire urban community. The central cities will be anxious to utilize every available dollar, but the suburbs are likely to go right on siphoning off the more affluent whites and excluding the less fortunate and the non-whites. The big-city mayors believe the proposed funds to be inadequate to launch the program at the desired scale, that indeed each mayor could easily spend the entire $2.3 billion within his own municipal limits. President Johnson's request for a meager $12 million in seed money makes those liberal Democrats with shaky constituencies feel that they would have little to show for a risky vote. Republicans concentrate on the inflationary waste of this sizeable long-term financial commitment

for a nation at war. Many Congressmen are reluctant to vote a bill which will not bring money to their communities if the latter don't subscribe to the legitimate national purpose of the Federal program. Wilson contends that HUD's administrators have shrouded the Demonstration Cities Act in vagueness and mystery. "If the present Congressional situation is any clue, the administrators' silence may suggest that they believe it too risky to reveal in detail their intentions. That silence probably also means that they haven't figured out what their intentions are."

We must not assume that the boundaries of our aspirations for the quality of community life will continue to be imposed by such circumstances as Viet Nam, other limited wars, and an unlimited space race. Involvement in limited wars is not entirely a matter of national choice. The scale of our space exploration is. What, if any, are the ultimate goals of the U.S. space effort? The head of the National Aeronautics and Space Administration himself, has asked the question. Said James E. Webb recently: "I think it is imperative to have a thoroughgoing national debate on whether we want to go past the point of no return." What do we do after we have put the man on the moon? Will that satisfy us? How will we exploit the feat to get our multi-billion-dollar investment back? Will there be further adventures in space, more billions spent to reach more distant planets? While Columbus merely explored an uncharted ocean, "a spacefaring nation," as the Wall Street Journal points out, "is dealing with infinity, and must of necessity proceed with finite means. Even Columbus, let us not forget, had to worry about the mundane matter of financing. It is theoretically feasible for the U.S. to devise the equipment for almost any kind of eventual space voyage, but if it does so without regard to cost and realistic calculations of presumptive benefits it runs the risk of having space override everything else and quite conceivably wasting the nation's resources."

It is interesting to note that the aerospace industries have begun to receive government research contracts for terrestrial as well as celestial projects. Governor Brown of California ordered four studies which the state's major aerospace firms have just completed. The contracts were for the study of criminal problems in a major California city, transportation in the state, waste disposal, and efficiency in the state government. It may be too optimistic to gather from this that the aerospace industries are getting their feet on the ground because they foresee a reduction in Federal spending for defense and space, and are eager to use their "systems approach" to solve the great environmental questions posed by LBJ. Certain large architectural firms, like Daniel, Mann, Johnson and Mendenhall, which are experienced in handling major space and defense projects, also believe that the techniques they have developed thereby are highly applicable to the solution of urban and regional design problems. Aerospace may get more of these contracts than architects, however, because those most closely connected with our successful adventure in space are the "culture heros" of the day and in our technologically-infatuated society would be considered more likely to come up with efficient, low-cost answers. Aerospace, in addition, is more tightly plugged into the pipeline through which Federal cash flows than are the large architectural and planning firms.

Since the great problems to be solved in the design of our environment are *political* ones, for which there is yet no consensus, if we are to achieve the national aim of equality and a decent life for all, political solutions must have priority over technical solutions. Political pressures and political choices will determine what technical solutions are called for. The systems approach of the aerospace industries is efficient when goals are agreed upon—getting a man to the moon, or carrying out Robert McNamara's deliberate plans. Its use by government leaders for broad-scale solutions of the problems of city and region can be a device by which they avoid taking painful and dangerous political measures, while at the same time appearing to grapple with the urgent problems of the day. This is an old story to architects, who have made many a fancy sketch to the same end.

What is needed is a real involvement of the architect in the political arena. For if LBJ's well conceived goals for the nation's physical and social environment are ever to become more than rhetorical, architects, planners, and all others must engage in a massive effort to divert public attention and funds to the improvement of man's life on earth. —*Mildred F. Schmertz*

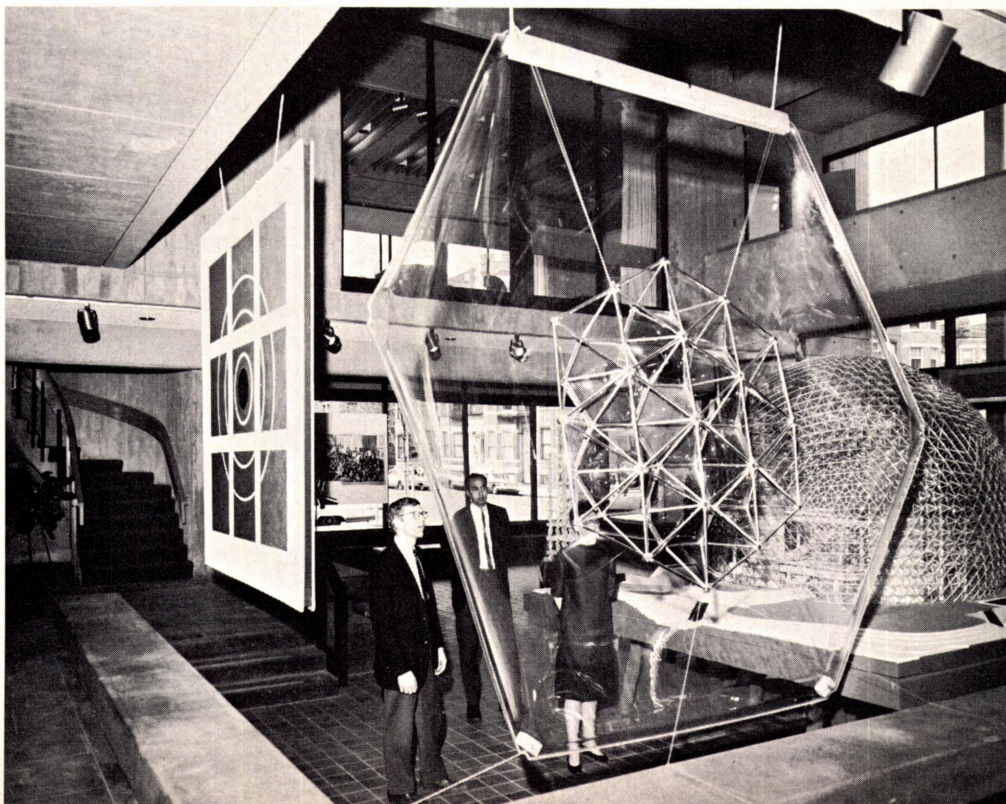
# Symbol of involvement: Boston architects construct a school for themselves and the community

The new Boston Architectural Center proclaims the significance of architecture to the community at large, as courthouses symbolize the power of law, and hospitals the importance of medicine. It is the first building in the United States to be planned and built for the sole use of the architectural profession and its affiliated groups. A handsome structure, it is prominently located near Boston's Prudential Center, which is expected to become the commercial heart of Boston.

The building will become a place for the continuing dialogue between architects and the public which has become essential to the achievement of a better environment. A.I.A. President Morris Ketchum Jr. has asserted that "The architect's greatest contribution in this age of ours will not lie in the development of new structures, but in awakening the American public to the urgent need to correct the social, political and educational defects that prevent the flowering of a better urban life." By constructing their center, the architects of Boston reveal that they have long played such a role and intend to expand it.

The design for the new BAC was won in international competition with nearly 100 entries by Ashley, Myer & Associates, a young Cambridge firm. Since 1889 the center's prime function has been to hold night classes for those unable to afford a regular architectural education. Each generation of Boston's best architects has taught there without compensation. The new BAC contains expanded classrooms, a memorial library, offices of the Boston Society of Architects, an exhibition hall, kitchen, roof garden and areas for social events.

The center got off to a good start early in May with a full week of activities to celebrate its opening, culminating in a well attended two-day conference on "The Future of Architecture."



*George Zimberg*

4

# ARCHITECTURAL RECORD THROUGH 75 YEARS

A sketchy record of a long continuity of controversies, educational efforts, publishing ventures and the perspicacity of literally hundreds of contributors, in the cause of architecture. One worthy conclusion seems to push forward: that most of the pronouncements over the 75 years would hold good today; it is the architecture, not the dedication, that changes with the years.

# SEVENTY-FIVE YEARS OF PUSHING FORWARD FOR BETTER ARCHITECTURE

*By Emerson Goble*

When I started to review ARCHITECTURAL RECORD through its 75 years of publishing, I must confess, I hoped for a brisk no-nonsense journey, and a quick review of high spots. But the entrancements were not to be denied, and no urge to speed could stand up against the absorbing interest of such a vast store of architectural knowledge and inspiration. The pressure of time yielded to the temptations of riches, and perhaps to the nostalgia of the pace and attitudes of times past.

At any rate I found myself sitting back to read whole articles—long articles they were too—and searching out events and comments and criticisms. Sometimes there was a chuckle over by-gone phases or styles or publishing mannerisms, but the more I read the more my respect grew for the editors, contributors, architects, and commentators—gentlemen, scholars and judges of good architecture. And always ready to leap forward, and to put up a fight when necessary.

The quality of perspicacity is probably what impressed me most. At least there is a consistency about it that goes on through changes in leadership and approach. I have always heard about the famous days of the early RECORD, when some great names in the field of criticism — Montgomery Schuyler, Herbert Croly, Russell Sturgis and others — joined with historians and teachers to educate the public about architecture. They were perceptive, yes indeed, but the perceptiveness of RECORD editors took many other directions, and continued on through many periods when criticism as such gave way to other forms of communication.

This characteristic perspicacity led to many "firsts." Perhaps the most notable one is the early recognition of Frank Lloyd Wright. It is generally believed that his first mention was in the ARCHITECTURAL RECORD for 1908, but in April 1904 a commentator named Arthur C. David had this to say, referring to the new stylistic manifestations of the Chicago spirit: "It really derives its momentum and inspiration chiefly from the work of Mr. Louis Sullivan, and from a very able architect, who issued from Mr. Sullivan's office, Mr. Frank Wright."

The writer went on to remark that it was all too young to have a history, "and probably 10 years must pass before any very intelligent estimate can be placed upon its value." Well, if 10 years didn't prove them right, 62 years certainly have.

So I have been impressed with the fact that for 75 years, good years and bad ones, cocky years and cautious ones, the RECORD has been characterized by a deep perception about architectural currents. That's a long time for such a light of understanding to keep shining.

**In the early days a literary periodical**

In its original concept, the RECORD was not a "professional" magazine, but a "general" one. While it sought to interest and to serve architects, its primary focus was on the general public. Its purpose avowedly was to educate the public. Its father and first editor, Harry W. Desmond, remarked in its first issue: "The difficulty is that people generally are so ignorant of even the A, B, C of Architecture. The meretricious accidents of the art—mere size, ornateness—the barbaric qualities which dazzle and impose upon the popular mind, are so exclusively appreciated that the essential, lasting and really veracious manifestations of the art are overlooked

Drawings by Professor Alexis Lemaistre for an article on l'Ecole des Beaux-Arts, July 1894.

...a more persistent attempt is needed to build up 'a pile of better thoughts' sufficient to be fruitful in great effects, and that is the work which, in really a humble frame of mind, the projectors of THE ARCHITECTURAL RECORD now undertake . . ."

The "projectors" thought of it as a magazine for the erudite reader, after the manner of Scribners or The Atlantic Monthly, and the literary orientation shows through. While of course there were illustrations, all kinds of them, the magazine was literary rather than pictorial. It published articles about "the A,B,C," of architecture, history, criticism of trends and styles, but it very rarely published buildings as we do today. There was an article by Dankmar Adler on the Chicago auditorium in 1892, and an occasional critique of an individual building, but in general it was at least 10 years before it became the custom to publish current buildings. So what later came to be considered the primary task of an architectural magazine—"publishing" buildings—really got its start quite a few years after the RECORD began its venture of publishing a magazine about architecture.

Actually the magazine went on for almost a quarter of a century before it became a "professional" magazine, directing its content to architects instead of lay readers. One can imagine that this choice was directed by the necessities of earning its keep, not by any wish to give up its communications with the public.

As it happened, the years around 1914 or '15 were a time of self-analysis in the publications world, when determination of objectives—yes, and ethics—were thrust upon magazine publishers. Advertisers were demanding certification of circulation figures (formed a bureau for that purpose), and publishers were asked to define and prove their readership. It became clear (and RECORD publishers have never forgotten it) that a good professional magazine is different from a good general magazine, and that it was time to sharpen the focus. I suppose it was Dr. Michael A. Mikkelsen who made this decision; at least the time coincides with his appointment

". . . Criticism even has a high measure of efficiency. But criticism in a public sense is not a great force with the average man, even the average man of some intelligence. Instruction is a much greater force in our present condition. The public need to know what the architect is driving at, the purpose of his efforts and intentions, the limitations that hamper him, the possibilities open to him. In every way the Owner needs to know more about the architect and the art he practices, and the architect needs from the Owner a heartier support and more substantial working sympathy.

"Henceforth, therefore, the ARCHITECTURAL RECORD will work more and more with the Architect than ever, but always *with* him in relation to his clients or his possible clients. Its efforts will be to penetrate to the Owner through the Architect, and will endeavor to create a taste and desire for at least architectural decency, earnest craftsmanship and reliable building materials. The magazine will try to banish all forms of substitution – false art for real art, false craftsmanship for real craftsmanship, inferior and therefore more costly building materials for superior and therefore cheaper articles."

February 1909, page 79

". . . The trouble lies largely with the owner. Architecturally speaking, he is a barbarian, and, as with all barbarians, he has no right sense of values, and he is more personally pleased with the meretricious than with the meritorious. He may accept good architecture as 'fashion,' but never as an intimate personal possession of value.

"As a result, the trained architect receives only a moiety of the commissions which the growth and development of the community affords. In place of well-designed structures, scientifically built, scientifically planned, the architectural spectacle presented from Maine to California is literally a nightmare of ignorant endeavor. The untrained draughtsman, the builder-architect, the papermade duplicated plan is rampant everywhere, and there is no police to arrest offenders."

February 1909, page 77

to the editorship, a post he held with distinction for over 20 years. His change of focus becomes visible, though no doubt the First World War had much to do with the changing magazine.

Now—50 years after this change in course—there is no disposition whatever to quarrel with it, or to alter it. Nevertheless, one can sit on his own side of the fence and wonder about the other. The early RECORD filled a great need—the education of the public about the architect—and this need is perhaps more apparent now than it was then. It is true that architecture now gets gobs of publicity in the general magazines—the picture weeklies, the news weeklies, the newspapers, the "shelter" magazines, the remaining "literary" magazines. But the educational quality of it all is varied (to be kind) or deplorable (to be blunt). The understanding and dedication of the old public-focused RECORD could be very helpful today.

**When criticism was rampant in the public arena**

And—50 to 75 years later—the old RECORD is still talked about for its fearless and forthright criticism. There was a group of critics whose names are still recalled and whose writings are still quoted. The quality I mentioned before—perception—shines through their writings; that is what made them important. But one suspects that their nerve and combativeness have much to do with their lasting fame, architects being what they are. There are a few "critics" today who understand the impact of sharp words, but generally speaking I should say that they are not in the same class; the sharp words without the equivalent perception don't sting so much.

The same writer who mentioned Mr. Frank Wright in 1904 did not hesitate to publish a house by another architect, and say: it "owes a great deal to the work of Mr. Frank Wright, and this is as it should be." In the same feature he published another house by another architect with this comment: "He is assuredly the 'new architect' in his most garrulous and candid moment. He has not been afraid to design houses which would impress an eye, not merely as extraordinary, but perhaps as grotesque . . ." He does soften his comment somewhat by suggesting that the architect was one to study and consider.

There was one famous series called "Architectural Aberrations," which ran over several years. A specific building was named and pictured and then verbally reduced to shreds. I don't know that any of the architects so immortalized ever committed hara-kiri, but I can imagine the fun some other architects had. The series was later dropped, and I can't find any stated reason; perhaps the editors were swamped, as editors would be today, by the proliferation of aberrations, or bored by the constant repetition of common faults. Whatever happened, architects were vastly impressed (amused?) by the department, as indeed have been various generations of editors of the RECORD.

In any case, the RECORD, in those early days, made a great deal of noise, and architects, then and ever since, have been happy about it.

Elsewhere in this issue (page 9) I have made some comments about criticism in today's situation. Right here it will have to suffice to say that as the RECORD shifted its aim from the layman to the professional (First World War times) it gradually turned to a calmer, more professional attitude toward the inventions of architects, assuming the sophistication of the audience, and taking up what might more properly be called reporting in depth rather than the more limited idea of "criticism."

**But the RECORD was known for charging to the front**

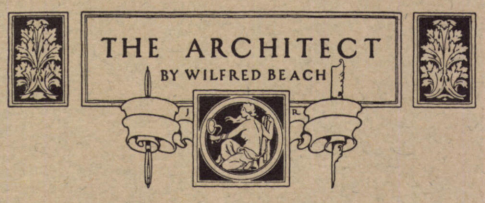
If, 50 years ago, the RECORD shifted to a more professional posture, it did not change its charge-forward determination. From an original conviction that architecture deserved the best of publishing techniques and perspicacious if not precocious observations, later regimes of staff management have tended to persist in the tradition. Not always with tremendous rewards, it must be said, but generally with a compulsion to move with the times.

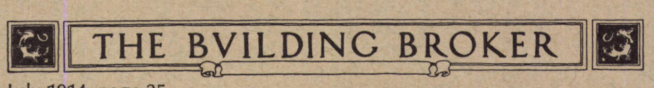
It seems a small thing now, but one of the temptations

## RUSKIN AS CRITIC OF ARCHITECTURE

*By Charles H. Moore*

August 1924, page 117




July 1914, page 25

## TRAINING FOR THE PRACTICE of ARCHITECTURE

BY CHARLES H. MOORE

January 1921, page 56

that brought the gleam to the eyes of its founders was the use of half-tone engravings to reproduce photographs. Our historical notes show that the Real Estate Record and Guide, an ARCHITECTURAL RECORD relative now in its 98th year, was the first magazine to take advantage of the half-tone process. That was in 1889. Before that buildings had to be shown in line drawings, or "wood cuts"; the realistic result had to be imagined. Two years later ARCHITECTURAL RECORD made its bow, and it doesn't require much imagination to envision the first enthusiasm for showing architecture in actual photographs.

In recent months there has been new enthusiasm around the RECORD for the use of four-color photographs, using a new web offset process of reproduction. Looking back we find the first four-color reproduction of architecture in the July 1893 issue of ARCHITECTURAL RECORD. One presentation in 1894 (Colonial Houses!) had eight full-page, four-color photographs (probably lithographs).

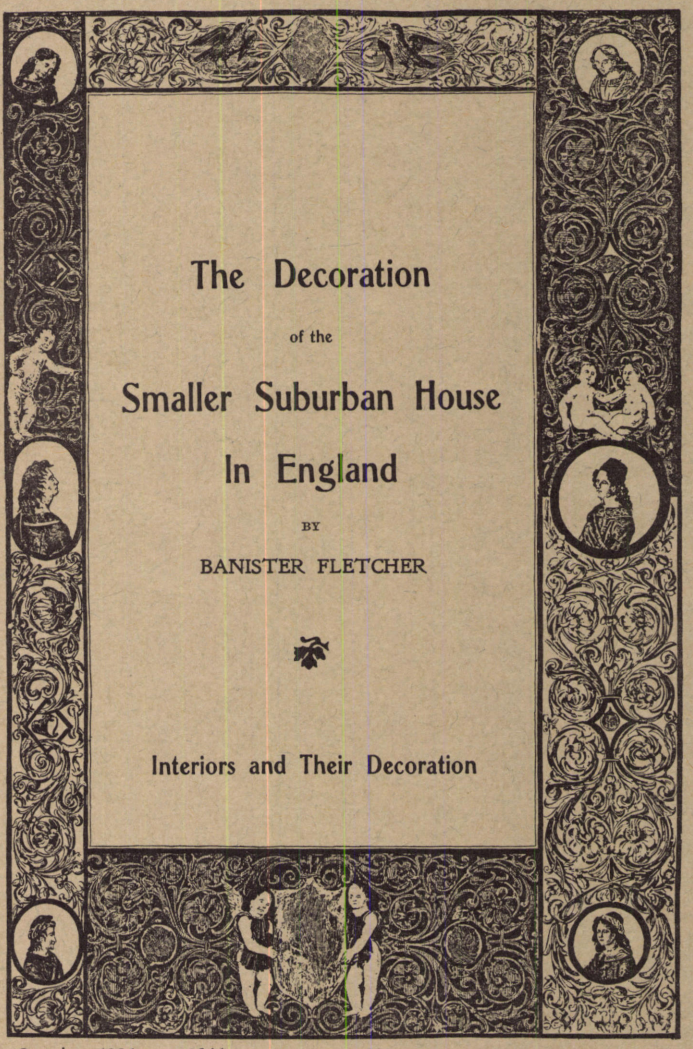
More important, of course, are the "firsts" in recognition of architectural break-throughs or individual initiative. Louis Sullivan, "Frank Wright," and the "Chicago spirit" have already been mentioned. In 1904 this combination was 'way in advance of the times. FLLW was recognized in Europe after that, and not really accepted in America until much later. In 1908 he wrote a famous article for ARCHITECTURAL RECORD, "In the Cause of Architecture," March 1908 — December 1928.

Perhaps it could be considered a "first" when Dr. Mikkelsen re-activated Wright in the twenties. Wright had been through all manner of vicissitudes, was dejected and idle. Mikkelsen made a deal for him to write a series of articles for the RECORD, for a fabulous price, and Wright took new encouragement, got new recognition, and took off again for new victories. In fact he took off so fast that he never wrote the final article; he took great pleasure in his later years in reminding us that he still owed us the summary piece of his famous series.

Still in the area of graphics, the RECORD undertook one

> "It will probably prove to be a fortunate thing for American architecture that such is the case. In a country, such as the United States, which is in the process of making and naturalizing its local architectural traditions and forms, it is a good thing both that some of the leading practitioners should intentionally cleave to the standard authoritative historic styles, and that others should propose, also intentionally, to depart from strict allegiance to the time-honored tradition, and to substitute types of design that have a manifest local propriety. These two ideals of design seem to be exclusive; but both are as necessary to the steady progress of American architecture as are a conservative and a liberal party to a healthy political organism. The two sets of ideas will prove to be supplementary—provided both of them are sincerely and intelligently adopted, and are applied with a high sense of technical honor. What American architecture needs very much more than devotion to any one group of forms is devotion to an uncompromising technical standard. When such a standard prevails, and brings with it all that it implies, the forms will take care of themselves."

"The Architecture of Ideas" by Arthur C. David, April 1904.




October 1901, page 641

> ". . . While keeping close to the invisible presence of the Ideal we must not lose touch with what exists, what each day brings forth, with the unavoidable and limiting conditions of our time. No effective work can be done by cutting adrift from what is. Reformation must be *from* what is and not *against* what is. Artificial progress, there is enough of it. We must not forget that the 'genius of each race brings forth its best products only when it works in harmony with the laws of its own nature, expressing without affectation the ideas and sympathies excited by immediate contact with the facts of life.' The facts of life! How inexorably, how tyrannously even the commonest of them demand recognition, and how many of the aspirations and noble efforts which they have broken as glass, leaving only a sound like music to linger in the silences of life."

"By Way of Introduction" by Harry W. Desmond, July 1891 editorial.

of its several redesigns in 1928. The art director was named Charles D. DeVinne, known in the graphics field as the designer of a well known type face that bore his name. But the type designer for the new RECORD format then was the famous Frederic W. Goudy, who specified one of his famous types, known as Garamont, for body, and designed new faces for head and caption types.

It is odd, looking backward, that the pictorial aspects of architectural journalism took so long to develop. Naturally all copies of the RECORD used drawings and photographs liberally, but they were used, after the manner of the times, as illustrations for text. In the early issues there are not many plans or sections, maybe because the reader was presumed to be unable to read them. Later they began to appear, as the magazine turned more professional, but somehow their possibilities for communication were unrealized.

Photographs always have dominated the pages; there was a long period, in all architectural magazines, when photographs were "plates," and each took a full page; frequently the page opposite was left blank, doubtless to heighten the pictorial effect. In those days, the text, if any, was isolated from the pictures.

The concept of pictorial journalism that we know today came later (if in fact it has fully come at this date). I mean the consideration of photographs, plans, sections, captions, text as a unified communication effort, in which one element complements, not repeats, the others. Today we study this sort of thing at great length. But this communication science seems to have taken forever to develop, perhaps because there was more time to read, less material to try to encompass, and maybe more enjoyment in the process of digestion.

I doubt if early editors of the RECORD ever considered what we think of today as "double" reading. We consciously arrange many of our "presentations" for two types of reading: scanning and study. A story is designed to give a quick message to the hurried reader, and also to reward the more studious reader—who actually may be the same person at a different time.

At any rate, there is no evidence of this kind of planning effort in any of the magazines until, say, the last 20 years. Slow down the world; I want to sit down and read a bit!

**The greats in architecture in the pages of the RECORD**

As one notes, in such a journey through the RECORD's history, the obvious perspicacity in its pages, one notes also a continuous parade of great architects and architectural greats. The institution (the RECORD was that) that first noted the work of "Mr. Frank Wright" kept its pages alive with writings, buildings, battles of the individuals who then (or later) were great in architectural history.

Frank Lloyd Wright wrote for the RECORD in 1908, in the twenties, again in the fifties. Louis Sullivan wrote a long series in the twenties; in fact the articles get shorter as he worked on to his end. Indeed it was an article in the RECORD by Sullivan that pushed Eliel Saarinen to his American fame, the one that blasted the Chicago Tribune competition for giving Saarinen second prize, not first, for his progressive understanding of the skyscraper form. Le Corbusier did some articles; so it seems did everybody else. Looking back, it is in fact difficult to believe the oft-quoted saying that architects would prefer to speak with their work or their drawings, rather than with words. They spoke with words in the RECORD, millions of them.

It is perhaps fitting to comment, also, that the words frequently had more permanent validity than the designs. I don't mean any denigration of the designs of the architects who "made" the history books; what I mean is that as you look back through old magazines you find the words much as they are today; maybe only because words come more easily than works. At any rate architectural objectives have changed but little, while currents of design have continually shifted.

**Vitruvius and the pattern of the three-legged stool**

Present editors of the RECORD feel the burden, as I have said, of keeping architects informed on many other topics besides visual design, and we think we work pretty hard at

# THE ARCHITECTURAL RECORD

*An Illustrated Monthly Magazine of Architecture and The Allied Arts and Crafts*

VOLUME 63 JANUARY, 1928 NUMBER 1

## A WORD ABOUT THE NEW FORMAT

THE changed appearance of The Record seems to call for an explanation and possibly for a restatement of editorial purpose. The page-size is plainly a concession to the universal demand for standardization. Having determined to accept the unit measure commonly employed in the professions and industries (paper making, the manufacture of filing cabi-

it. We keep before us the old line that architecture is a three-legged stool, the three legs being old Vitruvius's "commodity, firmness and delight." Since we do so much more than most magazines on the two legs of "commodity" (Building Types Studies) and "firmness" (Architectural Engineering) we sometimes feel as if we had started the whole business. We didn't: for all its literary approach, the early RECORD started right off with technical articles along with its great concern with the styles. It started a formal technical department in 1895. And it had occasional studies of individual building types and their problems as early as 1892.

The early technical articles tended to be rather elementary, the focus of the magazine being what it was, as did the planning type of article. But they were considered, apparently, an important part of the self-appointed task of educating people on architectural matters.

So what is different today is the depth of the informational material now so necessary for the direct education we publish for the architect. Naturally the intensity developed as decades went by; first as the focus changed to the architect as a reader, later as the technical topics proliferated and became more complicated.

A definite movement to develop more technical material began in the late thirties, when magazines, like other businesses, were fighting their way out of the great depression. Construction was picking up, and things looked promising, but it seemed to require a real effort to re-orient matters to building activity instead of abstract philosophizing, or contemplation of art.

The orientation toward active building was only beginning to make headway when the Second World War upset the architectural world once more. As a magazine formula, however, the three-legged pattern proved well grounded during the war years. Building was all for the war effort—tank plants, airplane plants, factories of all kinds, housing, military encampments and installations. Architectural design theories fell on pretty lean times, but materials and construction techniques were moving fast. Architectural philosophizing be-

**"Five features of the architectural history of the period, which deserve several pages apiece are: (a) the various phases of the movement for civic improvement, in city planning, garden cities, civic centres, and municipal art generally; (b) the great advances in mechanical equipment of buildings, with the attendant increase in the complexities of architectural design and practice; (c) the progress of domestic architecture and especially the Colonial revival in rural and suburban architecture; (d) the emergence of an American school of landscape design; and (e) the extraordinary increase in the variety and improvement in the quality of building materials."**

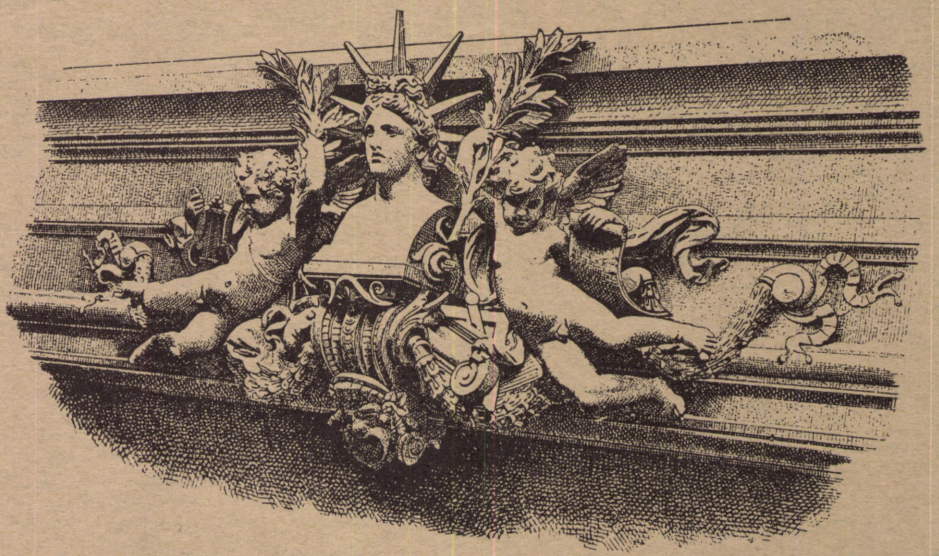
July 1916, page 12

". . . The vulgarity of which he speaks—not the vulgarity of table manners, but a spiritual coarseness which in the 'familiarity between the mind and things' reveals itself in our social life, in our politics—that malodorous subject—in all our activities, wherein we pass aside from the 'dignity of humanity'—this vulgarity we believe is the chiefest obstacle in the way of the greater number of the reforms for which pulpit, press and platform are working. For there is no deficiency of intelligence among our people. It is feeling that is lacking—right feeling. Upon a certain side of life their sensitiveness is dull. That unfortunate man who spoke the truth probably recognized this fact from his position when he declared the purification of politics to be an iridescent dream. So it is; so it will be until people become keenly sensitive to how dirty, contemptible, vulgar our political life is. Are not the facts of that life known by heart to-day by everybody? They are not rightly appreciated, that is all. So it is in social matters, commercial life, and even within the field of religion."

From the RECORD's first editorial "By Way of Introduction," by Harry W. Desmond, July 1891.

**". . . Recently the ARCHITECTURAL RECORD has been in communication with most of the leaders of the architectural profession, with the better known craftsmen and with a large number of the reputable building material houses. We asked frankly whether they recognized any real need for a co-operative movement in which Architect, Craftsman and Building Material Firm would be joined for the purpose of improving general architectural conditions, the action of each, of course, being confined to his own particular province. We received several thousand replies, and the answer, without a single exception, was heartily in favor of the co-operative movement. Some of our friends pointed out the difficulties ahead. The difficulties indicated are not insuperable in any case."**

February 1909, page 79



An illustration from a series of critiques on planning and construction entitled "Wasted Opportunities" July-September 1893, page 72.

came rather academic, or at least futuristic. The "modern" idea of expressing the world of technology gained great headway, theoretical though it was. And the magazines filled pages and pages with postwar prognostications.

Parenthetically, most of those architectural pronouncements (the extruded plastic house, for example) have not yet come to pass; probably waiting for the mega-structures. This observer joined the RECORD staff just prior to the war, and my beat was Washington and wartime construction. But I read all those dreams of the automated world (assembly line was the phrase then); so few of them came true that I feel not overly impressed with the present glimpses of the coming computerized country.

I should get back (forgive the digression) to the positive effects of the RECORD three-legged image. The war years *did* bring great technical development, and we undertook to digest and report it for architects. And the RECORD began an upward surge in reader response. The pace now is picking up so fast that we just might have the extruded housing unit in the mega-structure. Very likely it will enlarge our technical reporting operations in the future, exactly as it enlarges the responsibilities of architects and engineers.

**A small declaration for a big magazine**

The boomtime prosperity of the architectural fraternity, now 75 years after the RECORD bravely moved into it, is undoubtedly beyond anything believable then. If its first editor and founder were flabbergasted by growth (he should see Sweets now—he also founded that), he would probably take a second look and note that the deep understanding of architecture has not come to pass. He might in fact repeat the charge he wrote in the first issue: "Is there a civilization on the face of the earth as uninteresting as ours, as completely material, as lacking in dignity and distinction, as vulgar, commonplace and shabby?"

Well, we can hope that another 75 years will see some of the order the RECORD sought. In any case, Mr. Desmond, we shall keep trying.

## ARCHITECTS ARE STILL IMPORTANT

By
Thomas S. Holden
Vice President in Charge of Statistical Division, F. W. Dodge Corporation

Construction Outlook, July-December 1927, page 245.

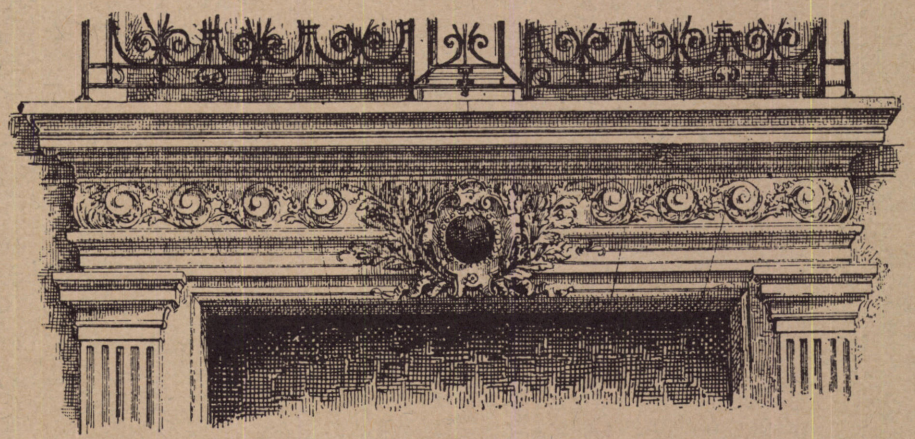
"The typographical design is the work of Frederic W. Goudy. The type faces originated by him are noted for purity of form—an architectural quality derived from monumental inscriptions as well as from the classic tradition in the art of printing. Then, too, Mr. Goudy's epigraphic studies have exercised a noteworthy influence upon architectural lettering. It was quite the natural thing for an architectural magazine to do, therefore, to turn to Mr. Goudy for collaboration. He has selected his own Garamont type for the body of the text, and has cut special faces for running heads, captions and the like. The execution of the design, its sympathetic interpretation and detailed application in the make-up of the magazine, has been carried out by Charles D. DeVinne of THE RECORD staff.

Editors and other people are apt to be slow in organizing their response to unaccustomed stimuli. The small size was adopted on the theory that text which contained news value, informed criticism or reasoned suggestion would be read by many and for these the reading should be made convenient. The RECORD in this size has obtained the largest circulation among architects of any architectural journal. Comparative subscription statistics therefore seem to say that architects read. Yet some of our most positive informants tell us that architects do not read, that they study plates and file such as may be useful for reference."

Editorial announcement of new typography designed by Frederic W. Goudy, January 1928.

"**. . . No, there are serious reasons for doubting that the railroad is the culmination of civilization. The steam engine has given us a wider touch with life, no doubt; but has it given us a finer? In no country, and at no other time, has mere existence been so full, so abundantly provided for as in this country at the present moment.**"

July 1891



## VARIOUS CAUSES FOR BAD ARCHITECTURE.

Illustration for "Wasted Opportunities" July 1892-July 1893, page 149.

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# THE CHANGING JOB TO BE DONE

The "Second America" that is about to be built forecasts a lot of work for all architects—and often at bigger scale, with shorter time limits and bigger worries. The following pages take a look at what and how much will probably be built. For added perspective, the section begins with a brief survey of the forces that have caused the changes in the building types and land use mix in the past, and the forces which may set the pace for the future.

*What* architects have done, and are doing, is as vital to the total picture of "the new role of the architects" as *how* they have designed and built—whether the how is interpreted as stylistic manner or office procedure. And what has been done is staggering. By and large, the United States as we know it has been built in the last 75 years, an incredible quantity of plans, dreams and buildings. In each period, there is patent evidence that architectural practitioners have conscientiously sought, as now, but as *they* visualized it, to drastically improve the existing environment. All of this makes one seriously wonder about the traditional "image of the architect," makes one wonder if a colorfully robust picture of activity and responsibility has perhaps become faded with simple lack of proper tending. Then, as now, there has been quick response to the many and complex factors that regulate building volume and types, factors which create obsolescence as well as new needs.

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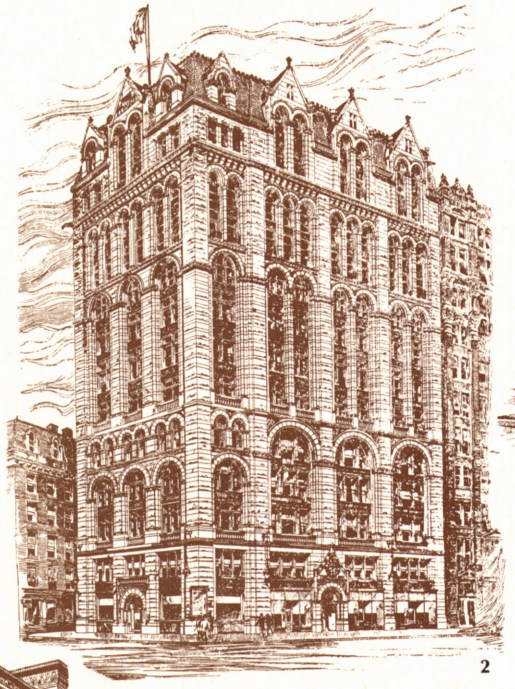

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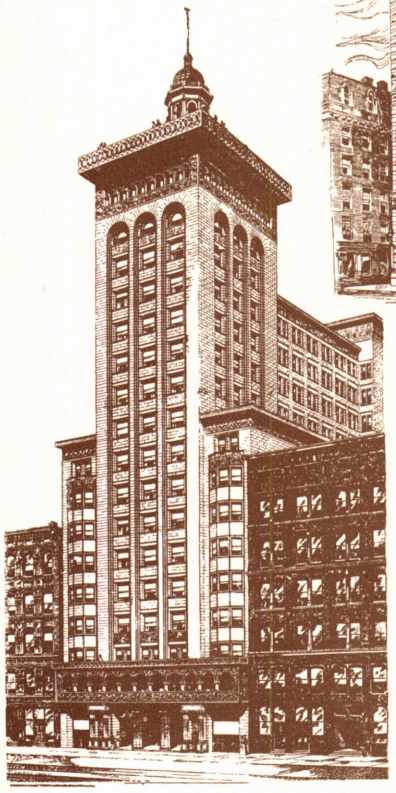

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## 1891

### Architects were few, but busy building up the entire U.S.

The country was prosperous, the Civil War was well past, and enthusiasm for architecture burgeoned with the economy. In a flow of inventiveness and enterprise, towns all over were building and rebuilding every then conceivable type of civic and private structure for more permanence and amenity.

The profession was also growing, increased by scores of graduates from Paris and new American schools. But, as a contemporary writer noted, "a relatively small body of trained architects had all they could do to supply at the same time this new provision for existing needs,

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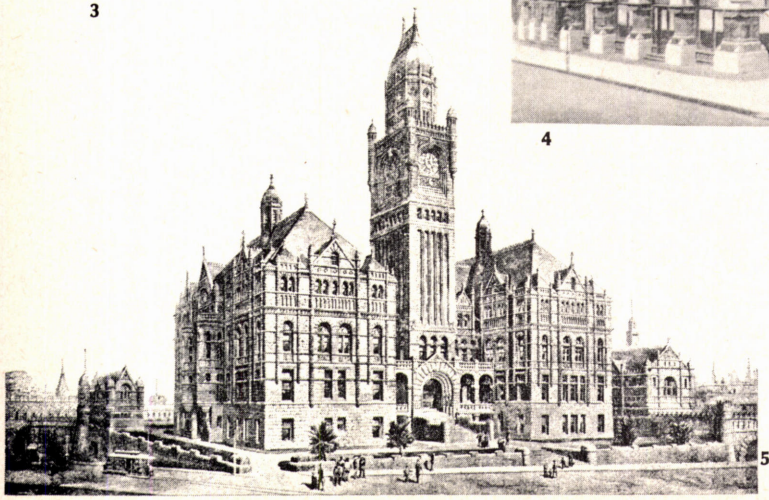

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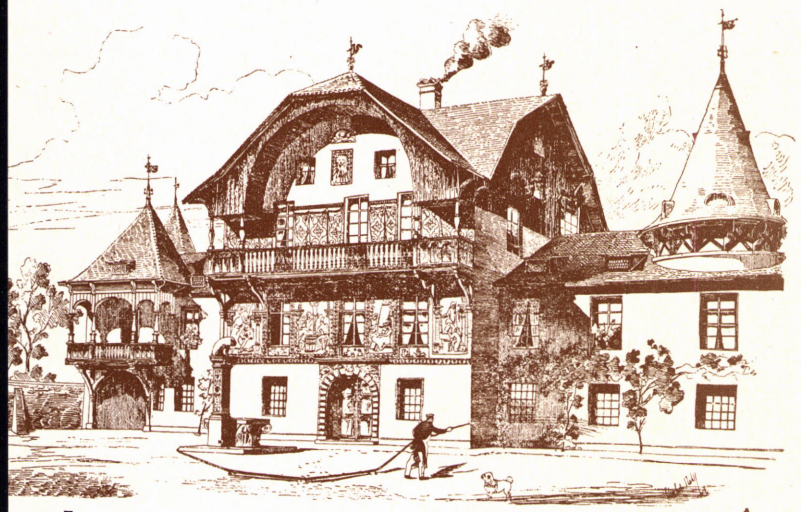

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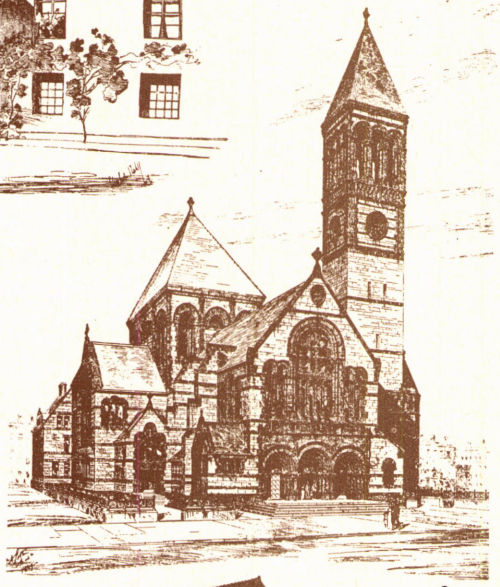
and also that for the constantly increasing new needs of growing communities and freshly created institutions. The 'New West' and the 'New South' were rapidly developing, and in spite of the activities of the Knights of Labor, building was not greatly disturbed."

The growth of the railroads made a huge impact on architecture: not only did they require quantities of buildings for their own functions, but quickened the distribution of the growing quantities of new building products, and of the expanding, increasingly urban population. And with the rails came structural metals and new building types. First came the metallic truss and big, lighter constructed spaces; next, the elevator spawned 10-story buildings; then, in 1889, the steel skeleton launched the skyscraper.



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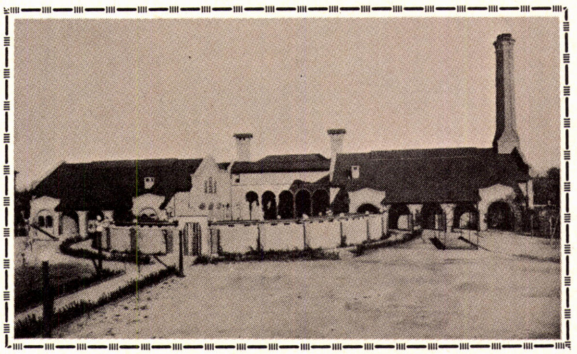
1. Houses in New York City by Lamb and Rich; 2. The New York Times Building by George B. Post; 3. new German Opera House, Chicago, by Adler & Sullivan; 4. warehouse in New York City by H. Hardenburgh; 5. court house in Los Angeles by Curlett, Eisen and Cuthbertson; 6. Mott Haven Railroad Station in New York City by R. H. Robertson; 7. design for residence by Oskar Dedreux; 8. St. Agnes' Chapel in New York City by William A. Potter; 9. Hotel Majestic, New York City, by Alfred Zucker; 10. Chamber of Commerce in Cincinnati, by H. H. Richardson and Shepley, Rutan & Coolidge; 11. Century Club in New York City by McKim, Mead & White; 12. Old Produce Exchange, New York City, by Leopold Eidlitz.



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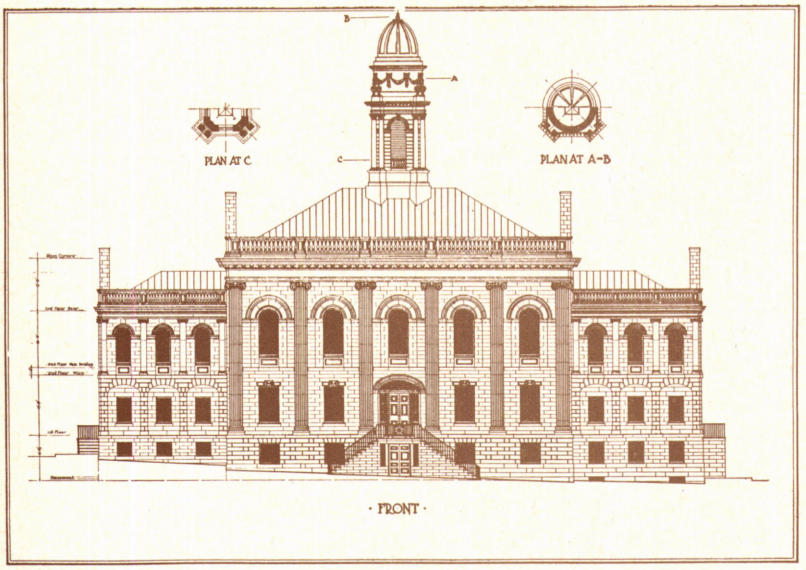
# 1892-1916

## Panics, war and strikes cloud a building spree with pessimism

The fortuitous architectural conditions of 1891, wrote A. D. F. Hamlin in the RECORD in 1916, "have changed in the last quarter century. The panics of 1893 and 1907 sadly checked the tide of architectural activity. Strikes and lockouts and now the war in Europe, have again and again thrown the financial and architectural world into confusion. . . . The country has been fairly well supplied with buildings; overbuilding is complained of in some of the great centers. This relatively diminished demand for new buildings falls upon a greatly increased army of capable archi-

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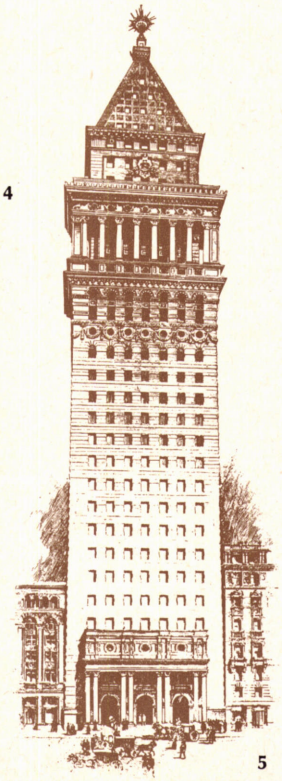

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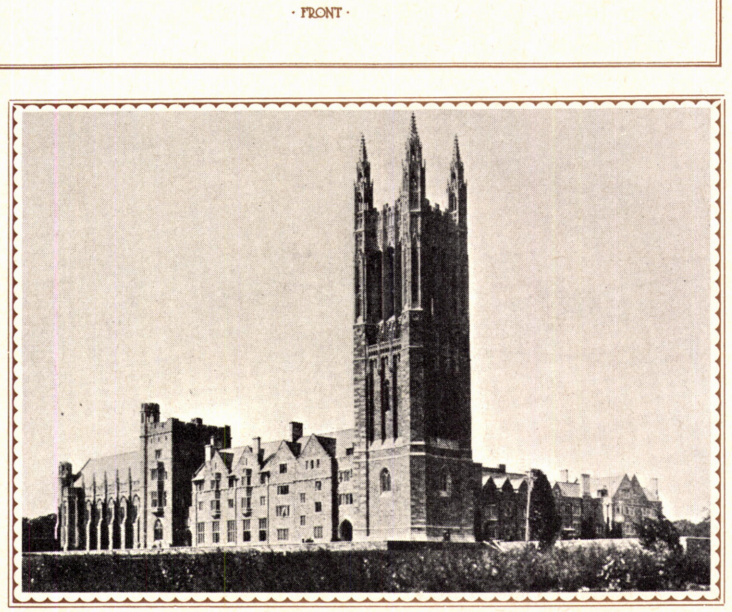

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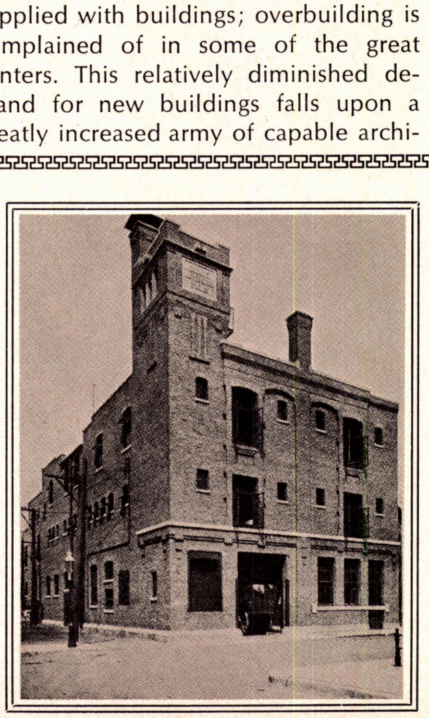

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tects, among whom the prizes are very unequally distributed."

Though his dim outlook at that moment is certainly understandable, Hamlin's quiet "fairly well supplied with buildings" gauzes over an impressive amount of architecture, big both in size and numbers. Great programs were carried out to supply the country with government buildings, big railway terminals, schools and colleges, libraries, hospitals, recreation and resort facilities, offices, churches, houses, and a "skyscraper skyline" for every sizeable town as well as "landmark preservation"(4). And there were, even then, nationwide campaigns for "better city plans, for improved tenement housing, for the artistic rebuilding of wrecked and burned cities, for reclaiming waterfronts, and for grouping buildings."

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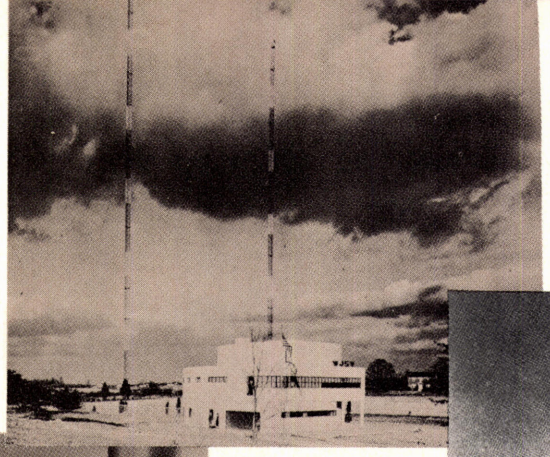
1. Recreation center, Peoria, Illinois, by Hewitt & Emerson; 2. Pennsylvania Station, New York City, by McKim, Mead & White; 3. ten houses, Boston, by R. A. Fisher; 4. Albany Academy, Albany, New York, by Philip Hooker; 5. drawing for Sun Building, New York City, by Bruce Price; 6. Graduate School, Princeton University, Princeton, New Jersey, by Cram, Goodhue & Ferguson; 7. General Hospital, Cincinnati, by Samuel Hannaford & Sons; 8. Library of Congress, Washington, D.C., by Smithmeyer & Pelz and Edward Pearce Casey; 9. Cobb building, Seattle, by Howell & Stokes; 10. New Monmouth Hotel, Spring Lake, New Jersey, by N. J. Watson & Huckel; 11. Haddington Public Library, Philadelphia, by Albert Kelsey; 12. City National Bank, Evansville, Indiana, by Mundie & Jensen; 13. Trinity Lutheran Church, Akron, Ohio, by J. W. C. Corbusier; 14. garage and stable for Oscar F. Mayer & Brothers, Chicago, by Hill & Woltersdorf.



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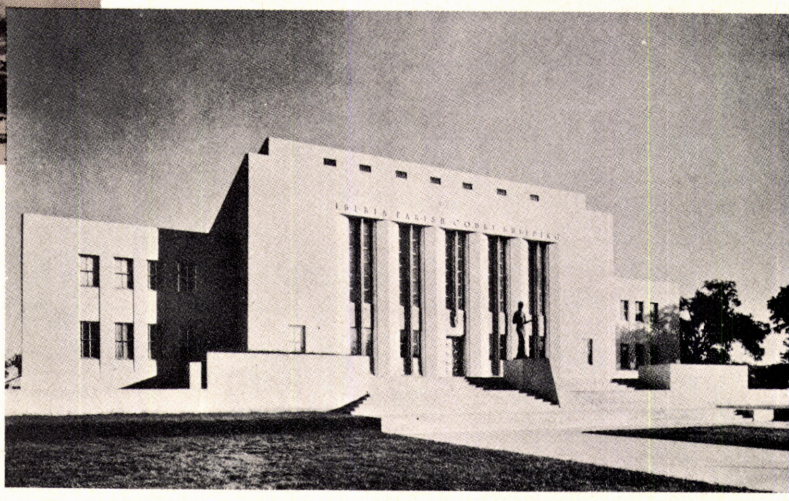

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# 1917-1941

## A spectacular boom-and-bust heralds an intense Modern age

The obviousness of the parabolic curve of construction activity during this era (rising from World War I to the speculative heights of the twenties, and falling back to the jobless bottoms of the depression) vividly masks some of the mounting architectural concerns. A 1941 RECORD article on New York could have been applied to the whole country: "For a frenzied decade following World War I, the rise and fall of Wall Street's brokers' boom obscured the basic trends of development. In both metropolis and upstate village, mounting dissatisfaction pressed for ameliora-

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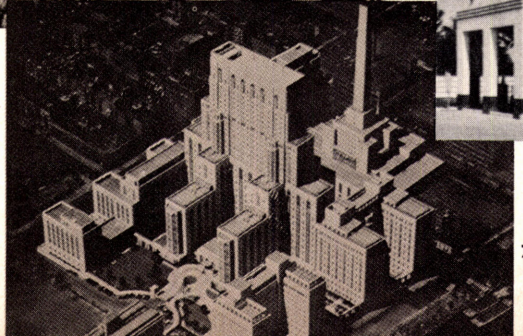

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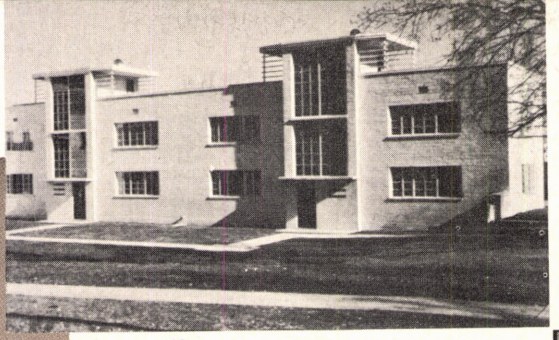

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tion of industrial environment, for expanded social services, and more worthy community equipment. The utopian suggestions of prewar reformers gave way to discussions of practical procedures or even to tentative experiments. Significant parallels appear in the flood of social legislation, in the comprehensive improvement of public health facilities—recreational, remedial or prophylactic—in the progress of low-cost housing, in the initiation of comprehensive programs for municipal and regional betterment, and in the rise of governmental architectural bureaus." Alongside the quantities of intense buildings created for this social consciousness frolicked myriads of facilities for automobiles, movies, radio, post-repeal bars and resorts. Then, by 1941, came the dramatic dispersal of defense industry.

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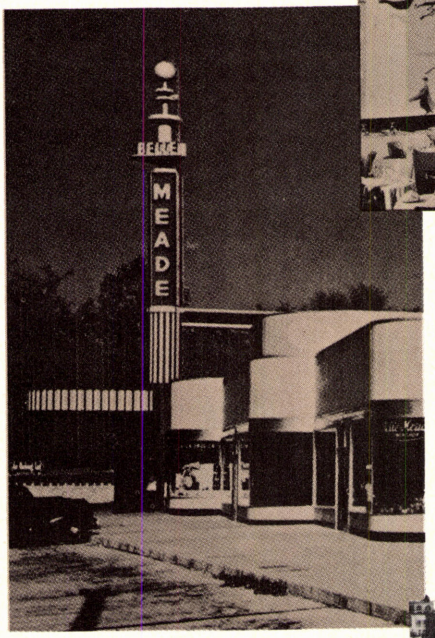


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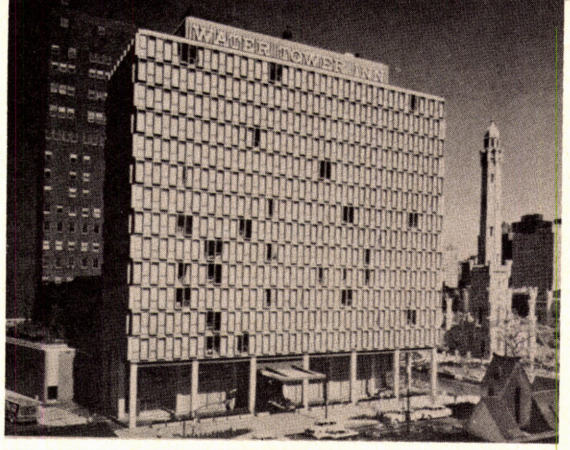
1. Station WJSV, Wheaton, Md., by E. Burton Corning; 2. Iberia Parish Court Building, New Iberia, La., by A. Hays Town; 3. Automobile Showroom, New York City, by Walter Dorwin Teague; 4. Jail for the City and County of San Francisco, by Albert F. Roller and Dodge A. Reidy; 5. Factory for Ohio Steel Foundry, by Albert Kahn, Inc.; 6. Collins Avenue, Miami; 7. New York Hospital and Cornell Medical Center, New York City, by Coolidge, Shepley, Bulfinch and Abbott, photos by McLaughlin Air Service; 8. Automobile Service Station by Walter Dorwin Teague; 9. Apartments in New York City by Albert Mayer; 10. Huntington Apartments, Boulder, Colo., by Huntington, Jones & Hunter; 11. Bowling Alley, Sioux Falls, S.D., by Harold Spitznagel; 12. Service Station and Hotel, Miami Beach, Fla., by Polevitzky and Russell, Gottscho photos; 13. Night Club, New York City, Anton Refregier, muralist; 14. Movie Theater, Nashville, by Marr & Holman; 15. New Federal Building, Los Angeles, by Louis A Simon.



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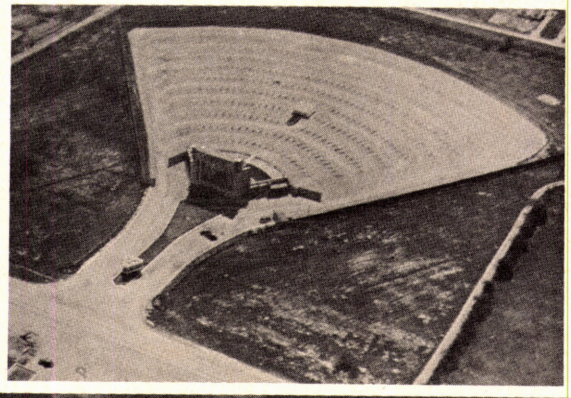

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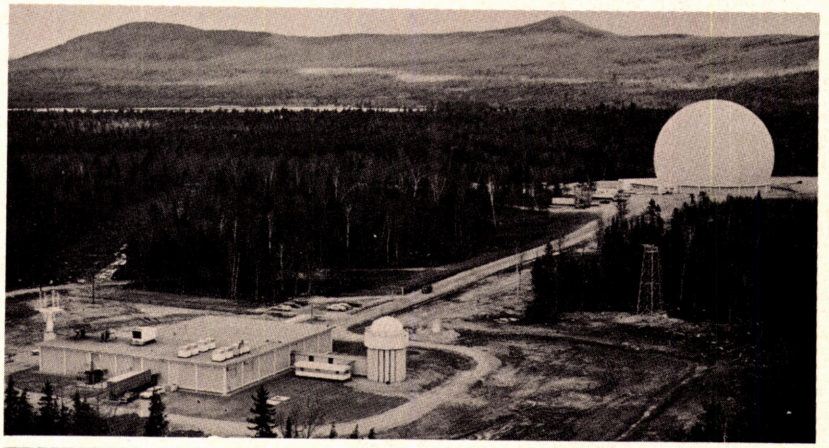

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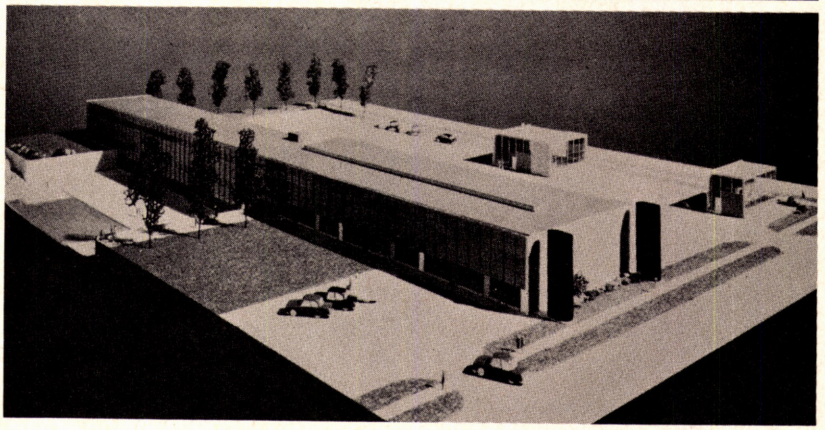

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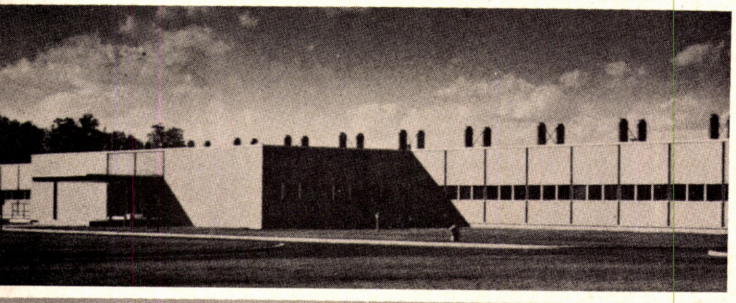
# 1945-1966

## Architecture reacts to a surge toward more of everything

The end of World War II found the U.S. with a great need for new buildings of all types, and a great shortage of materials to build them. It was a relatively brief moment. Soon quantities of materials, both standard and astonishingly new, were available from industries now dispersed in every part of the country. And a building boom was launched. As it progressed, it became obvious that other things were booming as well. There were more babies, more old people, more money, more autos, more airplanes, more people in urban centers, more research and invention—and ever-increasing need for more structures



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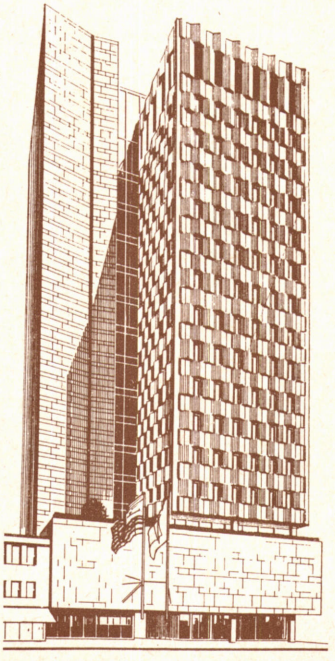

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1. Water Tower Inn, Chicago by Hausner and Maesai; Hedrich-Blessing photo; 2. retirement apartments, Menlo Park, Calif., by Skidmore, Owings & Merrill; Morley Baer photo; 3. Cactus Drive-in Theater, Albuquerque, N.M. by Jack Corgan; Jimmie Wills photo; 4. Earth Station, Andover, Me., by Perkins and Will; Carleton D. Greely photo; 5. Automotive Engineering Building, University of Michigan, Ann Arbor, by Giffels & Vallet, Inc., L. Rossetti; Lens-Art photo; 6. General Motors Isotope Laboratory, Warren, Mich., by Argonaut Realty Co.; 7. Kent Oaks Hospital, Grand Rapids, Mich., by J. & G. Daveman Co.; Rinco photo; 8. Southfield Sr. High School, Southfield, Mich., by Tarapata-MacMahon Assoc. Inc.; Balthazar photo; 9. Wachovia Bank Building, Charlotte, N.C. by Harrison & Abramovitz, A. G. Odell Jr., Associate; 10. new undergraduate dormitories, Princeton University, by Hugh

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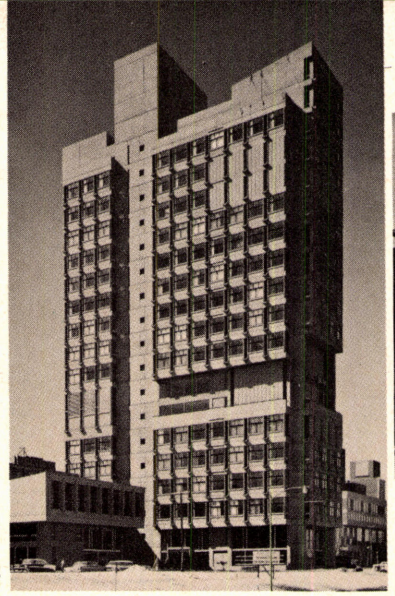

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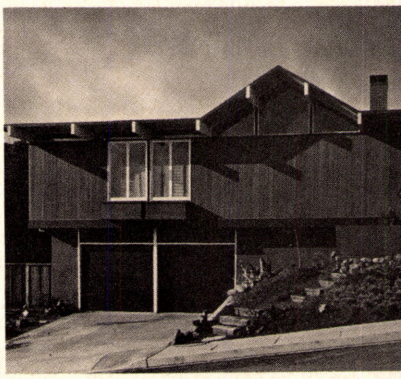

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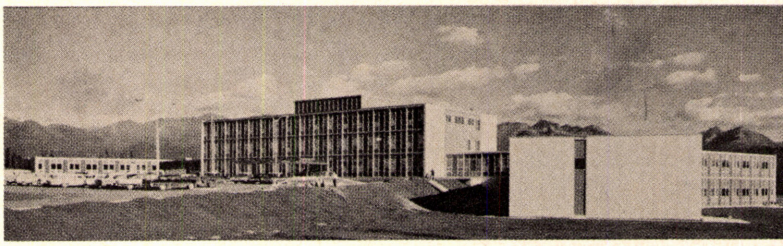

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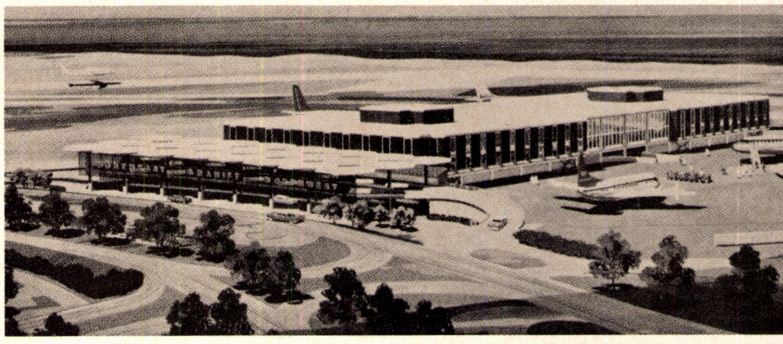

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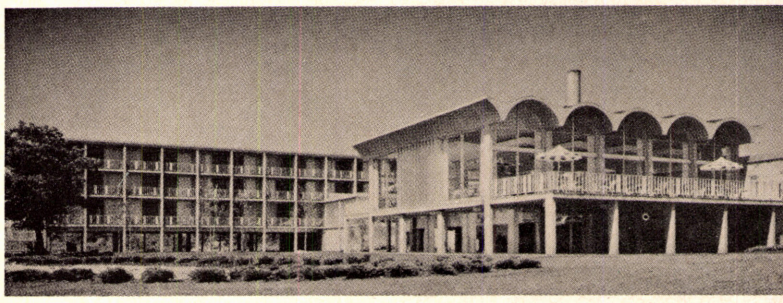

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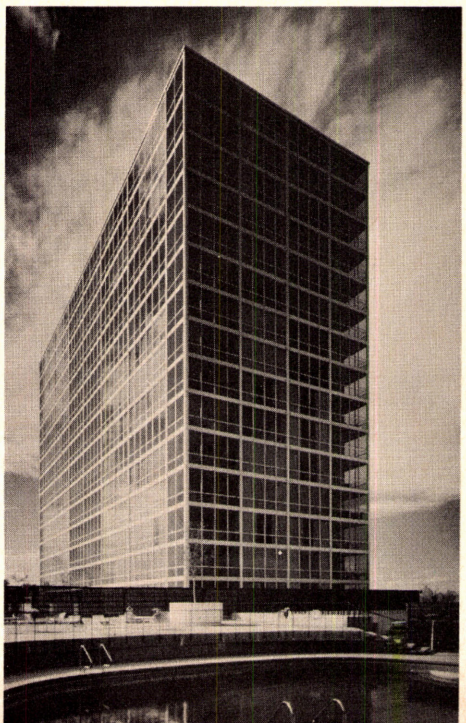

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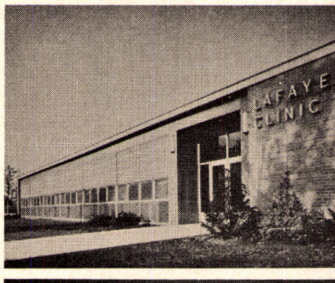

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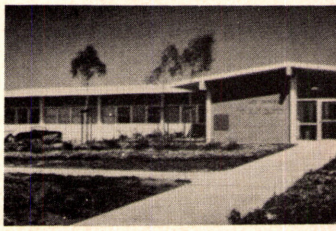

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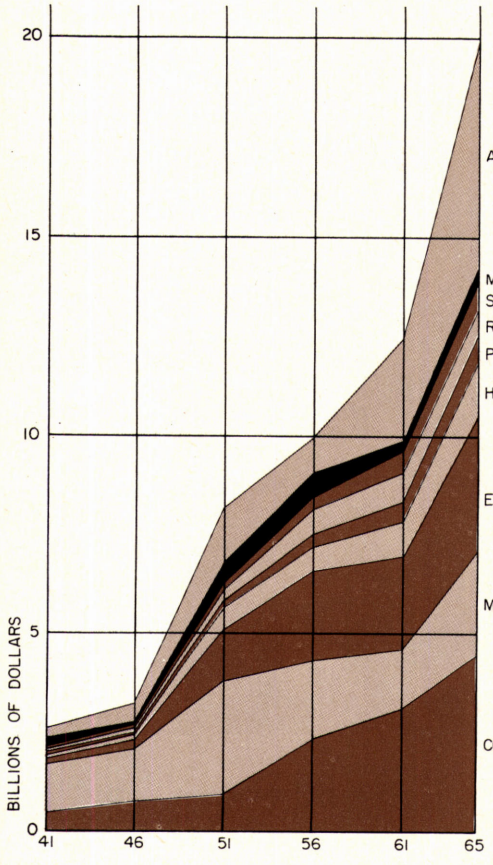
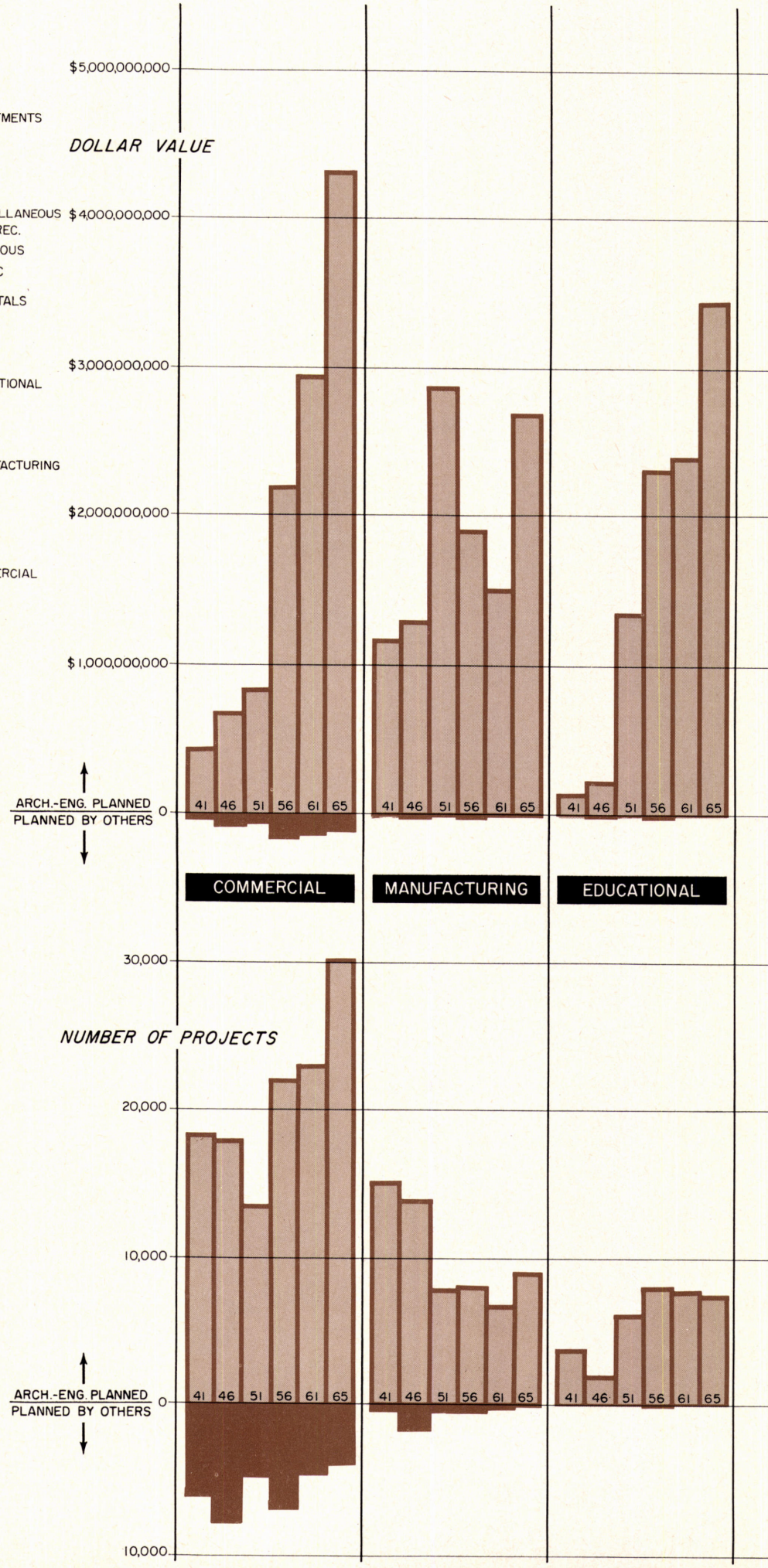
to house and serve them. And in increasing numbers, the structures have been built: houses, schools, colleges, stores, offices, industrial buildings, medical facilities, housing for the aged, recreation facilities. For the omnipresent auto, new building types emerged: huge garages, suburban shopping centers with parking fields, motels, and a "drive-in" facility for about everything.

And, as in other periods when railroads, elevators and the like brought forth new kinds of buildings, often-startling structures have been created for developments in the realms of the atom, space, plastics and electronics. But possibly, the dominant "developments" come from new Government programs, automation, increased leisure, and acute socio-economic problems which continue to amplify the admixture of needed building variety and volume.

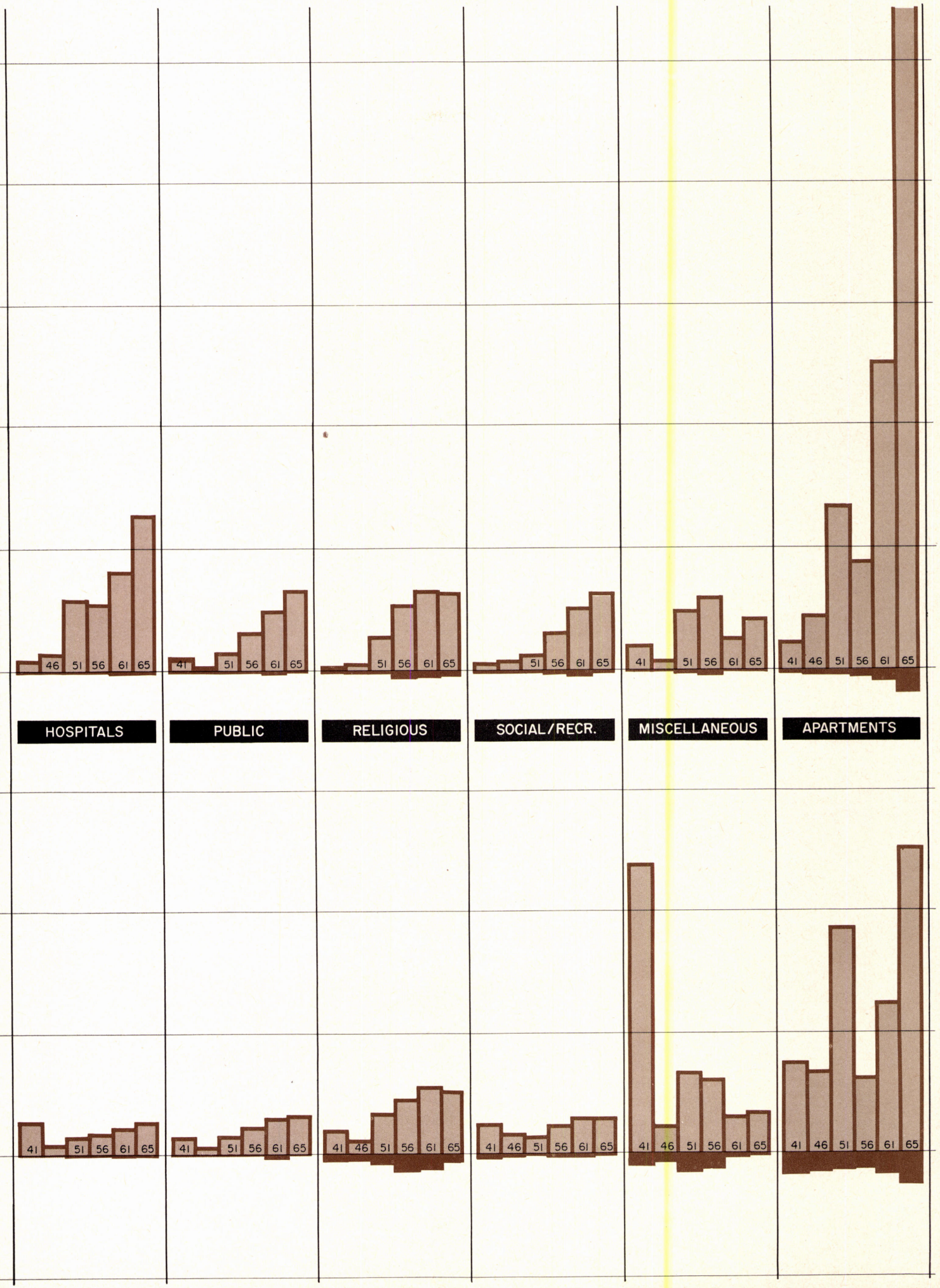
Stubbins and Assoc., Inc.; Joseph W. Molitor photo; 11. Sears, Roebuck & Co., Pine Bluff Ark., by A. L. Aydelott & Assoc.; Allied Photographic Illustrators photo; 12. Law and Education Building, Boston University, by Sert, Jackson & Gourley and Edwin T. Steffian; Louis Reens photo; 13. Alaska Psychiatric Institute, Anchorage, by Stone, Marraccini and Patterson; 14. sketch for terminal at Kennedy Airport, New York City by White and Mariani; 15. beach lodge, Zion, Ill., by Barancik, Conte and Assoc.; 16. Cherry Creek Towers, Denver, by Carl Groos Jr.; O'Neil Ford, Assoc.; Hedrich-Blessing photo; 17. development house, Millbrae, Calif., by Fisher-Friedman Assoc., Robert J. Geering, Assoc.; 18. Lafayette Clinic, Detroit, by Eberle M. Smith Assoc. Inc.; Hedrich-Blessing photo; 19. Hall for Juvenile Rehabilitation, Los Angeles, by Welton Becket and Associates; Vanguard photo.




## As building volume has grown, so has the architect's role

Though the direct relationship between the national economy and construction figures is often pointed out (as is the effect on specific building types of such factors as the "baby boom," population shifts, government programs), the percentage of architectural and engineering involvement in all this activity has seldom been underscored. It has been a dominant and constantly increasing one. Architect-engineer-planned structures in the nine major categories (omitting houses for the moment) are shown rising in the lighter tone, those planned by "others" diminishing in the dark tone in the charts at right; the lower band indicates numbers of units, the upper band gives dollar volume. The chart directly above gives a more complete value picture of total non-housing construction. The charts are based on Dodge Reports of construction contracts in 37 Eastern States. This is the computerized information available, but all indications are that these trends are equally applicable to the entire country. While architects have planned the bulk of muliti-family and large housing, there is a sharp reversal of these statistics for the smaller single-family house —but, again, indications are that—particularly in the larger-scale, blue-chip residential developments — architectural participation is increasing strongly.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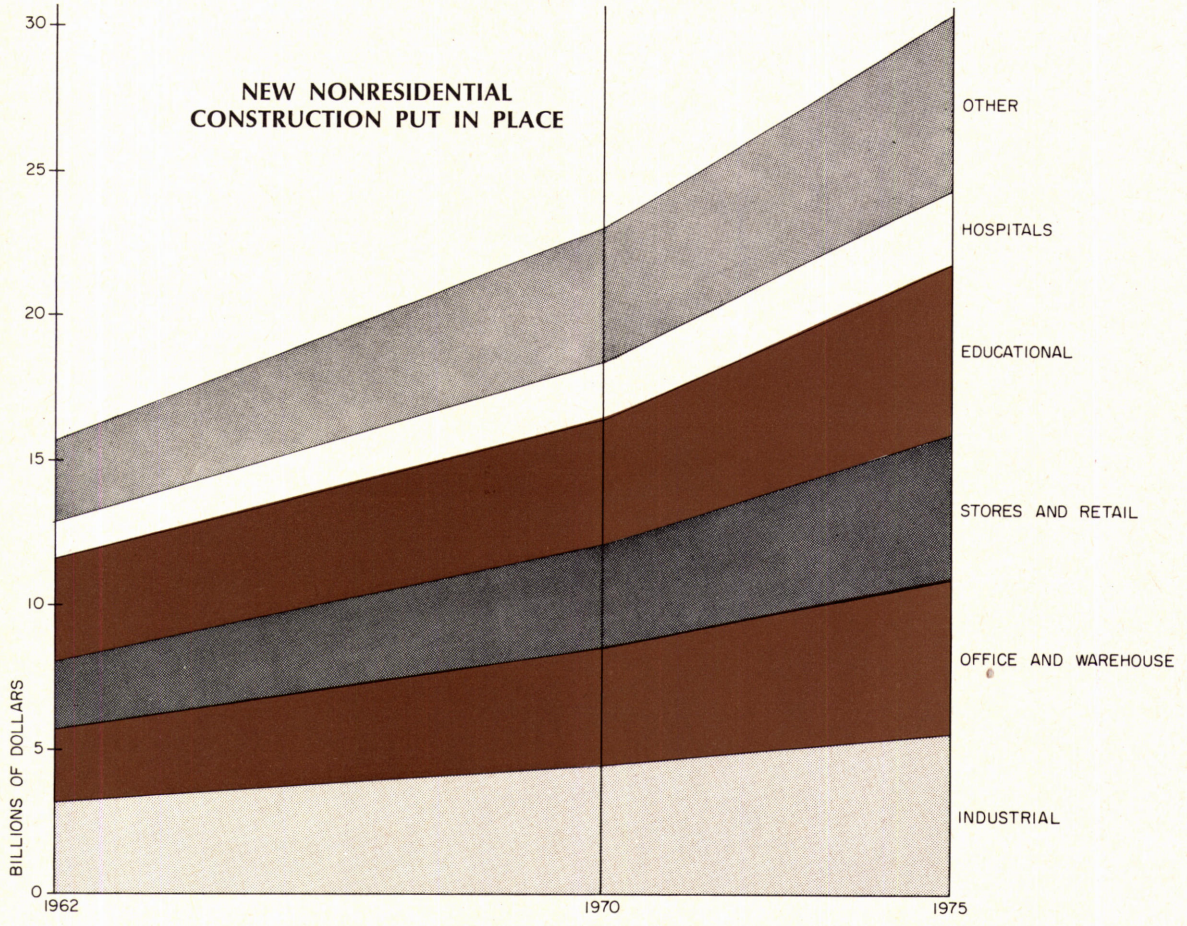
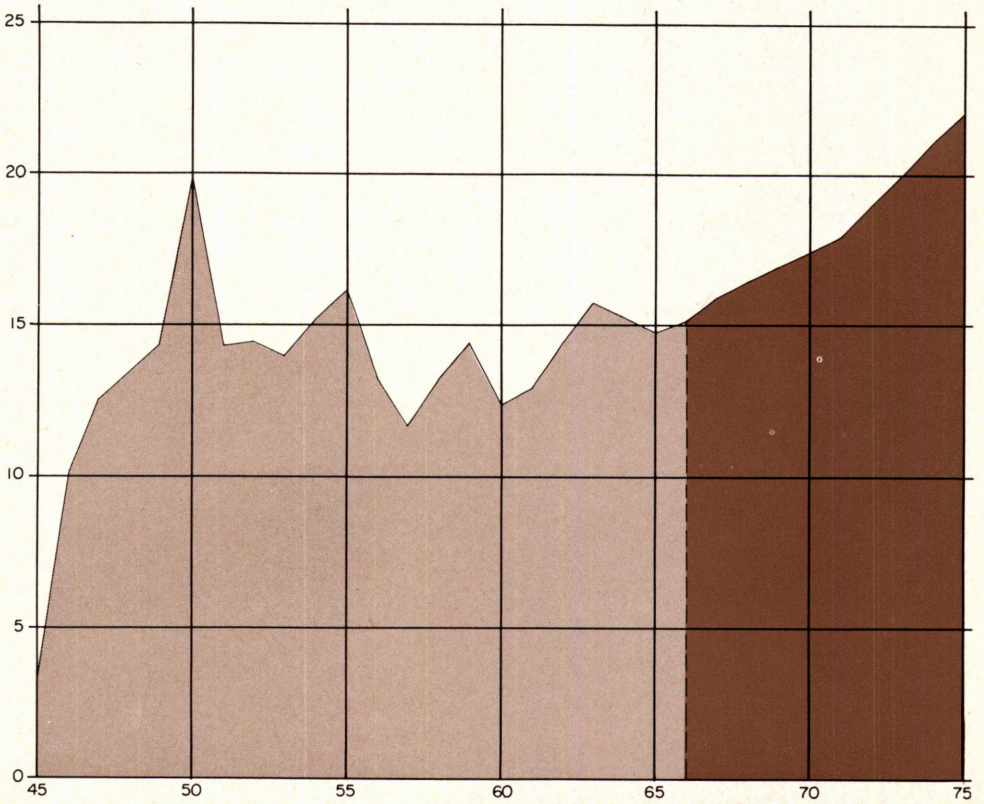



## The next decade offers even greater architectural scope

Predictions are that construction will continue to mount, with a second "baby boom." Statistically, the "son of the World-War-II veteran" is now in high school, college or Viet Nam, and he will found an estimated 15-million new families by 1975. This will cause a need for more rental housing, then for single-family housing. Then, inevitably, a second round of demand for more schools houses, stores, offices, etc. There will also be a strong need for rehabilitation and replacement of buildings, and for hospital and medical facilities to cope with the higher percentage of older people and social legislation.

The chart above, of the dollar volume of non-residential building put in place, is based on long-range forecasts made in September 1963 by the Economics Department of F. W. Dodge Company. Most of the reasoning behind these predictions is as valid today, except that new legislative programs will probably accelerate educational building, hospitals and housing even more. The graph of private, non-farm housing starts, at right, is a composite one, based on U.S. Department of Commerce statistics and F. W. Dodge forecasts. It is the largest segment of construction, and a most fertile field for added architectural involvement—a projected $52 billion worth by 1975!

**PRIVATE NONFARM HOUSING STARTS**
(vertical scale in hundred-thousand units)



Encouraging as the general architectural prospects are, what with the great upsurge of activity from 1945 through the next decade, and with the enormous share of the pie the profession has garnered, these same prospects are even more optimistic when one considers that all this work has been, and will be, done by a group of fairly limited number. And a group which, in proportion to the dramatically sharp rise in the construction statistics, has changed relatively little in numbers in those same years. In 1952, for example, there were 18,308 resident, registered architects in the United States; by the fall of 1965, the number had only grown to 30,373. Many, many times the work for fewer than twice the hands.

**But the coming years forecast some changes that will demand even more work,** and possibly more competition. The mounting trend to build in larger and larger developmental "packages" all the way to complete new towns, is creating a series of new functional combinations in complexes and buildings that are in reality new "building types." And a whole new range of planning commissions will be forthcoming for the basic schemes for these big projects, as well as the straight architectural commissions for the individual buildings or groups. One forecaster has even predicted that 40 per cent of all new houses will be built in huge new planned communities by 1970; and there will be more development money for architectural opportunities.

**One major job is to cope with every city's upward surge of building density**

Joseph W. Molitor

Probably the epitome of building on "air rights" over other structures is the Pan Am building in New York City, designed by Gropius, Belluschi and Roth. Even the Grand Central building complex that it tops is actually built on air rights over the railroad terminal facilities.

The mounting densities and soaring land values in so many of our cities are posing many new architectural challenges, even in the planning of individual buildings. New conglomerate or multi-use building types seem to be emerging as rapidly as the specialized ones. And, with by-passed plots and land covered with dispensable or "taxpayer" structures becoming scarcer, use of "air rights" and buildings-built-on-buildings are growing in number. Continuing shifts in neighborhood character, and often in zoning and city plan regulations, call for an increase in the adaptability of new buildings for functional change, to forestall premature obsolescence. Add to all this the pressing need that each new building contribute to the improvement of the general environment, and the probability that buildings will continue to increase in size and height, and one has a big sum of problems under the heading the changing job to be done.

Of all these particular issues, that of the use of air rights is possibly the most discussed and debated one. While alleviating some of the problems of density, it could add some new problems if not skillfully handled. But air-rights *are* being built on. Probably the most dramatic illustration of a building built on air rights, and one that is slowly being conceded its degree of success, is the Pan Am office building in New York. Hovering, as it does, over Grand Central, it considerably extends that earlier complex of buildings and elevated streets, which was built in its turn on air rights over the railroad terminal facilities. And Pan Am now has its *own* air rights allocated to a heliport. Countless other, newer schemes have been projected in various cities for the use of space over railroad yards and tracks, docks, highways and the like, for sites for new schools, housing or offices. And, of course, there are all those new, elevated superhighways.

**Multi-function buildings are gaining**

The combining of heretofore separated, but somehow related functions (such as New York's long proposed combination commercial high school and office building) into a single conglomerate structure is another gaining trend, with its attendant planning complications. Though hardly a novelty as a basic idea—living over the store has seemingly always been a predilection of townfolk—some varied and different combinations of uses are being planned. Skidmore, Owings and Merrill's new project for the John Hancock tower in Chicago, for example, combines enough different functions to almost be a town in itself. (see page 232).

Nor is the problem of adaptability an entirely new one. Because of the varied needs of business, office buildings have been developed with a high degree of interior flexibility. And the use of curtain walls and other prefabricated structural components offers the possibility of exterior changes in the event that, say, streets were made two-level to decongest traffic. But in too many cases, the life span of otherwise sound structures has been cut short by changing use or economic patterns of an area. For example, many of the fine, but rigidly planned, older hotels and apartment houses have been razed simply to make way for more adaptable and financially more remunerative structures. And all types of buildings can be affected. The Ford Foundation's Educational Facilities Laboratories, Inc. has reportedly even explored the feasibility of planning public schools in such a manner that they could be readily converted into commercial or industrial buildings if the need for a school in a given location should change.

The planning of individual buildings can, and often does, make some significant contributions to the general environment. Open spaces and a considered relationship with neighboring structures can work wonders. Real-estate values have been singled out as the prime reason for the paucity of private endeavors in this direction for so many years after Rockefeller Center pointed the way. It was argued that the solidity of building (on the squares left by the street grid patterns) must be inviolate, and ground-floor-frontage commercial values kept up. Lever House, with its "wasted" ground floor exploded *that* credo, and left us somewhat more thoughtful, if slightly plaza happy. From merely widened sidewalks, to "vest pocket parks," to Pittsburgh's Mellon Plaza, patches of daylight and green are now pleasantly dotting our cities. Part of the remaining job is to make all of them as happily usable as they are pretty.

**The individual building persists**

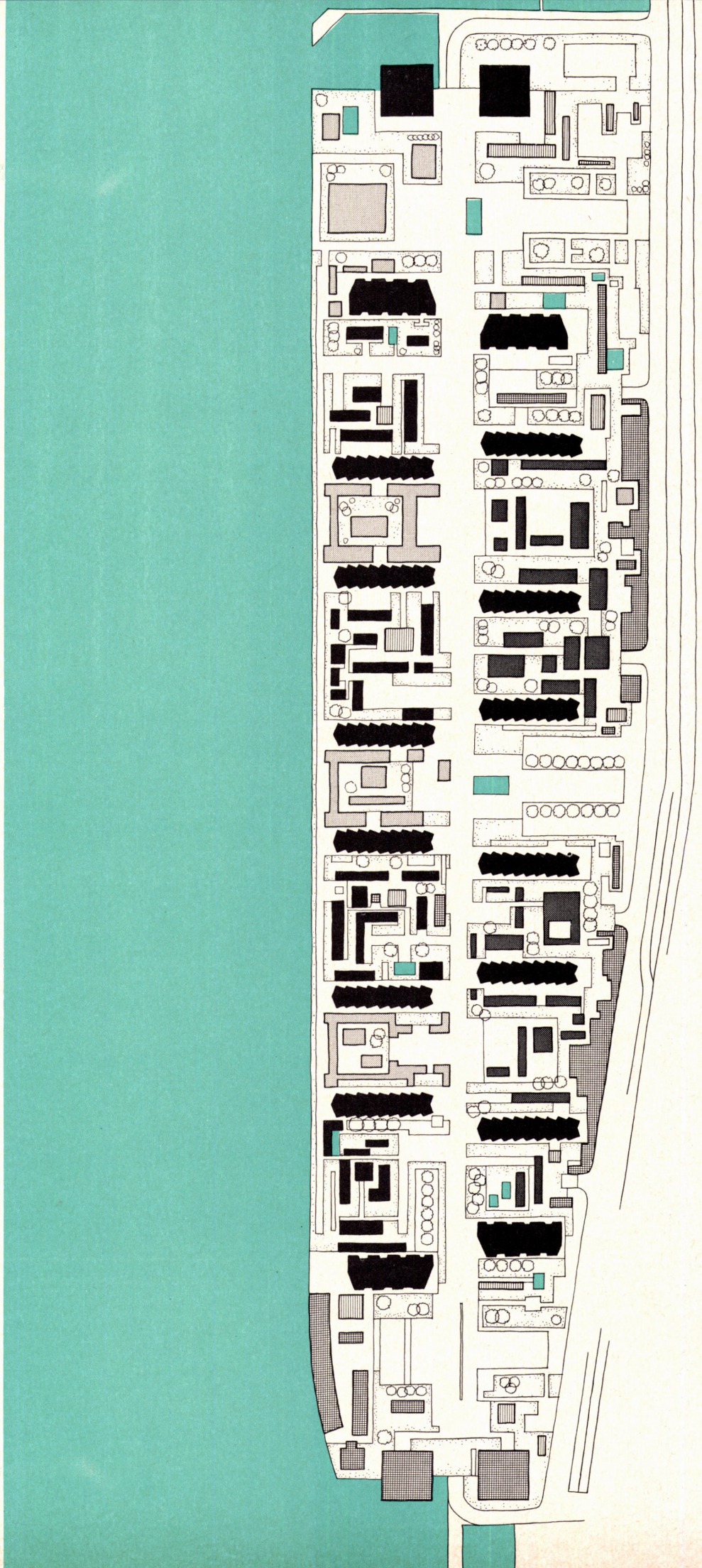
One sometimes hears the remark that "the individual building is becoming obsolete." That is an extremely doubtful premise as long as our concept of private, individual or corporate, property exists. Vast as government involvement in construction, and as big-area planning is becoming, huge efforts of smaller-scale, private initiative will also be needed to supply all the buildings needed for the coming years. And these individual buildings will probably continue to be designed ever larger and taller, to accommodate the expanding population and business, as well as satisfy a peculiar and well-conditioned human bent.

At least two generations of Americans have been thoroughly imbued with a "Things To Come" imagery of cities of shimmering towers, of fantastic heights, interlaced with spiraling aerial streets. Science fiction comic strips, movies, books, and a series of world's fairs have delineated a fairly complete picture; complete that is, except for the incredible masses of people, goods, utilities and transport that would throng its usually undisclosed inner reaches.

However, since Medieval times, man's relentless fascination with the tower has consistently nettled a good part of his inventiveness towards its ultimate achievement. And each time physical height limits seemed to have been reached, something new was developed to permit another upsurge of growth, and construction soon followed.

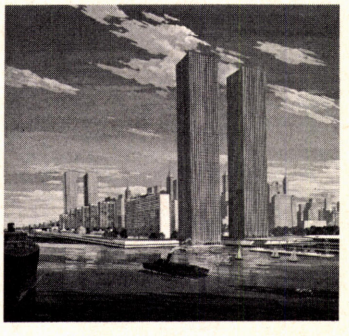
The Empire State building long seemed to have reached the height limit for our era: usable space had reached the point of diminishing returns as opposed to the cubic space needed for utilities. Frank Lloyd Wright had the dreams for his Mile-High Building for Chicago—but not the mechanical systems to make it function.

But now that hurdle has been partially cleared, and the Empire State will soon be superseded by The John Hancock tower in Chicago and (probably) by the twin towers of Yamasaki's World Trade Center for New York. And, inevitably, developments from research such as that for the outer-space program will lead to self-contained and re-circulating utility systems, possibly atomic or solar powered, that will make ever taller structures possible—and thus probable.

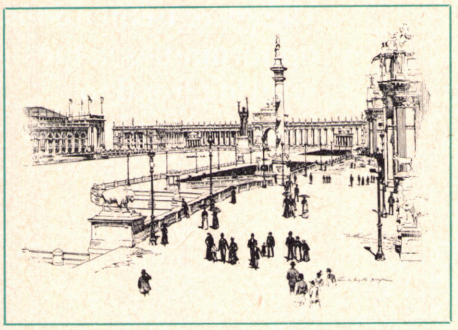


**There are tremendous opportunities in the growing trend to larger-scale planning**

HOUSING
CULTURAL & RELIGIOUS
MUNICIPAL
SCHOOLS
COMMERCIAL & OFFICE



Most of the facilities needed to form a complete community are included in this big scheme by Wallace K. Harrison for Battery Park City in Manhattan. Sponsored by Governor Nelson Rockefeller, the project would be built on fill over the Hudson River.



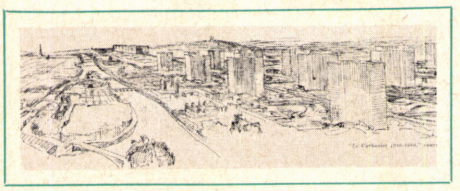
"The Chicago Columbian exhibition," an early RECORD author relates, "was the first time in our history, at least since Thomas Jefferson's modest experiment at Charlottesville, that our architects had had an opportunity to design, or our people to see, a monumental group of buildings planned as an ensemble; the first time that they had seen such buildings set in an environment of gardens and architectural and sculptural adjuncts designed to enhance the total effect. . . . It was an object lesson in the possibilities of group-planning, of monumental scale, of public decorative splendor and harmony, and of worthy landscape setting that was of incalculable value."

He, of course, overlooked L'Enfant, among others. But it is true that most American cities grew relatively "unadorned" and "unplanned," from the stereotyped grid scheme, with perhaps a courthouse square as its sole relief. And many towns, as the Westward Expansion gained momentum, were constructed almost in entirety by speculators with fantastic and deliberate speed. And later in the century they often had to be rebuilt. That "tradition" has seemingly carried over into much of today's suburbia, as land around our cities is quickly being overlaid by housing, shopping centers and autos.

But good architectural services can, and one confidently expects will, help provide more "incalculable value" for the big new developments in the offing. Not only is more design skill needed, but there is more money to pay for it.

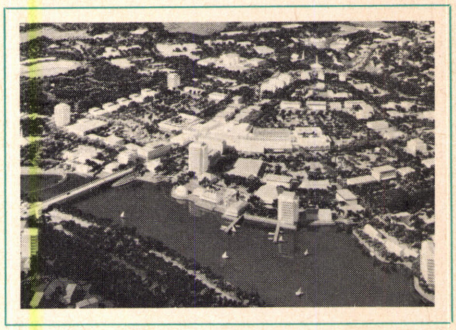
Pending large-scale schemes are enormously varied in type and scope, and so numerous that something seems afoot in most every city, big or small: urban renewal and housing, shopping centers, civic centers, cultural centers, industrial parks. These are but a few of the types of a sufficiently large scale to offer considerable control over both function and environment. Parks and openness and separation of pedestrians from vehicular traffic, and all the other amenities that were largely undreamed of during America's original wave of establishing its new towns, have a new and fresh chance of being incorporated.

But even the best intended "open land" preserved in large schemes can be of slight value unless destined for some activity. The pristine acreage planned into so many of our housing projects following Le Corbusier's schemes, such as the Voisin plan for



Paris, has too often become an inhospitable "no man's land." The good motivation to plan on a big scale failed in its aim of drastically improving the environment: to really succeed in "thinking big," the details must be filled in the broad sketch. Brasilia, for all its opportunities as a totally new city, might be said to suffer from the use of too broad a pencil.

Many of the big new schemes have apparently taken this lesson to heart. Columbia, Maryland, for example, is a complete new town being developed for 110,000 people. But it is planned as a build-up of smallish neighborhood units of 500 to 600 families each; each neighborhood will have its own "amenities," including a neighborhood center. Five or six of these neighborhoods will form a village, with a community center. And 10 of the villages will cluster around the town center (top, right) which will have public and municipal facilities, as well as structures for commercial and recreational use. Of its total 15,200-acre site, there will be 3,469 acres of permanent open space, including five lakes; 1,674 acres for industrial and primary employment; 6,739 acres for residential; 346 acres for commercial; and 1,780 acres for miscellaneous use.



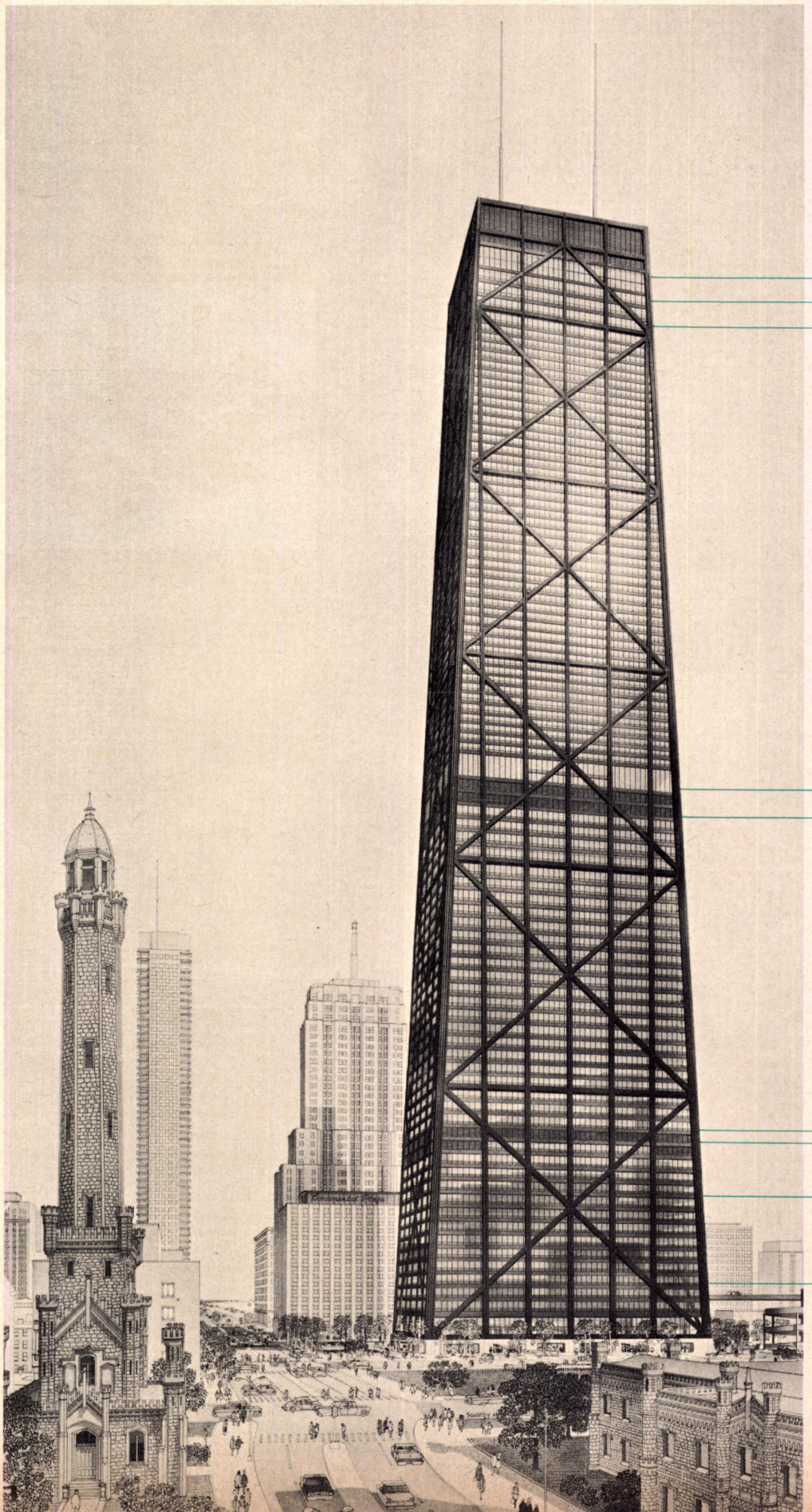
©Ezra Stoller Associates

Financial backing for the total Columbia project is "private": Connecticut General Life Insurance Company, Chase Manhattan Bank, and Teachers Insurance and Annuity Association of America. And those three companies are far from unique in their active interest in such large-scale developments. A good many of our larger corporations, insurance companies, mutual funds, pension trusts, and labor unions, are becoming involved to some degree. Example: the Aluminum Company of America's special subsidiary, Alcoa Properties, Inc., which is responsible for urban development activity, and which has now developed 10 major properties in six cities. Each day's newspaper is likely to carry an announcement of another big project, with another big sponsor. One of the most recent was a 40-block, downtown-renewal project, Penn Park, planned for Pittsburgh by the Pennsylvania Railroad.

Another, with as yet undisclosed backers, was announced a short while ago by New York's Governor Nelson Rockefeller for the lower-west-side waterfront area of Manhattan. The preliminary architectural schemes for this new "Battery Park City," prepared by Wallace K. Harrison, reveal a surprisingly complete community for 63,000 people to be built on "air rights" over the Hudson river in an area now occupied by a series of generally deteriorated docks. The scheme (shown opposite) is a two-level one, with major buildings, parks and pedestrians on the upper surface; light industrial, automobile and garage areas are below under a concrete platform. Landfill for the project will comprise some 98 acres.

Government and very large builders or developers are also launching quantities of new projects which augment this burgeoning new concept of land use and building type.

## In big-scale planning, multi-use buildings or the "complete" city may help gain vitality




The projected John Hancock Center in Chicago combines facilities for a fairly complete "planned community" within its 100 floors. Skidmore, Owings and Merrill are the architects.

"What this country must do is disperse its industry, build new cities in the middle of nowhere," urged William J. Levitt, president of Levitt and Sons, Inc. last April before the Housing Subcommittee of the Senate Committee on Banking and Currency. The proposed Title II legislation's new community provisions were under discussion. "We must build these cities, many of them, of moderate size [he later referred to an estimate of a billion dollars to build a city for 100,000 people], well planned, in which future generations may live and work, learn and play, grow up, raise families and enjoy all the good things and benefits. . . . That's why I believe the proposal in Title II to provide for new communities doesn't go far enough. As drafted, it does not call for really new communities, self-contained, with all the functions and facilities that properly give a city identity and character. Rather it would provide, as I see it, for the creation of smallish satellite communities, accretions and encrustations on the swollen mega-cities that are engulfing us."

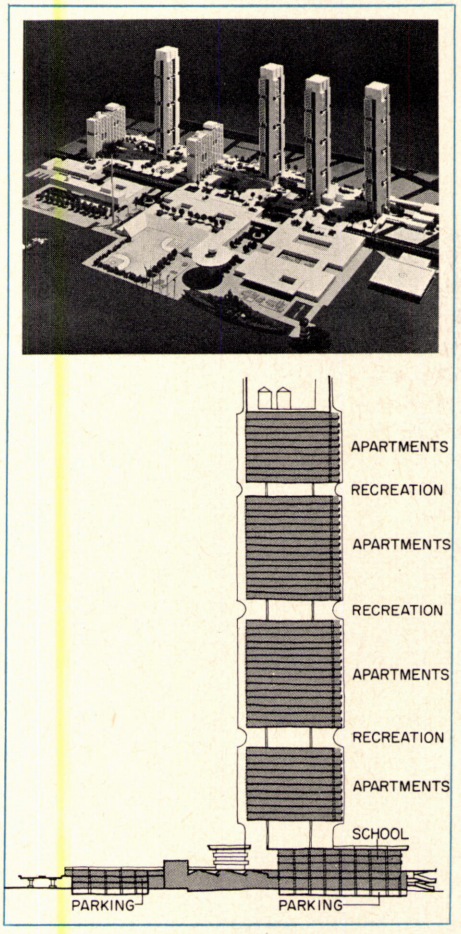
Levitt was endorsing a spreading opinion that new, smaller, complete communities are the only cure for crowded cities, urban sprawl, choked freeways and intolerable commuting. Others, however, have applied the same multi-function, 24-hour-use cure theory to the big, existing cities themselves—to neighborhoods, to grouped building developments, and even to individual buildings. Battery Park City, shown on the preceding page, was conceived as such a planned community within New York City, located to inject vitality into the night and weekend vacuum of the Wall Street area. And, hardly incidentally, it opens the potential of walking home to lunch for workers in the area. In a more limited, smaller package is the new U.N. Plaza, designed by Harrison & Abramovitz. It is a twin-tower building, flanking the United Nations, which contains apartments, offices, stores, parking, a restaurant and a playground. Conceivably, one could commute to work by elevator!

In Chicago, the much publicized Marina City complex, designed by Bertram Goldberg, is making such an impact as a sort of planned vertical community that, reportedly, sociologists and theologians are busy making studies of the "new" urban way of life. They will have more opportunities for their studies in the projected 100-story John Hancock Center by Skidmore, Owings & Merrill (opposite). This single, 1,100-foot-high tower will provide 750 apartments on 49 floors, 34 floors of office space, seven floors for parking and commercial and recreational facilities.

S.O.M. also served as consultants, with Mathers and Haldenly as architects, for Toronto's new project to revitalize that city's downtown core. Called Eaton Center, it is a little city in itself, and adjoins the recently completed City Hall. In the grouping of six structures are three office towers, a circular hotel, an apartment tower, and a department store. At plaza level is a shopping center. All the structures are interconnected below grade. S.O.M. are also architects for a similar multi-function complex in Johannesberg.

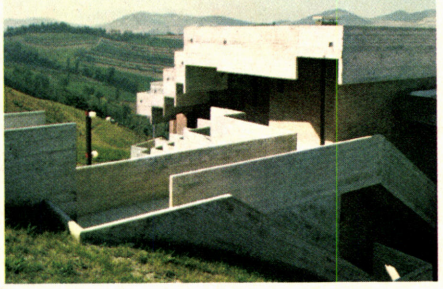
In a recent treatise, "The Complete City: A Look Ahead," Dr. Nelson N. Foote of General Electric's corporate research service commented, "Under the influence of architects and trade publications, emphasis up to now has been given primarily to physical planning of common open spaces, to the separation of automobile and pedestrian traffic, to parks and playgrounds, entrances and parking areas, and especially to the mix of detached houses, town houses, garden apartments and high-rise apartments. It was discovered that by such physical planning a magical benefit was obtainable: higher density of population on the land, with more open space available for recreational and esthetic use. . . . Nonetheless, it is far from the whole story of the contribution of planned communities [which] is to go to the opposite extreme—from the way of using space to the way of life to be lived—and primary employment."

The academic way of life is amply provided for in another New York project, Metro City, designed by the office of Max O. Urbahn. Also located on the Hudson, a bit north of the Battery Park City scheme, it incorporates a series of schools (public schools and community college, Baruch College, and a police academy) along with extensive middle-income housing, commercial and recreational facilities.




Dr. Nelson Foote, whom we quoted previously, exudes optimism about the future of planned communities, "all in all, we may be standing not merely on the verge of a breakthrough in the pattern of urban growth, but on the verge of a stampede of developers, consumers and employers into planned communities. . . . At the beginning of 1964, 75 development projects of 1,000 acres or over were known to be in progress; by the middle of this year, according to the Federal Housing Administration, 175!—I have ventured the guess that by 1970, 40 per cent of all new dwelling units will be located in planned communities." A fertile field, indeed, for architectural services.

## Rural or urban land can be conserved by compact planning for big projects



The University City at Urbino, Italy dramatically illustrates the way concentration of structures can be used for conservation of land. Architect Giancarlo De Carlo has massed the dormitory and commons buildings into a tight, mountain-top group, yet preserved a sense of openness by small courts, interconnecting walks, and many "lookouts."

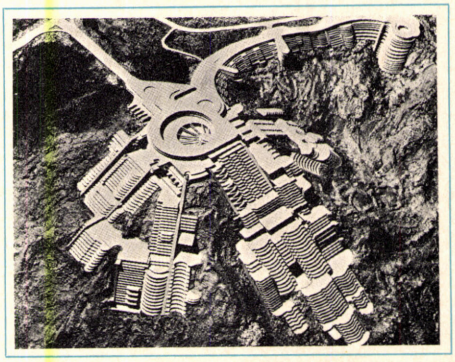
With two new towns now actually under construction, in France and Scotland, which are each self-contained in a single, massive building, there have been some predictable reactions: to the remarkable conservation of land and to the question of open space needed.

Giancarlo De Carlo's design for the dormitory and commons complex for the University of Urbino, Italy dramatically demonstrates that, at least at this scale, a continuous building can be compacted to leave the natural landscape relatively unscathed, while providing a delightful sense of freedom and openness within the structure, by using minimal open courts and many terraces and viewing stations to scan the beautiful countryside. When the result is compared with that of bulldozed American suburbs, it provokes some thought.

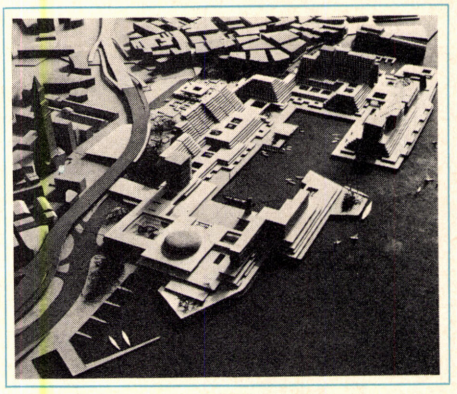
While few would really question the intrinsic value of nature's wide open spaces, there are many who have tempered opinions about open spaces in cities. "What are we going to do with the open space we wrench away from so-called greedy developers?" Konrad J. Perlman of Daniel, Mann, Johnson and Mendenhall, wrote in a recent article. "It is not enough to say that the ideal of every city, both those existing and those which will be designed, is a linking greenway and park system or one acre of park for every 100 population. For this concept not only overlooks the facts of growth; it is probably in a subliminal way against them. . . . In an urban complex that grows in a hydra-like fashion according to the logic of land values and the whim of our free enterprise system, open space cannot in all cases be considered inviolate, [it] must be thought of as a growth reservoir. In the case of existing cities open space must be created; the new town starts with an open space system. As a flexible plan, the growth diagram would permit former open spaces to be built on, as the direction of growth changes and the demand for open spaces shifts to other areas. . . . Open space would then have the same status as streets, which are widened, created and closed as traffic volume shifts."

This concept of open space as a changeable public domain has some interesting facets — but some severely stringent controls would be necessary to assure wisdom of action as "needs," and possibly whims, indicated change.

Two other members of the Daniel, Mann, Johnson and Mendenhall firm, Cesar Pelli, Director of Design, and A. J. Lumsden, Assistant Director, have come up with a scheme for a small city, in the Santa Monica mountains of southern California, which limits *its* open spaces to terrace views of the terrain. Strongly recalling the Urbino University City in its contours, the scheme is really a much more tightly-knit building or "mega-structure."



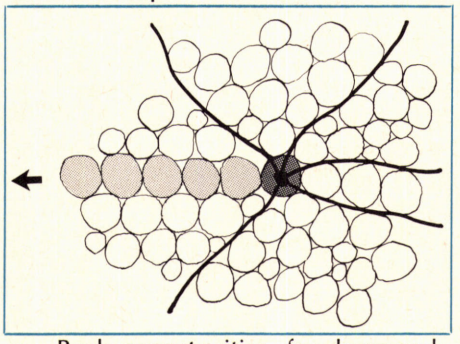
Roger Katan's project for a Boston waterfront redevelopment community also follows the dicta that "the man-made must never be allowed to displace natural phenomena." In this case it is the sea, and Katan makes it an integral part of his scheme. Compact facilities for a complete community are arranged, almost in single-building fashion, in arms around a small harbor; building levels mount up gradually from the marina basin in a step-like recession to give terraces, promenades and views.



Any such efforts which are devised to help conserve the land, or use it better, are worth some attention. While it is true that the U.S. as yet has no real land problem over-all, it of course has a staggering land problem in the areas where most people want to live, and another unthoughtful generation could easily create a national land problem.

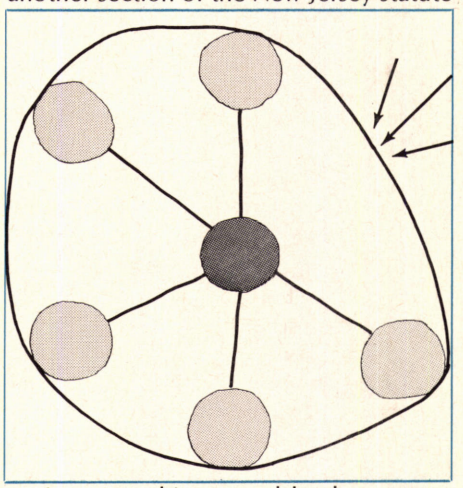
## Philosophies of planning cities and who is to design them is a current quandary

Divergent concepts of what the new city should be like are rife these days, with perhaps the extreme poles of thought represented by Doxiadis' scheme for a "continuous core" flanked by housing and snaking through the countryside, on the one hand, and on the other, the "molecular" or cluster scheme which sprinkles villages around in more or less related dollops.

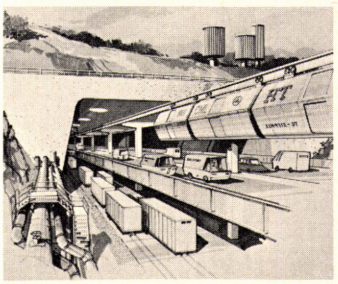


Real opportunities for large-scale planning, however, seem to be budding like a springtime orchard; what the harvest will be like, and by whom, is worth considering. The bigger builders seem to be ready and willing, with speeches to Senate committees, press conferences, and proposals for everything from new-city neighborhoods to complete new towns. Most, however, seem to visualize their role as entrepreneur. "Think tanks" and planners' groups are also priming for action with ready answers to the cities' problems. But, to date anyway, the majority of the larger, better projects seem to have been architect-designed, whoever may have been the entrepreneur. From Radburn to Reston, the end result has been more or less under architectural control—and there have been a few cases of architects being the motivating "developer" as well, in some of the large projects.

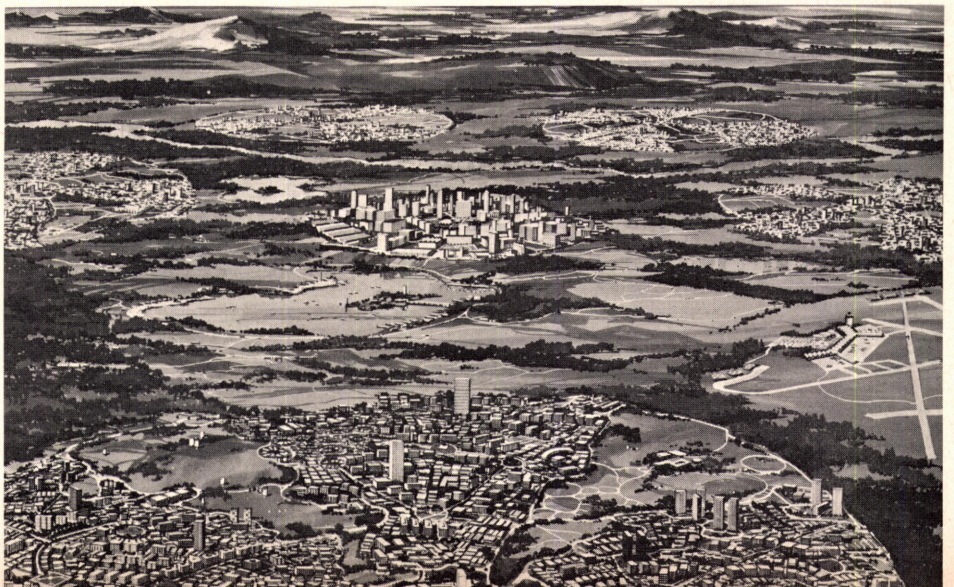
But serious, concerted effort will be needed to keep it so. New Jersey, for example, is the first state to require licensing of planners, and has recently ruled that an architectural license is no qualification for "city planning." In a legal decision, Judge Frank J. Kingfield is quoted by a recent American Institute of Planners' Newsletter as stating "that the evidence showed that city and regional planning is a separate and distinct profession from engineering and architecture, and training and experience in the latter fields does not make a competent city planner." It continues, "The judge further noted that under another section of the New Jersey statute



engineers, architects and land surveyors are to be free to perform some subsidiary planning functions, so long as they do not hold themselves out as professional planners; but he interpreted the section as allowing only licensed professional planners to be in responsible charge of preparing comprehensive master plans." This is a real challenge—for the stakes are the design of the environment! *—Herbert L. Smith, Jr.*



In contrast to Doxiadis' expanding city (diagram at top), the other illustrations show a molecular city, presented by the Committee For National Land Development Policy, of which builder Joseph Timan is chairman of the board, and architect Richard Neutra is a board member. The scheme places industry and rail transport underground.



Forty-six years ago ARCHITECTURAL RECORD sent an illustrator-author to Paris to interview the new "wild beasts" of modern art. He, Burgess, enjoyed his assignment immensely, but his article (here condensed) in the May 1910 issue was as prophetic in the field of painting as ARCHITECTURAL RECORD consistently was in theories of architectural art.

The Wild Men of Paris

# THE WILD MEN OF PARIS

I had scarcely entered the Salon des Indépendents when I heard shrieks of laughter coming from an adjoining wing. I hurried along from room to room under the huge canvas roof, crunching the gravel underfoot as I went, until I came upon a party of well-dressed Parisians in a paroxysm of merriment, gazing, through weeping eyes, at a picture. Even in my haste I had noticed other spectators lurching hysterically in and out of the galleries; I had caught sight of paintings that had made me gasp. But here I stopped in amazement. It was a thing to startle even Paris. I realized for the first time that my views on art needed a radical reconstruction. Suddenly I had entered a new world, a universe of ugliness. And, ever since, I have been mentally standing on my head in the endeavor to get a new point of view on beauty so as to understand and appreciate this new movement in art.

What did it all mean? The drawing was crude past all belief; the color was as atrocious as the subject. Had a new era of art begun? Was ugliness to supersede beauty, technique give way to naiveté, and vibrant, discordant color, a very patchwork of horrid hues, take the place of subtle nuances of tonality?

If this example of the new art was shocking, there were other paintings at the Salon that were almost as dire. There were no limits to the audacity and the ugliness of the canvases. Still-life sketches of round, round apples and yellow, yellow oranges, on square, square tables, seen in impossible perspective; landscapes of squirming trees, with blobs of virgin color gone wrong, fierce greens and coruscating yellows, violent purples, sickening reds and shuddering blues.

But the nudes! They looked like flayed Martians, like pathological charts —hideous old women, patched with gruesome hues, lopsided, with arms like the arms of a Swastika, sprawling on vivid backgrounds, or frozen stiffly upright, glaring through misshapen eyes, with noses or fingers missing. They defied anatomy, physiology, almost geometry itself!

It was an affording quest, analyzing such madness as this. I had studied the gargoyles of Oxford and Notre Dame, I had mused over the art of the Niger and of Dahomey, I had gazed at Hindu monstrosities, Aztec mysteries and many other primitive grotesques; and it had come over me that there was a rationale of ugliness as there was a rationale of beauty; that, perhaps, one was but the negative of the other, an image reversed, which might have its own value and esoteric meaning.

And so I sought to trace it back to its meaning and to its authors. Though the school was new to me, it was already an old story in Paris. It had been a nine-days' wonder. Violent discussions had raged over it; it had taken its place as a revolt and held it, despite the fulmination of critics and the contempt of the academicians. The school was increasing in numbers, in importance. By many it was taken seriously. At first, the beginners had been called "The Invertebrates." In the Salon of 1905 they were named "The Incoherents." But by 1906, when they grew more perfervid, more audacious, more crazed with theories, they received the appellation of "Les Fauves"—the Wild Beasts.

Who were the beginners of the movement? Monet, Manet and Cézanne, say most, though their influence is now barely traceable. Cézanne, no doubt; Cézanne, the pathetic bourgeois painter, whose greatest ambition was to wear the ribbon of the Legion of Honor, and to have his pictures exhibited in the old Salon, and who, because his maiden sister disapproved of the use of female models, painted nude women from nude men! Truly, he deserved the red ribbon. But Cézanne, though he experimented with pure color, was still concerned with tonalities. He was but the point for these mad explorers. It was Matisse who took the first step into the undiscovered land of the ugly.

Matisse himself, serious, plaintive, a conscientious experimenter, whose works are but studies in expression, who is concerned at present with but the working out of the theory of simplicity, denies all responsibility for the excesses of his unwelcome disciples. He hears his own speculative words distorted, misinterpreted, inciting innumerable vagaries. He may say, perhaps: "To my mind, the equilateral triangle is a symbol and manifestion of the absolute. If one could get that absolute quality into a painting, it would be a work of art." Whereas, little madcap Picasso, keen as a whip, spirited as a devil, mad as a hatter, runs to his studio and contrives a huge nude woman composed entirely of triangles, and presents it in triumph. What wonder Matisse shakes his head and does not smile! He chats thoughtfully of the "harmony of volume" and "architectural values," and wild Braque climbs to his attic and builds an architectural monster which he names "Woman," with balanced masses and parts, with openings and columnar legs and cornices.

What of these other Fauves, who left Matisse out of sight in the runaway from beauty? I picked out some of the

From "Matisse" Published by Skira, Geneva-New York

Matisse paints weight volume, roundness, col or and all the intrinsi physical attributes of th thing itself, and then imbues the whole with sentiment. Oh, yes, hi paintings do have life One can't deny that.

*The Museum of Modern Art, New York. Acquired through the Lillie P. Bliss Bequest*

Then Picasso, too, talks of values and volumes, of the subjective and of the sentiment of emotion and instinct. *Et pat-à-tie et-pat-à-ta,* as the French say. But he's too fascinating as a man to make one want to take him only as an artist. Is he mad, or the rarest of *blaguers?* Let others consider his canvases in earnest—I want only to see Picasso grin!

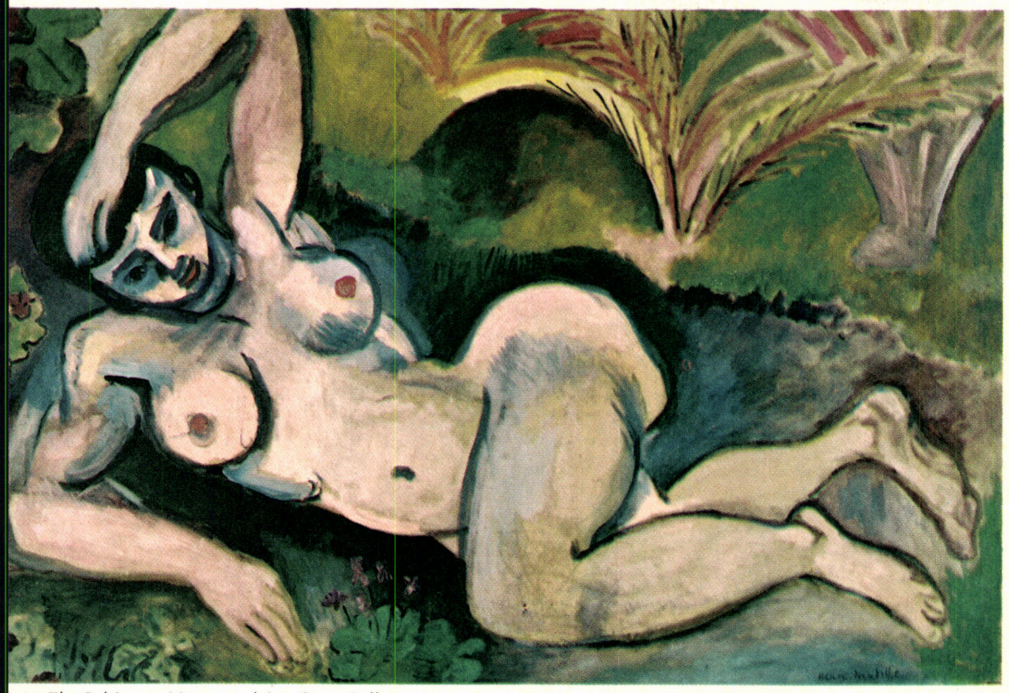
most ferocious and stalked them all over Paris. And what magnificent chaps I met! All young, all virile, all enthusiastic, all with abundant personality, and all a little mad.

And so, first, to visit Braque, the originator of architectural nudes with square feet, as square as boxes, with right-angled shoulders. Braque's own shoulders were magnificent. He might be a typical American athlete, strong, muscular, handsome, as simple as a child and as modest as a girl of nine. To see him blush when I asked permission to photograph him—and then to turn to the monster on his easel, a female with a balloon-shaped stomach —oh, it was delicious to see big, burly Braque drop his eyes and blush!

"I couldn't portray a woman in all her natural loveliness," says Braque. "I haven't the skill. No one has. I must, therefore, create a new sort of beauty, the beauty that appears to be in terms of volume, of line, of mass, of weight, and through that beauty interpret my subjective impression. Nature is a mere pretext for a decorative composition, plus sentiment. It suggests emotion, and I translate that emotion into art. I want to expose the Absolute, and not merely the factitious woman."

Let's repeat the dose. Follow me to visit Dérain, whom all consider the most intelligent and earnest Fauve.

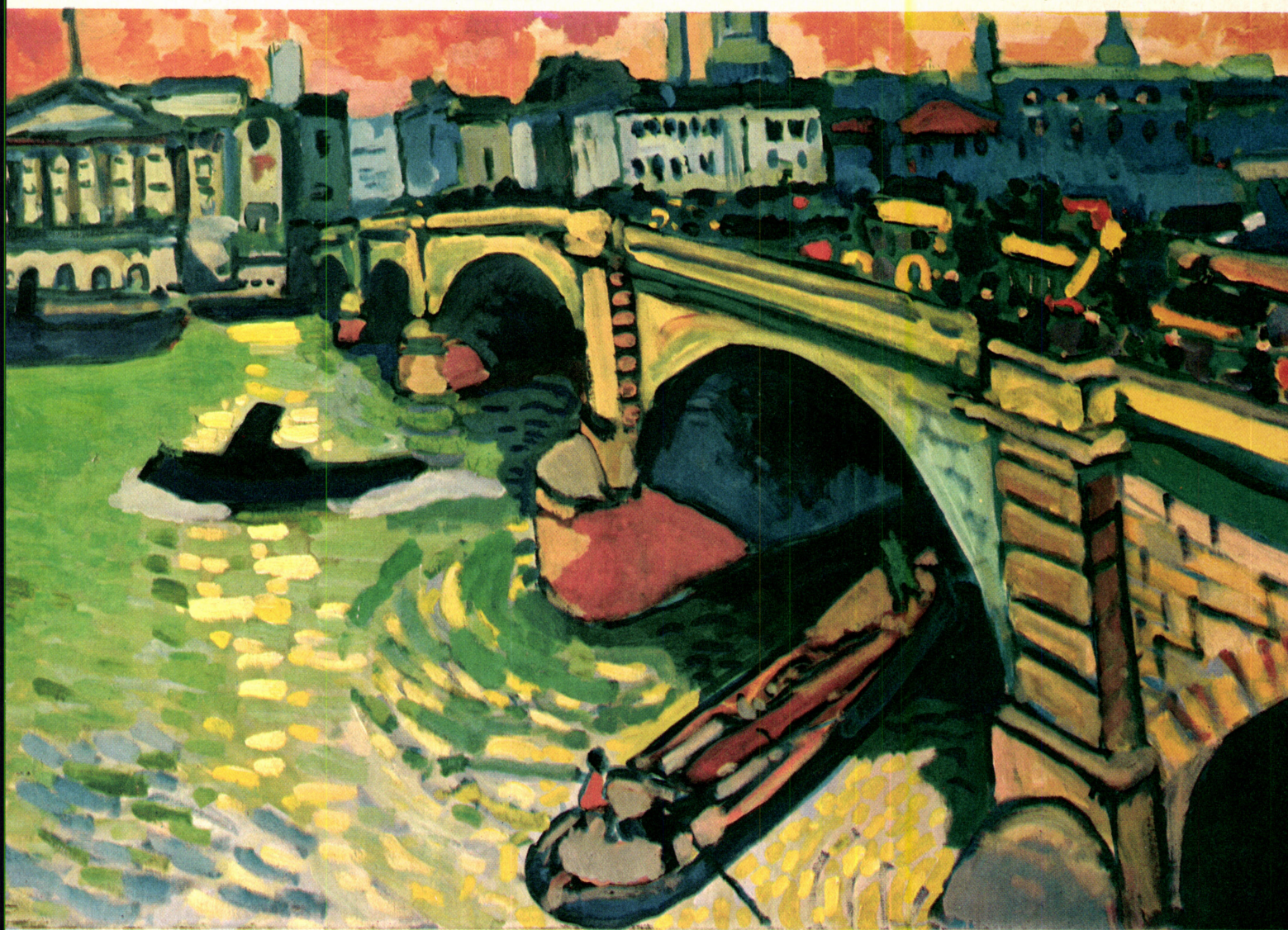
Dérain is across the street with his model, a dead-white girl with black hair, dressed in purple and green. Dérain leaves her pouting and we walk through a strange, crowded bourgeois neighborhood with Dérain, who is a tall, serious-looking young man, with kind brown eyes and a shrill blue tie. We plunge down a narrow lane-like passage, with casts amidst the shrub-



*The Baltimore Museum of Art, Cone Collection*

Dérain, being a quiet man, doesn't care to talk. He shows us portfolios of experiments in pure color, geometrical arrangements such as you yourself did in the grammar school.

*The Museum of Modern Art, New York. Gift of Mr. and Mrs. Charles Zadok*



bery, into a big open studio, with a gallery at the end.

Look at his biggest picture, first, and have your breath taken away! He has been working two years on it. A group of squirmy bathers, some green and some flamingo pink, all, apparently, modeled out of dough, permeate a smoky, vague background. In front sprawls a burly Negro, eight feet long. Now notice his African carvings, horrid little black gods and horrid goddesses with conical breasts, deformed, hideous. Then, at Dérain's imitations of them in wood and plaster. Here's the cubical man himself, compressed into geometric proportions, his head between his legs. Beautiful! Dérain's own cat, elongated into a cylinder. Burned and painted wooden cabinets, statues with heads lolling on shoulders, arms anywhere but where they ought to be. A wild place for dreams. But no place for mother.

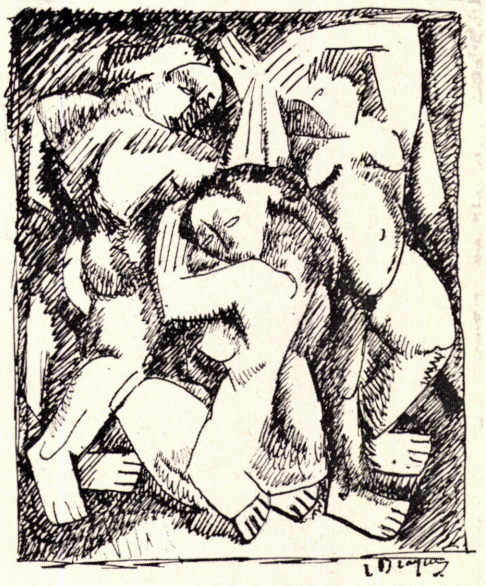
But who am I, to laugh at Dérain? Have I not wondered at the Gobelin designs, at the Tibetan goddess of destruction, and sought for occult meanings in the primitive figures of Mound Builders? Let Dérain talk, if he will be persuaded. What has he learned from the Negroes of the Niger? Why does he so affect ugly women?

"Why, what, after all, *is* a pretty woman?" Dérain answers, kindly. "It's a mere subjective impression—what you yourself think of her. That's what I paint, another kind of beauty of my own. There is often more psychic appeal in a so-called ugly woman than there is in a pretty one; and, in my ideal, I reconstruct her to bring that beauty forth in terms of line or volume. A homely woman may please by her grace, by her motion in dancing, for instance. So she may please by her harmony of volumes. If I paint a girl in the sunlight, it's the sunlight I'm painting, not the real girl; and even for that I should have the sun itself on my palette. I don't care for an accidental effect of light and shade, a thing of 'mere charm.'

And now for Picasso, of whom, here and there, one has heard so much. Picasso will not exhibit his paintings. He is too proud, too scornful of the opinions of the *canaille*. But he sells his work, nevertheless. That's the astonishing thing about all of them. Who buys? God knows!

Picasso is a devil. I use the term in the most complimentary sense, for he's young, fresh, olive-skinned, black eyes and black hair, a Spanish type, with an exuberant, superfluous ounce of blood in him. I thought of a Yale sophomore who had been out stealing signs, and was on the point of expulsion. When, to this, I add that he is the only one of the crowd with a sense of humor, you will surely fall in love with him, as I did. But, Picasso is colossal in his audacity. His canvases fairly reek with the insolence of youth; they outrage nature, tradition, decency. They are abominable. You ask him if he uses models, and he turns to you a dancing eye. "Where would I get them?" grins Picasso, as he winks at his ultramarine ogresses.

I doubt if Picasso ever finishes his paintings. The nightmares are too barbarous to last; to carry out such profanities would be impossible. So we gaze at his pyramidal women, his sub-African caricatures, figures with eyes askew, with contorted legs, and—things unmentionably worse, and patch together whatever idea we may.



No one could have been kinder than was Braque. He gave me a sketch for his painting entitled "Woman." To portray every physical aspect of such a subject, he said, required three figures, much as the representation of a house requires a plan, an elevation and a section. His chief preoccupation is the search for violence, for a primitive emotion.

But let's regard their art as we regard Debussy's music, and Les Fauves are not so mad, after all; they are only inexperienced with their method. I had proved, at least, that they were not charlatans. They are in earnest and do stand for a serious revolt. Now, a revolt not only starts an action, but a reaction, and these Wild Beasts may yet influence the more conventional schools.

*Gelett Burgess*

6

# THE CHANGING PATTERNS OF ARCHITECTURAL PRACTICE

Architects face new and larger tasks in the midst of revolution and in a new climate of acceptance at top levels of government and industry. New horizons of design encompass the huge works now shaping every aspect of the environment of man—his resources, transport, recreation, and whole cities for his work and dwelling places. It is to the architectural profession that those who feel the need for these great works are turning, not just for the complex specifics of design, but for skilled and thoughtful help in setting the new goals. And the profession is taking up such new tools as it needs to execute these great commissions.

There is a new profession abroad in the land. It has been called forth to deal with the crowded plight of mankind in a time of technical and social revolution. It is the logical extension of an ancient concern of architects with the commodity, firmness and delight of buildings. But now it must embrace the whole environment of man in an ever-more-demanding complex.

As man has multiplied and his structures and devices saturate the earth, his every exposure becomes man-made. He makes waste and generates friction. His natural resources are depleted or polluted. The very air he breathes is charged with the noxious exhalations of his own machines. His vast constructions obliterate the gardens of his soul.

But somehow the last great strangulation is averted.

Long past the Malthusian point of self-destruction, man has survived and will continue. He reaches out for new devices, new resources, new lubricants for the order of his ways. A profession evolves that plans the controlled resources of a state; that devises transport for a nation's capital; that shapes the features and the future of a hundred cities. It is a profession that pulls together a stupendous multiplicity of hardware and the skills for its arrangement. It makes of all that multiplicity a cohesive and intuitive whole. It is an art. And its name is architecture.

ARCHITECTURAL RECORD has, in the journalistic sense, documented the evolution of architecture. The interwoven colors of its many-stranded cable of history are here to see. But the past is prelude to a future that depends on the capacities of practitioners to grasp it. "The question confronting us," says A.I.A. president Morris Ketchum Jr., "is whether or not we, as individuals and as a profession, can rise to the demands of our new destiny." What are these demands? By whom are they imposed? What capacities must architects enhance to meet them?

**The surge to bigness**

The individual architect as artist remains and shall remain the dominant conceptual force in the design of man-made environment. The architect as professional, however, is operating in an era when the surge to bigness has brought business and government to ever-more-complex corporate and bureaucratic structures. Architects are facing fundamental changes in both the nature of their clients and the milieu in which their work is done. They have themselves been caught up in an economy in which a large office no longer reflects a simple and happy multiplication of commissions. Today, size is very often fundamental to staying in business at all in certain kinds of practices now developing.

This is *not* to say that the big architectural office is the only office of the future. Revolution and evolution do not mean obliteration of all semblances of the past. By the very nature of the professional relationship, the classic dialogue between architect and client remains at all levels; and the very multiplicity of jobs of all sizes assures continuance of and opportunities in individual relationships. But even the solitary practitioner must now approach the smallest commission with a bigness of mind that is prepared to encompass a whole new spectrum of consulting services.

**The shift to the multi-person client**

One aspect of change was aptly illustrated in a recent interview with William H. Scheick, executive director of the A.I.A. Consider, he suggested, the relationship of J. P. Morgan and Charles Follen McKim. Morgan owned the site on which he wanted to build. He simply called McKim and instructed him to design a bank. The job was done and bills were paid. It was an interchange between individuals, complicated only by the possible clash of strong opinions. Nowadays, the client for a large project is generally a corporation, a syndicate, a foundation, or a government agency. The dialogue becomes diffuse and complex, subject to new disciplines of organization and new lines of authority.

**The demand for comprehensive services**

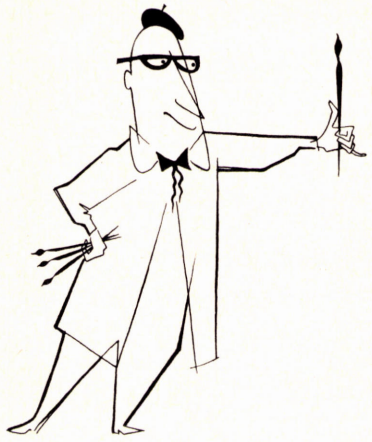
In any business today, consultation has become a way of life in dealing with any situation that is out of the normal stream of operation. For example, new construction for expansion—while an outgrowth of operation—involves expertise in feasibility, construction, location and programing that is beyond the in-house scope of most business organizations. They seek guidance in these matters from a consulting profession. They find one that is uniquely endowed to provide or to co-ordinate that guidance. They turn to architects, because those pre-construction problems are the familiar prelude to the daily work of architecture.

But the traditional practice of architecture, while it generated familiarity with many of these pre-project problems, had not set up fee structures or habits of operation geared to participation in their solution. When the challenge of demand presented itself, the profession took up arms to deal with it. "Comprehensive services" has been the rallying cry for the better part of 10 years. And the means of providing and charging for those services are being devised and worked into the professional structure. Demand and fulfillment regenerated more demand and higher capabilities for meeting it. Corporate clients were joined by governments and institutions in the enlistment of architects on a widening front of attack on problems related to planning—larger-scale complexes of buildings, whole new campuses, vacation and recreation complexes, bigger and more-carefully-thought-out residential communities.

**The demand for urban planning**

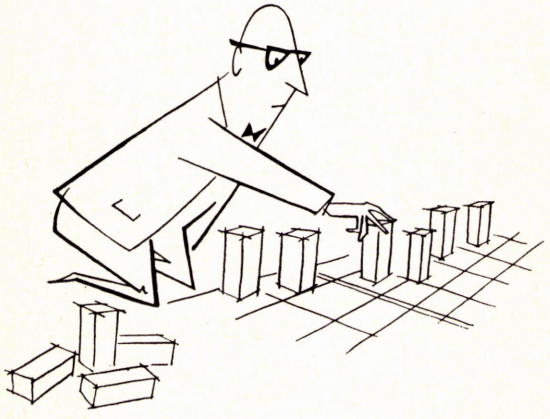
In communities all over the nation, there is a great and growing awareness of the impact even a single building may have on the appearance and viability of its surroundings. The Kennedy and Johnson administrations have actively fostered that awareness in a new climate of cultural and esthetic emphasis. The establishment at cabinet level of the new Department of Housing and Urban Development, and more especially the assignment of architects to key roles in its administration, are significant and far-reaching in relating the public

*Illustrations by Sol Ehrlich*

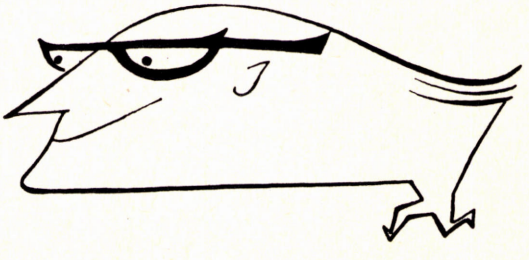


*Artist*

*Teacher*



*City Planner*



*Industrial Designer*

mind to architecture as an instrument of urban planning. While the planning of cities is no new role for architects, the crisis of rapid growth in this field, brought on by vast appropriations for urban renewal, has opened the door to personal involvement of hundreds and hundreds of architects on a scale never before realized, as described in more detail in an earlier section of this report.

It is perhaps this character of personal involvement that puts the architect, as a citizen, in a key role in the implementation of urban renewal. Architects are tending to participate more and more in community affairs—not just because their voices are needed more and more, but because this involvement is increasingly related to their professional roles. As problems in urban renewal come up in more and more communities, fellow citizens are calling upon architects for leadership in planning their own home towns. Center-city merchants, especially, who have felt centrifugal losses to outlying suburbs, are asking architects to redesign the centers of cities in more inviting aspect. City officials are meeting the pleas of citizens with ready funds and enabling acts. And so the war on our staggering urban problems is more and more effectively joined.

**The demand for regional planning**

Success succeeds, as the saying goes, and the step from successful urban planning to commissions on a regional or statewide basis would seem a logical one. It is; but there is an exponential factor of complexity as it relates to size. Further, the product of this kind of practice is not always one to delight the eye of the artist in the sense of line and form. It does have, however, a larger beauty of organization, and it is calling forth every talent of a considerable body of skilled practitioners. It is truly architecture on a new scale.

Those who are responsible for vast enterprise in transport, conservation of resources, statewide health or education systems, recreation areas, or any of the complex regional facilities that transcend local boundaries, are turning more and more to architects who have demonstrated capability in planning on a large scale. A regional system of airports and ground transport to serve them in a huge metropolis; a statewide program in mental health facilities; a control system for a whole coastal watershed—these are all current commissions for architectural offices.

As the trend to wide-scale planning continues, and the reliance on architects at high levels of the Federal government is confirmed by the successes of their work, that reliance will spread through ever-widening circles of endeavor, public and private, in new massive planning and organization in a new age of architecture.

**The key factor of agency**

Thousands of architects, especially those in smaller offices, do not now consider themselves geared to offer comprehensive services or urban and regional planning on the broader scale. And in the light of simple multiplication of commissions of all kinds in this age, there is no dearth of work to

suit the proclivities of any architect at whatever scale he may elect. But many small and medium firms are offering these

CHANGING PATTERNS IN THE NEW AGE

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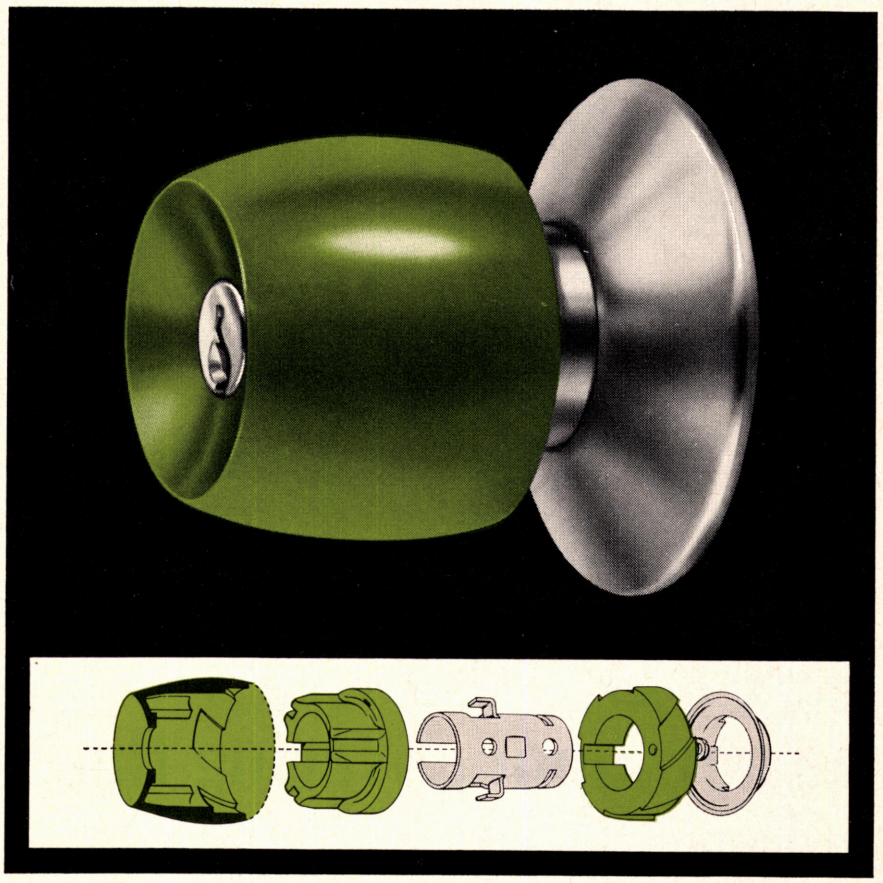
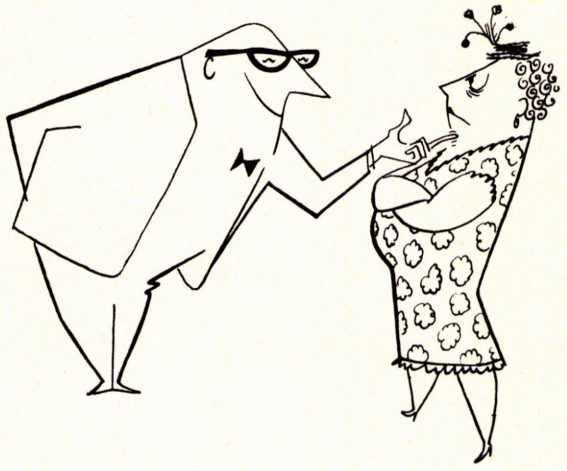


**Expertly engineered,** the Corinthian knob is moulded in three parts and is interlocked with metal components which makes the assembly



*Salesman*

*Architectural Analyst*

*Sociologist*

*Environment Shaper*

**Economists view the decades ahead**

The yeast of the new age of architecture is, of course, new construction. Without new commissions, the high-sounding phrases of challenge would fall on the arid ground of unemployment. It is the phenomenal rate of new construction, maintained over unprecedented periods and still unflagging, that has brought the new age about. What are the prospects for its continuance?

Last year's total spending on new construction throughout the country amounted to something in excess of $70 billion, observes George A. Christie, chief economist of F. W. Dodge Company. And that $70-billion pace represented almost exactly $1 out of every $10 spent throughout our entire $700-odd-billion economy. For the past couple of years the construction industry has been in a period of transition, and on the threshold of a new stage of growth. The most important key to this new burst of growth is the impact that the post-war population explosion is having as it works its way through the population, redistributing the age composition as it goes. Russell Baker of the New York Times, summed up the situation not long ago when he wrote:

"This country has quietly passed one of those historic moments so uneventful in the happening that they never make the headlines, but so profound in their implications that they leave society shaken to the roots. More than half the population is now under the age of 26. Another 18 million persons, or about 10 per cent of the population, are over 65. As a result, we now have an entirely new minority group on our hands—those vast discontented millions between the ages of 26 and 65 known as 'the grownups'."

The sharp growth we are now witnessing in the number of young adults will continue to have a profound two-fold impact on the economy for a long time to come. The work force will accelerate sharply, growing by 1.8 per cent per year between now and 1970, and at a rate of 1.6 per cent after that. The other side of the coin, of course, is that these people will make themselves felt not only as producers but as consumers as well.

A related factor in the long-term construction markets is the recent expansion and development of the many government programs designed to cope with the problems of our expanding population as well as to meet the many dire needs that exist today. These new Federal, state and municipal programs, affecting housing, transportation, education, health, and welfare are going to be playing an even greater role in shaping the construction markets of the future.

In the decade between now and 1975, we are going to have to provide a total of nearly 20 million new housing units. This means that by the year 1975, we'll be seeing annual housing unit totals well in excess of two million!

When we look ahead, it becomes clear that by far the fastest growing parts of our population—the young adults and the over-sixties—are the age groups that represent the hard core of apartment demand. It stands to reason that for a while yet, levels of multi-family construction must move substantially above the volume of recent years.

The general trend of industrial and commercial construction will continue to move ahead at a strong rate over the next decade, although for the next few years we may see noticeably slower growth than the past several boom years have offered.

Where does the educational building market go from here? Certainly there are a few years of strong demand for college building left. Several new Federal programs like the Higher Educational Facilities Act of 1963 and the Higher Educational Act of 1965 are providing very substantial backing in the way of construction grants and loans which will sustain this building market through most of the rest of the sixties. Eventually, however, we'll reach the point where the post-war population bulge has gone through the entire educational system from kindergarten to graduate school, and by then we'll have enough capacity for a while. It shouldn't be long after that, though, — sometime in the early or mid-seventies—that the next generation will be knocking at the doors of our elementary schools, and then the whole process will repeat itself, though on the second time around the impact is likely to be more dispersed.

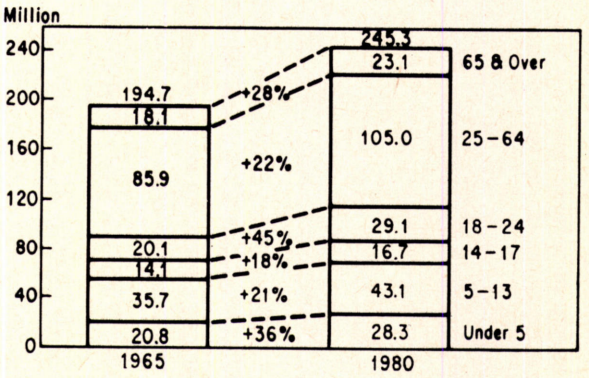
The story on hospital construction is a different variation of the same theme. Since 1960 the annual volume of hospital construction has more than doubled, and now with the brand new Medicare program just going into effect this year it's obvious that a whole new wave of expansion is in prospect—one that will be geared to the special medical problems of the aged. The problems of mental health, for another example, are likely to be met by a big expansion of specialized facilities. All in all, these trends indicate that the hospital and health facilities construction market is slated for continued sharp growth for as far ahead as anyone can see.

Similarly, there is a good case to be made for accelerated growth in most all other categories of building and construction in the decade ahead. It means that by 1975, today's $70-billion construction market will have grown to at least twice its size. And while part of this doubling in the dollar value of new construction work implies a pretty substantial boost in construction costs—that is, inflation, pure and simple —it still means that in actual physical terms we'll be putting up the equivalent of three buildings in 1975 for every two that were built in 1965.

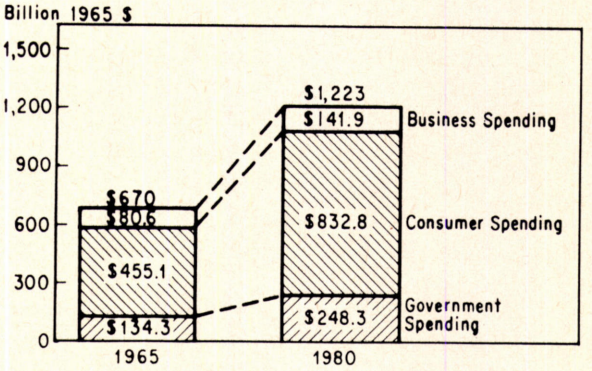
**Prospects for growth through 1980**

The charts and comments in the column at right are a small sampling from a study prepared by the Department of Economics of McGraw-Hill Publications. The study is not intended as a forecast of where our economy, or any part of it, would be at any given date during the period covered. But one thing seems fairly clear: future declines in economic activity will be of shorter duration and smaller magnitude. This report makes it crystal clear that all segments of the economy must plan for very substantial growth in the next 15 years, and the architectural profession, including those responsible for education and recruitment, must prepare itself for the new age.

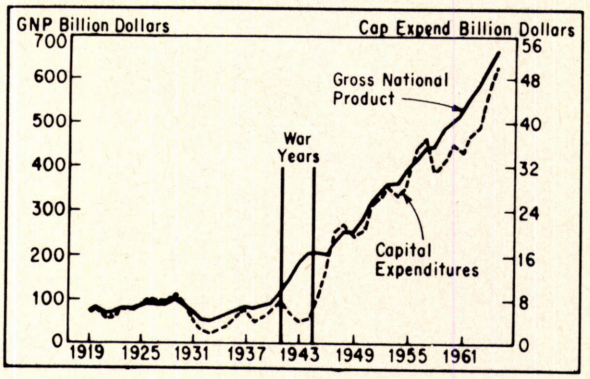
*—William B. Foxhall*




**Population growth:** The total market for goods and services is going to grow and grow. But a relatively small increase is expected in the key working age group, 25 to 64 years of age. This means that more capital goods per worker will be necessary. The smallest increase in population will come in the 14- to 17-year age bracket, the high-school student age group, while the largest increase is expected in the college student age group, 18 to 24 years.




**Gross National Product:** In 1980 Government spending will account for 20.3 per cent of GNP compared with less than 20.1 per cent in 1965. Consumer spending will account for less than 68.1 per cent in 1980 compared with 67.9 per cent 15 years earlier. All business spending (including net exports) will represent 11.6 per cent of the GNP total in 1980 in contrast to 12.0 per cent in 1965.




**Capital spending means prosperity:** In the past, except in war years, our GNP rose when business increased its expenditures for new plants and equipment. If business increases its investment in the years ahead, then GNP will rise and our prosperity will expand. There are many factors which indicate that a rising level of investment in new facilities is ahead.

## A final word about the future: Architectural education needs to grow closer to the profession to supply the leadership required by changing times

Architects may seldom work as hard again as they did in architectural school, where students spend long hours and all-night charettes under the pressure of a high attrition rate and uncertain standards of success and failure, frequently holding down a job at the same time. But when the graduate of this long and arduous process starts looking for employment, he finds that his academic training is conventionally regarded as the next thing to worthless, and that his state registration board will not accept the standards of his school, but will make him take a new series of qualifying tests.

The gap between theory and practice is a familiar problem of professional training. In the case of architecture, however, the theory and practice often seem to belong to different systems.

**Today's architectural curriculum is something of an historical accident**

The Beaux Arts design sequence made an indelible mark on most architectural schools. In this sequence the student spent a year learning the "Orders" and presentation techniques, and then worked through a series of building types of graduated difficulty. After the Second World War the Bauhaus method of teaching, in which students approached problems from first principles without pre-conceptions, was grafted to the Beaux Arts sequence.

The Beaux Arts system had been accompanied by a body of conventional knowledge about the general configuration that buildings should take. It is only a slight over-simplification to say that libraries had a central entrance hall with a divided staircase, and the reading room was on the *piano nobile;* hotels had two-story lobbies with a mezzanine and Corinthian columns; government buildings had a porch and pediment before the main entrance door. At the Bauhaus, the problems studied during most of the course were much simpler and sought a thorough understanding of certain basic principles.

What the Beaux Arts—Bauhaus graft produced was a situation in which students were asked to solve highly complex problems from first principles, without the benefit of a conventional body of knowledge.

The typical architectural curriculum today begins with a basic design course that occupies the place that the Orders used to have in the educational sequence. The one year of basic design is frequently used to teach perspective drawing, elements of painting, sculpture and graphics, and sometimes aspects of a liberal education as well. The pressure to cram everything in sometimes brings grotesque results: in one basic design course recently students were asked to "design a mobile expressive of Palladio."

The heart of the training program is the series of architectural problems given in studio courses. The initial problems are usually something "simple," like a bus shelter or a house for a sculptor, followed by examples of various building types of increasing complexity, and culminating in a thesis.

Each building type is taught on a sink-or-swim basis; the student treats the problem much as if he were a principal designer in an office, but without either the experience of a professional or all the constraints of a real architect-client relationship. The student receives periodic assistance from a professional architect in the studio, and often some very high-powered and stinging criticism on the final jury, when it is too late to change anything.

Associated with the studio sequence is a series of courses in structural engineering, which teach the student how to calculate the type of simple frame structures which are routinely done on a computer in today's engineering office, and which professional architects almost never calculate themselves. These structural courses occupy several years, but are seldom related directly to problems of architectural design. The student also receives a much less rigorous introduction to mechanical engineering and special short courses in "practice" and similar related topics, with electives in art history and, perhaps, city planning.

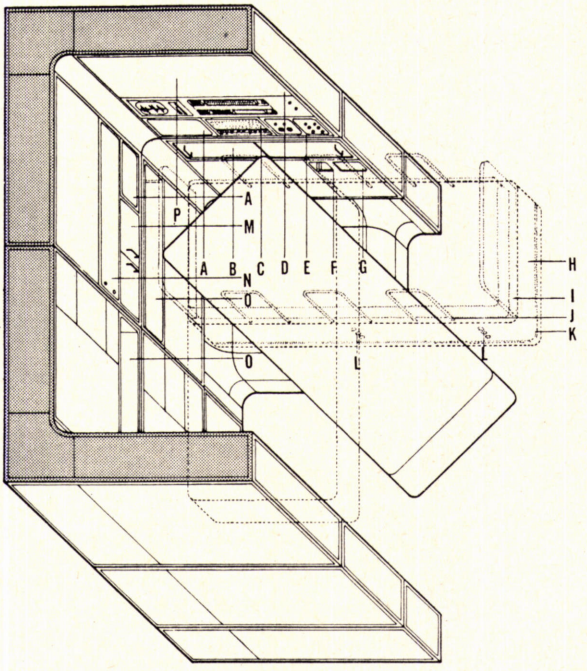
Most of the student's energies are concentrated in the studio courses, however, where he struggles endlessly, in the absence of any accepted standards and under the demand for "originality" implicit in the concept of modernism. Small wonder that "originality" and "standards" both frequently turn out to be found in the work of the most prominent architect on the faculty.

**The best way to evaluate this curriculum is to consider what is not taught**

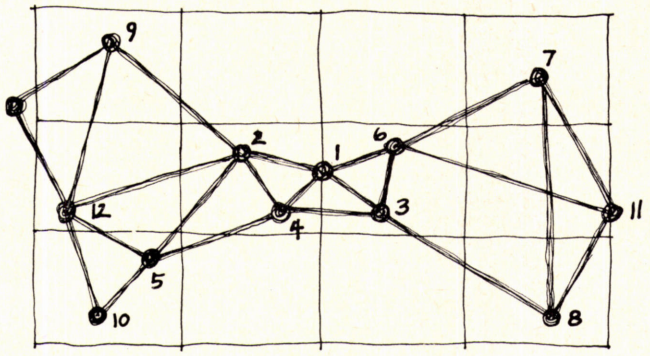
Architects spend much of their time making decisions of one kind or another, but how many schools of architecture offer courses in decision-making theory? Architects are constantly creating spaces and shapes to influence the environment, but how many schools offer courses in perceptual psychology? What about cost analysis, value engineering, or the economics of real estate? The University of California offers courses in the analysis of architectural programs, and some city planning departments offer courses in urban sociology, but only those students at universities where there is a school of business administration have any access to the latest theories and techniques of management.

At a slightly more mundane level, by no means every architectural school offers courses in the preparation of contract documents, the physics of weather exclusion as it applies to detailing, an introduction to computer programing, or a first course in landscape planting, although all of these subjects are teachable in an academic context.

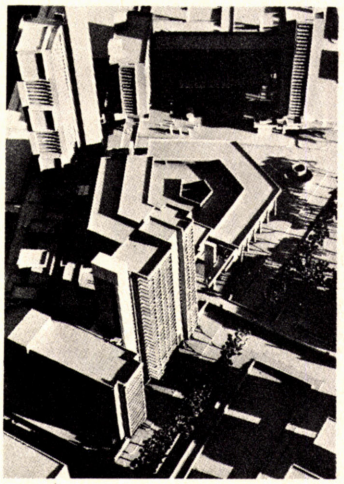
Perhaps the schools of architecture, by relying so heavily upon a case-study method, have tended to overlook those aspects of the subject which could be presented more formally.




Part of a study of an adaptable building module for progressive patient care done by students in the department of architecture at Texas A & M University.




A functional relationship chart from a program analysis of a proto-type filling station done by students in the fourth year at Auburn University.



Urban design, in which building elements are related at a larger than architectural scale, is a relatively new field of study. The example is from the graduate program at Harvard University (Courtesy *Connection*).

**The schools are responding to the pressures for change**

The American Institute of Architects has made available a substantial study grant, being administered by Robert Geddes and Bernard Spring of Princeton University, to investigate possible changes in architectural curricula. According to Richard Whitaker, who is in charge of educational programs for the A.I.A., this study is being made in the context of the whole question of architectural registration. In the course of the initial phase of investigation it has become clear that a high proportion of the schools contacted are already planning changes in their curriculum to increase the amount of inter-disciplinary contact. Many of the most recent modifications seem to be within the format of the studio course; some examples are shown at left.

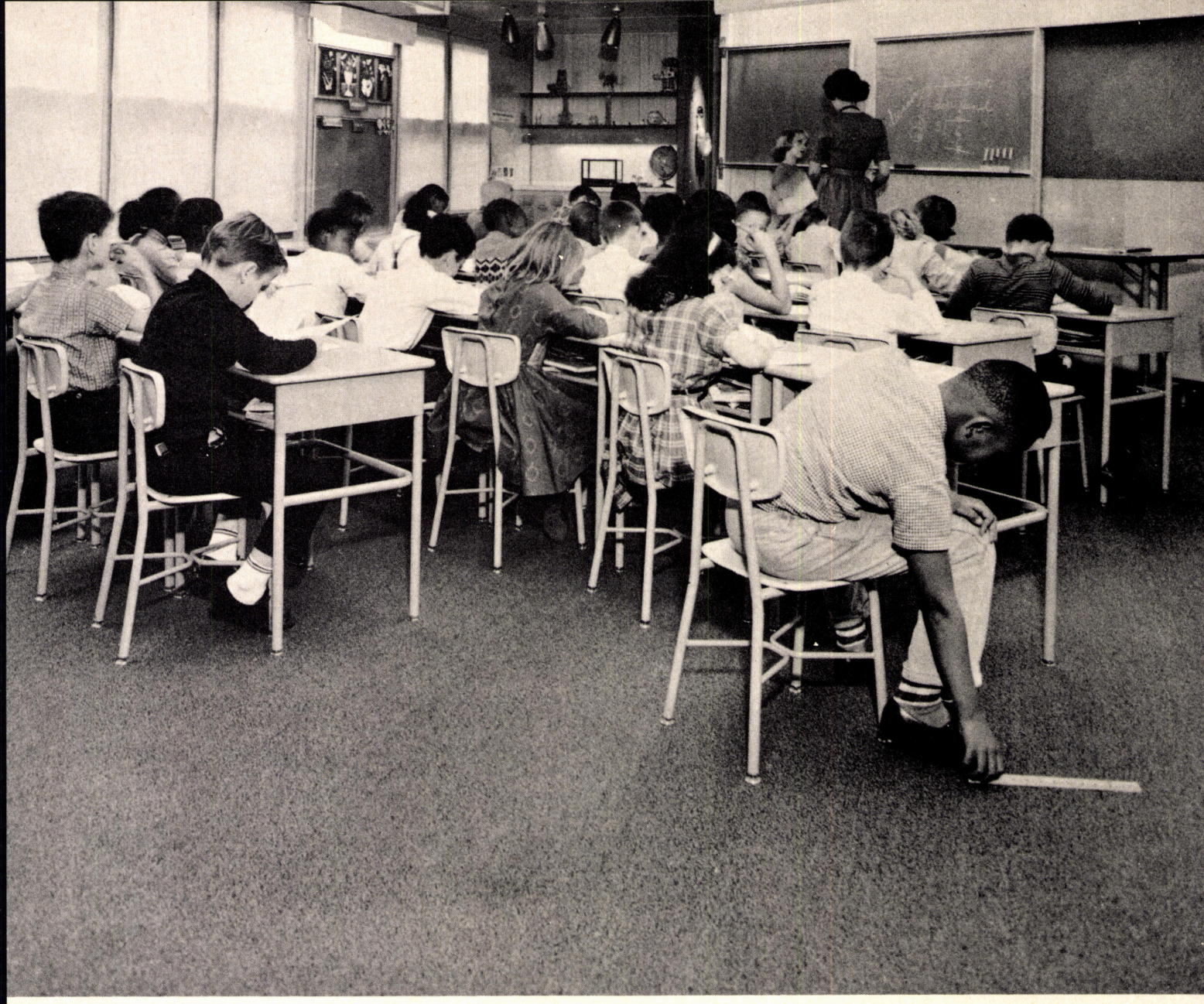
Another important trend is towards a lengthening course of study, with an emphasis on at least two years of liberal arts training. The University of California's department of architecture at Berkeley will go from a five-year program leading to a professional degree to a four-year undergraduate course that will give a Bachelor of Arts in Environmental Design, followed, after two more years, by a Master of Architecture that will be a first professional degree. Except for the names of the degrees, this change parallels the architectural curriculum set up at Washington University in St. Louis some years ago, and approximates the graduate programs at schools like Harvard, Yale, Princeton and the University of Pennsylvania. In the words of Gerald M. McCue, chairman of California's Department of Architecture, "we suspect that, judging from interest shown by other universities, this plan will dominate education in this field throughout the country within a few years."

There are other possibilities, however. Dean Burnham Kelly of Cornell made a plea at a recent Boston Architectural Center conference for the continued provision of programs where mature high school graduates could begin professional training right away, with the possibility of adding a liberal arts education later.

Whatever his degree program, this June's architectural graduate will still be in the midst of his professional career at the year 2000. If the rate of change within the architectural profession continues to be anything like it has been in the last 20 years, it will take much more than a re-vamped school curriculum to keep up. The question of continuing education for architects throughout their careers, however, has only just begun to be discussed.

Architectural departments, generally speaking, do not have the research programs that characterize most other disciplines, although some schools, like the one at the University of Michigan, have been active in this area for some time. Architectural research, is therefore another educational area which requires careful consideration in the near future.

The schools seem to be alive to the challenges that confront them; but, if there are to be any basic changes in the profession and a closing up of the gap between theory and practice, the schools will have to move a long way in a very short space of time. —*Jonathan Barnett*



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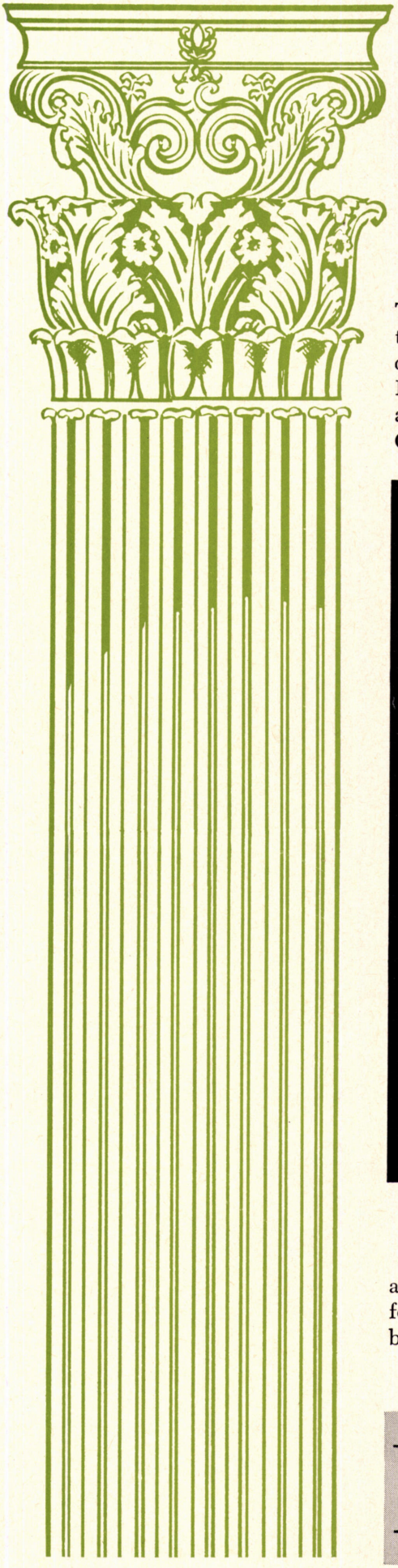

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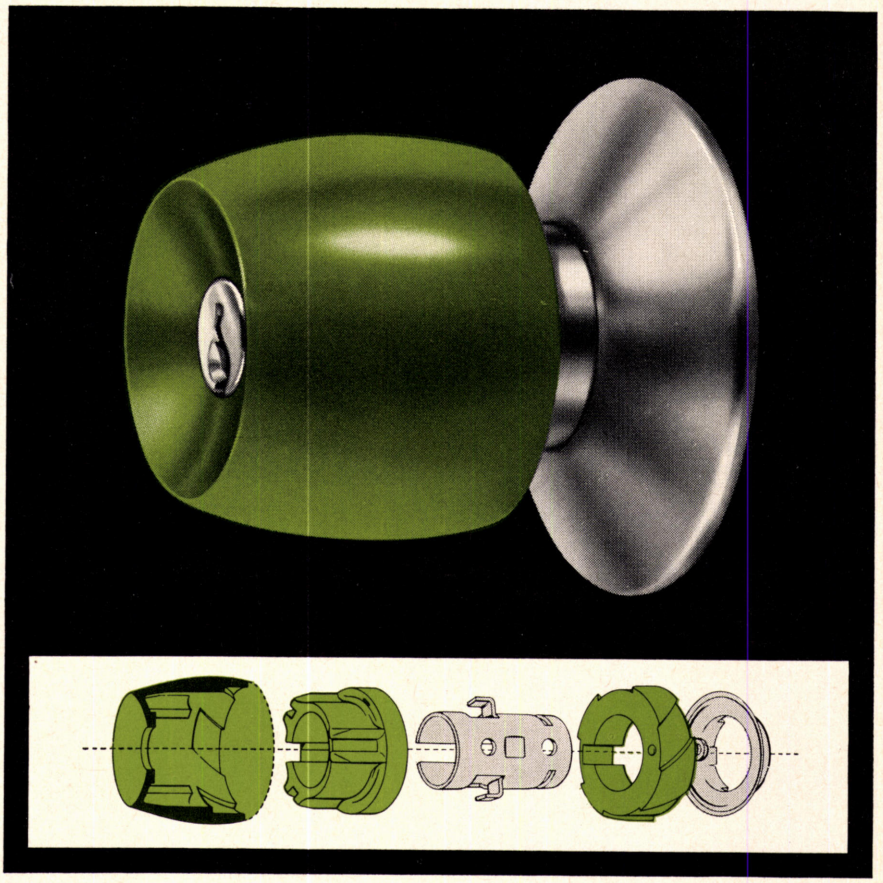

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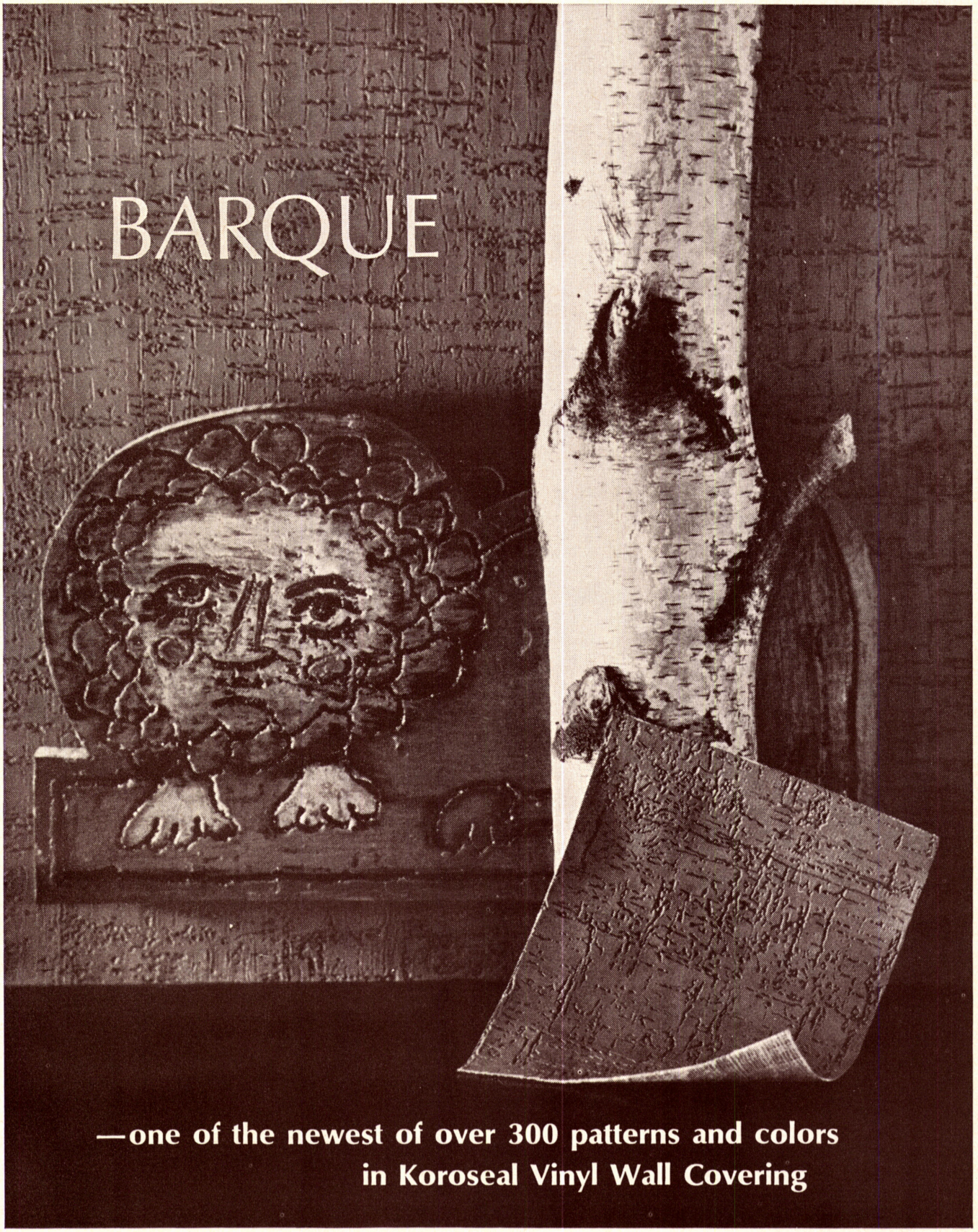


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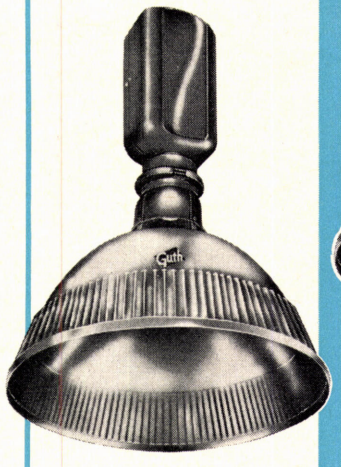
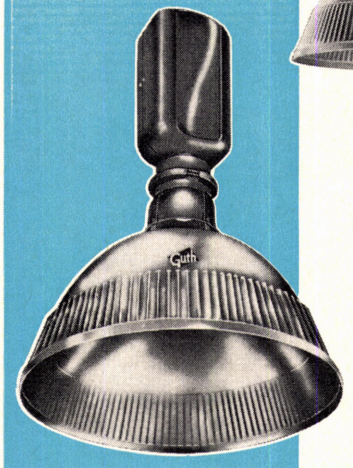
Figures below indicate Relative Costs for the various lamp sources in Vue-Trol Reflector-Units.

*U.S. Pat. applied for.

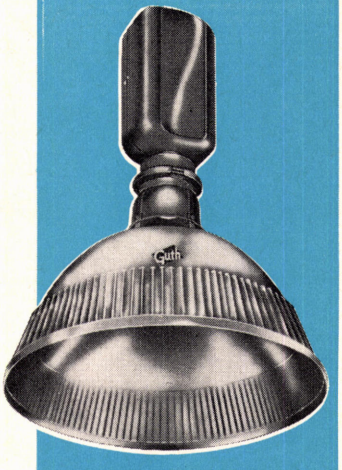


LUCKY REFLECTORS®



MERCOLUX®

TWIN MERCOLUX®



METAFLECTOR®

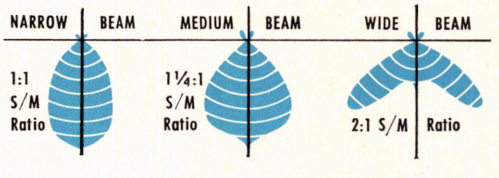
| RELATIVE COSTS ② | 1-400W LUCALOX | 1-400W MERCURY C.I. | 2-400W MERCURY C.I. | 1-400W METALLIC-ADDITIVE |
|---|---|---|---|---|
| 1 INITIAL COSTS | 100% | 124% | 113% | 112% |
| 2 OPERATING COSTS | 100% | 132% | 125% | 123% |
| 3 TOTAL ANNUAL COSTS | 100% | 133% | 124% | 120% |

**NOTES:**

① Vue-Trol Reflectors reduce brightnesses in 60°—90° zones. TM and Pats Pend.

② Relative Cost figures are based on 1:1 S/M Vue-Trol Luminaires for 70/50/10 R.F., and Room Ratio of 5.0. For 3000 Burning-Hours per year at 2¢/KWH. Complete analysis is available; write on your letterhead for copy.

**Each model available in 3 beam types**




● THE EDWIN F. GUTH COMPANY • P.O. BOX 7079 • ST. LOUIS, MO. 63177

*For more data, circle 102 on inquiry card*

# Here's DENSYLON– he new floor covering that's nd carpet for high-traffic a

**gineered for commercial use with A.C.E. nylon**

ENSYLON* is a revolutionary new kind of r covering, so easy to keep spotless that actually *pays for itself in maintenance ings alone.* Costs you at least *80 cents a are yard* LESS to maintain in showcase dition than any other flooring—hard or .

DENSYLON is *right* for offices in so many s. It's as warm, comfortable and luxu- s as ordinary carpeting. Safe and quiet, . But dirt, grime, or soil can't penetrate NSYLON's extra-tight-twist, high-density on pile. And *anything*—grease, coffee or n permanent ink—wipes right off with a p sponge.

Unlike tile, DENSYLON can't be dented, scratched, scuffed or marred, even h heels or heavy furniture. You vacuur as new with *half the strokes* needed ventional carpeting. There's no sc stripping, waxing—ever.

For resiliency and durability, DEN *permanently* bonded to a 3/16" B. F. G sponge-rubber backing. That's *spo* foam. It can't slip or creep, ripple o And it has a lifetime guarantee.

Wear? DENSYLON is so *tough* tha show traffic lanes, so rugged that DENSYLON installation has ever w Not even the G.E. World's Fair Exhib 15 million persons tramped over DE

Join the revolution—the coupon t

mercial Carpet Corporation, New York City, Chicago. In Los Angeles, Pacific Commercial Carpet Cor

**Revolutionary new DENSYLON is produced only by CCC. We designed it. We developed it. We make it. We sell it. And we back it up coast-to-coast with the industry's largest staff of floor-covering experts. Before, during, and after installation.**

**We also happen to make and market virtually every other kind of carpet, too. Every kind of fiber. Every kind of construction. Conventional broadlooms as well as the revolutionary new floor coverings. Miles and miles of them.**

**So it's not just chauvinism that causes us to recommend DENSYLON as today's right choice for high-traffic areas. It's professionalism—the kind that's made us the biggest company in the world whose only business is commercial carpeting.**

**Write on your letterhead to receive your own copy of "Carpet—When, Where, and How to Specify It." It's definitive.**

# N– g that's obsoleted tile raffic areas

lon

and for quiet, DENSYLON is nded to a 3/16" B. F. Goodrich backing. That's *sponge*, not ip or creep. It can't ripple or lifetime guarantee.

ts roll easily and quietly over t to air conditioning, there's lds traffic, increases shopping YLON.

YLON is so *tough* that not *one* ls of high-traffic installations , stores, hospitals, restaurants nt *kitchens*, has ever worn cludes the G.E. World's Fair 5 million pair of feet tramped .

lution—the coupon tells how.

CCC 10 West 33rd Street
New York, New York 10001 Dept. AR-7
Attention: Mr. Oliver A. Wyman

☐ Send facts on revolutionary DENSYLON.
☐ Have representative give us estimate on approximately _____ square yards.

Name_____
Title_____ Phone_____
Organization_____
Address_____
City_____ State_____

*CCC's trademark for its sponge-bonded, high-density nylon ca
†Trademark: Allied Chemical Corporation

Densylon
MANUFACTURED BY CCC WITH A.C.E. NYLON BY

c Commercial Carpet Corporation. Canadian Affiliate: C. C. Carpet Co., Ltd., Ontario

# Here's DENSYLON– he new floor covering that's obsoleted tile nd carpet for high-traffic areas

**ngineered for commercial use with A.C.E. nylon**

DENSYLON* is completely different from y other kind of hospital floor covering. It oks as luxurious as ordinary carpeting. It's t as safe and quiet, as warm and comfort- le. But, dirt, grime, or soil can't penetrate ENSYLON's extra-tight-twist, high-density lon pile. And *anything*—spilled foods, emicals or even Merthiolate—wipes right with a damp sponge.

Tested and approved in actual hospital use, ENSYLON is the *most sanitary* way to cover ors. It reduces airborne bacteria by reduc- airborne dust. It has a fungistatic and cteriostatic sponge-rubber backing. Its pile ll hold anti-bacterial agents up to two eks. And it's easier to keep clean.

Unlike tile, DENSYLON needs no scrubbing, stripping, no waxing. You vacuum it clean new with *half the strokes* needed by con- ntional carpeting.

*In fact, you save enough on maintenance alone to pay for your* DENSYLON *installation within a few years.*

DENSYLON provides greater safety, too. Its *non-slip* surface reduces accidents. Its permanently bonded backing of 3/16" B. F. Goodrich sponge rubber prevents serious injuries. *A quiet "bonus":* DENSYLON's sponge-rubber backing absorbs noise, reduces din and clatter. Wheel chairs and equipment glide easily, silently.

Wear? DENSYLON is so *tough* that even the heaviest traffic can't mat it down . . . so durable that *not one* of the thousands of installations in hospitals, schools, hotels, offices, stores, restaurants, etc.—even restaurant *kitchens*—has ever worn out. And that includes the G.E. World's Fair Exhibit where 15 million pair of feet tramped over DENSYLON.

Join the revolution—the coupon tells how.

CCC 10 West 33rd Street
New York, New York 10001 Dept. AR-7
Attention: Mr. Oliver A. Wyman

☐ Send facts on revolutionary DENSYLON.
☐ Have representative give us estimate on approximately _____ square yards.

Name_____
Title_____ Phone_____
Organization_____
Address_____
City_____ State_____

*CCC's trademark for its sponge-bonded, high-density nylon carpet
†Trademark: Allied Chemical Corporation

Densylon
MANUFACTURED BY CCC WITH A.C.E. NYLON BY

mmercial Carpet Corporation, New York City, Chicago. In Los Angeles, Pacific Commercial Carpet Corporation. Canadian Affiliate: C. C. Carpet Co., Ltd., Ontario

# Here's DENSYLON– the new floor covering that's obsoleted tile and carpet for high-traffic areas

**Engineered for commercial use with A.C.E. nylon**

DENSYLON* is completely different from *any* other kind of floor covering. It's as comfortable, warm, and luxurious as ordinary carpet. But, dirt, grime, or soil can't penetrate DENSYLON's extra-tight-twist, high-density nylon pile. And *anything*—crayons, ink or even finger paints—wipes right off with a damp sponge.

Unlike tile, DENSYLON is practically mischief-proof. It can't be dented, scratched or marred—no matter how children stomp, scuffle or scribble on it. You vacuum it clean as new with *half the strokes* needed by conventional carpeting. There's no scrubbing. No stripping. No waxing.

DENSYLON makes classrooms quieter. Improves student achievement and decorum. Enhances teacher efficiency and morale. For greater comfort and safety, DENSYLON is *permanently* bonded to a 3/16" B. F. Goodrich sponge-rubber backing. That's *sponge*, not foam. It can't slip or creep, ripple or buckle. And it has a lifetime guarantee.

Wear? DENSYLON is so *tough* that not *one* of the thousands of high-traffic installations in schools and colleges, hotels, offices, stores, restaurants—even restaurant *kitchens*—has ever worn out. And that includes the G.E. World's Fair Exhibit where 15 million pair of feet tramped over DENSYLON.

Join the revolution—the coupon tells how.

CCC 10 West 33rd Street
New York, New York 10001 Dept. AR-7
Attention: Mr. Oliver A. Wyman

☐ Send facts on revolutionary DENSYLON.
☐ Have representative give us estimate on approximately _____ square yards.

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Title_____ Phone_____
Organization_____
Address_____
City_____ State_____

*CCC's trademark for its sponge-bonded, high-density nylon ca
†Trademark: Allied Chemical Corporation

Densylon
MANUFACTURED BY CCC WITH A.C.E. NYLON BY

Commercial Carpet Corporation, New York City, Chicago. In Los Angeles, Pacific Commercial Carpet Corporation. Canadian Affiliate: C. C. Carpet Co., Ltd., Ontario

For more data, circle 98 on inquiry card

# NOW! THE MOST SPECTACULAR FOOD SERVICE CARTS IN 20 YEARS

Flair®

*. . . the color touch that costs no more*

## *Harmonizing wood grains and textured colors permanently fused into metal!*

No longer need your food service carts be hidden from your customers' eyes . . . . no longer need they be drab and unattractive . . . . because Flair is here! Now you can enhance your decor and add appetite appeal with the most exotically beautiful line of food service equipment in years. And—it's the most rugged, the most durable, the most dependable line ever made . . . . because it's designed and built by Jarvis and Jarvis, makers of the world's finest casters, too!

Handsome vinyls in wood, fabric or leather finishes are *permanently* fused under tremendous pressure to 20 gauge steel to form a bond that won't peel, crack or mark . . . . a surface practically impervious to all commonly encountered acids, alkalis, food stains, spillage, moisture, fire, heat and cold . . . . and, it wipes clean with a cloth! All edges are rolled and die-formed—and there are no exposed screws, nuts, bolts or rivets.

*Most Flair carts are available from stock in a variety of walnut, teak, shrimp, blue, or stainless finishes. But you can special-order practically any color in the rainbow! Consult your Jarvis & Jarvis representative for details, or write for more information.*

**Jarvis and Jarvis** DIVISION

UNITED SERVICE EQUIPMENT CO., INC., MURFREESBORO, TENN.

*For more data, circle 103 on inquiry card*

**Jarvis & Jarvis Division**
**United Service Equipment Co.**
**Murfreesboro, Tenn.**

- ☐ Please have a representative call.
- ☐ Please rush complete details on Flair carts.
- ☐ We specify ☐ recommend food service equipment.

Name _____

Firm _____

Street _____

City _____ State _____ Zip _____

# New products highlight fool-proof operation, low maintenance and easy installation

**NURSE-CALL AND ENTERTAINMENT** / Two new consoles providing convenient nurse-call systems and entertainment for hospital patients place the controls within easy operating reach of the bed. One model is a "swing-away" control console which can be swung out with a flick of the finger from its wall-recessed position to a convenient location over the patient's bed. The second version is available for installation in all major manufacturers' bedside cabinets, and places all nurse-calling functions and entertainment controls within easy reach of the patient's arm. Both consoles provide for two-way voice communication with the nurse, operate overhead and reading lights, control television and radio channels, open or close drapes and receive telephone calls. Both models feature universal actuation touch bars for nurse call, call cancellation and channel change, which operate at a touch of the finger on any portion of the bar. The patient entertainment audio is automatically muted during all nurse call communication. ▪ Motorola Inc., Chicago, Ill.

*Circle 300 on inquiry card*

**HANDSET TELEPHONE** / Designed for use with a variety of telephone systems, as either a desk or wall handset, this new model provides good voice reproduction and will fit in well with contemporary interior decor. Molded of a soft grey high-impact plastic, the new telephones are said to offer high acid resistance and a tensile strength of 5100 pounds per sq in. at 70 deg F. The handsets are equipped with matching grey coil cords, and a weighted base for stability. White pushbuttons permit direct dialing or signaling. One or more pushbuttons can be used for remote operation of door openers and for quick fingertip contact with other instruments. Single-gang outlet boxes are suitable for mounting. ▪ S. H. Couch Company, Inc., North Quincy, Mass.

*Circle 301 on inquiry card*

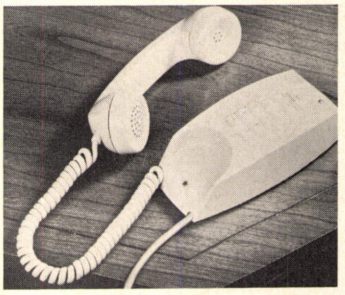
**SAFETY DEVICES FOR DOCKBOARDS** / To provide for safety under all loading conditions, automatic *Panic Stops* have been introduced, which function independently of the normal operation of the dockboard. If a truck pulls away while the loaded dockboard is in working position, the *Panic Stops* "sense" and react to the fall of the board and stop the downward movement of the board by means of a locking action. Rust or other failure of the mechanism is guarded against by means of a stop mechanism which engages the safety posts and reminds the attendant that maintenance is necessary. The board can be made operable again by freeing the mechanism or replacing the spring. The company reports that laboratory tests conducted on the product show that the greater the force, the faster the reaction of *the Panic Stops*. ▪ Kelley Company Inc., Milwaukee, Wis.

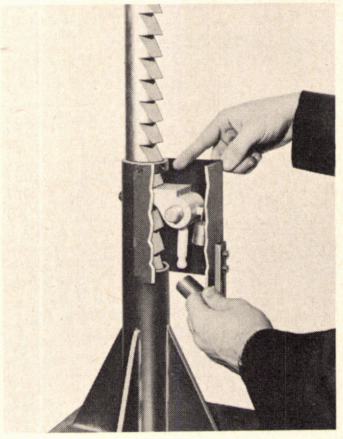
*Circle 302 on inquiry card*

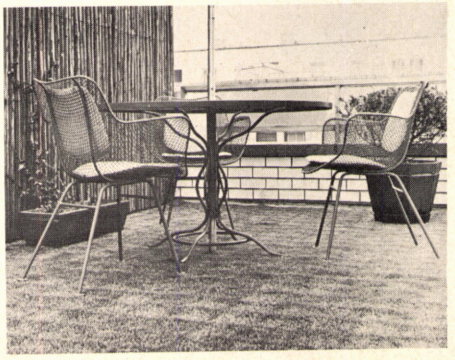
**INSTANT GRASS** / Polyethylene grass carpeting called *everGrass* is available in 6-in. by 6-in. pieces, which can be easily assembled and adapted to cover any indoor or outdoor surface to give the impression of real grass. The *everGrass* surface consists of resilient 1-in. high blades that will spring back to an upright position even after prolonged compression by heavy objects. The base of each square is perforated to allow natural drainage and drying of subsurfaces and to permit easy cleaning with hose or vacuum cleaner. The grass has been fully tested under artificial and natural light and in extremes of heat and cold and has been found by the manufacturer to be weather and wear resistant, color fast and resistant to staining and soiling. The material is lightweight and flexible, can be cut to shape with ordinary scissors and easily rolled up for relocation and storage. ▪ Pegasus International Corporation, New York City.

*Circle 303 on inquiry card*

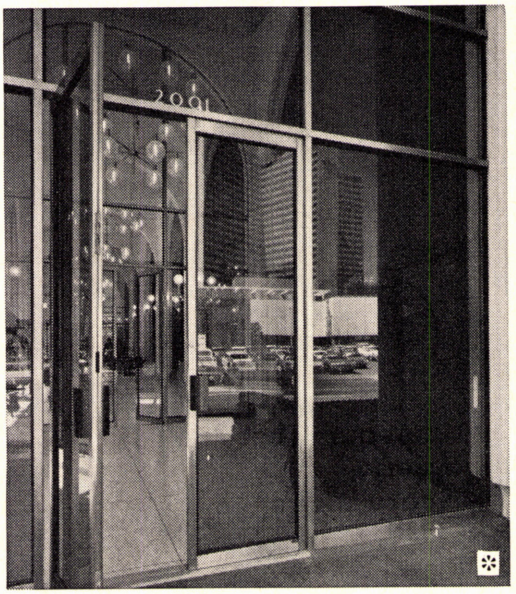
*more products on page 268*

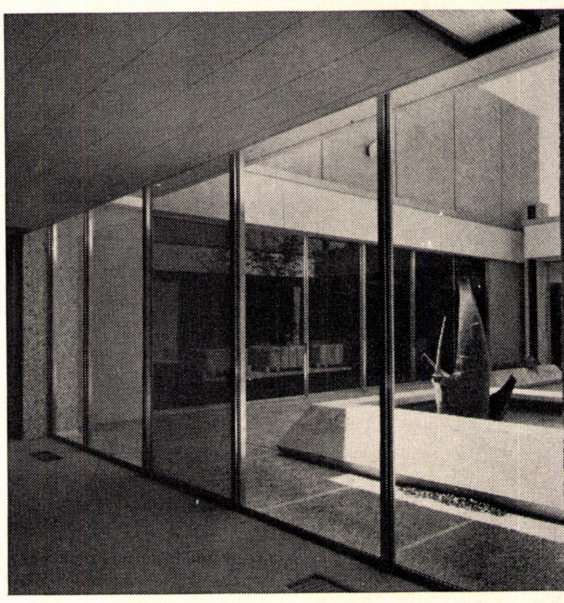


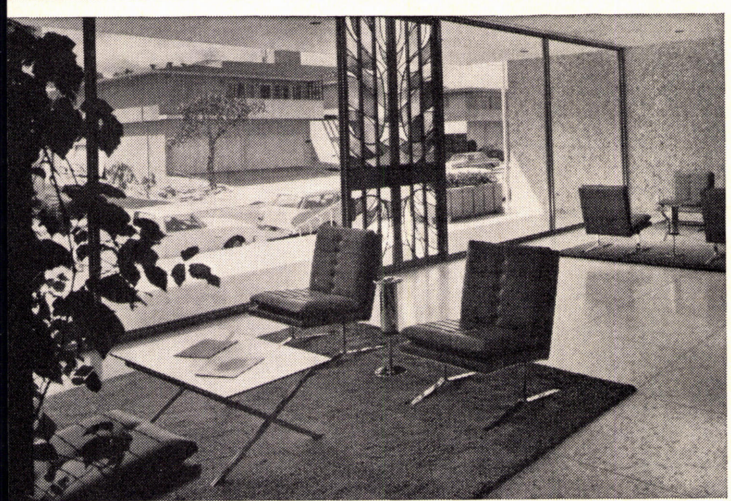


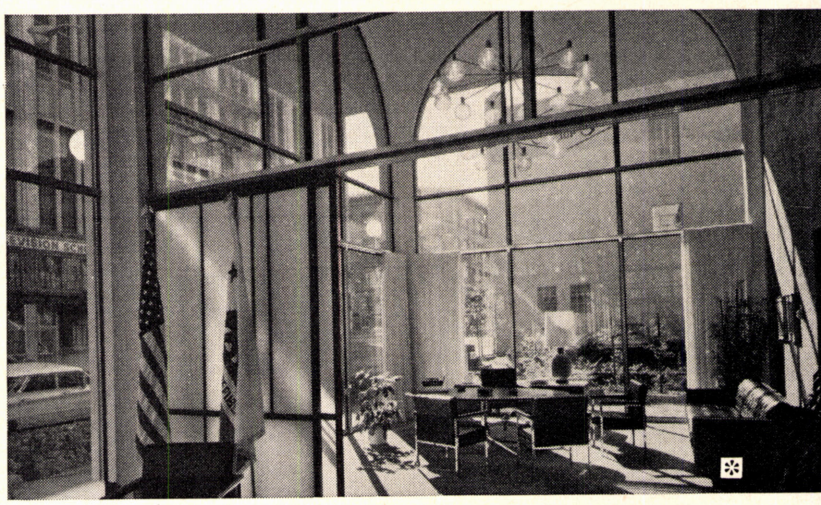


# OPEN INVITATION TO ARCHITECTURAL ELEGANCE







Two new buildings in California—a bank* and an office building—designed by Shigenori Iyama, A.I.A., architect.
Entrance doors by The Alumiline Corporation, Providence, R.I./Sliding doors by Carmel Steel Products, Downey, Calif.

The strength of lustrous stainless steel eliminates the unnecessary, unsightly bulk that obstructs natural light. Its warp-resistance keeps doors and frames perfectly aligned and snug-fitting, so heat stays in and weather stays out. Its rugged resistance to forcible entry stops intruders, adds maximum security. And of course, its resistance to corrosion and marring means minimum maintenance.

Yet with all these practical advantages, stainless steel doors and entrances invite architectural elegance too. They enrich airy facades; they brighten massive in city streets or country highways.

Now—as the result of new fabrication techniques—slim-line doors and entrances of stainless steel are available from stock at a price that puts them within reach of every architectural budget. Contact the manufacturers credited above for detailed information on stainless doors and entrances. Write to our Architectural Services for further information on stainless steel.

**Jones & Laughlin Steel Corporation**

# OFFICE LITERATURE

*for more information circle selected item numbers on Reader Service Inquiry Cards, pages 373-374*

**WATER TREATMENT** / Vacuum diatomite filtration systems and chemical treatment equipment can be used to provide industry with high quality process or drinking water, or to remove iron or manganese from well supplies. A new bulletin describes a typical potable water plant and an iron and manganese removal plant, and details the advantages of using BIF water treatment systems. ▪ BIF Division, New York Air Brake Company, Providence, R. I.*

*Circle 400 on inquiry card*

**DOOR OPERATORS** / Typical installations, specifications, dimensional information, and photos of a complete line of automatic door operators and accessories are included in a 16-page catalog. The advantages and operating characteristics of five different control systems are fully explained and a 2-page selector chart allows easy selection of appropriate equipment. ▪ Norton Door Closer Division, Eaton Yale & Towne, Inc., Bensenville, Ill.*

*Circle 401 on inquiry card*

**WINDOW CONDENSATION** / A pocket-sized calculator operates like a slide rule to show when certain combinations of climate and window materials can result in condensation. By using this as a guide, architects and designers should be able to specify window materials and glazing which will prevent steam or frost from collecting on either the glass or sash. Letter requests to ▪ Ponderosa Pine Woodwork, 39 South La Salle St., Chicago, Ill.

**RADIANT HEAT PANEL** / Information on the *Sun/Tec* radiant heat panel for both wall and ceiling installation is given in a new brochure. The *Sun/Tec* panel radiates heat away from the source and converts electrical energy into heat energy within moments of turning up the thermostat. The company claims that this method of heating avoids hot blasts and cold corners and does not detract from the natural humidity of the air. The new brochure explains the principles of operation and lists a wide range of applications. ▪ Litecontrol Corp., Watertown, Mass.

*Circle 402 on inquiry card*

**UNDERGROUND SPRINKLERS** / Information on planning and estimating the cost of an automatic underground sprinkler system for residential applications is given in a 32-page booklet called "Yard Planning Guide." The guide contains 43 blueprints of *Moist O'Matic* installations in yards of various shapes, ranging in size from 4,400 to 26,600 sq ft. Costs of materials and installation of each of the systems illustrated are clearly set out in the brochure. ▪ Toro Manufacturing Corporation, Minneapolis, Minn.

*Circle 403 on inquiry card*

**BASIC LIGHTING SYSTEM DATA** / This new application guide provides architects and engineers with the basic data for lighting system design in the form of one convenient reference brochure, which includes all the information which was previously contained in a number of different reference sources. The booklet is divided into sections, the first dealing with the new Zonal Cavity Method for determining average illumination. A step-by-step explanation and the necessary tables for using this system are shown on facing pages for convenient use. The next section covers estimating the lighting load for adequate wiring and air-conditioning heat load, as well as a quick check for the lighting level of any fixture layout. A watts-per-sq-ft table indicates illumination levels up to 200 footcandles, and for coefficients of 0.20 through 1.10. The section on spacing ratio is devoted to lamp data, and gives the wattage, lamp size and lumen output of generally used light sources. It also includes correction factors for use with the watts-per-sq-ft table. The spacing ratio, as set out in the company's catalogs and brochures, is defined and an explanation is given of its use in lighting system design. Calculation methods for specific as well as general lighting systems are presented.

The final section covers current I.E.S. recommended levels of illumination, and suggested maintenance factors for Lightolier's fixtures in good, medium and poor maintenance conditions. ▪ Lightolier, Jersey City, N. J.*

*Circle 404 on inquiry card*

**TOTAL ENERGY CONTROL** / Solid-state controls for multiple-engine power systems are described in a 12-page booklet. Photographs and diagrams illustrate the completely automatic control systems available for reciprocating or gas turbine engine modules in on-site energy systems—either standby or total energy concept. The booklet discusses a modular arrangement which provides automatic load demand sequencing and load division, precise speed control and voltage regulation, automatic synchronization and paralleling. The various available options in instrumentation, switch gear, clock synchronizer and dual frequency control are indicated. ▪ TRW Equipment Operations, Cleveland, Ohio.

*Circle 405 on inquiry card*

**PUMP CONNECTIONS** / Eight typical pump installations, plus the range of types, capacities and discharge pressures of Hoffman condensate and vacuum pumps are featured in a new wall chart, the fifth in the company's wall chart series. This new chart deals with centrifugal, turbine and underground condensate types of pump in addition to vacuum pumps for systems from 2,500 sq ft EDR to 150,000 sq ft EDR. The center spread of the chart shows diagrams of typical pump connections in heating systems, single and duplex pump hook-ups to boilers or boiler feed receivers, and condensate pump connections to vacuum pumps when installed in conjunction with one another. ▪ Hoffman Specialty Mfg. Corp., Indianapolis, Ind.

*Circle 406 on inquiry card*

**OVERHEAD MONORAIL SYSTEMS** / The use of *Teeco* monorail conveyors to transfer merchandise from warehouse to dispatch and merchandising areas in three large distribution centers belonging to the Zayre Corporation, is explained and illustrated in a foldout brochure. ▪ Tangel Automated Systems Inc., Woodside, N. Y.

*Circle 407 on inquiry card*

**Additional product information in Sweet's Architectural File.*

*more literature on page 346*

# THE BOARD OF EDUCATION

## FLINTROCK® Vinyl-Covered Gypsum Wallboard

*Available in:*
Executive Walnut
Olive Weave
Golden Tan Weave
Pewter Gray Weave
Shell White Weave
Persian Orange Weave

**B.A.** in beauty

**M.A.** in maintenance

**Ph.D.** in fireproofing

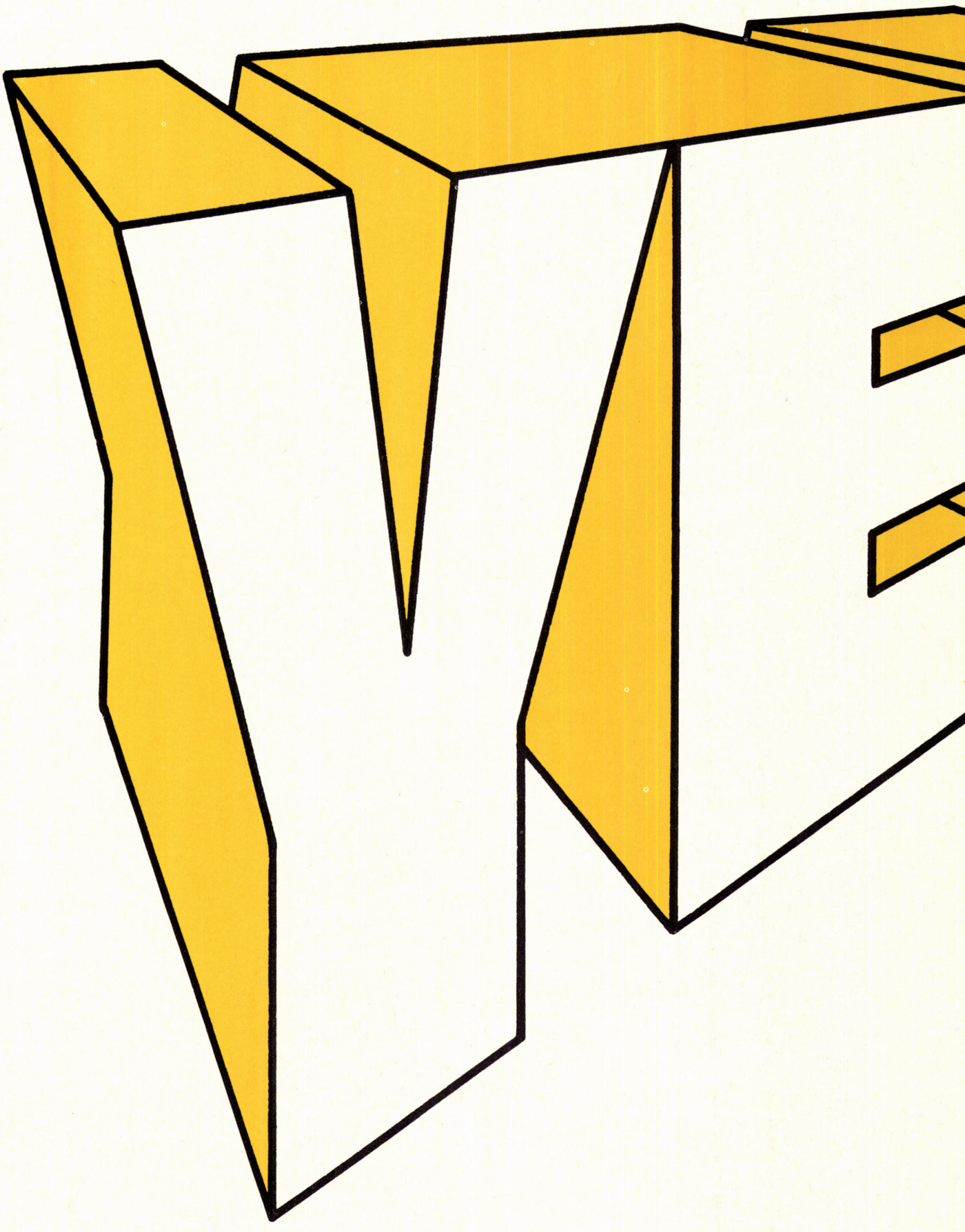
Smart as can be, this bright idea in wall construction g
up all finished—and what a finish! Pure vinyl fabric! W
scuff, washes clean, stays beautiful for long years to co

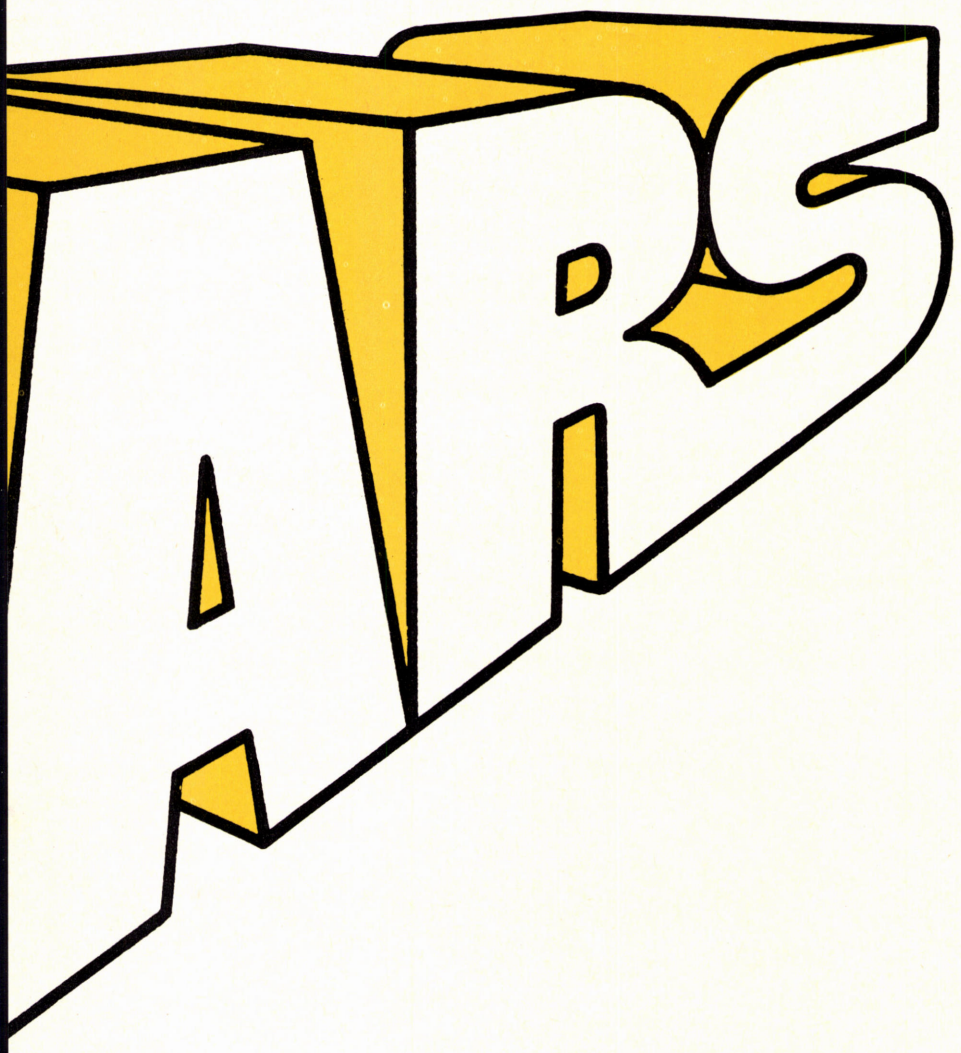
The solid, safe gypsum core builds protection and e
value into any installation. It's a good time to graduat
FLINTROCK Vinyl-Covered Gypsum Wallboard—"most li
to succeed".

FLINTKOTE®

**THE FLINTKOTE COMPANY**
480 Central Avenue, East Rutherford, N. J. 07073
*Sales Offices:* Atlanta, Boston, Camden, Charlotte, Dallas, Chicago Heights, Detroit, Houston, Lyndhurst, New Orleans, Oklahoma City, Pittsburgh, St. Louis, Los Angeles

*For more data, circle 105 on inquiry*






Dimensional Fiberglas* acoustical products last and last and last. Their beauty lasts. Their texture lasts. Their quieting effect lasts. And so do those washable vinyl surfaces. Practically maintenance-free, too. Can't warp or sag or buckle. And Fiberglas shrugs off construction and building moisture. Guaranteed. All this and a wide range of textures, finishes and large sizes to choose from. Choose.

To see how really big that choice is, write: Owens-Corning Fiberglas, I & C Division, 717 Fifth Avenue, New York, N.Y. 10022.

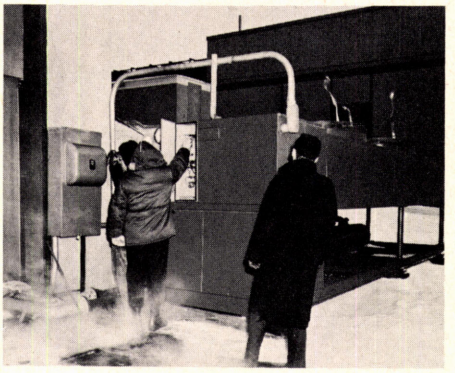
OWENS-CORNING
FIBERGLAS
T.M. REG. U.S. PAT. OFF.

USE DE

Dividend Engineering—to stretch your building dollar while improving building performance. *T-M (REG. U.S. PAT. OFF.) O-C. F. CORP.

*For more data, circle 106 on inquiry card*

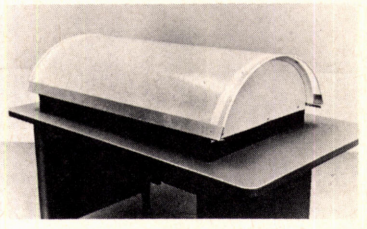
continued from page 261



**AIR-COOLED CHILLER** / All-weather start up and operation at ambient temperatures from 0 deg F to 115 deg F are features of this new air-cooled water chiller. The factory-assembled *Cold Generator,* which can be ground-level or roof-mounted, can be used to provide chilled water for comfort or process cooling and is available in nominal capacities of 20 to 65 tons. The new unit incorporates the company's standard, heavy-duty refrigeration components. The cold starting and operating is accomplished by means of optional accessories: a refrigerant metering device, which bleeds enough refrigerant into the evaporator to raise the suction pressure above the low-pressure cut-out setting, and a *Unipressure* valve, which is a condenser backflooding control used in conjunction with the cold-start device to build up head pressure in the condenser to maintain continuous operation. The provision of a condenser subcooling circuit in all models is said to result in a reduction of up to 17 per cent in KW per ton power requirements.

▪ The Trane Company, La Crosse, Wis.

*Circle 304 on inquiry card*



**GLASS FIBER SKYLIGHT** / *Alsynite* translucent top and end panels give this skylight a plus or minus flexibility of two inches in both width and length when installed, thus solving often costly problems which may arise when variation between actual and stated dimensions result in a fixed size skylight being the wrong size. Easy installation, weather resistance and little or no maintenance are other features of this new product.

▪ Flexlite Inc., Knoxville, Tenn.

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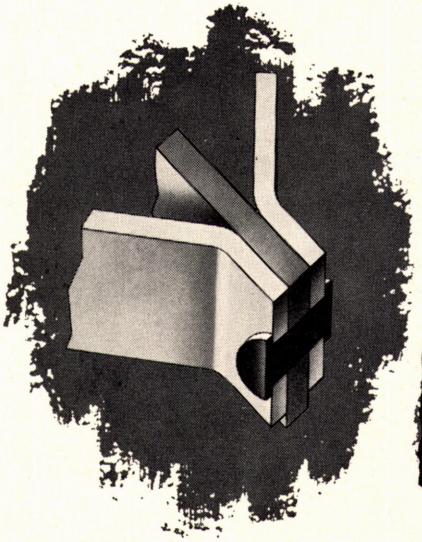
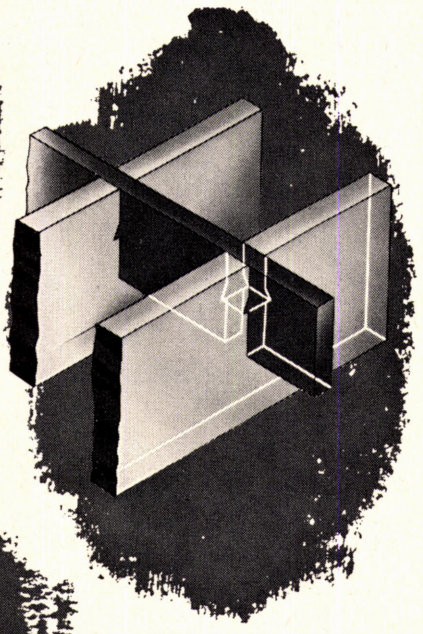
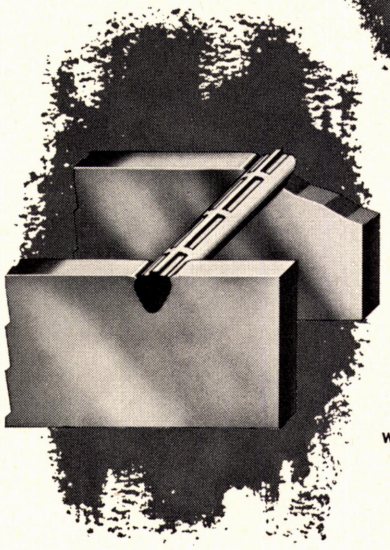
more products on page 287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**SHRINE OF THE IMMACULATE CONCEPTION,**
Washington, D. C.

The largest Roman Catholic Church in the Western Hemisphere

**ARCHITECTS:** Maginnis and Walsh and Kennedy, Boston, Mass.

**ROOFING CONTRACTOR:** The J. Edw. Linck Sheet Metal Works, Philadelphia, Pa.

**DOME:** Ludowici shingle tile — full glaze blues, yellow, gray and red

**LOWER ROOFS:** Ludowici Special Tapered Mission tiles pans and covers — reds, fireflashed buffs and browns

# Roofs by Ludowici

**FIRST METHODIST CHURCH POMPANO BEACH, FLORIDA**

**ARCHITECT:** Robert E. Hansen, Ft. Lauderdale, Fla.

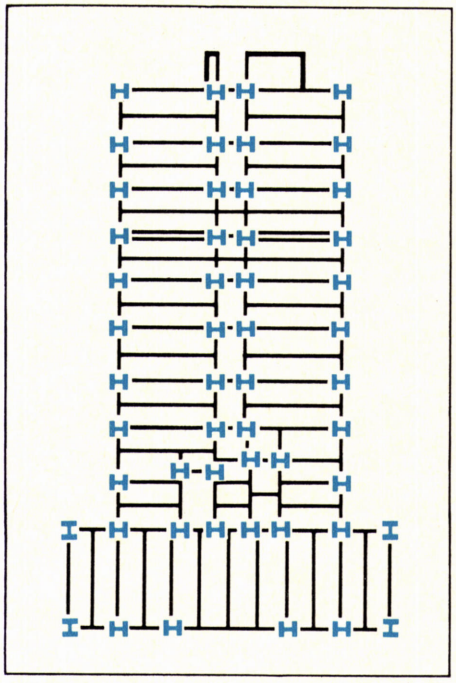
**ROOFING CONTRACTOR:** Broward Sheet Metal Works, Ft. Lauderdale, Fla.

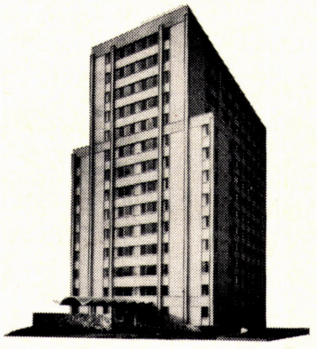
**ROOF:** Interlocking shingle — light blue

WICI-CELADON COMPANY
Wacker Drive - Chicago 1, Illinois

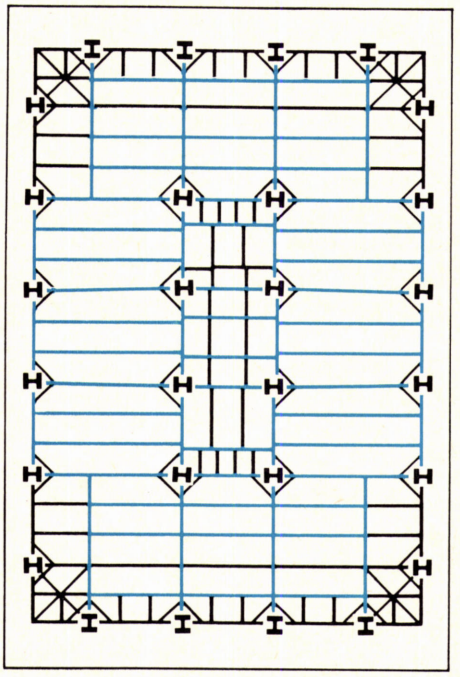
# Six design problems solved with steel

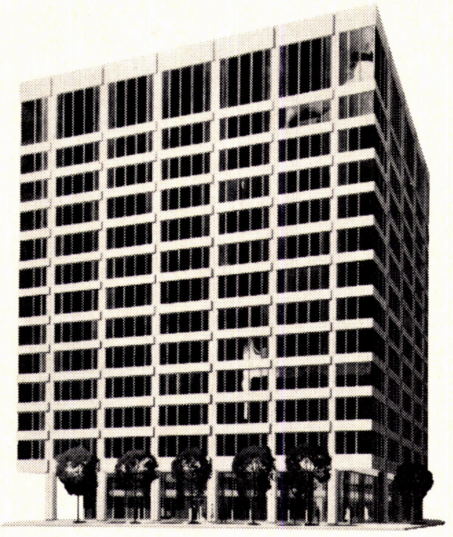
**These handsome new buildings show how the versatility of the USS Family of Steels solves design problems. New architectural concepts, stronger steels, and unique methods of construction are combined in these structures.**



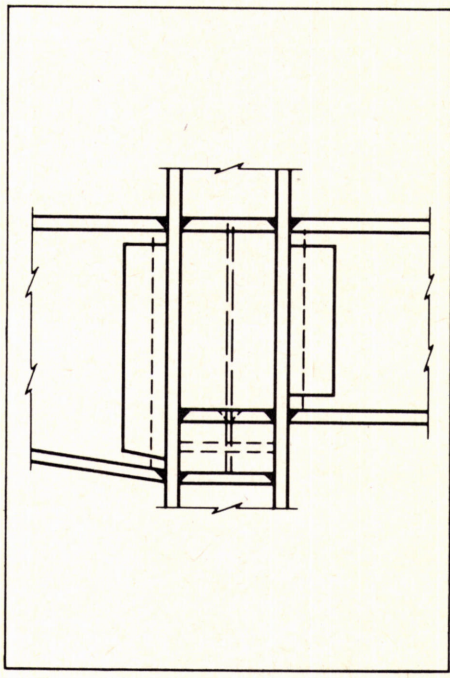


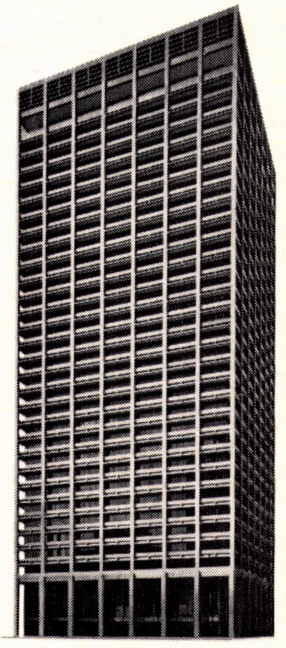
**For rent sooner**—Sunset Towers, Salt Lake City, Utah, is a 16-story luxury apartment owned by the Artcol Corporation. The architects, developer and structural engineer all agreed from past experience that a steel frame would be competitive in cost, quicker to erect and more flexible for the layout of utilities than any alternate construction. The building uses 172 tons of USS TRI-TEN Steel (A441) for columns and 516 tons of A36 structural steel. The steel frame was erected during the coldest winter weather. Architects: H. A. Carlson, AIA, Los Angeles, California, and M. E. Harris, Jr., AIA, Salt Lake City, Utah. Structural Engineers: Hoffman C. Hughes Co., Salt Lake City, Utah.



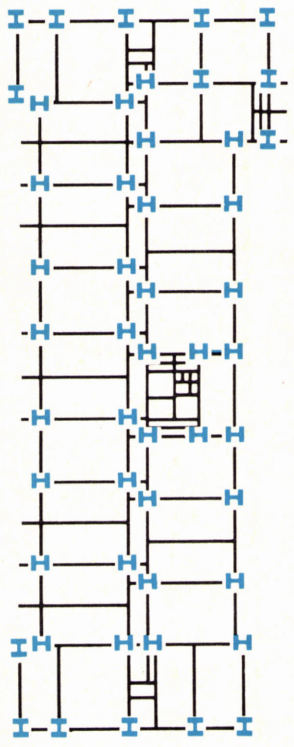


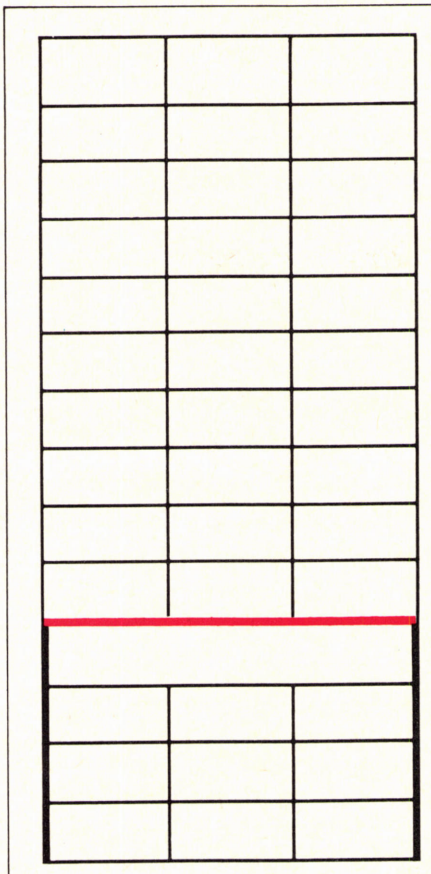
**Extra space**—How to obtain maximum column-free rentable space was the problem posed by the owners of this building at One Erieview Plaza, Cleveland, Ohio. The solution was developed through the use of a center core structural steel framing system of A36 steel and USS EX-TEN High Strength Steel. This economical combination saved 268 tons of steel. The cantilever problem at the corners was solved by placing a diagonal beam between the two columns nearest the corner. Then another beam was framed from the interior girder to the corner, on top of the diagonal beam. Architects: Shafer, Flynn & VanDijk, Cleveland, Ohio. Engineers: Barber-Hoffman, Cleveland, Ohio.

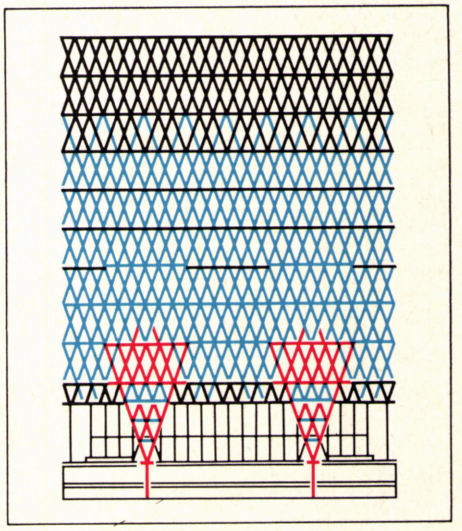


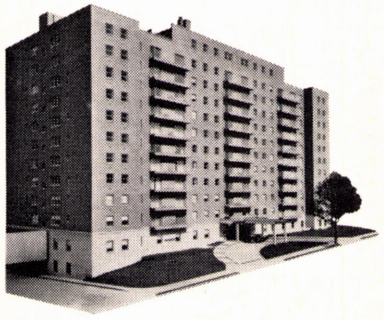


**Unique requirements**—The architectural challenge of the Tennessee Gas Transmission Company Building in Houston, Texas, was such that only steel was considered as the building frame material. This is a 33-floor office building 195′7″ square. The design provides for a square core area with 55′ clear spans between core and exterior columns. The second floor and the 31st floor are partially suspended from the floors above. This was a job for steel. Structural carbon steel did the job. Architects & Engineers: Skidmore, Owings and Merrill, San Francisco, California.

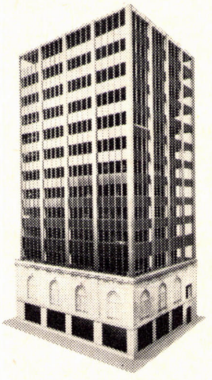




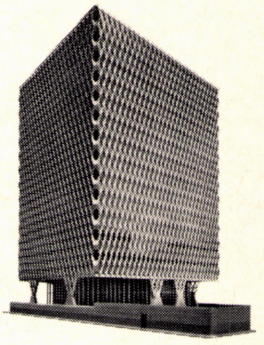




**Up fast with less steel**—The Maxon Towers, Pittsburgh, Pa., had to be built in a hurry to meet an April completion date—so the architect chose a steel-framed structure for this 12-story apartment house. The engineer specified A36 steel for beams and girders and USS EX-TEN 50 Steel columns. A steel frame gave greater flexibility in the layout of the building and its mechanical functions, with lower installed costs for heating, wiring and plumbing. The extra load-carrying capacity of USS EX-TEN steel columns saved significant steel tonnages. Architect: Bowers & Barbalat, Pittsburgh, Pa. Structural Engineer: George M. Levinson, Inc., Pittsburgh, Pa.



**Raising the ceiling**—Bliss Tower, Canton, Ohio, is a new annex to the Onesto Hotel constructed over an old 3-story base. The owners wanted a large column-free area, 49′ x 57′, on the fourth floor. This posed a problem of spanning 49 feet with two girders. By using USS "T-1" Steel for the girders, engineers cut girder depth from an estimated 5 feet for A36 steel, to 3 feet for "T-1" steel. They avoided reducing headroom to an undesirable point, since the shallower "T-1" steel girders were able to support the load from the upper 10 floors. Architects: Cox, Forsythe and Associates, Canton, O.



**Expression of structure**—The International Business Machines (IBM) Building in Pittsburgh's Golden Triangle combines five different steels with strengths from 33,000 psi min. yield point to 100,000 psi min. yield strength. The high strength of USS "T-1" and USS TRI-TEN (A441) Steels made the design feasible. Diamond-shaped steel grid trusses, sheathed in stainless steel and exposed to view, form the exterior bearing walls of this unique 13-story building. Architects: Curtis and Davis, New Orleans, Louisiana. Structural Engineers: Worthington, Skilling, Helle and Jackson, Seattle, Washington.

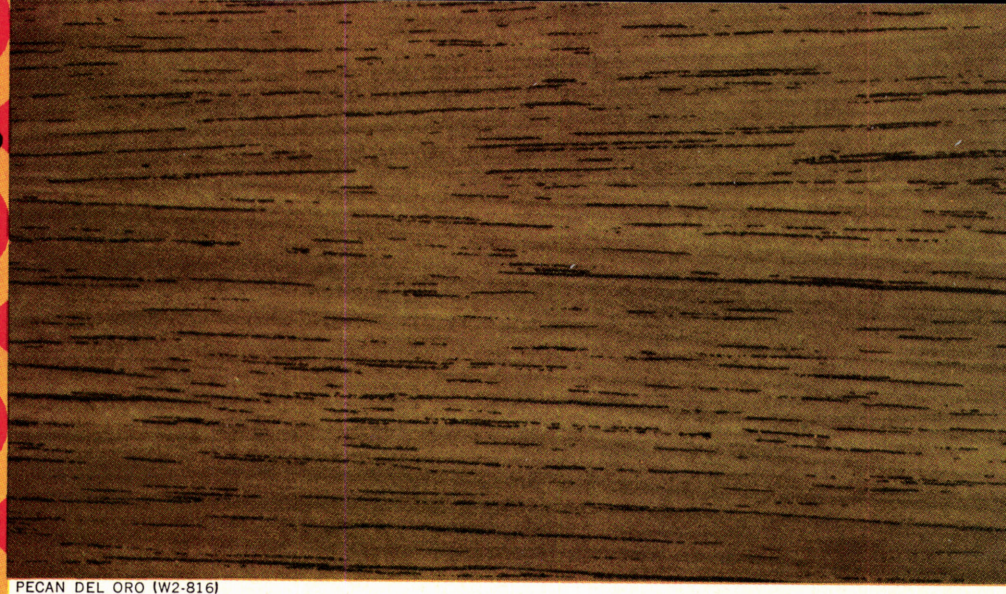
**For a Structural Report** on any of these buildings, contact the Construction Industry Marketing Representative through the U. S. Steel Sales Office nearest you, or write United States Steel, Room 9069, 525 William Penn Place, Pittsburgh, Pa. 15230.

USS, "T-1," TRI-TEN and EX-TEN are registered trademarks.

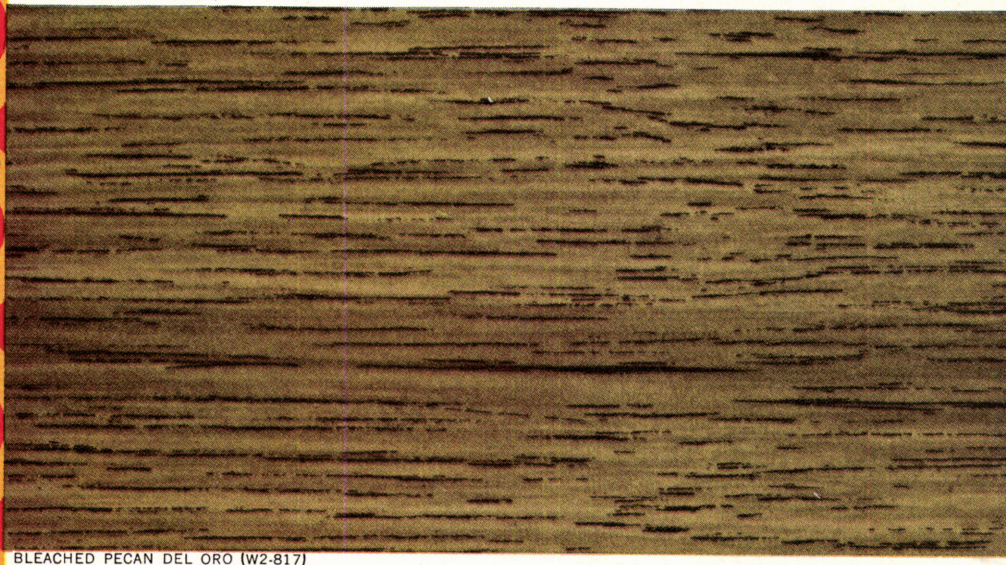
This mark tells you a product is made of Steel.

# USS United States Steel: where the big idea is innovation

# Pecan Del Oro



PECAN DEL ORO (W2-816)



BLEACHED PECAN DEL ORO (W2-817)

DISTRESSED PECAN DEL ORO (W2-815)

**...very Mediterranean** in keeping with the architect's demand for settings with the Latin Look. Pecan Del Oro—the newest addition to Nevamar's superb collection of high pressure laminated plastic wood grains. Rich, warm, enduring, new Pecan Del Oro is the most faithful Pecan reproduction available—anywhere. Choose from 3 distinctive tones—regular, bleached and distressed, in a wide range of exciting finishes.

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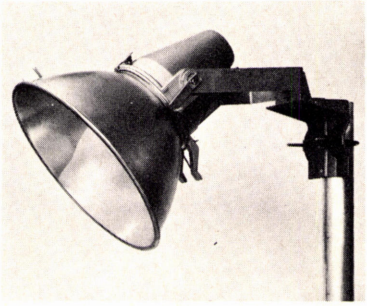
LAMINATED PLASTIC TOPS EVERYTHING FOR LASTING BEAUTY

**The Nevamar Company, Odenton, Maryland • A Division of National Plastic Products Company, Inc.**

*For more data, circle 109 on inquiry card*

*continued from page 268*



**GENERAL PURPOSE FLOODLIGHT** / Developed for outdoor applications and to utilize either an incandescent, mercury or Metalarc lamp, the *GPF* unit features rear relamping and a spun-sealed front cover glass for easy maintenance. Spun aluminum reflectors, a heavy die-cast aluminum housing and galvanized steel trunnion mounting make this a durable and versatile unit. Beam spreads ranging from 20 deg to 120 deg are obtainable with the incandescent lamp, and from 30 deg to 120 deg with the mercury or Metalarc sources. ▪ Sylvania Electric Products Inc., New York City.

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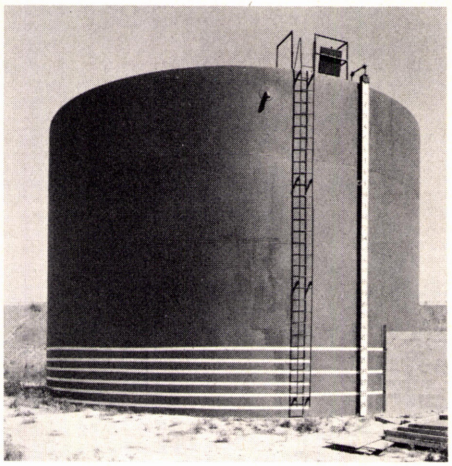

**SELF-ADHERING ELECTRICAL STRIP** / The uniform heating of storage tanks can be simplified by spiraling this 3½-in. wide low heat-density strip around the tank's exterior shell. The pressure-sensitive adhesive backing bonds permanently and requires no additional support. The length of *Electro-Wrap* required for different applications is determined by the heat-loss of the tank area with its specific thermal insulation; insulation heat-loss data and a quick computing method are supplied by the company. *Electro-Wrap* is available in either 1 watt per sq in. (24w per lineal ft) or ⅓ watt per sq in. (8w per lineal ft) at 115 v, and is rated for continuous operation at 300 deg F. ▪ Electro-Trace Corporation, Danbury, Conn.

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*more products on page 294*


# Handy for little kids...big people, too

All Halsey Taylor wall-mounted water coolers can be factory-equipped with low-level accessory fountains. Practical and convenient wherever you must provide drinking water—supermarkets, department stores, schools, and other public buildings. Available with stainless steel cabinets, baked enamel in choice of colors, and vinyl laminated steel in silver spice or mocha brown. Write for new 1966 catalog, or look us up in SWEET'S FILE or the Yellow Pages.

Complete line of electric water coolers and drinking fountains

Halsey Taylor®

THE HALSEY W. TAYLOR COMPANY 1560 THOMAS ROAD · WARREN, OHIO

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# Planned for wear and tear!

Planned to resist high-traffic abuse. Planned to provide reliability where the action is heaviest . . . in schools, offices, hospitals, and stores. The Russwin Uniloc* Lockset! Here is stylish security in a choice of dramatic doorware designs. Functional beauty with built-in stamina. Factory assembled units go in fast. Can't be installed wrong. Outlast the building. Precision parts work smoothly millions and millions of times.
For action on your specifications, call Russwin, Division of Emhart Corporation, New Britain, Connecticut 06050.
In Canada — Russwin Lock Division, Belleville, Ontario.

*Trademark

RUSSWIN

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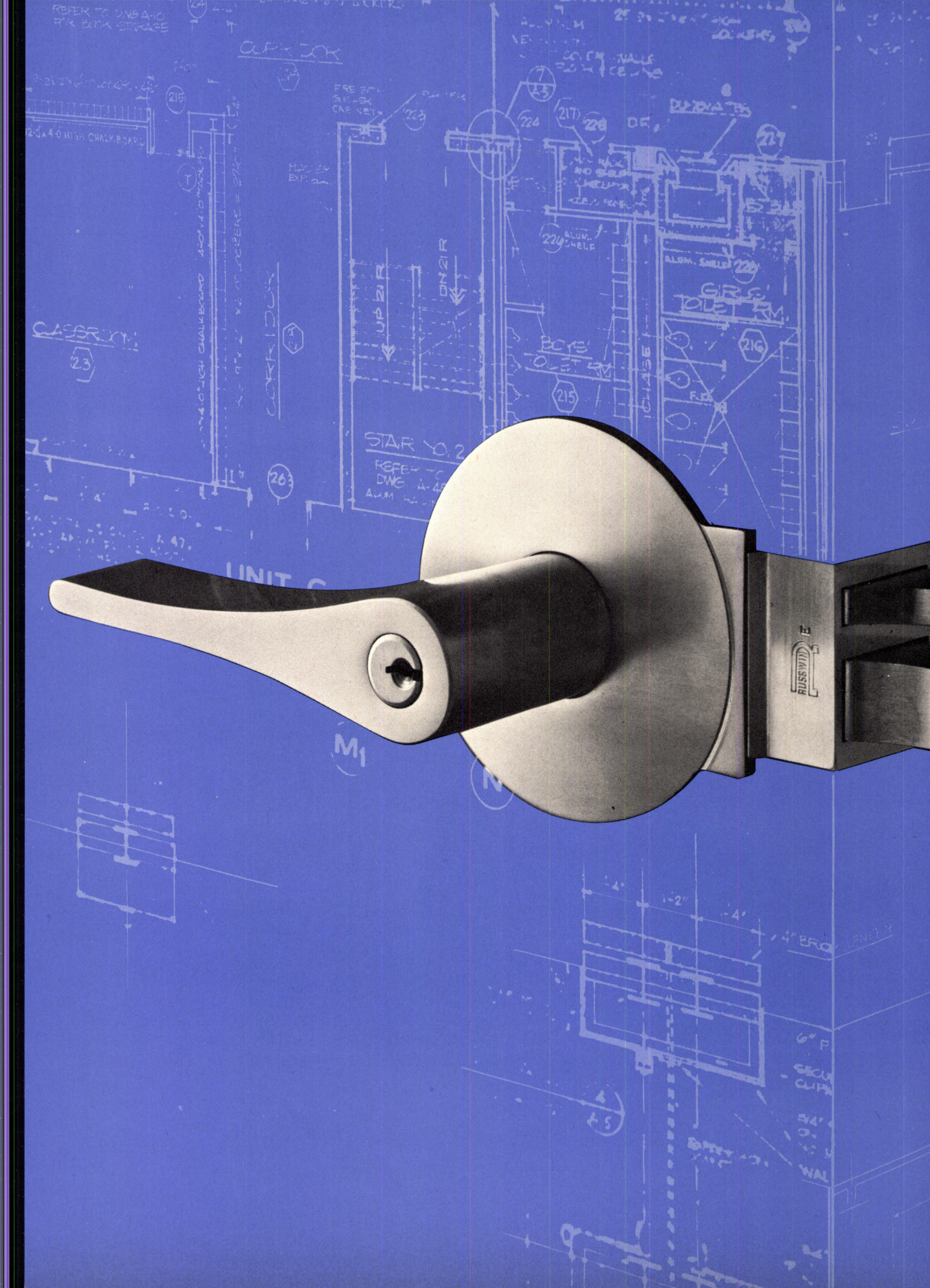
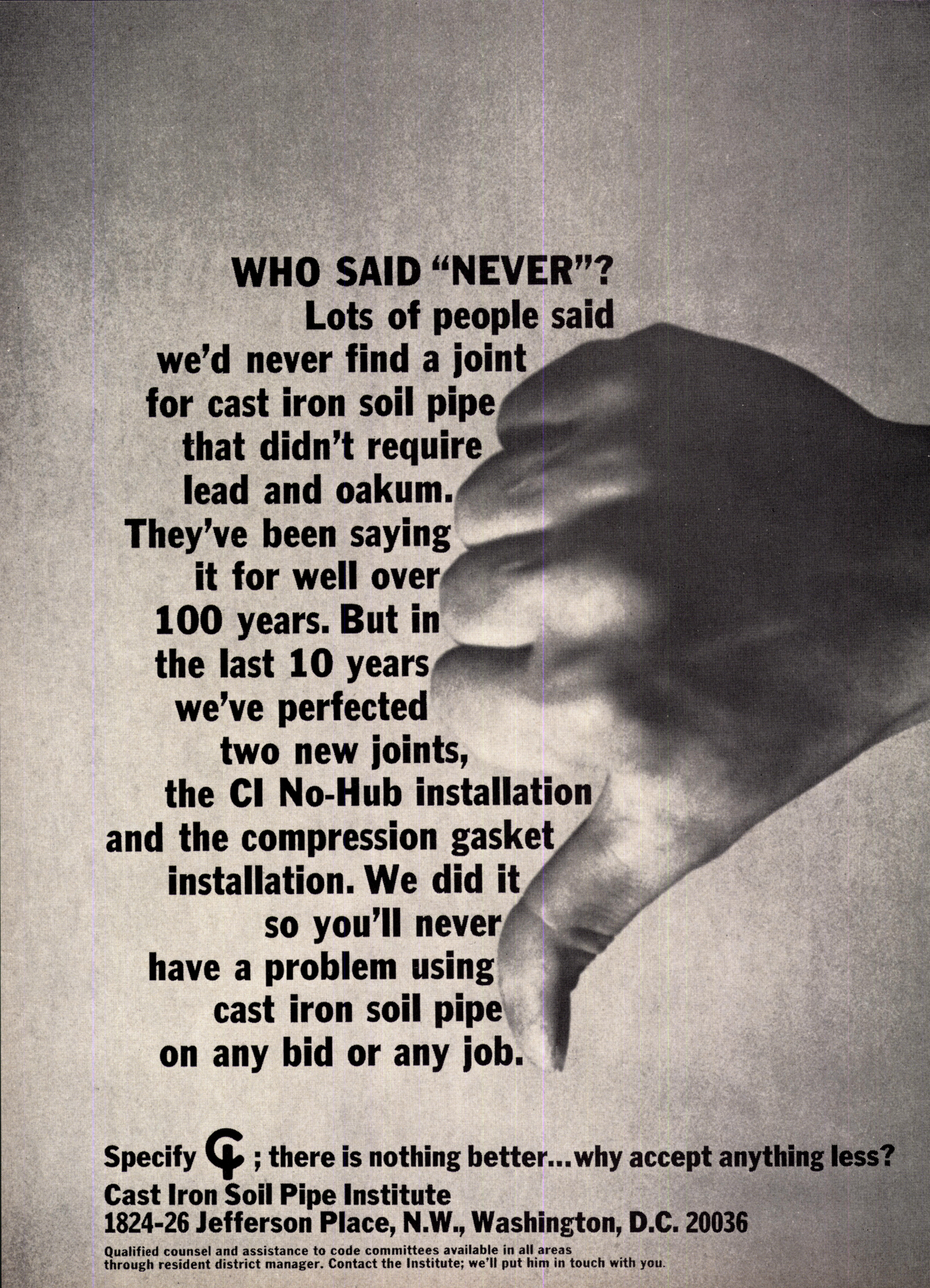

RUSSWIN


WHO SAID "NEVER"?
Lots of people said
we'd never find a joint
for cast iron soil pipe
that didn't require
lead and oakum.
They've been saying
it for well over
100 years. But in
the last 10 years
we've perfected
two new joints,
the CI No-Hub installation
and the compression gasket
installation. We did it
so you'll never
have a problem using
cast iron soil pipe
on any bid or any job.
Specify ; there is nothing better...why accept anything less?
Cast Iron Soil Pipe Institute
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Qualified counsel and assistance to code committees available in all areas
through resident district manager. Contact the Institute; we'll put him in touch with you.

# "We could sell you an electric plant for 18% less.

# But we probably couldn't sell you a second one!"

I'm Bud Onan, president of the Onan Division.

We make electric power plants, engines, generators and controls.

And we could make them for a lot less . . . passing along a price "saving" of 18% across the board. With a 1.5-kw plant, for instance, we could do away with the special alloy valves that contribute to 300% longer valve life.

The crankshaft wouldn't have to be as strong as it is. Bearings could be smaller than we make them. We could knock off $14 by using a second-rate oil pump.

This plant could have paper-thin shielding and a two-bit muffler. We could save the money it takes to test and certify performance before shipment.

But we won't. Because we want that second order, and every one after that. And we want to make sure *you get what you pay for.*

That means building all our products a little better than we have to. It means being conservative when we're rating our product's capability. It means giving you an Onan product that delivers every bit of power our nameplate promises.

It means keeping faith with loyal customers who have made us the world's leading builder of electric power plants.

To us at Onan, it means living, day by day, with the certainty that . . .

**We build our future into every Onan® product.**

**PERFORMANCE CERTIFIED**

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

ONAN ENGINE/GENERATOR DIVISION Studebaker CORPORATION

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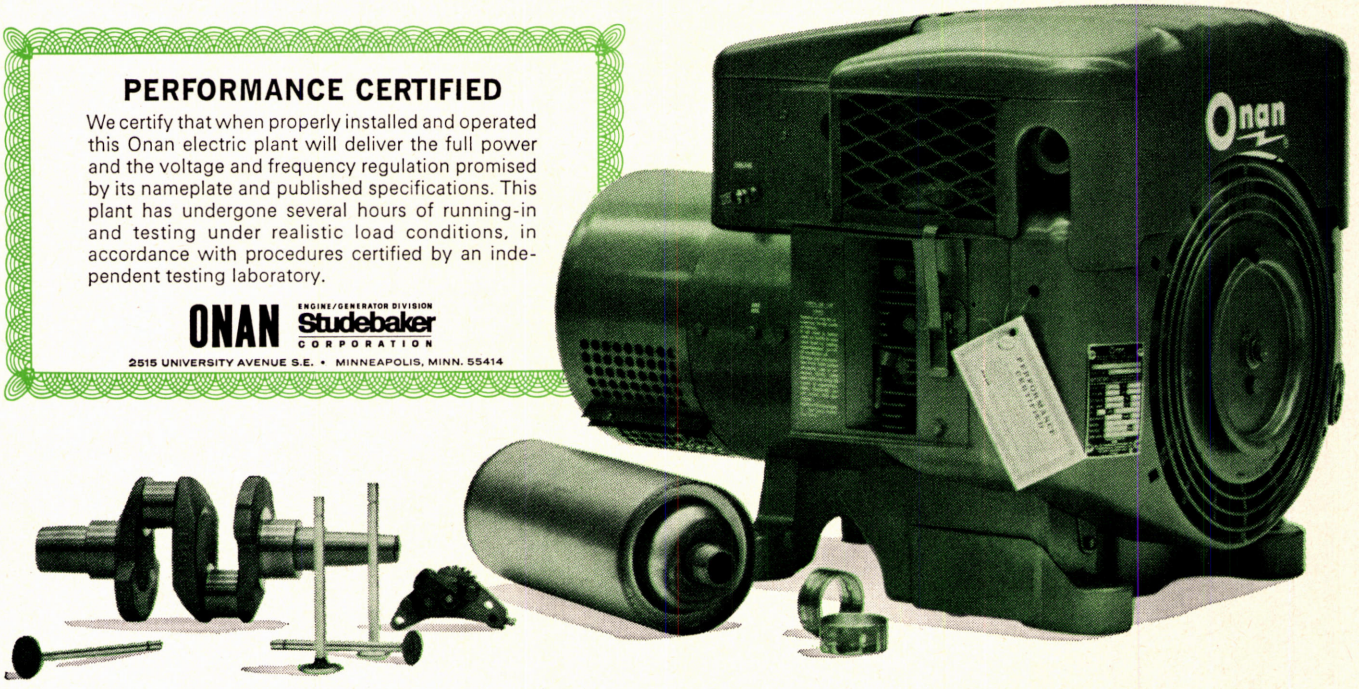


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For more data, circle 123 on inquiry card

# Wood windows vs. metal windows:

# here are the facts about condensation.

In winter a metal window frame is cold. Cold to touch. Cold to be near. It's the nature of metal, caused by what heating engineers call excessive thermal conductivity. This chart gives you the cold, hard facts.

*Findings listed below show heat loss of various materials 1" thick, 12" square, with only 32 degree difference between inside and outside temperatures:*

| | |
|---|---|
| **HEAT LOSS** | Wood . . . 25 BTU's per hr. |
| | Glass . . 186 BTU's per hr. |
| | Steel. . . 9,984 BTU's per hr. |
| | Aluminum . . .. 45,312 BTU's per hr. |

Data derived from: ASHRAE Guide and Data Book 1965. Chapters 4 and 24. By permission.

These figures stated another way mean that wood used for window frames is over 1770 times as effective as aluminum in preventing costly heat losses through radiation. When you consider that windows are 30-70% of a home's exterior it's pretty important to the home owner to have the right windows.

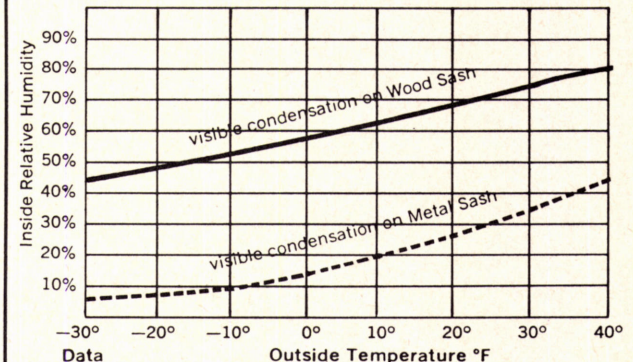
What happens to the *inside* of all these windows can be costly, and aggravating, too. Condensation! It's caused by the same excessive thermal conductivity. When interior humidity—even below average humidity—touches a freezing metal window frame, it condenses.

Condensation can build up with amazing rapidity on metal window frames . . . even form ice. And . . . water drips . . . all over the sill, the moulding, and the wall. This type of condensation is impossible with quality wood windows. A look at the chart below will show you why.

## The undiluted facts on condensation

**Visible Condensation on Inside Surfaces.**
Room temperature 70°. Outside wind velocity 15 mph.

Chart shows comparative condensation on inside surface as outside temperature drops. Example: when outside temperature is 20° it would take as much as 69% inside relative humidity before condensation would appear on wood sash—but condensation will form on aluminum sash with just 22% inside relative humidity (and, most homes average 30-35%).



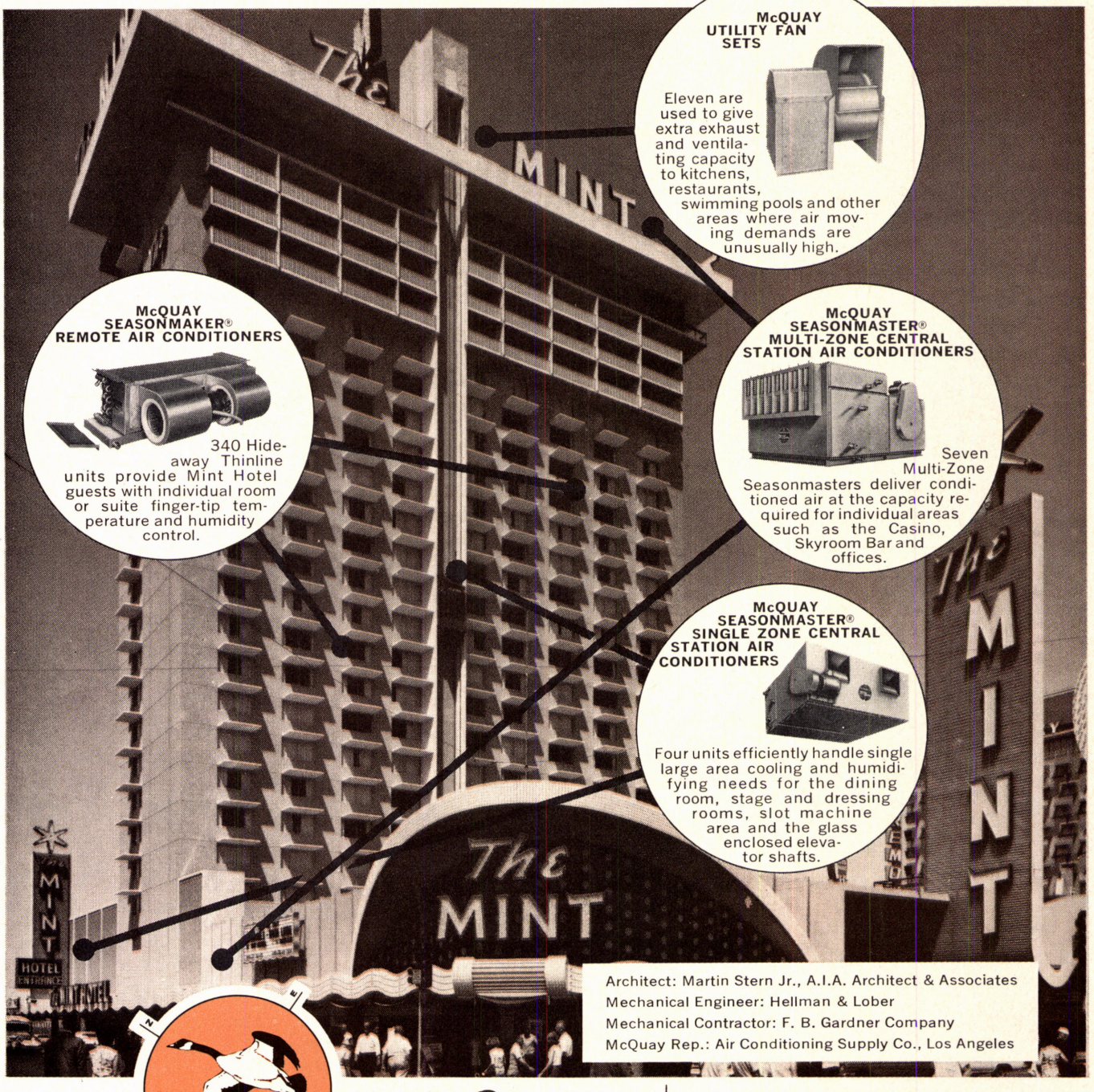

Data derived from: ASHRAE Standard Psychrometric Chart. By permission.

**Free Window Condensation Calculator:** first time available. Helps you avoid condensation problems before they happen. Send request on your letterhead to:

**PONDEROSA PINE WOODWORK**
*and the Western Wood Products Assn.*
Dept. AR4-C, 39 South La Salle Street
Chicago, Illinois 60603

# MINT HOTEL, LAS VEGAS LOOKED TO THE LEADER ...McQUAY TO SOLVE ITS EXACTING AIR CONDITIONING NEEDS

When 24-hour-a-day comfort must be assured for hundreds of guests, there is no room for less than a top performing air conditioning system. That's why the Mint Hotel looked to McQuay for the answers. McQuay offers an almost unlimited selection of types and sizes of air conditioning equipment—you get complete application freedom and you can design a system to meet any precise air conditioning, heating or ventilating requirement. All McQuay units are made for each other—designed for quick installation and ease of maintenance. For complete information call your McQuay Representative or write direct.




**McQUAY UTILITY FAN SETS**



Eleven are used to give extra exhaust and ventilating capacity to kitchens, restaurants, swimming pools and other areas where air moving demands are unusually high.

**McQUAY SEASONMAKER® REMOTE AIR CONDITIONERS**



340 Hideaway Thinline units provide Mint Hotel guests with individual room or suite finger-tip temperature and humidity control.

**McQUAY SEASONMASTER® MULTI-ZONE CENTRAL STATION AIR CONDITIONERS**



Seven Multi-Zone Seasonmasters deliver conditioned air at the capacity required for individual areas such as the Casino, Skyroom Bar and offices.

**McQUAY SEASONMASTER® SINGLE ZONE CENTRAL STATION AIR CONDITIONERS**



Four units efficiently handle single large area cooling and humidifying needs for the dining room, stage and dressing rooms, slot machine area and the glass enclosed elevator shafts.

Architect: Martin Stern Jr., A.I.A. Architect & Associates
Mechanical Engineer: Hellman & Lober
Mechanical Contractor: F. B. Gardner Company
McQuay Rep.: Air Conditioning Supply Co., Los Angeles

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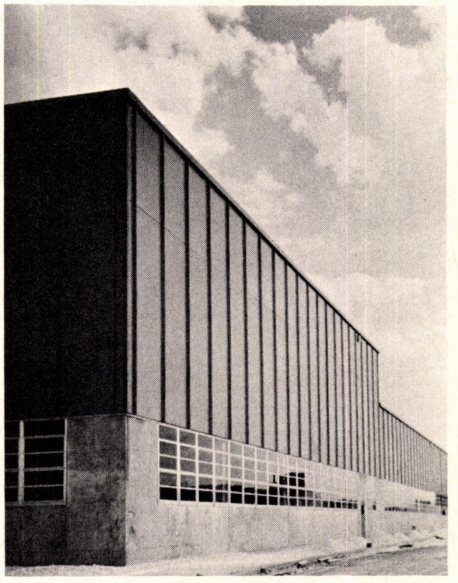
continued from page 287



**CURTAIN WALLS** / The *Shadow Fin* curtain wall system for construction of new industrial and commercial buildings is one of three industrial walls utilizing Alcoa's *Alply* panels. Designed for application to structural frames, the *Shadow Fin* curtain wall employs projecting vertical fins to introduce variety and contrast to metal walls. The depth, configuration and spacing of the "fin" effect can be varied to achieve specific architectural effects. The other systems include a flat wall facing applied over masonry to improve appearance and insulation, and a flat curtain wall for fastening directly to steel girts to provide a fully insulated enclosure. *Alply* panels consist of two sheets of aluminum laminated to an expanded polystyrene core, and are available in patterned or plain surfaces and in a variety of baked enamel colors and other finishes. ▪ Aluminum Company of America, Pittsburgh.

*Circle 308 on inquiry card*

**SWING-SLIDE DOOR OPERATOR** / Horton's new swing-slider eliminates the undesirable features of the previous "pocket" arrangement. A special design avoids alignment wheels and the consequent protective pocket enclosure. By placing the slider to the outside of a fixed panel, the door will pivot outward at any point of the slider travel stroke, thus eliminating the danger of wedging the door in a partly open position as well as the need to maintain a traverse electrical connection. In the case of electric power failure, the door may be moved manually without any restriction, either by pushing it outward or by sliding it. ▪ Horton Automatics Inc., Corpus Christi, Tex.

*Circle 309 on inquiry card*

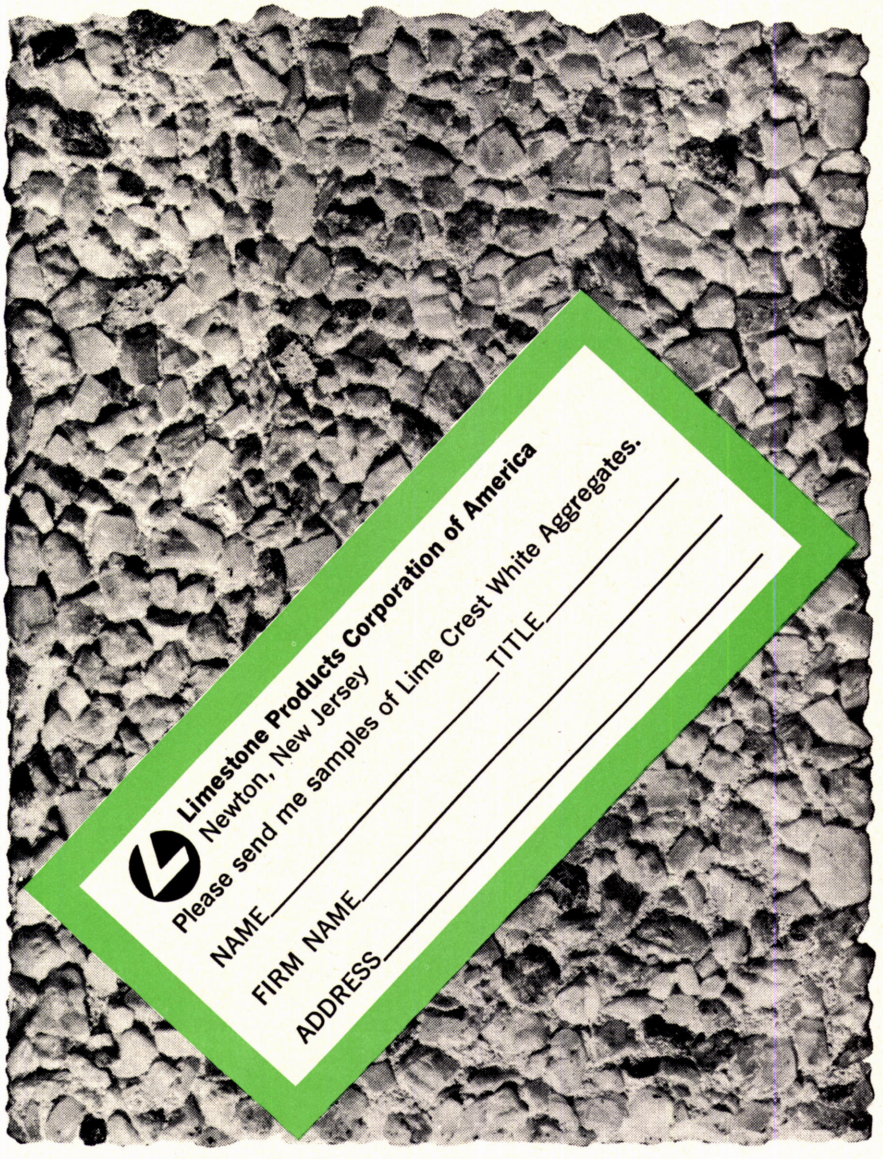
more products on page 306


# SOMETHING NEW IN STRUCTURAL DESIGN

## LIME CREST WHITE AGGREGATES

With their unusual crystalline structure Lime Crest White Aggregates add light reflectivity to pre-cast panels and color contrast to poured concrete. Their predominant, long-lasting whiteness makes possible the use of pastel shades and other light colors in a mix . . . almost any desired effect can be achieved—and much more economically than with cut stone.

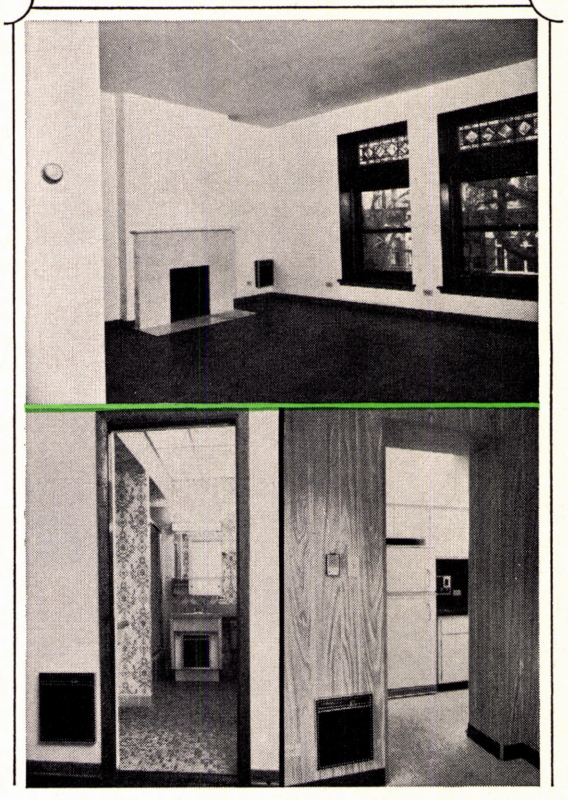
Where appearance makes a difference Lime Crest White Aggregates look better and cost less. If our photograph doesn't convince you, let us send you some samples that will.




*For more data, circle 126 on inquiry card*

# 19th Century Charm
## 20th Century Comfort

**®Electromode** FLAMELESS ELECTRIC HEAT



2218 Fremont Street, in Chicago's Old Town (white faced building in above photo) represents a new trend in urban renewal that has attracted nation wide attention . . . restoring the faded glory of former elite neighborhoods.

Instead of tearing everything down and building anew, architects and builders are retaining 19th Century Victorian charm while adding 20th Century comfort and convenience.

Modern Electromode electric heat has helped make this trend both feasible and economical with flexible, low cost equipment and controls that are easily installed. Electromode facilitates this blending of the old with the new to offer people who rent and those who buy the incomparable safety, cleanliness and comfort of automatic electric heat with individual room temperature control.

The complete story of 2218 Fremont Street and its modern Electromode electric heating system is told in folder CH-29. Send for your free copy today.

NEMA MEMBER

SINGER
CLIMATE CONTROL PRODUCTS

®Electromode
Climate Control Division THE SINGER COMPANY
Dept. AR-76, 62 Columbus St., Auburn, N.Y. 13021

*For more data, circle 127 on inquiry card*

# "VIM" goes High...Wide...and LAMSON with Selective Vertical Conveyors

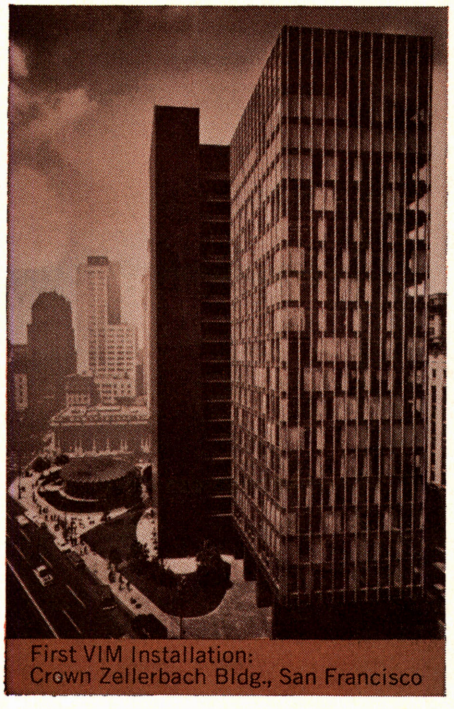
The Post Office has developed a farsighted Vertical Improved Mail (VIM) System for fast, continuous service in high-rise buildings. At the heart of this system is the selective vertical conveyor.

LAMSON, pioneer in mechanized communications systems, has designed, built and installed a large majority of the world's vertical conveyors, including the highest and largest systems.

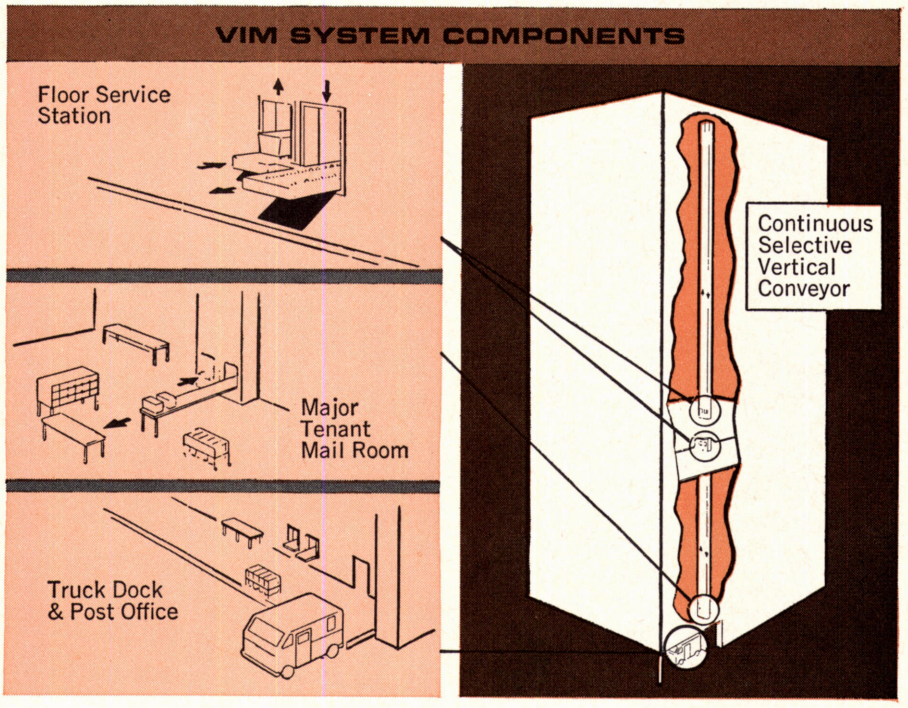
In addition to the selective vertical conveyor, a VIM System also includes a truck dock and a Post Office operated mail room at street or basement level. Here, incoming mail is sorted and locked in tenants' trays for automatic dispatch to all floors via the conveyor. Tenants pick up trays at floor service stations. Outgoing mail may also be sent down to the Post Office mail room from these points.

VIM offers many advantages: mail is delivered early to all floors . . . security is improved . . . congestion from bags and carts in building is relieved . . . day-long mailing permits faster processing to and through the main Post Office . . . contract messenger service is reduced. Equally important: major tenants occupying several floors can use conveyors for their own interoffice distribution of mail, supplies, EDP tapes and cards, etc.

Continuous, high-speed mail service is the lifeline of any business. In building or moving to new office space, carefully evaluate provision for VIM facilities. For additional details on selective vertical conveyor systems, consult your architect or write to: LAMSON CORPORATION, 183 Lamson Street, Syracuse, New York 13201.



First VIM Installation:
Crown Zellerbach Bldg., San Francisco




**LAMSON CORPORATION**
A DIVISION OF DIEBOLD, INCORPORATED

Lamson Street, Syracuse, New York
Also: San Francisco and Toronto, Canada
Offices in All Principal Cities

*For more data, circle 128 on inquiry card*

THE MULTI-COLORFUL WORLD OF

# VENEZICO

VENETIAN-CUT
MOSAIC TILE

Now LATCO PRODUCTS offers a dazzling array of multi-colored mosaic tiles, from its exclusive "VENEZICO" collection.

These vitreous, hand-crafted tiles give the appearance of authentic antique beauty, with an old-world charm that makes them truly distinctive. Yet they actually cost less than most Venetian tiles on the market today.

Available in the Antique shades of White, Ivory, Champagne, Putty, Black, Beige, Brown, Amber, Marine, Orange, and Aqua. Other colors include Persimmon, Aztec Orange, Brite Red, Antique Silver, Antique Brass, and four shades of Antique Gold.

"VENEZICO" is suitable for interior or exterior use, and impervious to wear and weather.

Mesh mounted on 12"x12" sheets, for easy installation at low cost. Matching trimmers are available.

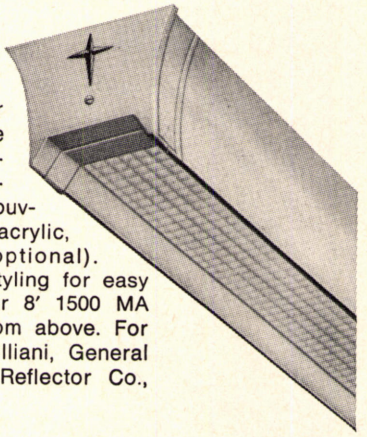
For further information, write to:

Latco® PRODUCTS

3371 GLENDALE BOULEVARD ▪ LOS ANGELES, CALIF. 90039
TELEPHONE: (213) 664-1171

*For more data, circle 129 on inquiry card*

# The best commercial fixtures made come from Wheeler.



The single lamp Ultima II semi-indirect fixture for modular dimensions is made of strong lightweight extruded aluminum. With integral ballast. And plastic louvers (metal louvers, solid acrylic, or prismatic shielding optional). Crevice-free, clean-lined styling for easy maintenance. For 4', 6' or 8' 1500 MA lamps. Easily relamped from above. For information write E. Quintilliani, General Sales Manager, Wheeler Reflector Co., Inc., Hanson, Mass.

Designed by Paul Lamson
Illuminating Engineer

WR

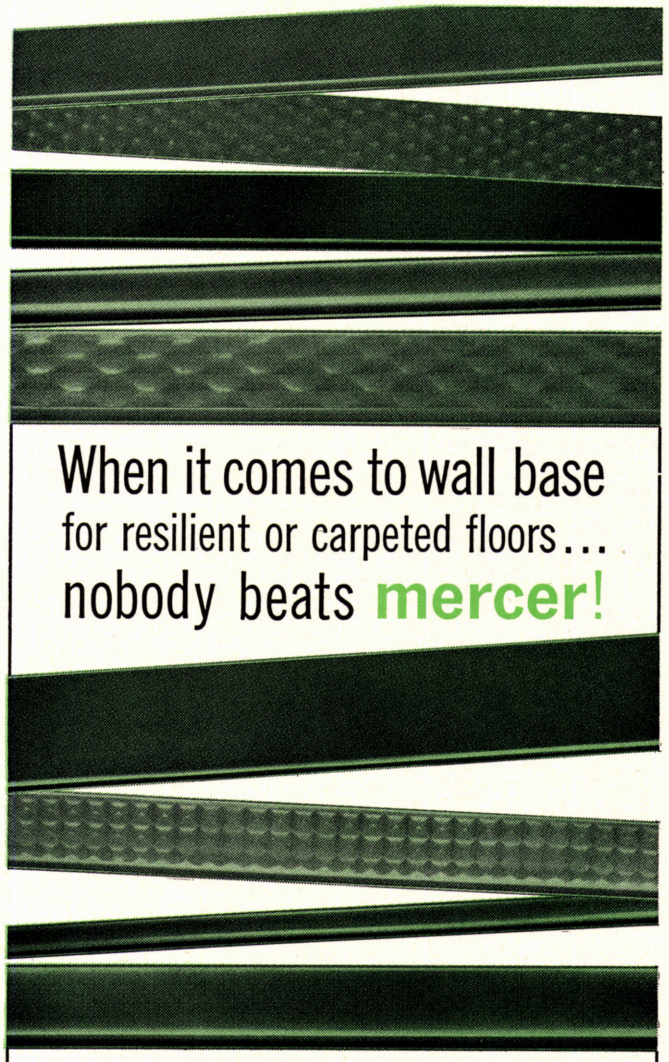
*For more data, circle 130 on inquiry card*

BARBER COLMAN

# HEAT-OF-LIGHT®
# A LEADER
# IN THE NEW AGE OF ARCHITECTURE!

SEE PAGES 21-24

*For more data, circle 12 on inquiry card*



# When it comes to wall base for resilient or carpeted floors... nobody beats mercer!

## COLORS!

21 of them—from popular blacks and browns to decorator-inspired gold, lavender, pearl-white... PLUS custom shades.

## SIZES!

¾", 1½", 2½", 4", 6", and 7" heights, plus intermediate sizes to order. .085" and .125" gauges.

## STYLES!

With toe, without toe... 4' sections, 100' rolls.

## FINISHES!

Matte... Attractive Satin... Textured Sculptura... Mirror-Finish; enhance their surroundings, easy to maintain.

## QUALITY!

Homogeneous vinyl... permanent, washable, economical to install.

## RUGGEDNESS!

Unbreakable... scuffproof, keeps attractive for years.

*Inside and Outside Corners, In All Colors and Types—2½" to 6" Heights.*

You can't miss with Mercer... Supplying the Nation with the most complete line of vinyl floor and carpet accessories.

*See your local distributor, or write:*

**mercer**

**PLASTICS COMPANY, INC.**

*Main Office & Warehouse:* 1 Jabez St., Newark, N.J. 07105
*Factory & Warehouse:* Eustis, Florida 32726

MP

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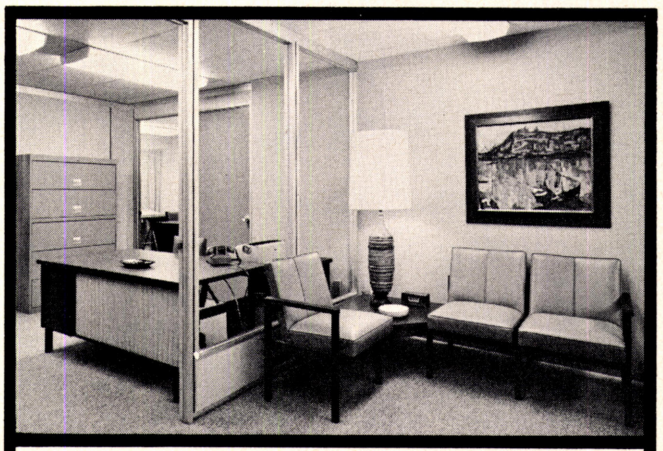
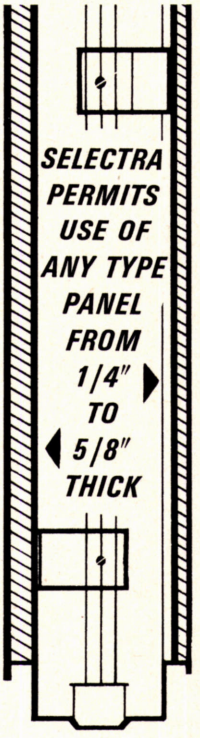





# LOOK AT THE INSIDE STORY

WORKWALL

DARLING SELECTRA®

**MOVABLE PARTITIONS**

***offer plus benefits that add up to client satisfaction . . .***

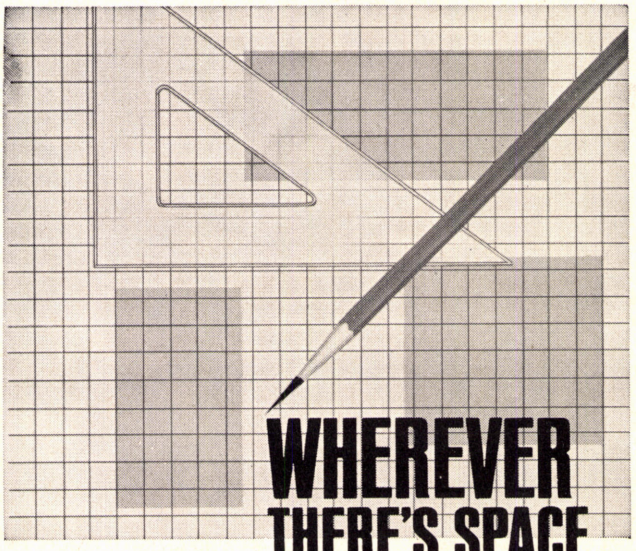
- **Installed cost as low as $1.50 per sq. ft.**
- **Controls noise . . . minimum sound transmission (up to 46.4 decibels)**
- **Choice of any paneling—¼" to ⅝" thick.**
- **Metal framing is assembled and wired before panels go on.**
- **Freedom of design with interchangeable parts.**

***See us in Sweet's Architectural File 22a/Da or write for complete details.***

WORK WALL® SELECTRA MOVABLE PARTITIONS

DIVISION OF L. A. DARLING COMPANY
Box 130, Bronson, Michigan

*For more data, circle 133 on inquiry card*



# WHEREVER THERE'S SPACE

## there's a Norris Walk-In to fit

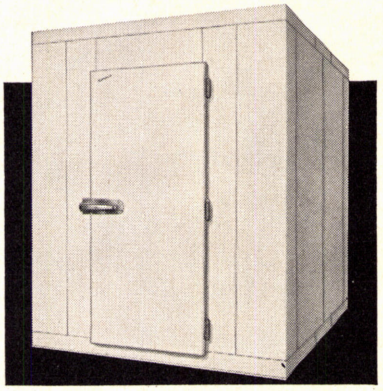
Wherever there's space, there's a Norris walk-in cooler, freezer, or cooler-freezer combination to fit, for Norris walk-ins provide complete installation flexibility. Available with or without floors, Norris walk-ins are pre-fabricated in two- and three-foot wall sections, four-foot door sections (7½' high), and can be set up in one-foot increments in any size—in almost any space—in new or existing buildings. The only tool necessary is a light hammer.

The modular panels of Norris walk-ins are all-metal—no wood to absorb moisture—and extremely light-weight. Standard exteriors are bonderized steel finished in white baked enamel, interiors are 22-gauge galvanized metal, with custom exteriors or interiors optional at extra cost. Ideal for every industrial, commercial or institutional refrigeration need, Norris walk-ins can be supplied with the proper self-contained or remote refrigeration equipment to meet any application.

***WRITE FOR DESCRIPTIVE LITERATURE!***

LIGHT WEIGHT

as low as 4½ lbs. per sq. ft. —reduces freight costs



Norris

**NORRIS DISPENSERS, INC.**

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NORRIS—THE FIRST NAME IN MILK SERVING AND STORAGE EQUIPMENT!

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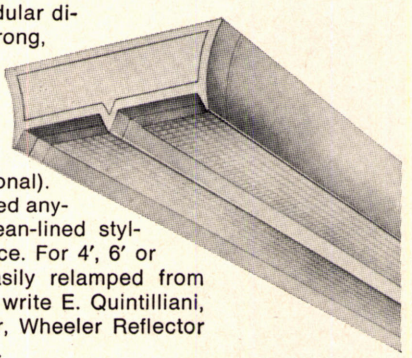
# The best commercial fixtures made come from Wheeler.

The double lamp Ultima II semi-indirect fixtures for modular dimensions is made of strong, lightweight extruded aluminum. With integral ballast. And plastic louvers (metal louvers, solid acrylic, or prismatic shielding optional). Pendants can be mounted anyplace. Crevice-free, clean-lined styling for easy maintenance. For 4', 6' or 8' 1500 MA lamps. Easily relamped from above. For information write E. Quintilliani, General Sales Manager, Wheeler Reflector Co., Inc., Hanson, Mass.



Designed by Paul Lamson Illuminating Engineer

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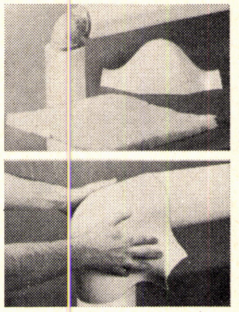
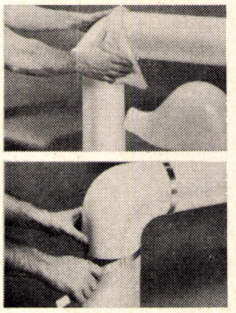
## INSULATION EFFICIENCY PLUS A NEAT LOOKING, PROFESSIONAL FINISHED FITTING

**This new method of insulating pipe fittings will not only make all fittings look better but will also increase insulation efficiency.**

Materials used are: molded fiber glass insulation and one-piece ZESTON (patent pending) Fitting Cover. Other insulating materials can be used.

Fiber glass insulating material is placed over bare pipe and tucked in.





One-piece ZESTON Pipe Fitting Cover is placed over pipe and insulating material and "snapped" into place.

Cover may be banded, stapled or taped in place. . . . ever seen a more attractive finished fitting!

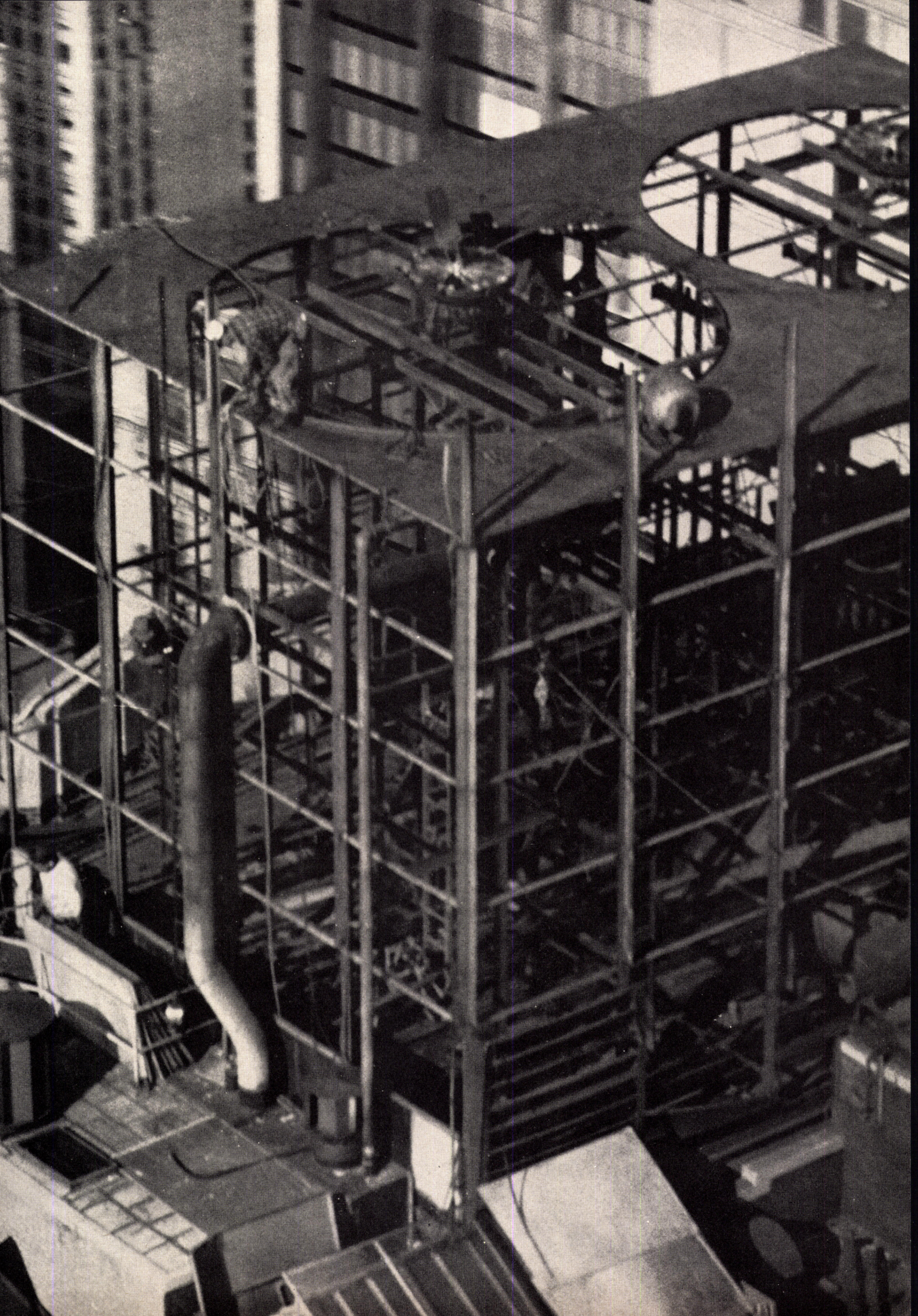
- Excellent vapor barrier — Ideal for chilled water systems
- Glossy off-white finish can be cleaned with soap and water or painted any color • Costs less than present methods
- Reusable — easy to remove and replace for maintenance on pipe
- Versatile — fits screwed or welded elbows
- Wide temperature range — sub zero to 400°F or more
- Can be used indoors or outdoors, on cold or hot piping systems
- Weatherproof — withstands water, acids, alkalies or chemical washdowns. Resists alcohols and oils. • Will not support combustion

Write for free literature and samples

ZESTON, Inc.

**744 State Street • Perth Amboy, New Jersey 08861**

*For more data, circle 135 on inquiry card*



A four-pipe system
isn't always the answer.

# Wouldn't you rather have a rooftop you could rent?

You can—with a G-E Zoneline heating/cooling system. It does everything a four-pipe system does. But it eliminates pipes, ductwork, compressors, cooling towers.

And that not only saves on first cost. It frees space, both inside and on your rooftop—for a pool (William Penn House, Philadelphia) or penthouse offices to increase income (Peoples Savings Bank, Bridgeport).

Other advantages with G-E Zoneline:

**ROOM-BY-ROOM CONTROLS** allow a tenant who is chilly to turn on the heat, even though everyone else has the air conditioning on.

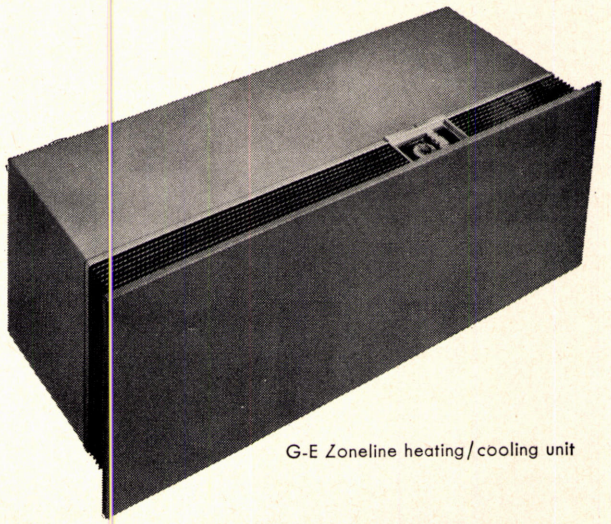
**CHOICE OF GRILLEWORK** is one you make. G-E Zoneline grille comes in two standard designs or can be treated architecturally to blend with building appearance.

**INTERIOR FLEXIBILITY** allows you to fit units over doors (Marina Towers, Chicago) or under window seats (Century House, Lincoln, Nebr.).

From motels to high-rise construction, Zoneline systems can make dramatic economies in space and first cost. Call your General Electric Zoneline Air Conditioning Representative for the facts.

**GENERAL ELECTRIC**

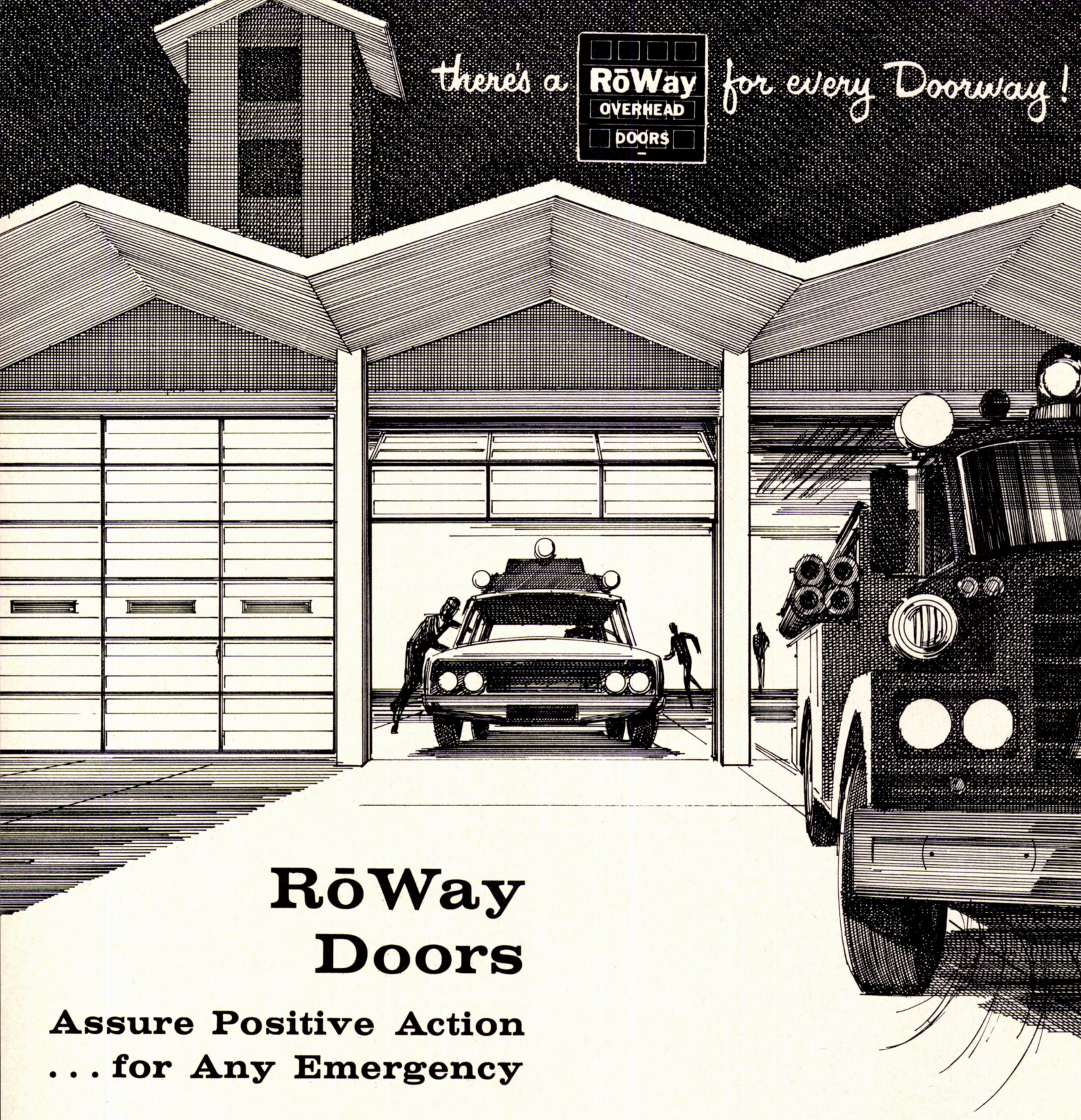
Air Conditioning Department, Appliance Park, Louisville, Kentucky



G-E Zoneline heating/cooling unit

*For more data, circle 136 on inquiry card*

there's a RōWay OVERHEAD DOORS for every Doorway!



# RōWay Doors

## Assure Positive Action ... for Any Emergency

Emergency vehicles of all kinds stand ready to answer alarms as fires, accidents and other tragedies occur. These vehicles must be ready to roll on a moment's notice, if lives and property are to be saved. Quick on the up-take, smooth working and reliable, RōWay Doors and Electric Operators help send emergency vehicles on their way. They have been a dependable team for many years.

Architects take reliability into account when specifying overhead doors for the emergency buildings they design but they are also interested in beauty, as well. RōWay Door Designers have come up with many styles to fit practically every architectural specification. The selection of doors includes wood, steel, aluminum and fiberglass. Combining materials with a variety of styles adds up to a wide choice of handsome, functional doors available for **any** type building under consideration.

Ready to assist is the local RōWay Distributor. Installation and door servicing are just two of his specialties. The third is his experience in working with architects and contractors. He's listed in the yellow pages and is ready to help prove that "Better Doors Come From Rowe."

*INDUSTRIAL / COMMERCIAL / RESIDENTIAL*

RōWay OVERHEAD DOORS

**ROWE MANUFACTURING COMPANY**

Find Your Nearest Distributor in the "Yellow Pages"

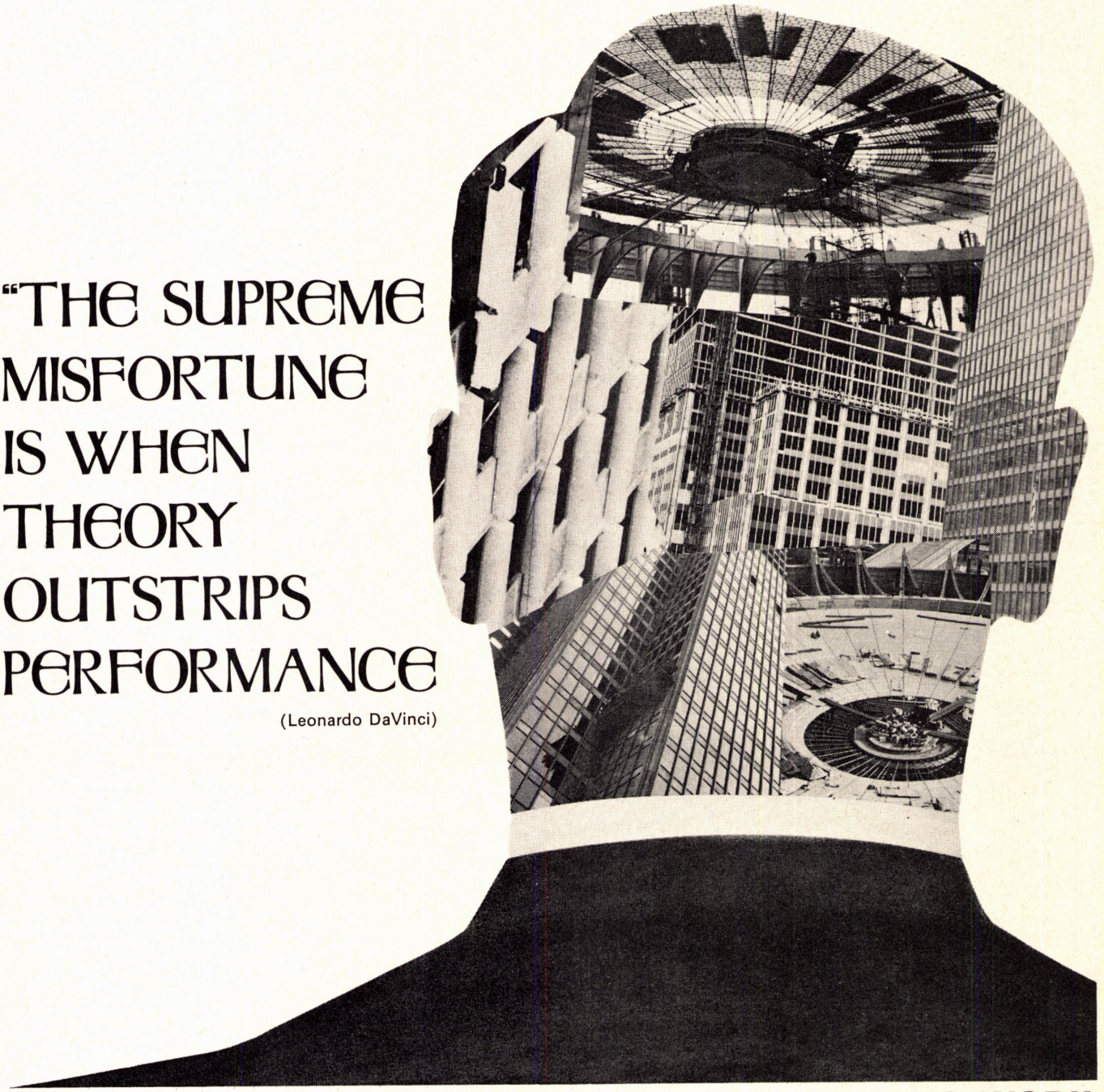
SEE OUR CATALOG IN SWEET'S OR WRITE FOR COPY

**Galesburg, Illinois**
**Dept. AR76**

*For more data, circle 124 on inquiry card*

"THE SUPREME MISFORTUNE IS WHEN THEORY OUTSTRIPS PERFORMANCE

(Leonardo DaVinci)



## PRESSTITE PRODUCTS HELP MAKE YOUR DESIGNS WORK

Although sealants normally account for less than 1% of total cost, they are critical to design performance.

There is a high-performance Presstite sealants system to meet the most exacting, advanced design requirements.

With so much at stake (at so little relative cost) it pays to specify the very best.

We welcome the opportunity to consult with you in the early stages of design, concerning sealant selection and performance, joint design and compatibility of materials.

***WRITE FOR YOUR COPY OF "ARCHITECTURAL SEALANTS"***

- Plastic Compound Tapes
- Glazing Compounds
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- Polysulfide Joint Sealants
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*For more data, circle 137 on inquiry card*

# This is 3M's new Tartan® BRAND Multi-Use Surfacing...

**RESILIENT:** Provides cushion for falls, protects against shin splints, leg fatigue and body shock. Constant under all conditions.

**ALL WEATHER:** Surface conditions and resilience remain constant regardless of rain, cold, heat. Non-slip wet or dry.

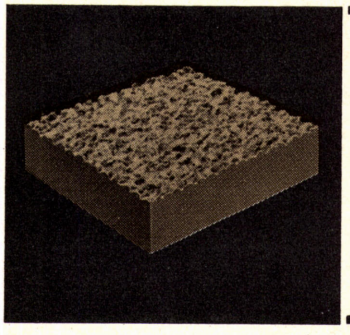
**DURABLE:** Withstands extreme wearing conditions; impervious to spikes, cleats, high heels, even heavy machines and vehicles.

**LOW MAINTENANCE:** May be cleaned with broom or rinsed with hose. Never needs varnishing. Causes no dust or dirt.

An incredibly durable material. Sound-proof, resilient and non-slip underfoot. Can go indoors or outdoors; resists abrasion, chemicals, soiling and weather extremes; requires minimum maintenance; can be pre-fabricated to almost any dimension or custom-installed on the site. Available in several colors and surface textures. Refer to our catalog in Sweet's Architectural and Industrial file 36c/ME. Or write or call for information.

3M COMPANY

# what do you make of it?



**Recreation & Athletic Products**
Minnesota Mining & Manufacturing Co.
367 Grove St., St. Paul, Minn. Tel.: 612-733-2452

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

AR-7

*For more data, circle 139 on inquiry card*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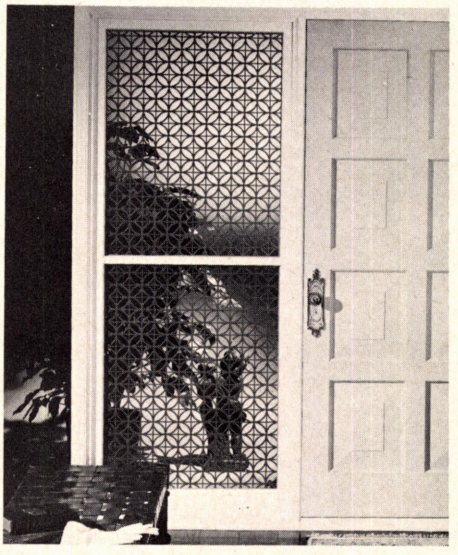
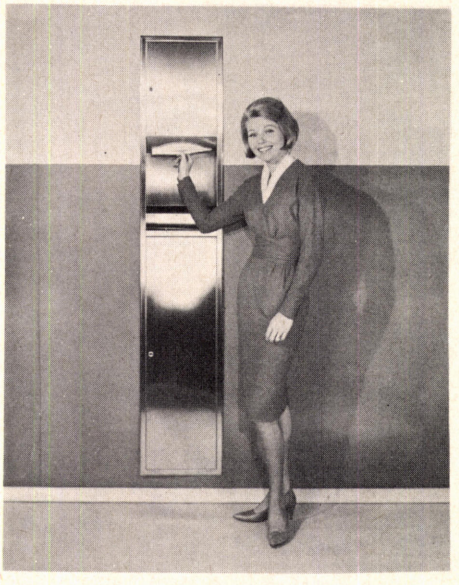


**DECORATIVE GLASS PANELS** / Suitable for interior or exterior use, these panels give the appearance of fine hand-leaded glass, but in fact the pattern is built in, rather than being on the exterior, to allow smooth cutting and easy cleaning. Available in 28-in. by 40-in. panels, four different patterns are standard to the line, but different designs and colors can be supplied if required. Recommended uses include windows, doors, dividers, bathroom applications, cabinet doors, table tops and a wide range of other applications. ▪ Coltra Marketing Inc., Chicago.

*Circle 310 on inquiry card*



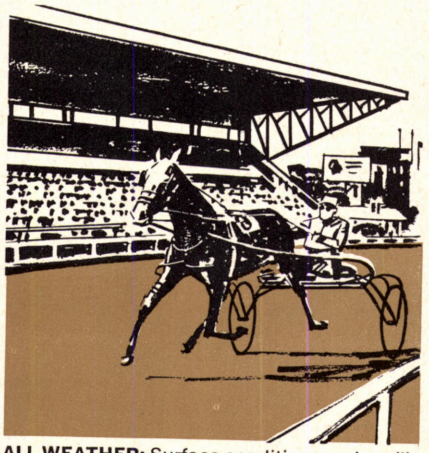
**WASHROOM EQUIPMENT** / This model is one of a line of recessed stainless steel towel and soap dispensers, waste receptacles and other items designed for ease of cleaning, durability and low maintenance. ▪ D. J. Alexander Corporation, Moorestown, N. J.

*Circle 311 on inquiry card*

*more products on page 314*

# This is 3M's new Tartan® BRAND Multi-Use Surfacing...

**RESILIENT:** Provides cushion for falls, protects against shin splints, leg fatigue and body shock. Constant under all conditions.



**ALL WEATHER:** Surface conditions and resilience remain constant regardless of rain, cold, heat. Non-slip wet or dry.

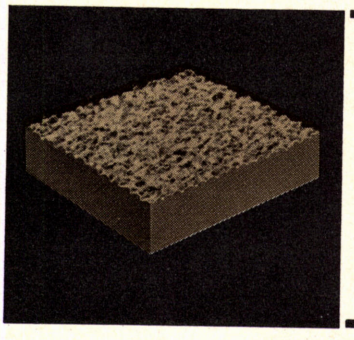
**DURABLE:** Withstands extreme wearing conditions; impervious to spikes, cleats, high heels, even heavy machines and vehicles.

**LOW MAINTENANCE:** May be cleaned with broom or rinsed with hose. Never needs varnishing. Causes no dust or dirt.

An incredibly durable material. Sound-proof, resilient and non-slip underfoot. Can go indoors or outdoors; resists abrasion, chemicals, soiling and weather extremes; requires minimum maintenance; can be pre-fabricated to almost any dimension or custom-installed on the site. Available in several colors and surface textures. Refer to our catalog in Sweet's Architectural and Industrial file 36c/ME. Or write or call for information.

3M COMPANY

# what do you make of it?



**Recreation & Athletic Products**
Minnesota Mining & Manufacturing Co.
367 Grove St., St. Paul, Minn. Tel.: 612-733-2452

NAME_____

COMPANY_____

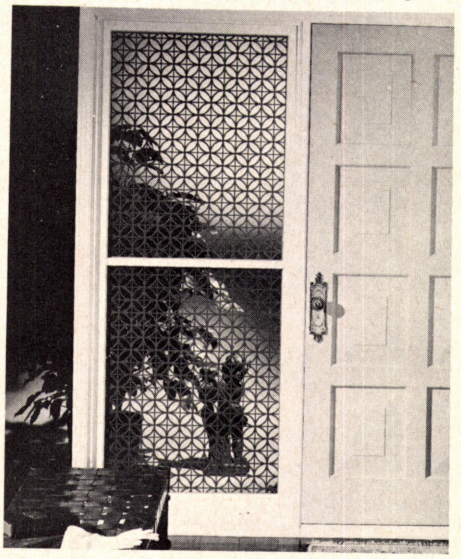
ADDRESS_____

CITY_____ STATE_____

AR-7

*For more data, circle 139 on inquiry card*


*continued from page 294*



**DECORATIVE GLASS PANELS** / Suitable for interior or exterior use, these panels give the appearance of fine hand-leaded glass, but in fact the pattern is built in, rather than being on the exterior, to allow smooth cutting and easy cleaning. Available in 28-in. by 40-in. panels, four different patterns are standard to the line, but different designs and colors can be supplied if required. Recommended uses include windows, doors, dividers, bathroom applications, cabinet doors, table tops and a wide range of other applications. ▪ Coltra Marketing Inc., Chicago.

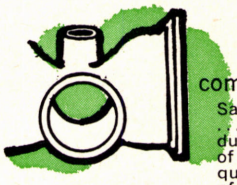
*Circle 310 on inquiry card*

**WASHROOM EQUIPMENT** / This model is one of a line of recessed stainless steel towel and soap dispensers, waste receptacles and other items designed for ease of cleaning, durability and low maintenance. ▪ D. J. Alexander Corporation, Moorestown, N. J.

*Circle 311 on inquiry card*

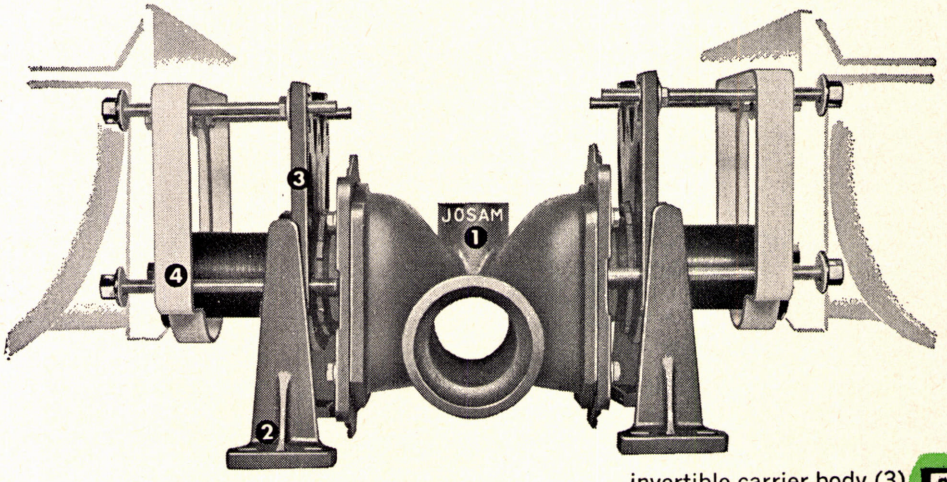
*more products on page 314*

# WHAT MAKES AN OFF-THE-FLOOR INSTALLATION COST LESS?

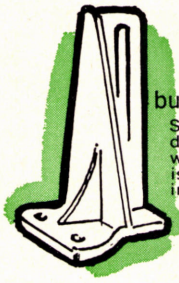


**common vent (1)**
Saves chase space . . . substantially reduces the number of connections required in a battery of toilets

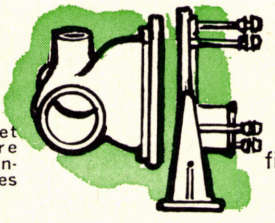
**positioning frame (4)**
Simplifies alignment . . . Saves one or more hours of labor per bowl* . . . saves fixture breakage . . . saves call-backs . . . acts as template for wall finish, saving tile-setting time.




**invertible carrier body (3)**
Fits all types of toilets, blow-out or syphon jet . . . saves handling time . . . eliminates stocking and ordering of different carriers.



**buttress foot (2)**
Short Bulldog feet do not interfere with any type of finished floor . . . saves installation time



**fitting and carrier are separate**
provide more adaptability to meet changing conditions of installation . . . save revision time and labor

## . . . put them all together . . . they spell JOSAM UNITRON®

AND THERE'S NOTHING ELSE LIKE IT!

Now . . . with all the other advantages of off-the-floor fixtures . . . there is no reason to allow installation costs to change your mind . . . if you use Josam Unitron Carriers and Fittings on the job. Every feature is designed not only to save time and prevent error, but to provide the adaptability that solves on-the-job problems.

The combined savings in space, materials and installation are substantial enough to make off-the-floor fixtures the logical choice on every job . . . if you use Josam Unitron Carriers! For further information, write for Manual F-4.

*Verification on request*

JOSAM

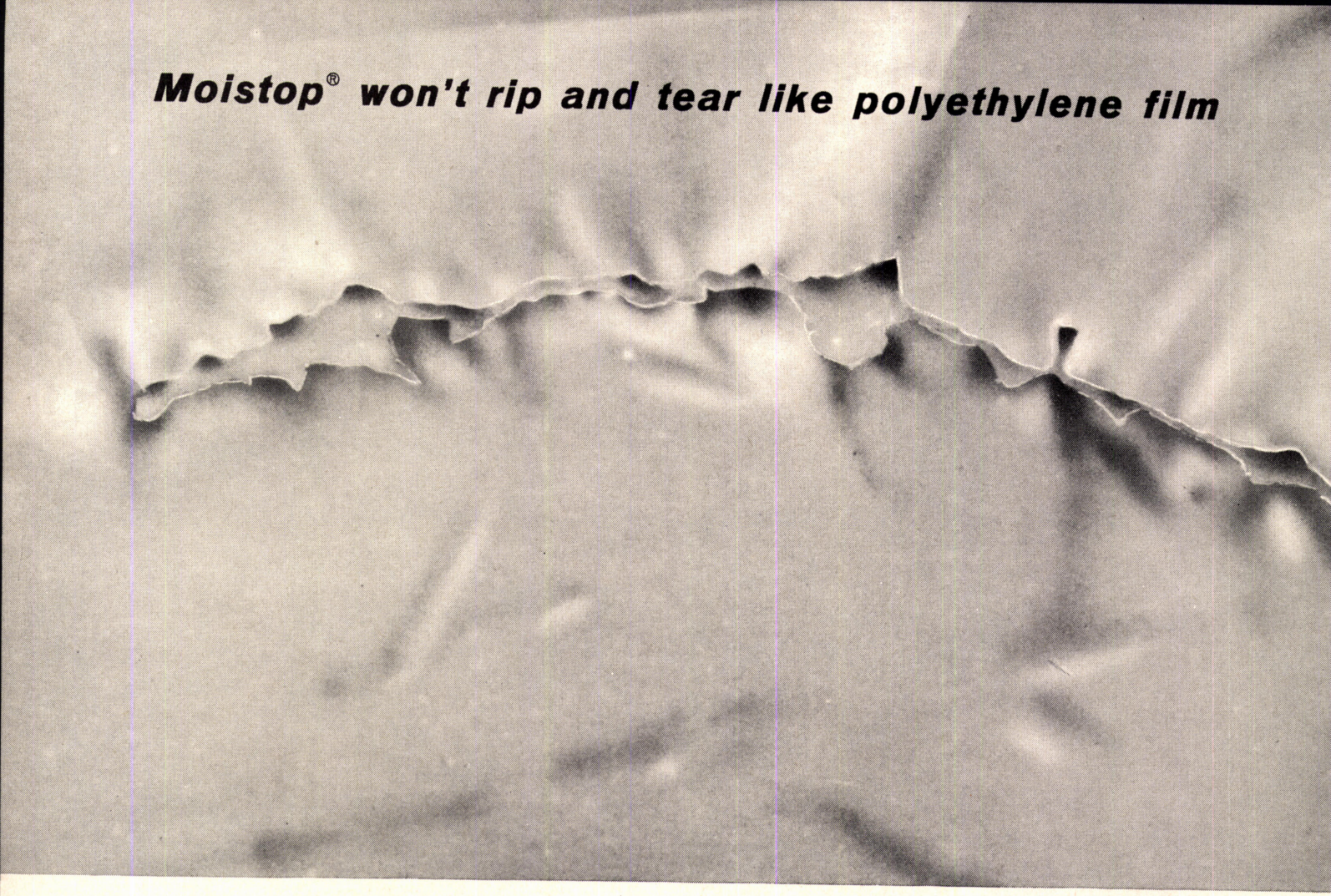
**JOSAM MANUFACTURING CO.**

*Michigan City, Indiana*

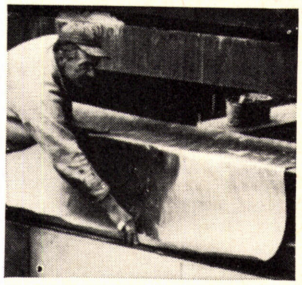
JOSAM PRODUCTS ARE SOLD THROUGH PLUMBING WHOLESALERS

*For more data, circle 140 on inquiry card*

## *Moistop® won't rip and tear like polyethylene film*

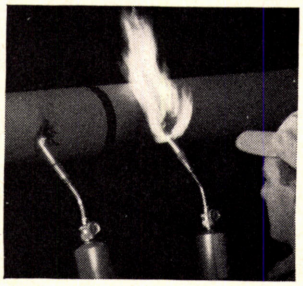


**SPECIFY THESE OTHER CONSTRUCTION PAPERS AND VAPOR BARRIERS FOR MAXIMUM PROTECTION IN CRITICAL BUILDING AREAS**



### Copper Armored Sisalkraft®

For concealed flashing with pure copper at 1/5th the cost of heavy copper:
COPPER ARMORED SISALKRAFT. A combination of electro-deposit copper and reinforced Sisalkraft that provides lifelong protection against moisture penetration at vulnerable points in the structure.

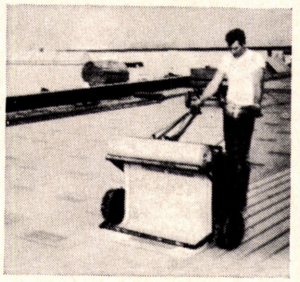


### Pyro-Kure

Permanent, noncombustible vapor barriers for pipe jacketing, air conditioning duct insulation and industrial insulation facing: PYRO-KURE®. A line of flame-resistant, reinforced laminations with a U/L flame spread rating of "25 or less." Complies with National Building Code standard for noncombustibility.

### Curing Papers

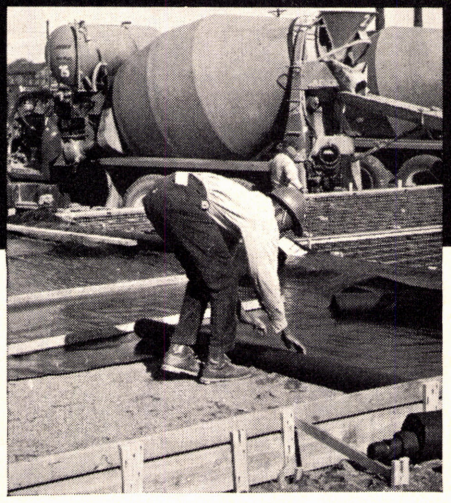
For maximum protection and curing of concrete:
SISALKRAFT® CURING PAPERS. Reinforced, waterproof papers prevent damage and soiling of newly placed concrete slabs. Retards hydration, provides a maximum cure for harder, denser concrete floors.



### Roof Deck Vapor Barriers

**For Class 1 Construction: PYRO-KURE 600.** More than twice the vapor resistance of vinyl. Approved by Factory Mutual.
**For Other Decks: VaporStop 710.** Single ply, pre-built barrier (0.28 perm) **at 20% less applied cost** and 80% less weight than 15 lb. felt.

# SPECIFY THIS TOUGH VAPOR BARRIER FOR UNDER SLAB PROTECTION



Place a sample of polyethylene film and a sample of Moistop side by side. Take a nail and scrape it across both . . . as hard as you want. **You'll find that polyethylene ruptures but Moistop remains undamaged.** Moistop was made this tough because Architects found that too many moisture barriers failed on the job, with moisture and water penetration resulting. Moistop combines the inert properties of polyethylene film with the strength and body of tough, reinforced, waterproof paper. This multi-ply construction makes Moistop a stronger, better moisture-vapor barrier than any other available product, assuring your client of a permanent barrier to keep floors dry.

**Specification:** The vapor barrier shall be unrolled directly on top of the base fill, parallel with the direction of pour. Joints may be unsealed if lapped a minimum of six inches. Any damage to the vapor barrier shall be repaired before placing concrete. The vapor barrier shall be **Moistop,** as manufactured by the Sisalkraft Division, St. Regis Paper Company. Check Sweet's File **8h/Si.**

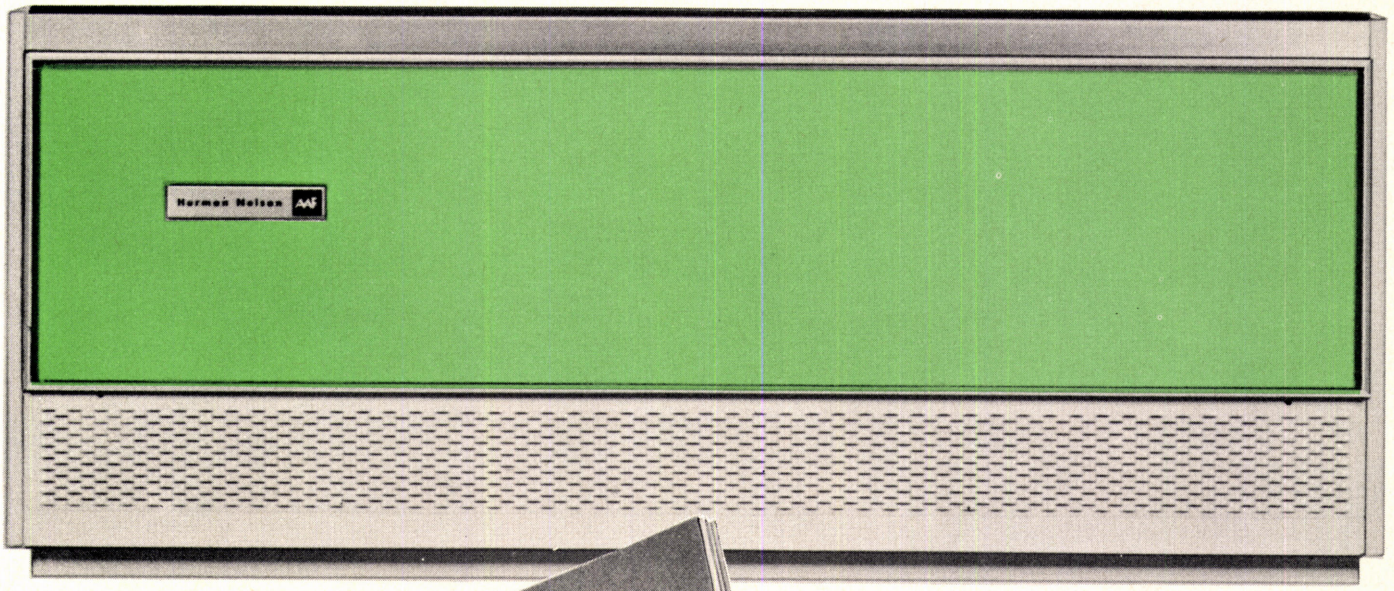
**Send for physical property data and sample of Moistop.** Write: "Moistop Data": Sisalkraft, 73 Starkey Avenue, Attleboro, Massachusetts.

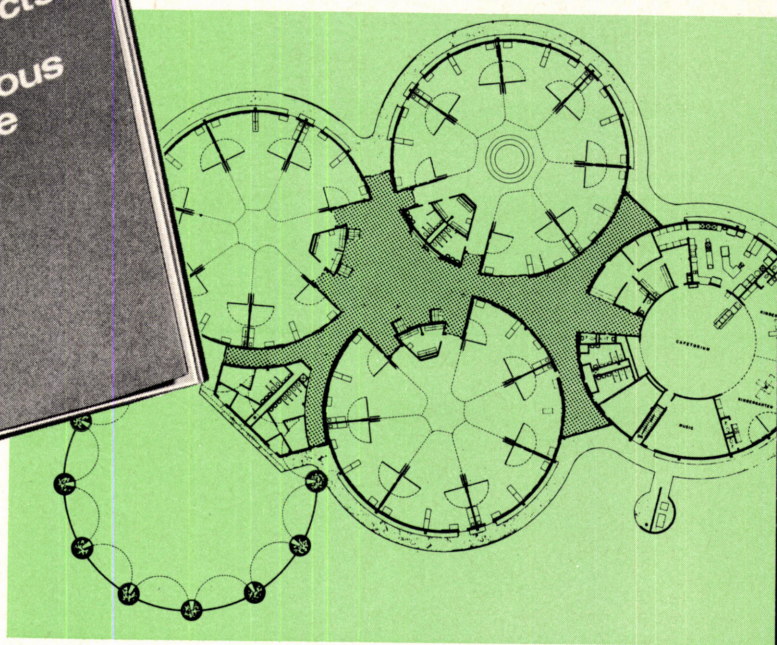
SISALKRAFT DIVISION ST REGIS

*For more data, circle 141 on inquiry card*

## AAF/Herman Nelson means...

# INGENUITY





30 outstanding school designs, featuring unit-ventilator heating, ventilating, and air conditioning, are described in this new 36-page brochure. Architects may secure copies by writing on letterhead. (Illustrations shown at right taken from brochure.)

# unlimited

**There's no end to the design possibilities with Herman Nelson unit ventilators for your classroom heating, ventilating, air conditioning**

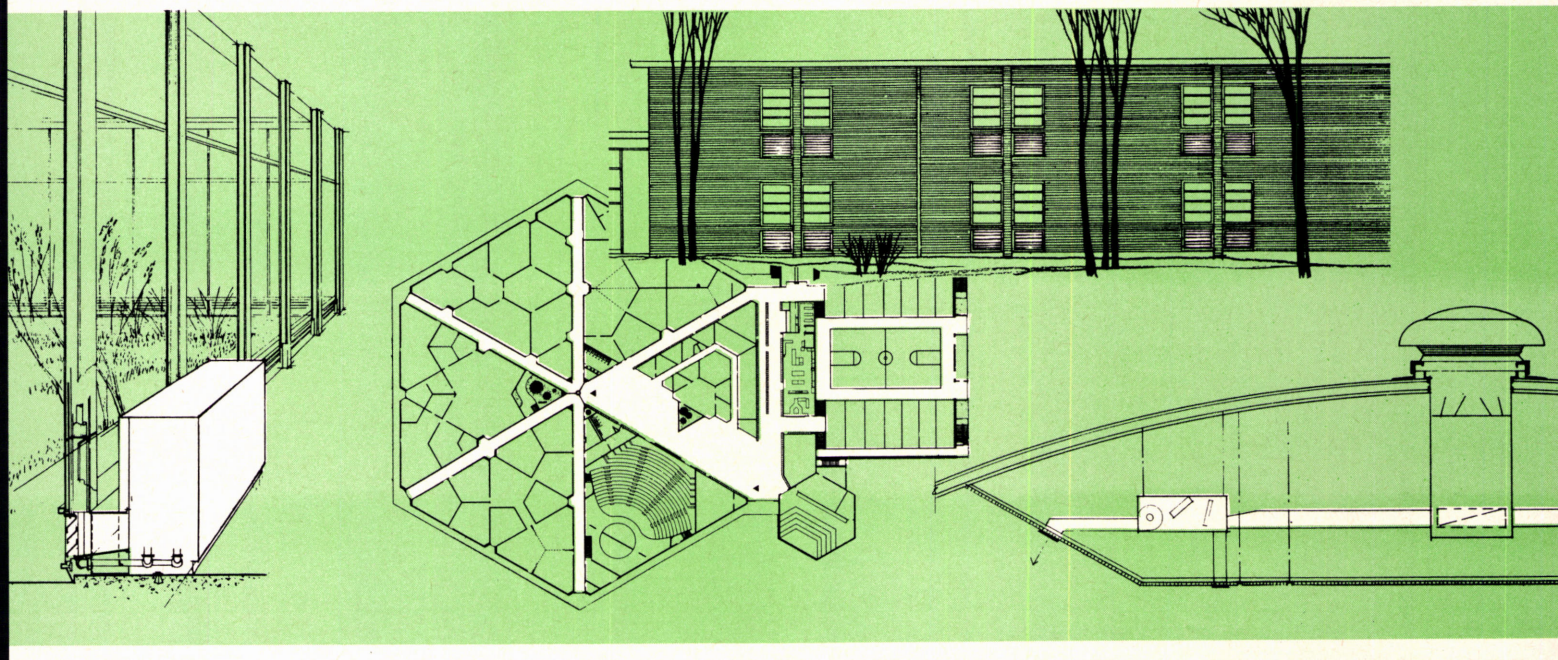
Today, Herman Nelson unit ventilators are delivering fresh clean air in windowless schools, circular schools, cluster schools, flexible schools —in just about every variation of the educational-building theme that's been tried.

And we're going to keep it that way. That's why we want to work with architects who are weighing new ideas. Some of the flexibility we've already built into Herman Nelson unit ventilators includes:

- A wide variety of fresh-air intake arrangements.
- Models for floor, ceiling, wall, concealed, even inverted applications.
- Modern, architecturally-styled units with companion classroom furniture, available in your choice of 4 base colors and six decorator panel colors.
- New fan designs to operate on plenum-ductwork systems of higher static pressures.
- "Now or later" air conditioning units.
- New SC UNIvent unit ventilator featuring self-contained refrigeration. Use in existing schools.

If you've got a new idea you're considering, give us a chance to help it along. Bank it off your Herman Nelson representative, or write: American Air Filter Company, Inc., 215 Central Avenue, Louisville, Kentucky 40208. Available in Canada.

AAF **Herman Nelson**
SCHOOL PRODUCTS DIVISION



*For more data, circle 142 on inquiry card*

# Who but Crane would think of a hidden soap dish?

(or all these other extra-convenience features)

**Soap dish out of sight**
Crane's exclusive concealed soap receptacle (as shown in the mirror here) puts the soap where it belongs—out of sight. Keeps your countertop neat and clean; also doubles as an overflow.

**Leak-proof faucets**
Exclusive Crane Dial-ese control keeps stem threads dry, free from corrosion. Lasts years longer than conventional controls. Valve closes with water pressure. No more washers to change. Cuts maintenance costs and water bills.

**Step in and out with safety**
Unusually low silhouette (only 14" high) of Crane's Fairfax tub makes getting in and out safe and easy. Pleasing sculptured styling features full-length rim seat.

**Sweat-free tanks**
Crane's Neu-Sahara tank stays dry even when the bathroom steams up to 80° and 70% humidity! Ends wet floors. (Shown here with Crane Radcliffe toilet.)

THE NAME IS

CRANE

VALVES • PUMPS • FITTINGS • WATER TREATMENT
PIPING • PLUMBING • HEATING • AIR CONDITIONING

**For details, contact your Crane sales office, Crane wholesale distributor, or write for full-color brochure, "The Bathroom Beautiful." Crane Co., Dept 008, 4100 S. Kedzie Ave., Chicago Ill. 60632.**

For more data, circle 143 on inquiry card

For more data, circle 144 on inquiry card

ever try to hold a hose loaded with 100 pounds or more water pressure? it could be a deadly blacksnake if it broke your grip—

these pressure restricting valves eliminate the possibility with a calibrated adjusting ring that reduces pressure on the nozzle end to make the hose safe to handle by anybody until the fire department arrives—

the valve on top is 1½" U/L approved, and the valve below is 2½" U/L approved—both are made by W. D. Allen, the 1½" exclusively.

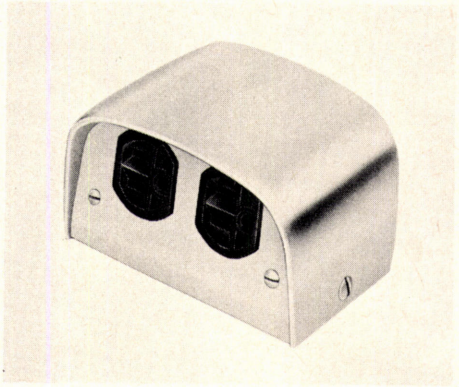
ALLEN

Write or call W. D. Allen for complete specifications and prices

**W. D. ALLEN MANUFACTURING CO.**

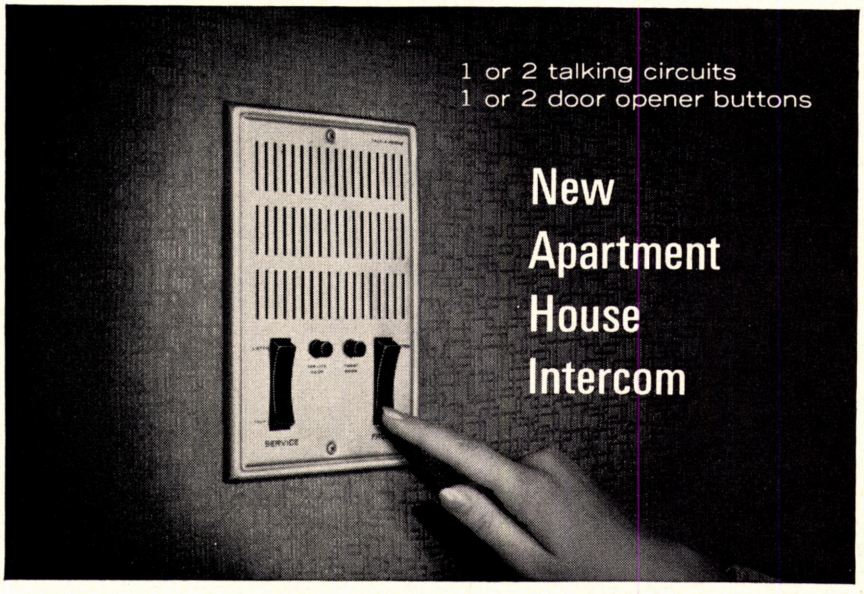
2200 W. 16th St./Broadview (Chicago), Ill. 60155/MAnsfield 6-9000

continued from page 306



**DUPLEX RECEPTACLE OUTLETS** / New *Lo-Con* receptacle outlets provide a connecting device that bridges the gap between many of today's above floor electrical appliances and equipment, and the below floor and standard floor boxes. The rounded contours of the housing are designed to blend with different types of decor, and the overhang of the hood serves as a protective shield for receptacles and plugs. The housing can be easily removed. ▪ Russell & Stoll Company, Inc., New York City.

*Circle 312 on inquiry card*

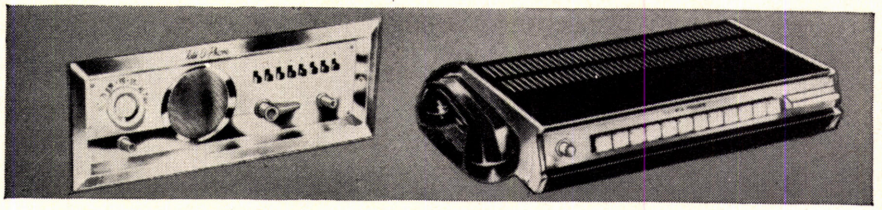

# *New* TALK-A-PHONE

Provides instant and direct 2-way conversation between any Apartment and Vestibule . . . Greater Performance with Exclusive Talk-A-Phone Features:
• Ample Volume—Whispers, shouts and normal voice are heard clearly without "boom" • Automatic Privacy—On all Apartment Units • Volume Selector—Each Apartment selects own volume. Concealed yet easily accessible • Built-in Buzzer—Pleasant sound, in each Apartment Unit • With one or two independent talking circuits and one or two independent door opener buttons.

**Distinctively styled. Quality Engineered. Built to withstand continuous use.**

•

**TALK-A-PHONE . . .** "Has Everything. Does Everything." The accepted standard of quality and dependability in Intercommunication for over a third-of-a-century.

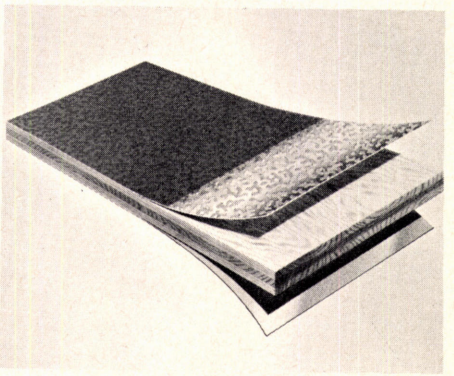


**Intercom For The Home.** Enjoy comfort, convenience and peace of mind. From any room you can • Listen-in on baby, children or sick room • Answer outside doors • Talk to anyone—upstairs or downstairs, inside and out • Enjoy radio. Distinctively styled. Beautifully finished. Easily installed.

**Intercom For Office and Industry.** Saves thousands of man-hours, simplifies office routine. Distinctively styled, ruggedly built to withstand continuous day and night use. From 2-station systems to elaborate installations, you can do it better and more economically with Talk-A-Phone. Pays for itself many times over.

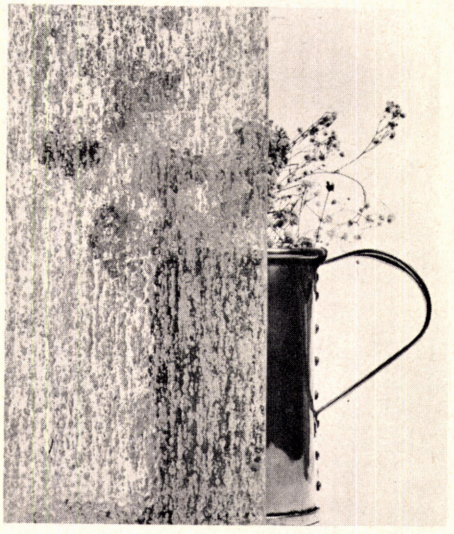
*Send for Free Catalogs...* Dept. AR-7

**TALK-A-PHONE CO.,** 5013 N. Kedzie Ave., Chicago, Illinois 60625

**DURABLE EXTERIOR PANELING** / By combining the best qualities of aluminum and plywood, the company claims that its new product provides finished exterior, structural sheathing and reflective insulation in a single application. Called prefinished siding *Panel 15*, the new product has a core of exterior plywood with aluminum bonded to both sides. The regular panel has a textured 10-mil aluminum sheet with baked enamel finish for the exterior surface and a 2-mil reflective insulating foil on the back. Special panels are prefinished on both sides for use as balcony panels, dividers and other applications where both sides are exposed. The 5/16-in.-thick panels are available in a variety of colors and sizes up to 4 ft by 10 ft. A 15-year guarantee is given by the company. ▪ Weyerhauser Company, Tacoma, Wash.

*Circle 313 on inquiry card*



**NEW FLAT GLASS LINE** / A special process which captures thousands of tiny bubbles within the glass has been used to create the new *Cascade* decorative glass which is available at a thickness of 3/8 in., in standard lengths up to 48-in. wide. ▪ American Saint Gobain Corporation, Kingsport, Tenn.

*Circle 314 on inquiry card*

more products on page 334

*For more data, circle 145 on inquiry card*

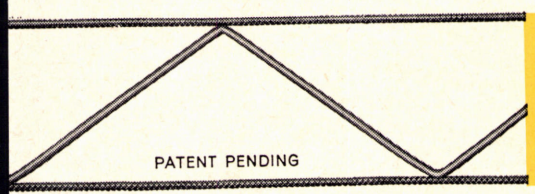
*For more data, circle 146 on inquiry card*

**INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)**

THESE THREE important code approvals assure you of extra confidence when you use Dur-O-waL brand truss-design reinforcement for multiple applications in masonry wall construction. Write for your free copy of the new Installation Details Brochure. Dur-O-waL, P. O. Box 150, Cedar Rapids, Iowa.

# Reinforce masonry walls and your confidence.

# SPECIFY DUR-O-WAL®

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**THE ORIGINAL MASONRY WALL REINFORCEMENT WITH THE TRUSS DESIGN**

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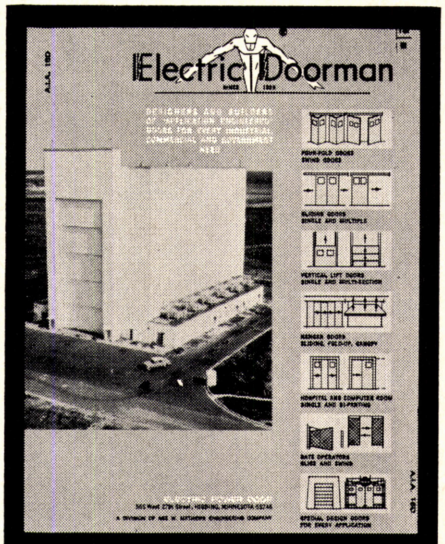
*For more data, circle 159 on inquiry card*




# Our New 1966 Electric Power Door Catalog is yours for the asking!

**Complete specifications and illustrations of our complete line of "application engineered" industrial doors and operators**

☐ **VERTICAL LIFT DOORS.** Single and multi-section, for mining, manufacturing and space industry, power plants.

☐ **FOUR-FOLD & SWING DOORS.** Warehouses, fire stations, garages, banks, hospitals, railroads, manufacturing plants, monorail openings.

☐ **HANGAR DOORS.** Commercial, private, government airports.

☐ **INDUSTRIAL SLIDING DOORS.** Special designs to any size for warehouses, monorail openings.

☐ **COMPUTER ROOM DOORS.** Single and bi-parting types for computer rooms, banks, laboratories, hospitals.

☐ **GATE OPERATORS.** Parking lots, storage areas, tool rooms.

☐ **ELECTRIC DOOR OPERATORS.** Stock models for powering all doors.

☐ **CRANE-WAY DOORS.**

**ELECTRIC POWER DOOR CO.**
**Hibbing, Minn. 55746 (218) 262-3465**

AR-7-66

ELECTRIC POWER DOOR CO.
555 West 27th St., Hibbing, Minn. 55746
Yes . . . please send us your new 1966 ELECTRIC POWER DOOR catalog at no cost or obligation.

Type of business_____

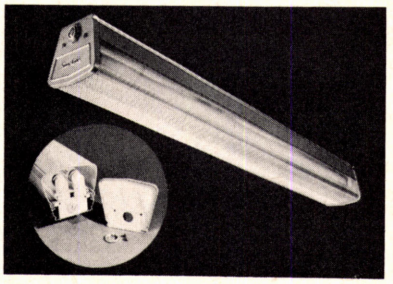
Your name_____ Title_____

Firm name_____

Address_____

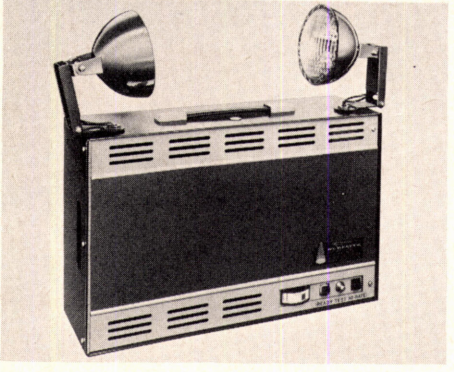
City_____ State_____ ZIP_____


*continued from page 314*



**LUMINAIRE** / Constructed specifically for use in areas where protection from moisture, vapor and other outside contaminants is necessary, the *Moisture-Guard* luminaire is fabricated entirely of aluminum and is rust and corrosion proof. Channel housings are one-piece extruded aluminum with full length "V" grooves for sliding clamp hangers. Reflectors are heavy gauge aluminum with white baked enamel finish. The entire unit—housing, end plates and diffuser—is fully gasketed assuring maximum protection against moisture. *Moisture-Guard* is available in 48-in. and 96-in. lengths and is said to operate satisfactorily both indoors and outdoors at temperatures as low as —20 deg F. ▪ Sun-Lite Manufacturing Company, Detroit.

*Circle 315 on inquiry card*



**EMERGENCY LIGHTING** / A line of 33 battery-standby-power emergency lighting units for use in the event of power failure has just been introduced. Called *Surelite,* the new line can be used to fulfill emergency lighting requirements where interruption of electrical power might create a safety hazard. All units in the line are UL approved and can be used with three different types of battery: lead-acid; nickel-cadmium; or maintenance-free lead-acid, specially designed for use in inaccessible areas. The line provides a choice of from one- to three-lamp seal beam units or remote lamps if desired. All parts carry a one-year warranty. ▪ Edwards Company Inc., Norwalk, Conn.

*Circle 316 on inquiry card*

*more products on page 342*

For more information, write or call any of the Institute members listed below:

## MO-SAI INSTITUTE, INC.

110 Social Hall Ave.
Salt Lake City, Utah 84111

**BADGER CONCRETE COMPANY**
437 Marion Road
Oshkosh, Wisconsin

**BEER PRECAST CONCRETE, LTD.**
110 Manville Road
Scarborough, Ontario, Canada

**BUEHNER & COMPANY, INC.**
P. O. Box 936
Mesa, Arizona

**CAMBRIDGE CEMENT STONE CO.**
156 Lincoln Street
Allston, Massachusetts

**ECONOMY CAST STONE COMPANY**
P. O. Box 3-P
Richmond, Virginia

**FORMIGLI SALES COMPANY**
6 Penn Center Plaza
Philadelphia, Pennsylvania

**GOODSTONE MFG. CO., INC.**
470 Hollenbeck Street
Rochester, New York

**GEORGE RACKLE & SONS CO.**
A Subsidiary of Texas Industries
Newburg Station
Cleveland, Ohio

**GRASSI AMERICAN CORPORATION**
111 South Maple Avenue
South San Francisco, California

**HAMILTON CONCRETE PRODUCTS CO.**
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Chattanooga, Tennessee

**HARTER CONCRETE PRODUCTS, INC.**
1628 West Main Street
Oklahoma City, Oklahoma

**INTERPACE PRECAST CONCRETE PRODUCTS**
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**JACKSON STONE COMPANY, INC.**
330 West Mayes Street
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**SOUTHERN CAST STONE CO., INC.**
Sutherland Avenue and Concord Streets
Knoxville, Tennessee

**SUPERCRETE, LTD.**
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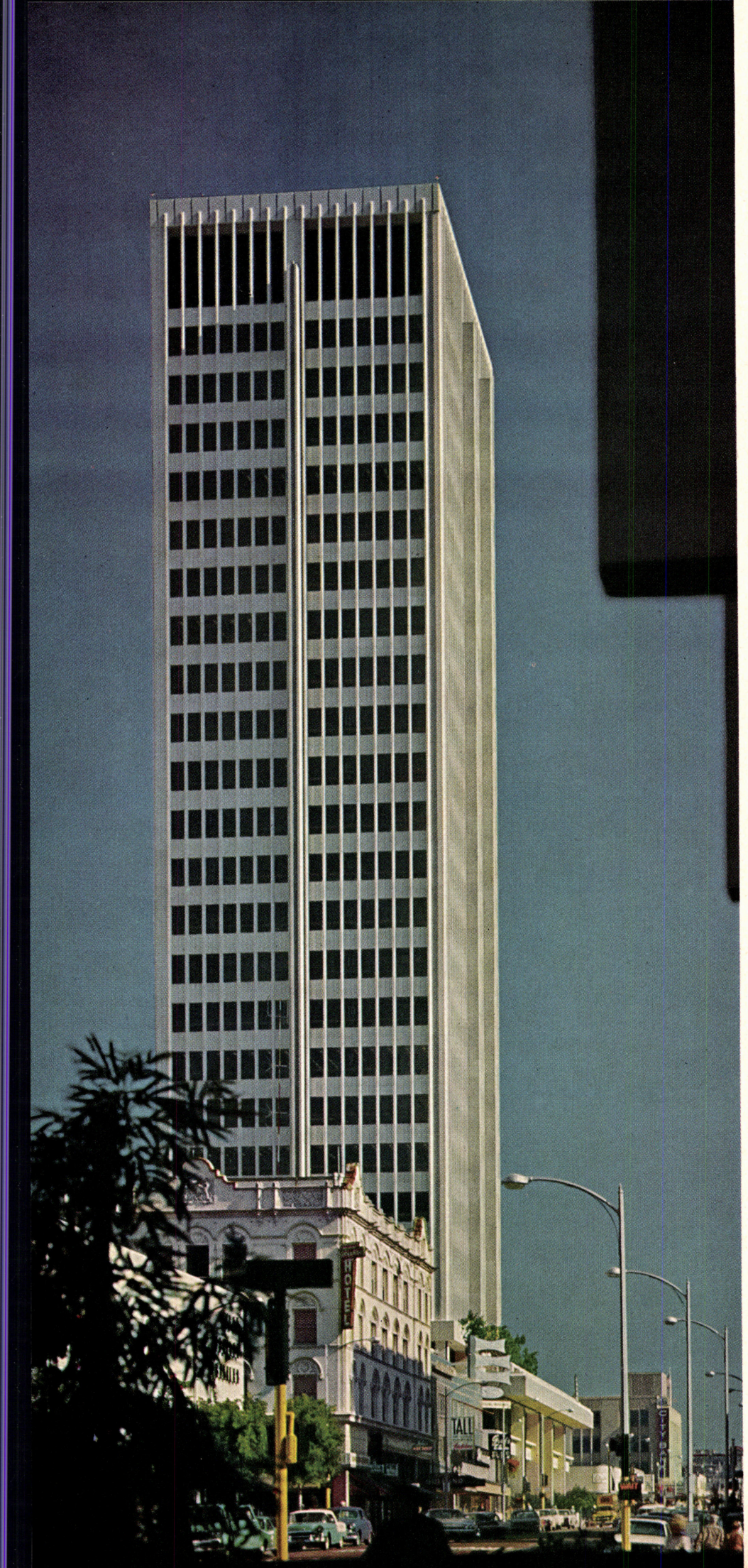
St. Boniface, Manitoba, Canada

**TEXAS INDUSTRIES, INC.**
P. O. Box 400
Arlington, Texas

**WILSON CONCRETE COMPANY**
Highway 75 and Avery Road
South Omaha, Nebraska

*For more data, circle 160 on inquiry card*

*For more data, circle 161 on inquiry card*




# "The sculptured look"... Mo-Sai preglazed windowalls and vertical fins

Topping all other buildings in dynamic San Diego's fresh complex of government, business, and cultural structures is the new First National Bank Building . . . stunning white landmark tower for the "city in motion."

The 25-story structure has been characterized by the firm of Tucker, Sadler, and Bennett as: "A sculptural piece of art, with all its bays and curves and panels . . . It is contemporary with a classical approach — a rectangular cube on the skyline, soaring and vertical. Light and shadow throughout the day create a changing pattern of textures."

The major fins are crystal white sculptured Mo-Sai, as are the windowall units. Glass was set directly into the Mo-Sai with neoprene gaskets by the Mo-Sai manufacturer before erection and guaranteed for five years against leakage.

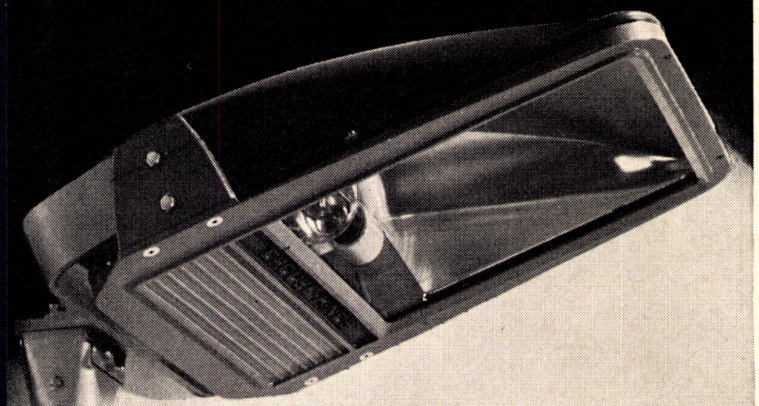
First National Bank Building, San Diego, California
Tucker, Sadler, and Bennett, A.I.A., Architects and Engineers

Mo-Sai®
PRECAST, PRESTRESSED CONCRETE
WITH EXPOSED AGGREGATE

Up to now you could buy a floodlight designed for beam efficiency. It gave you uneven light patterns like this.

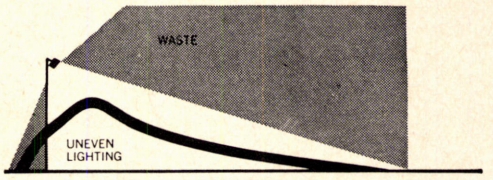
Now you can buy a floodlight designe for beam utilization It gives you a bloc of light like this. You can build with

# This rectangular revolution in good light and good looks is called Profile Light.®



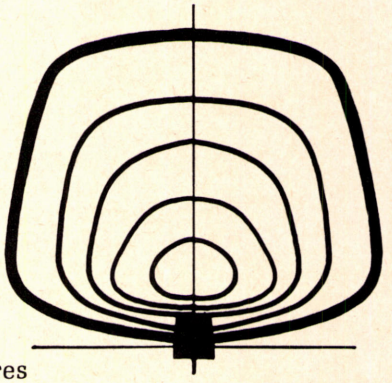
# Profile Light is different because Crouse-Hinds designed it from the ground up.

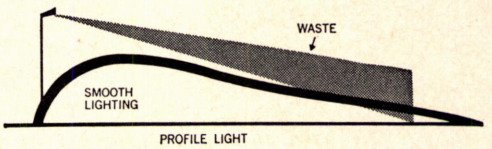
The reason lighting has often been so uneven until now is that it operates something like this.




CONVENTIONAL FLOODLIGHT

We forgot the past and designed a light working backwards through isolux patterns and isocandle data from the surfaces being lit back to the reflector. The result was an asymmetrical or off-center reflector which casts a rectangle of even, uniform light on the surface. Where round parabolic fixtures throw away 25% of their beam lumens and conventional rectangular fixtures up to 40%, the new Profile design only loses 12%.



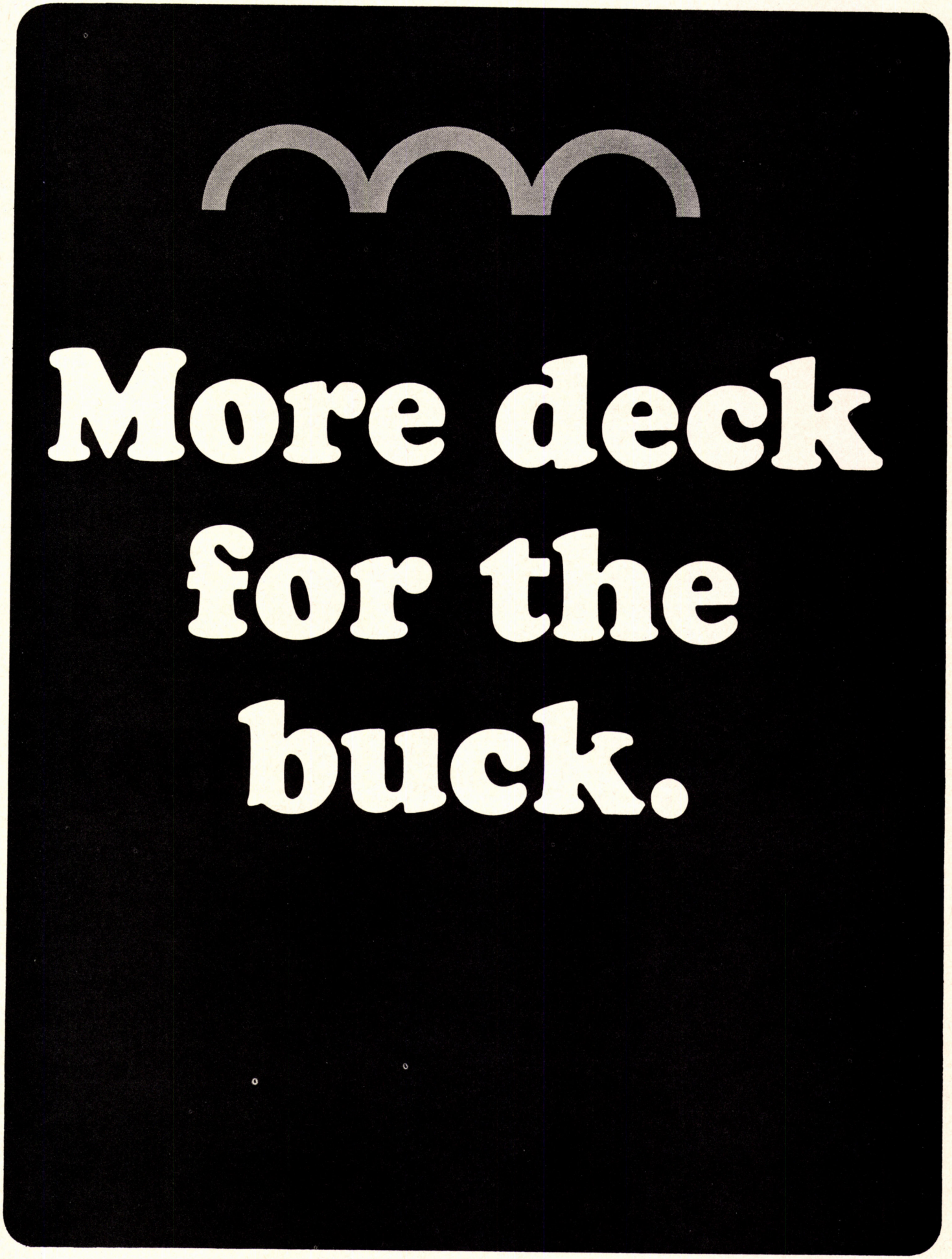


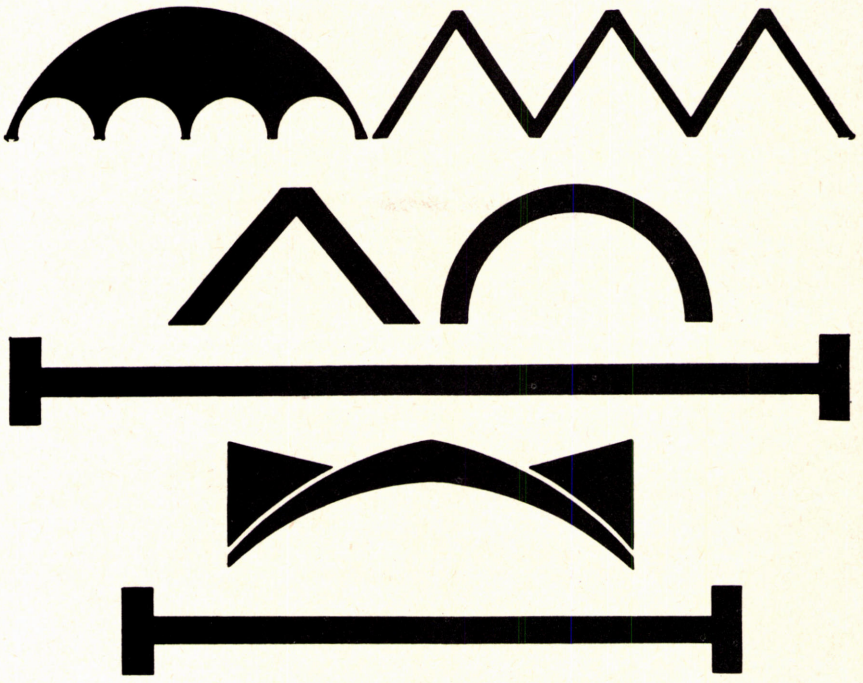

PROFILE LIGHT

You work with far fewer lights with far less expense in most areas. Get the rest of the story on this revolution in outdoor lighting design. Write for Bulletin 2775. Crouse-Hinds Company, Syracuse, N. Y. 13201.

CROUSE-HINDS®

For more data, circle 162 on inquiry card


More deck
for the
buck.



# That's all that Zonolite® lightweight insulating concrete roof decks offer you... but more and more architects and engineers seem to think that's plenty.

Now Approved Zonolite Roof Deck Applicators have cut costs. They have developed methods to pour and level 30,000 square feet of roof deck per day.

That's fast. So fast that Zonolite Roof Deck Applicators are able to submit low bids. Low bids on a roof deck with a combination of features no other roof deck can offer.

1. **Lightweight** . . . Zonolite concrete has as little as 1/6th the weight of ordinary concrete, so supporting structures can be considerably lighter in weight and cost.
2. **Specified insulation value** can be obtained by simply varying the thickness of Zonolite vermiculite concrete.
3. **Permanent** . . . composed of completely inorganic materials; won't rot or decompose, lasts the life of the building.
4. **Monolithic** . . . continuous surface; no seams to allow tar drip and combustion in the event of fire.
5. **Incombustible** . . . vermiculite concrete is all mineral, cannot possibly burn.
6. **Flexible** . . . can be used with form boards, paper-backed wire lath, galvanized metal decks or structural concrete.
7. **Slopes for drainage** . . . as prescribed by the built-up roofing industry, are easily and economically provided.
8. **Economical** . . . original cost is low, maintenance costs are nil. Insulation efficiency can allow use of smaller heating and cooling units.
9. **Certified application** . . . the approved Zonolite applicator maintains a continuous log of the job; day by day mix proportions, water content, densities and weather conditions. Deck specimens are taken periodically and tested for proper dry density and compressive strength at our labs in Skokie, Illinois.

All that and low cost, too.

*For complete specifications and data file, have your secretary drop us a note at 135 S. LaSalle Street, Chicago, Illinois 60603.*

ZONOLITE
GRACE

ZONOLITE DIVISION W. R. GRACE & CO.
135 SO. LA SALLE ST., CHICAGO, ILL.

*For more data, circle 163 on inquiry card*

# Only Honeywell makes 8 different systems to automate any building

*Here's a quick guide to them all...*
*what they do and where you use them...*
*from Honeywell*
*the people*
*who invented building automation*

Only Honeywell makes 8 different systems to automate your clients' buildings . . . ranging from one so simple a secretary can run it to a computer-controlled building operations center. You get the system your client needs. No compromises.

But as different as they are, these 8 Honeywell systems have a lot in common. For one thing, they'll all save your clients 33⅓% annually on their investment.

And they all feature contemporary styling . . . so handsome you can even install them in the lobby.

They all include indication and adjustment of control points . . . monitoring, logging, communication and alarm display functions are available.

Other Honeywell advantages? We're the only supplier that makes computers (including a new one specifically for building automation) . . . the only one who can furnish telemetering.

We're the only company with a separate field staff of Building Automation Systems Engineers who can work with you to make sure your client gets the payoff he deserves.

And only the Honeywell man can call on 8 separate divisions for help . . . taking advantage of our pioneering in diverse fields like process control and space guidance to keep your client's system from becoming obsolete in a few years.

In short, *only Honeywell can design, build, install, guarantee and service the complete system your client needs.*

And we're ready to help you now. Mail the coupon or call.

**Honeywell**

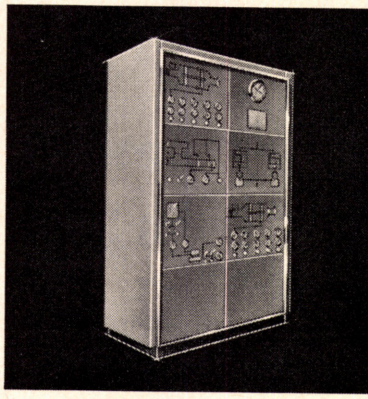
**FREE BOOKLET ON ALL 8 SYSTEMS**

New, full color booklet gives design and operating features of each Honeywell automation system.

**To: Mr. W. N. Wray**
**Honeywell**
**Dept. AR7-107**
**Minneapolis, Minn. 55408**

Name_____
Title_____
Firm_____
Address_____
City_____
State_____ Zip Code_____

## 1—PNEUMATIC SUPERVISOR DATA CENTER



**SYSTEM DESCRIPTION**

Ideally suited to single buildings (sma office buildings, schools, and institution with 10 or fewer mechanical system Provides graphic representation of m chanical systems from a central locatio . . . temperature indication and adjus ment, starting and stopping equipmer and damper adjustment.

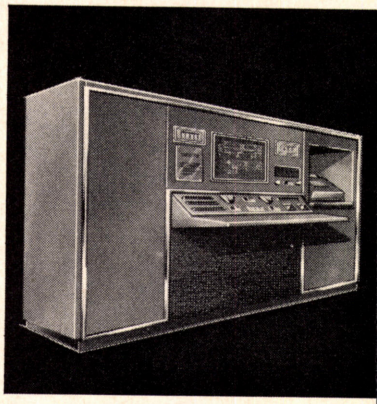
Since this is a pneumatic system, tran mission runs are normally limited to 50 feet or less.

**ADVANTAGES**

Centralized operation yields great sa ings. Convenience of a central locatio saves time of operating people.

A low cost system because: 1) signa are transmitted pneumatically (tran ducers aren't needed) and 2) standar panels are used with customized displa

## 5—SYSTEM 10—BUILDING CONTROL CENTER



**SYSTEM DESCRIPTION**

A means of centrally controlling and monitoring up to 100 remote mechanica systems with ten or more inputs per sys tem. Solid-state scanner checks points a 60 per second; yet can locate any one o 1,000 remote alarm contacts in less tha 2 seconds. Alarm printer provides perma nent record of time, point address, and category of alarm.

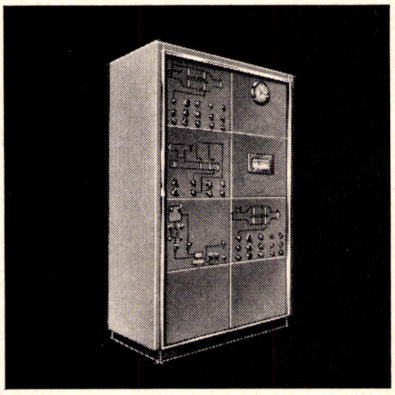
**ADVANTAGES**

It's the most efficient, lowest cost "man agement-by-exception" system on the market today. Great reliability; high speed

Instant print-out of trouble points; un limited points.

Low wiring and installation costs due t time-shared wiring techniques.

## 2—ELECTRIC SUPERVISORY DATA CENTER



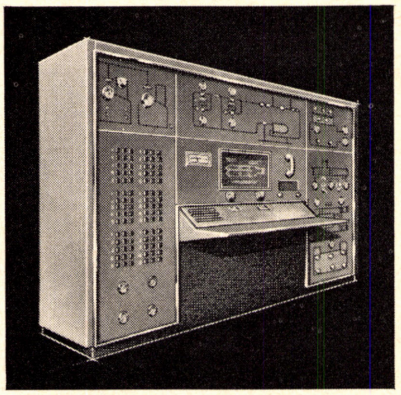
**SYSTEM DESCRIPTION**

Generally applicable to single buildings (schools, office buildings, institutions) with 10 or fewer mechanical systems. Makes possible centralized operation of an all electric or electronic temperature control system . . . or one that employs electric or electronic sensing with pneumatic actuation. Provides graphic representation . . . temperature, pressure or humidity indication either continuously or selectively with single high-precision indicator with ¼% scale accuracy. Continuous pilot-light alarm indication.

**ADVANTAGES**

This system combines the instantaneous indication of alarms, ¼% scale accuracy with the ability to accommodate long transmission runs.

## 3—SELECTOGRAPHIC DATA CENTER



**SYSTEM DESCRIPTION**

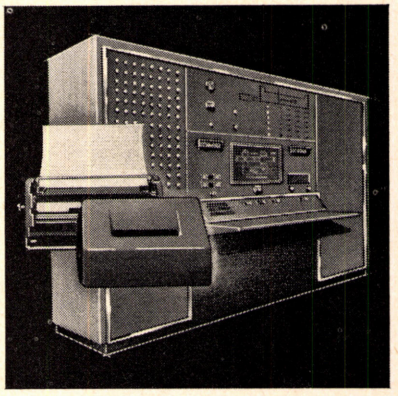
Suited to large single buildings and multi-building complexes (hospitals, industrial buildings, colleges and office buildings) where it's practical to carry signals by wires. Provides display and control of many mechanical systems in a desk-size console only 24″ x 48″ x 52″. Signals are transmitted electronically.

**ADVANTAGES**

An economical way to display and control many systems in a minimum space. Operation is simplified.

Installation costs are reduced dramatically because a single set of controls can be used for all systems displayed. And, time-shared circuits mean that one set of wires is used to control a number of different systems.

## 4—LOGGING AND SCANNING SYSTEM



**SYSTEM DESCRIPTION**

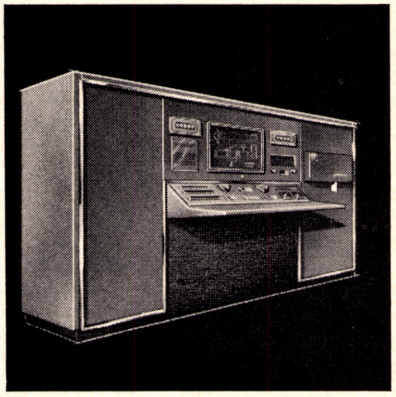
This is a low speed, automatic data collection system for use in buildings (office buildings, research centers, utilities, hospitals) where moderate amounts of data, and/or critical data are required. Scans 1 point per second up to 1,000 points. Prints sensing point information . . . value and type (such as degrees, gallons, etc.) . . . in groups according to a predetermined timing schedule. Off-normal conditions print in red.

**ADVANTAGES**

This is the first step toward the automatically operated building. System provides simultaneous reading and collection of data; permits more efficient use of data.

Also yields properly related data . . . critical readings taken simultaneously.

## 6—SYSTEM 11—BUILDING SUPERVISORY CONTROL CENTER



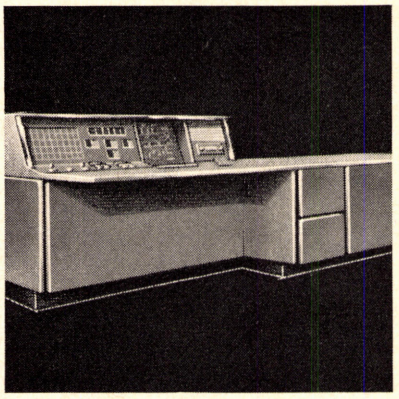
**SYSTEM DESCRIPTION**

This system also can centrally control and monitor up to 100 remote mechanical systems. It differs from System 10 in the following ways: it can scan temperature points and analyze them on a quantitative basis at the rate of 10 per second; it can print-out trouble-point information (where trouble occurred, when, and the value); alarm recording occurs on a change of status basis . . . copy printed only when a point goes into alarm or returns to normal.

**ADVANTAGES**

Solid-state reliability; high-speed operation. All advantages of System 10 including time-sharing of circuits.

## 7—SYSTEM 20—BUILDING OPERATIONS CENTER



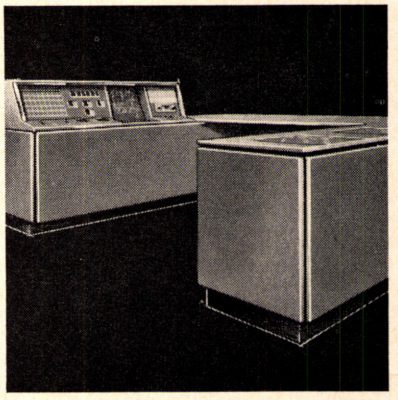
**SYSTEM DESCRIPTION**

A high-speed, solid-state computerized data acquisition system that can handle up to 250 remote mechanical systems with 10 or more inputs per system. Unlimited points accommodated; scans 100 points per second on contacts . . . 40 points per second on quantitative values. Operations include: start-stop programming; flow and BTU measurement, computation, and totalization; change-of-state alarm recording. Two printers run at same time . . . one prints out alarms; the other prints out important operating data.

**ADVANTAGES**

Automatically starts and stops equipment according to a stored program; provides computation and action-taking capability.

## 8—SYSTEM 30—BUILDING OPERATIONS COMPUTER CENTER



**SYSTEM DESCRIPTION**

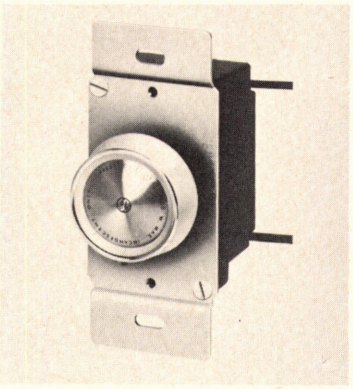
System 30 can operate more than 250 remote mechanical systems with up to 20 inputs per system. It performs all the functions of System 20 (logging of selected inputs, start-stop programming, command functions, etc.). In addition, System 30 provides full, on-line control of air-conditioning, heating and ventilating systems as well as central chillers, boilers, and utilities.

**ADVANTAGES**

System 30 is the automatic building. It analyzes, makes a diagnosis, and takes corrective action. It runs the building.

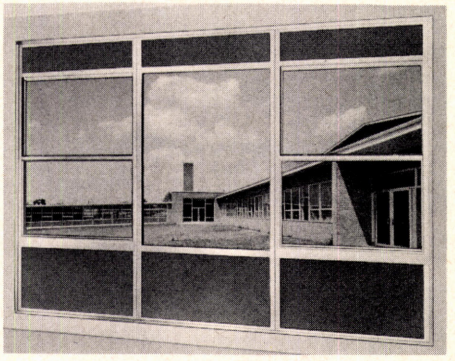
And, on-line control permits operation for minimum energy costs as well as monitoring machine efficiency for better maintenance scheduling.

continued from page 334



**600-WATT DIMMERS** / Two new UL listed solid-state incandescent dimmers, the single pole *DI-61UL* and the three-way *DI-63 UL*, carry a rating of 600 watts and feature press action on/off operation. Each unit has only two moving parts—a switch and a long-life potentiometer. Current is controlled by a solid state switch that lasts indefinitely. Special heat dissipation techniques contribute to the long life of these devices. ▪ General Electric Wiring Device Department, Providence, R. I.

*Circle 317 on inquiry card*



**WALL WITH DOUBLE-HUNG VENTS** / These double-hung windows, which use the pressure equalization or open rain screen design principle, have been incorporated into a new unitized metal curtain wall. Designed for low-rise or slab-to-slab high-rise construction, the *1700* Unit Wall system is said to give excellent resistance to wind and rain penetration. The *Sealair 170* double-hung windows used in the system have been laboratory tested to withstand 55-mph winds and 7½-in. rains without leakage. Air leakage did not exceed .20 cfm per lineal ft of crack perimeter when tested in 25-mph winds. The new *1700* aluminum curtain wall will accept, in addition to the double-hung window, glass and/or panels from ⅛-in. to 1-in. thick, using neoprene dry glazing. Horizontal expansion and contraction are accommodated through split mullions that are double weathersealed with vinyl. Vertical expansion is accommodated by a floating head channel. ▪ Kawneer, Division of American Metal Climax Inc., Niles, Mich.

*Circle 318 on inquiry card*

**ONE-COAT HOUSE PAINT** / A new alkyd base paint, an addition to the *Sun-Proof* line of house paints, has been formulated with exceptionally high-hiding pigmentation for repaint work. The company claims that this new paint provides in one coat the coverage, hideability, wear and surface protection normally produced by two coats of ordinary house paint. ▪ Pittsburgh Plate Glass Company, Pittsburgh.

*Circle 319 on inquiry card*

**SMOKE DETECTION** / The *FM-1000* smoke detector switch can be used with *Firemark* door releases to form a simple, two-component system which will react to a trace of smoke before flames or heat can be detected, and release doors to confine the danger. One smoke detector switch can control as many as 20 door releases. ▪ Firemark, Division of Rixson Inc., Franklin Park, Ill.

*Circle 320 on inquiry card*

**Schooline® semi-concealed wardrobe**

The newest and most exciting answer yet for the classroom wraps problem... a high capacity semi-concealed wardrobe, that keeps wraps dry, open to air, provides easy access while presenting a useful surface of either tack board or chalk board. Racks are of quality construction to give long, attractive, quiet and safe service, and are easily installed or relocated. Pat. Pend.

*For complete information and specifications, write for Catalog #48*

- **Each unit accommodates 16 people with hooks or hangers**
- **Shelves are adjustable in height for all age groups**
- **Teacher's storage-robes and sink cabinets make matching companion pieces for a complete teaching and service area complex.**

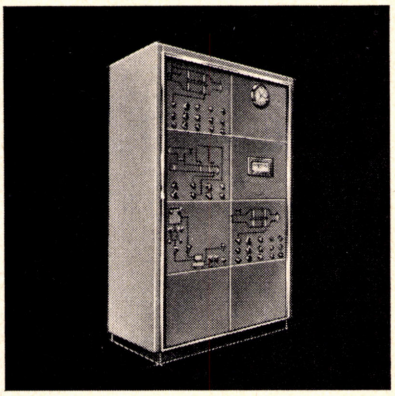
© 1965 V.P. Co.

**VOGEL-PETERSON CO.**

*"The Coat Rack People"*
ELMHURST, ILL.

*For more data, circle 164 on inquiry card*

## 2—ELECTRIC SUPERVISORY DATA CENTER



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**ADVANTAGES**

This system combines the instantaneous indication of alarms, ¼% scale accuracy with the ability to accommodate long transmission runs.

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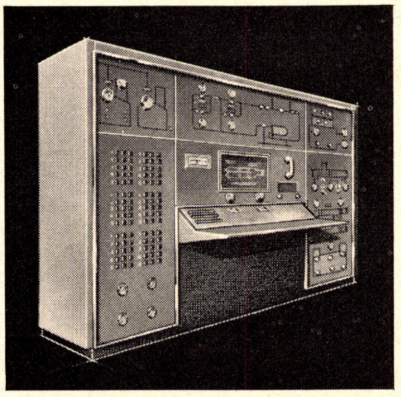

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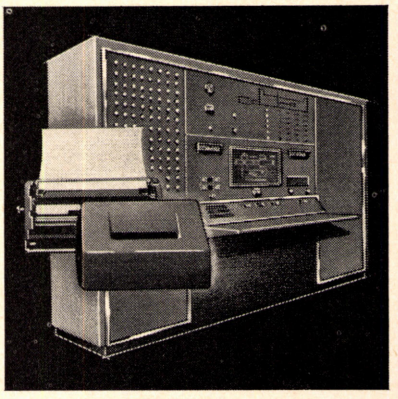

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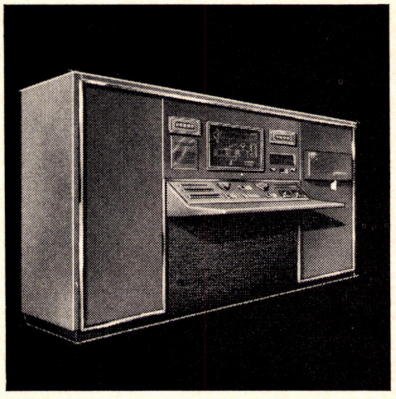
## 6—SYSTEM 11—BUILDING SUPERVISORY CONTROL CENTER



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**ADVANTAGES**

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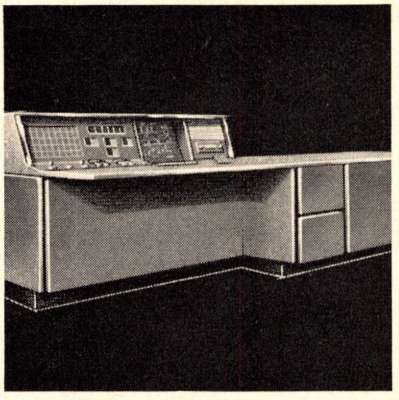
## 7—SYSTEM 20—BUILDING OPERATIONS CENTER



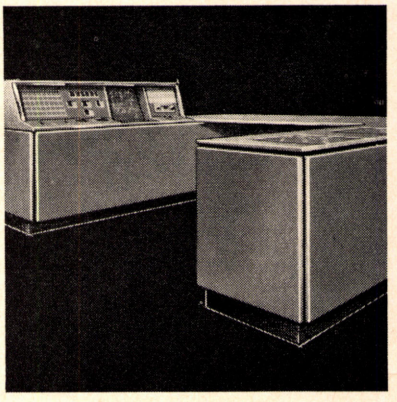
**SYSTEM DESCRIPTION**

A high-speed, solid-state computerized data acquisition system that can handle up to 250 remote mechanical systems with 10 or more inputs per system. Unlimited points accommodated; scans 100 points per second on contacts . . . 40 points per second on quantitative values. Operations include: start-stop programming; flow and BTU measurement, computation, and totalization; change-of-state alarm recording. Two printers run at same time . . . one prints out alarms; the other prints out important operating data.

**ADVANTAGES**

Automatically starts and stops equipment according to a stored program; provides computation and action-taking capability.

## 8—SYSTEM 30—BUILDING OPERATIONS COMPUTER CENTER



**SYSTEM DESCRIPTION**

System 30 can operate more than 250 remote mechanical systems with up to 20 inputs per system. It performs all the functions of System 20 (logging of selected inputs, start-stop programming, command functions, etc.). In addition, System 30 provides full, on-line control of air-conditioning, heating and ventilating systems as well as central chillers, boilers, and utilities.

**ADVANTAGES**

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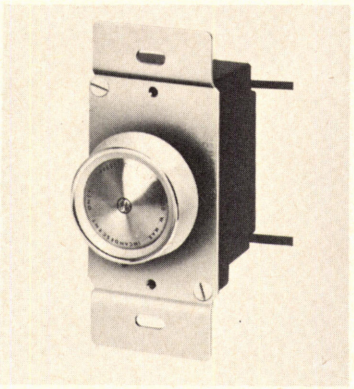
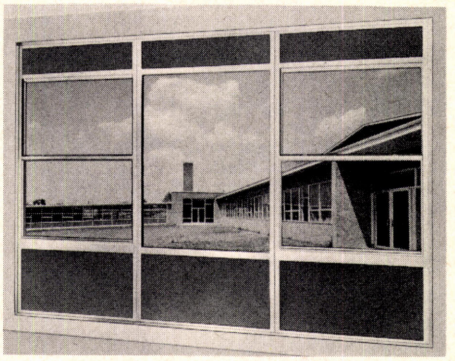


**600-WATT DIMMERS** / Two new UL listed solid-state incandescent dimmers, the single pole *DI-61UL* and the three-way *DI-63 UL*, carry a rating of 600 watts and feature press action on/off operation. Each unit has only two moving parts—a switch and a long-life potentiometer. Current is controlled by a solid state switch that lasts indefinitely. Special heat dissipation techniques contribute to the long life of these devices. ▪ General Electric Wiring Device Department, Providence, R. I.

*Circle 317 on inquiry card*



**WALL WITH DOUBLE-HUNG VENTS** / These double-hung windows, which use the pressure equalization or open rain screen design principle, have been incorporated into a new unitized metal curtain wall. Designed for low-rise or slab-to-slab high-rise construction, the *1700* Unit Wall system is said to give excellent resistance to wind and rain penetration. The *Sealair 170* double-hung windows used in the system have been laboratory tested to withstand 55-mph winds and 7½-in. rains without leakage. Air leakage did not exceed .20 cfm per lineal ft of crack perimeter when tested in 25-mph winds. The new *1700* aluminum curtain wall will accept, in addition to the double-hung window, glass and/or panels from ⅛-in. to 1-in. thick, using neoprene dry glazing. Horizontal expansion and contraction are accommodated through split mullions that are double weathersealed with vinyl. Vertical expansion is accommodated by a floating head channel. ▪ Kawneer, Division of American Metal Climax Inc., Niles, Mich.

*Circle 318 on inquiry card*

**ONE-COAT HOUSE PAINT** / A new alkyd base paint, an addition to the *Sun-Proof* line of house paints, has been formulated with exceptionally high-hiding pigmentation for repaint work. The company claims that this new paint provides in one coat the coverage, hideability, wear and surface protection normally produced by two coats of ordinary house paint. ▪ Pittsburgh Plate Glass Company, Pittsburgh.

*Circle 319 on inquiry card*

**SMOKE DETECTION** / The *FM-1000* smoke detector switch can be used with *Firemark* door releases to form a simple, two-component system which will react to a trace of smoke before flames or heat can be detected, and release doors to confine the danger. One smoke detector switch can control as many as 20 door releases. ▪ Firemark, Division of Rixson Inc., Franklin Park, Ill.

*Circle 320 on inquiry card*

**Schooline® semi-concealed wardrobe**

The newest and most exciting answer yet for the classroom wraps problem... a high capacity semi-concealed wardrobe, that keeps wraps dry, open to air, provides easy access while presenting a useful surface of either tack board or chalk board. Racks are of quality construction to give long, attractive, quiet and safe service, and are easily installed or relocated. Pat. Pend.

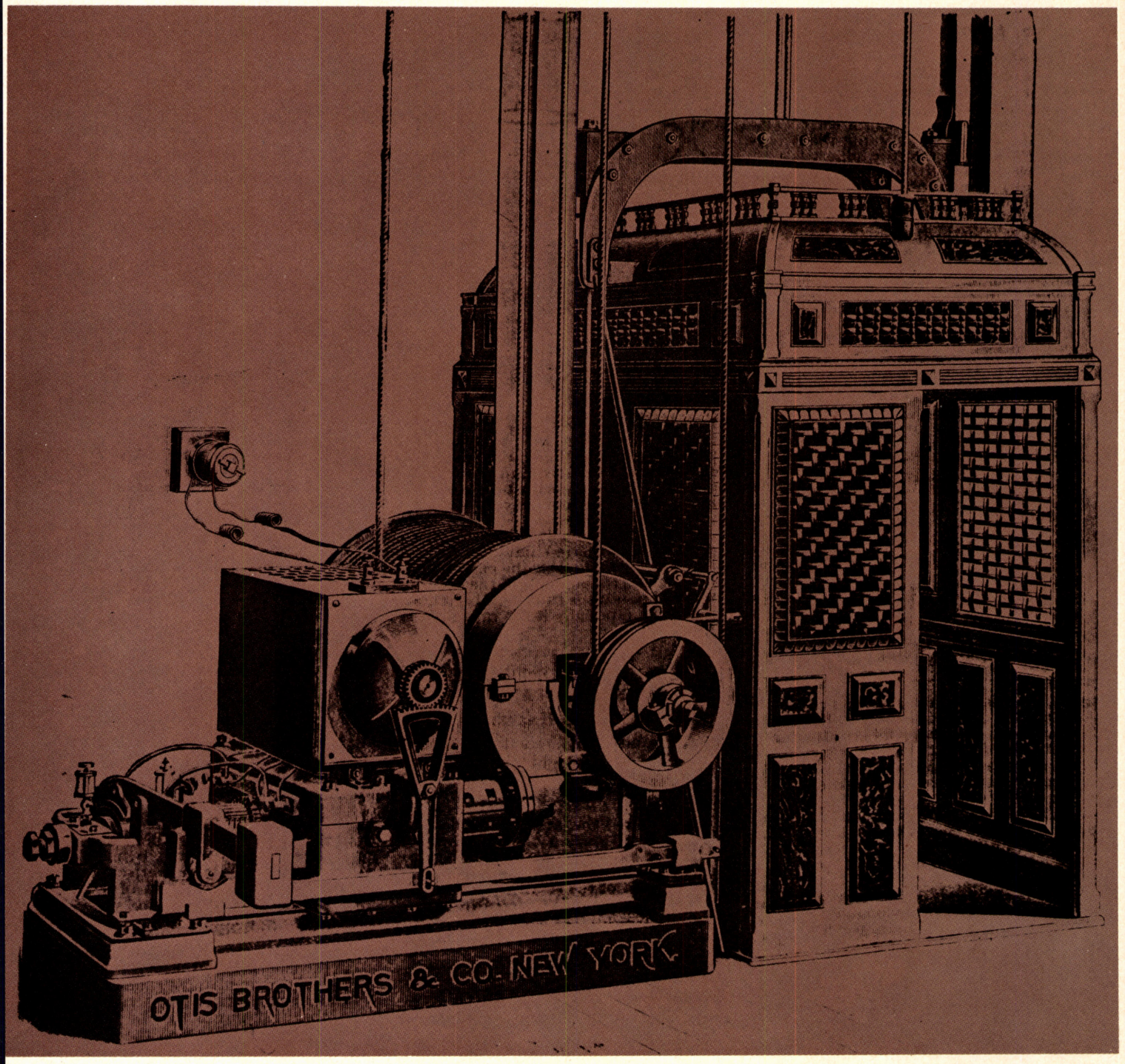
*For complete information and specifications, write for Catalog #48*

- **Each unit accommodates 16 people with hooks or hangers**
- **Shelves are adjustable in height for all age groups**
- **Teacher's storage-robes and sink cabinets make matching companion pieces for a complete teaching and service area complex.**

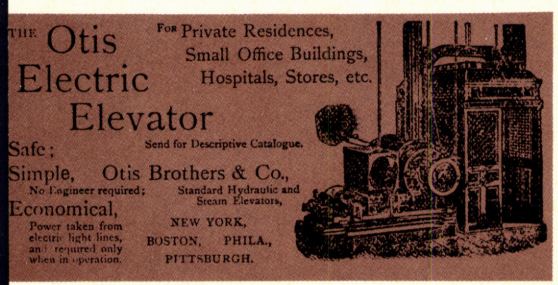
© 1965 V.P. Co.

**VOGEL-PETERSON CO.** | *"The Coat Rack People"* ELMHURST, ILL.

*For more data, circle 164 on inquiry card*




# When you were 1, and we were 38




This was our Otis ad in Architectural Record 75 years ago. Your first issue, in your first year. When Otis was already 38 years in the elevatoring business. And this is our way of saying congratulations. With best wishes for continued success.

**Otis®**
ARCHITECTS' SERVICE

Electric and Hydraulic Passenger & Freight Elevators • Escalators • Moving Walks • Dumbwaiters • Elevator Modernization & Maintenance • Military Electronic Systems • **Gas & Electric Trucks by Baker Division** • Otis Elevator Company, 260—11th Ave., N.Y., N.Y. 10001.

*continued from page 264*

**VINYL SIDING** / Installation instructions for the company's 8-in. vinyl siding with backerboard are given in a 6-page booklet. Steps in the procedure are illustrated by means of a series of line drawings. ▪ Monsanto Company, St. Louis, Mo.*

*Circle 408 on inquiry card*

**PLANNING SCHOOL SHOP AREAS** / A planning guide for industrial educational facilities, incorporating new concepts in shop or laboratory development is now available. The 56-page guide contains photos and drawings which illustrate different methods of solving problems of student traffic, material flow and equipment placement. The 10 chapters cover all stages in development, from the initial research to detail planning and actual layout. Hints on how to avoid some common planning errors and notes on long-term local and community educational objectives are also included. ▪ Price $2 from Rockwell Manufacturing Company, 856 Lexington Avenue, Pittsburgh.

THE BOBRICK CORPORATION

*Since 1906 Designers and Manufacturers of Washroom Equipment*

503 Rogers Avenue, Brooklyn, New York • 11611 Hart Street, Los Angeles, California

*For more data, circle 166 on inquiry card*


**EMPLOYEES' ELEVATORS** / Photos, drawings and specifications for a range of *Manlift* personnel elevators are given in a new brochure, which covers safety features of the various models and shows typical floor plans for three lift sizes. ▪ Humphrey Elevator and Truck Company, Faribault, Minn.

*Circle 409 on inquiry card*

**HARDWARE** / Over a hundred new products are featured in the recent edition of the company's catalog of forged hardware, which also includes details of existing standard lines. Letterhead requests to ▪ The Baldwin Hardware Manufacturing Company, 841 Wyomissing Blvd., Reading, Pa.*

**GUIDE TO ALUMINUM SHEET** / A 23-column chart provides a practical selection guide to 40 of the most popular aluminum sheet alloys, tempers and finishes. Essential buying factors, including availability, strength, corrosion resistance and formability, are covered. A special column compares the relative costs of coils, mill flat sheets and sheets cut-to-length from coils. Color photos are included to illustrate the wide range of textures and finishes which can be supplied. ▪ Joseph T. Ryerson & Son, Inc., Chicago, Ill.*

*Circle 410 on inquiry card*

**PLUMBING EQUIPMENT** / Shower and bath fittings; lavatory and sink fittings; flush valves; hospital equipment; emergency safety equipment and an optional equipment guide and miscellaneous data make up the seven sections of this looseleaf catalog no. C-12. Colored photos are used to illustrate the new *Colortemp* line of bath and lavatory fittings which enable one to dial the required water temperature by means of a patented color coding device. ▪ Speakman Company, Wilmington, Del.*

*Circle 411 on inquiry card*

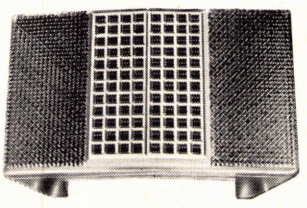
**NEW FAN** / A 12-page bulletin, REX-66, describes the new in-line *Centrex* fan. The booklet contains performance and capacity tables on 19 models in direct and v-belt drive series from 85 cfm to over 24,000 cfm. Full descriptions are given of appropriate accessories and the 100-deg. access panel, which permits the unit to be serviced without removal from the duct system. ▪ Penn Ventilator Co. Inc., Philadelphia, Pa.*

*Circle 412 on inquiry card*

**Additional product information in Sweet's Architectural File.*

# 768 REASONS TO SPECIFY THE NEW VENTED PHOTOMETRIC

The first *vented* wrap around plastic refractor gives you 768 sound reasons to specify Wakefield's new Vented Photometric luminaire. 768 small, square louvers the length of the lens allow air to circulate freely throughout the unit, decreasing operating temperature, lengthening ballast and lamp life, and *increasing efficiency almost 10 percent.* Available in either styrene or acrylic, this slim, handsome, injection molded refractor offers the same brightness level and strength as the popular solid Photometric refractor, while actually *increasing light output.* Available in standard 2-lamp 4-ft. and 2-lamp 8-ft. tandem fixtures, this super-efficient vented refractor is interchangeable with solid refractors on present Wakefield Photometric luminaires. It features the same easy lift-slide-remove features with no latches or catches. Ask your Wakefield Representative or write for information on the new Vented Photometric . . . the only unit better than the Photometric. Wakefield Lighting Division, P.O. Box 195, Vermilion, Ohio. ITT Wakefield Corporation, a subsidiary of International Telephone and Telegraph Corporation.



**Wakefield Lighting** ITT

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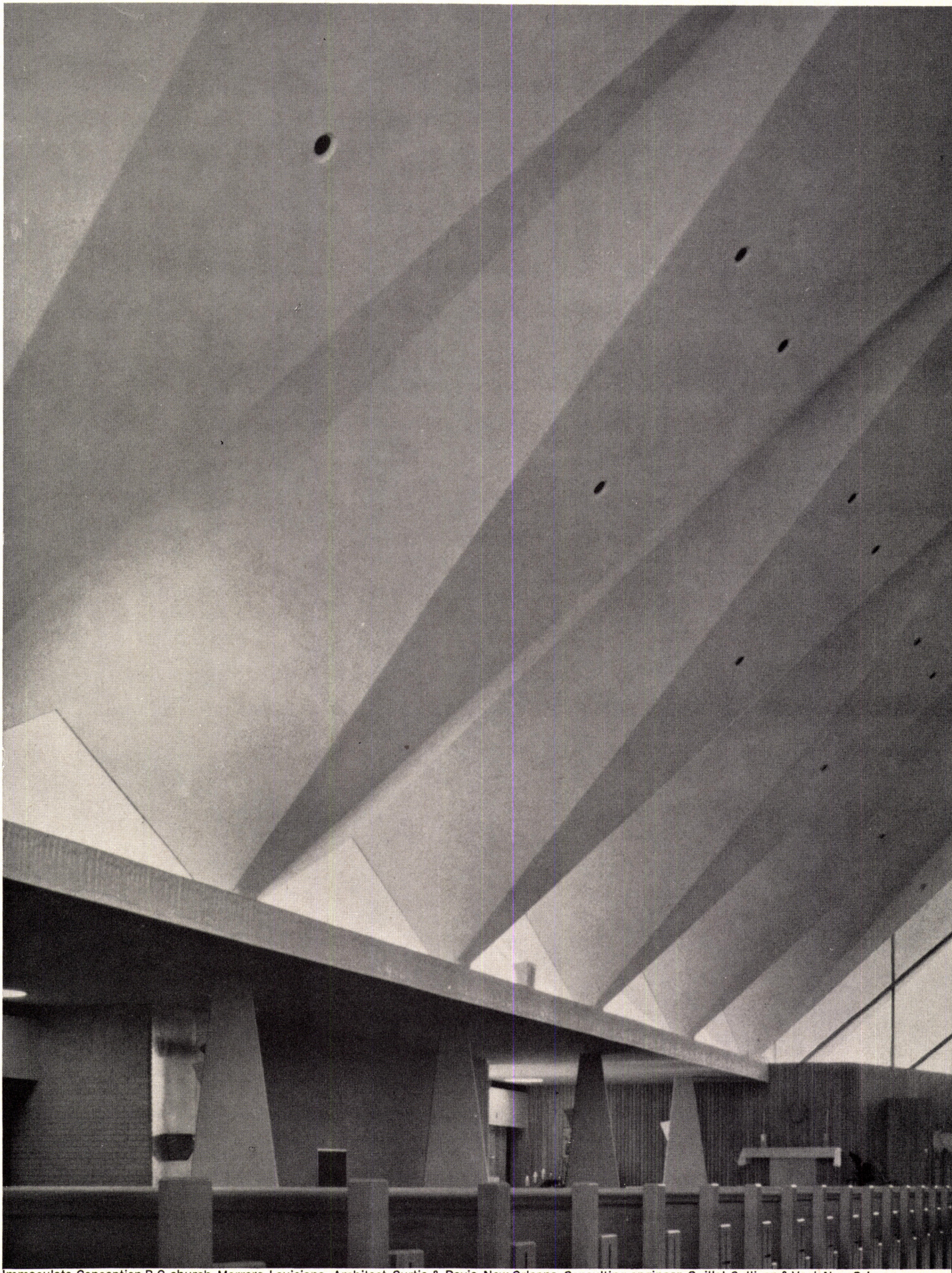
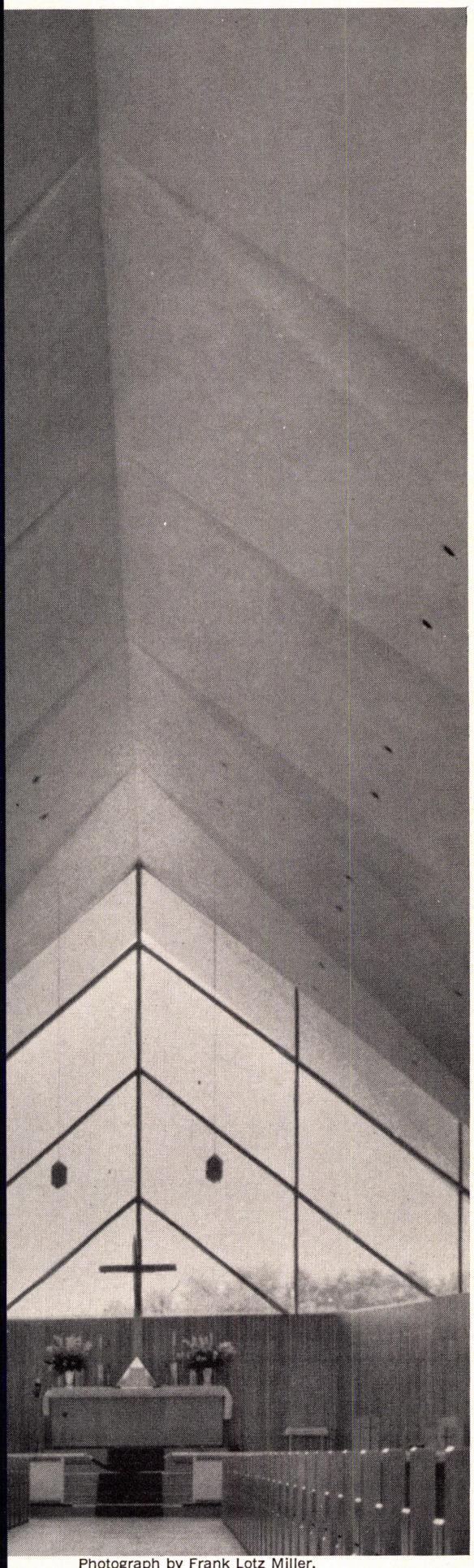


Immaculate Conception R.C. church, Marrero, Louisiana. Architect: Curtis & Davis, New Orleans. Consulting engineer: Guillot, Sullivan & Vogt, New Orleans.

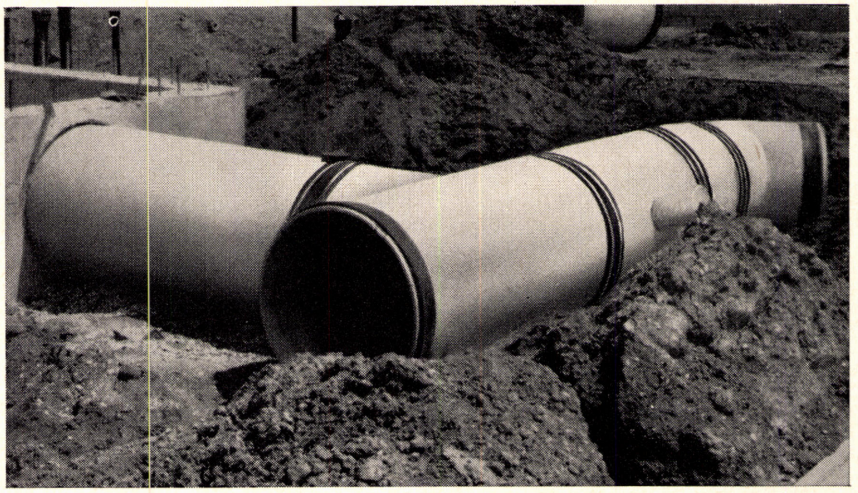


Photograph by Frank Lotz Miller.

# The architect wanted design freedom...

# The engineer wanted heating-cooling efficiency...

# They specified J-M Transite® air duct below slab.



For the architect, a Johns-Manville TRANSITE* air duct system below slab means minimum interference with structural elements. Ceilings can be higher. Glass areas can be more extensive. Building silhouettes can be lower. Furred ceilings and beam construction can be forgotten.

For the engineer, J-M TRANSITE air duct below slab means an efficient heating-cooling system that meets the architect's design. Smaller ducts or smaller blowers can be used, because long TRANSITE air duct lengths and smooth bore allow air conveyance with 30% less pressure drop than sheet metal. Radiation puts more warmth into the slab and helps eliminate cold spots common to peripheral systems. Tight joints prevent infiltration of below-grade water. The system operates more quietly. And homogeneous asbestos-cement TRANSITE duct systems are corrosion-resistant, vermin-proof, rot-proof and odorless.

In designing and constructing the Immaculate Conception R.C. church, a Progressive Architecture Award Citation winner, the architect got the design freedom he sought, the engineer got the efficiency he sought—with J-M TRANSITE air duct below grade. Both are fully satisfied.

For full details, see TRANSITE air duct inserts 30F/JO in Sweets Architectural File or Mechanical Products Specification File. Or write Johns-Manville, Box 362, Dept. AR-7, New York, N. Y. 10016. Cable: Johnmanvil.

**Johns-Manville**

*Transite is a registered Johns-Manville trademark for its brand of asbestos-cement products. Available in Canada.

*For more data, circle 168 on inquiry card*

*continued from page 128*

Beach Street, San Francisco.

**Doug Unger** has joined the rendering staff of **Nashbar/Osborne & Associates,** Canfield, Ohio.

**Louis A. Bacon** and **Lloyd Van Dermark** have joined **P & W Engineers Inc.** of Chicago as vice presidents of structural and electrical engineering.

**The Perkins & Will Partnership,** architects of Chicago, White Plains, N.Y. and Washington, have named 24 new associates. In the Chicago office they are: **Neil Baker, James Caron, Stanley Gordon, Kiyoshi Kikuchi, Kenneth Kloss, Phillip Kupritz, James Maeda, John Michiels, Charles Morison, Harry Patterson, Carl Schwebel, Robert Sullan, Roger Tinney and Raymond Watson.** In the White Plains Office they are: **Arthur Clements, Charles Higbie, John Janiga, Frank Luce, Peter Serpati, George Shear and James Valeri.** In the Washington office they are: **Karl Feller, Joseph Reid and Walter Ross.**

In addition to their architectural lighting design office, **Seymour Evans Associates** have formed **Lighting Research and Design** in partnership with **William Katavolos.** Both offices are at 36 W. 36 St., New York City

**Sicard-LaFleur & Associates,** architects, Maritime Building, 203 Carondelet Street, New Orleans.

**Gerald M. Arvin, A.I.A** has become a partner in the Detroit firm of **Leonard G. Siegal Associates/Architects.**

**The Architects Collaborative Inc.** of Cambridge, Mass. have announced five new associates: **Serge Cvijanovic, Allison Goodwin, John Hayes, Joseph Hoskins,** and **David Sheffield.**

**George Russell, architect,** has joined **Tinsley, Higgins, Lighter & Lyon Architects** of Des Moines as an associate.

**Harry Robert Fox, A.I.A.,** formerly associated with **George M. Ewing Company** has joined **Arthur M. Tofani Jr. Associates** as a partner. The firm is to be known as **Tofani and Fox,** 1801 Pine Street, Philadelphia.

**John Carl Warnecke and Associates,** architects and planning consultants of San Francisco, Honolulu and Washington, have opened a New York City office at 350 Park Avenue.

**Woodward-Clyde-Sherard & Associates,** consulting engineers, New York City, have appointed **James V. Sheehan** manager of business development for the Middle Atlantic States.

**Donald G. Radcliffe,** structural engineer, and **Gerald A. Williams, A.I.A.** have joined **Young, Richardson & Carleton,** architects and engineers of Seattle.

## NEW ADDRESSES

**Hayes & Smith Architects A.I.A.,** 70 Broadway, San Francisco.

**Clovis Heimsath, A.I.A.,** 203 Westmoreland St., Houston.

**Marr & Marr, Architects,** 100 W. Seven Mile Rd., Detroit.

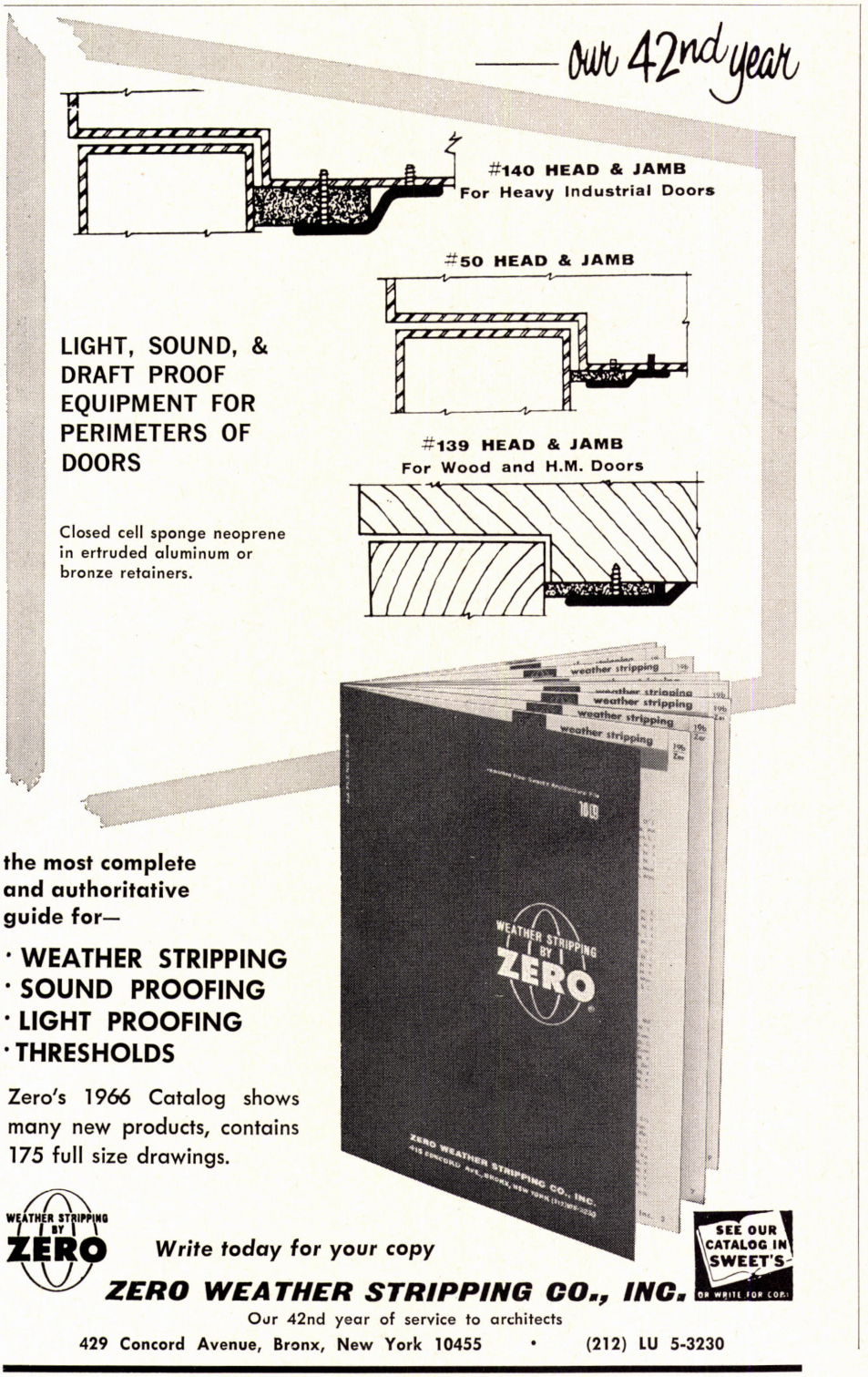
**Peter P. Seidner Associates,** architects, 10 Sunset Drive, Latham, N. Y.

**Edgar Tafel, Architect, A.I.A.,** 74 Fifth Ave., New York City.

## ADDENDA

In the April article, "In-factory or on-site for concreting?" by Guy G. Rothenstein, the construction system referred to as the "Balency-MBM System" should read "Balency Building System" promoted by Balency-MBM Associated.

In a news story on the Toledo Performing Arts Center (May, page 42), the names of the associate architects for the project were omitted. The credits should have read: Hugh Hardy & Associates and Hahn & Hayes, associate architects.


*For more data, circle 169 on inquiry card*

# Multiply Billy Edwards by 48,800,000

## *to measure*

## *the challenge of school construction*

Figures on school enrollment are only part of the picture.* Education today is a living, changing thing. The idea is to equip Billy Edwards for *his own future*—not for his parents' past.

Doing this job calls for new concepts in school design—concepts made possible with *prestressed concrete*. Teaching space must be quickly changeable in size and shape. A gymnasium this evening may be four lecture halls tomorrow morning. The *most adaptable* schoolhouse is the *best schoolhouse* since education must meet changing needs and accommodate sophisticated teaching aids *with multi-purpose space*.

Now, school planners bring wide-open spaces *inside* as the long-span muscle of prestressed concrete invites them to forget about space-wasting columns. At the same time, this truly 20th century material points the way to impressive economies in speedily erected, fire-safe, quality schools.

See your local PCI member for details on the use of prestressed concrete in schools.

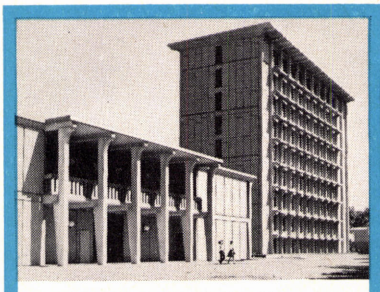
*Send for your free copy of "PRESTRESSED CONCRETE—applications and advantages" and selected literature on prestressed concrete in schools.*

**PRESTRESSED CONCRETE INSTITUTE** PCI

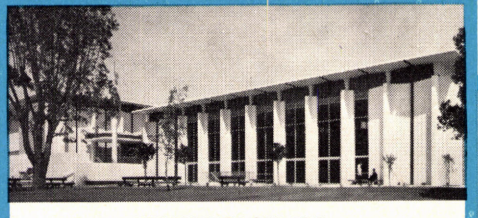
205 WEST WACKER DRIVE • CHICAGO, ILL. 60606

ARCHITECTURAL STRUCTURAL

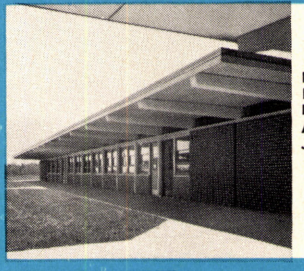
* Public and private school enrollment, first twelve grades, 1965—1966 school year, is 48,800,000. Enrollment will increase 400,000 annually through 1975.—**U.S. Office of Education.**



**UNIVERSITY OF CALIFORNIA**
Davis, California
**Architect:**
Gardner A. Dailey, FAIA, & Associates
**Engineer:**
T. Y. Lin, Kulka, Yang & Associate



**AMBASSADOR COLLEGE**
Pasadena, California
**Architect:** Peter J. Holdstock
**Engineer:** Johnson & Nielsen



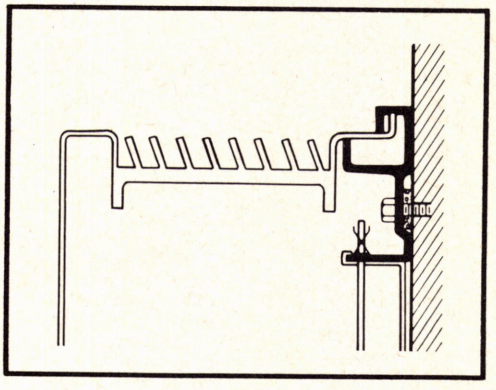
**HENRICO HIGH SCHOOL**
Richmond, Virginia
**Architect:**
J. Henley Walker, Jr. AIA

**PARSONS RURAL ELEMENTARY SCHOOL**
near Salina, Kansas
**Architect & Engineer:**
Anderson—Johnson AIA

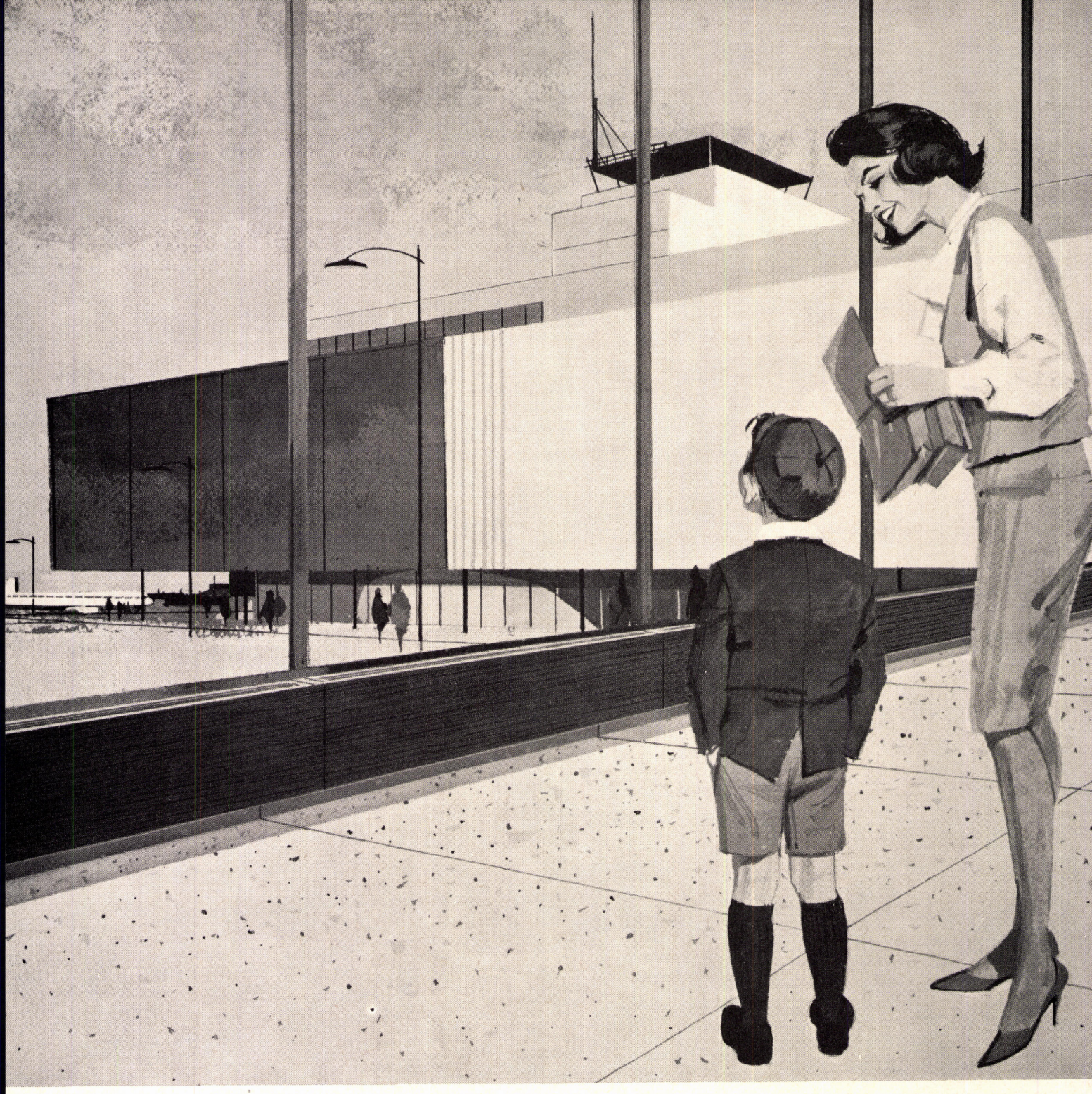
**ACADEMY OF THE HOLY ANGELS**
Demarest, New Jersey
**Architect & Engineer:**
J. G. Phelan and Associates

*For more data, circle 170 on inquiry card*

# Heating never looked better or installed easier



*Modine's exclusive Perma-Trim aluminum wall support channel gives rigid support, perfect alignment on any wall surface. Urethane seals prevent air leakage—no wall streaking. Flanged edges of enclosure sections interlock for added strength and sleek appearance.*



# —new Modine finned-tube radiation

Remember when finned-tube units all looked alike? Most still do.

This is the exception—Modine's new Imperial line. With sleek architectural styling, Imperial presents a clean-line appearance from one end of the area to the other. And what could add more richness and warmth than the look of a hand-rubbed wood grain finish or one of the many Modine decorator colors.

You'll find, too, that Imperial's beauty is more than skin deep. Installation is a *snap*—because the enclosure sections *snap-fit* into Modine's exclusive Perma-Trim® aluminum wall support channels. Wall mounting with Perma-Trim is straight-as-an-arrow even on irregular wall surfaces. And that's a Modine exclusive, too.

Trim pieces retain the smart styling of the enclosure sections, and also serve as access panels. There are no access plates or doors. A tamperproof "Pik-Lok" latch, another Modine exclusive, securely fastens trim pieces yet affords instant access by authorized persons.

With this modular design concept, Modine offers 12″, 18″ or 24″ heights, lengths from 2 to 8 ft in 6″ increments. Just measure up the job and fit Imperial to it. There's no costly on-the-job cutting and piecing to compromise appearance.

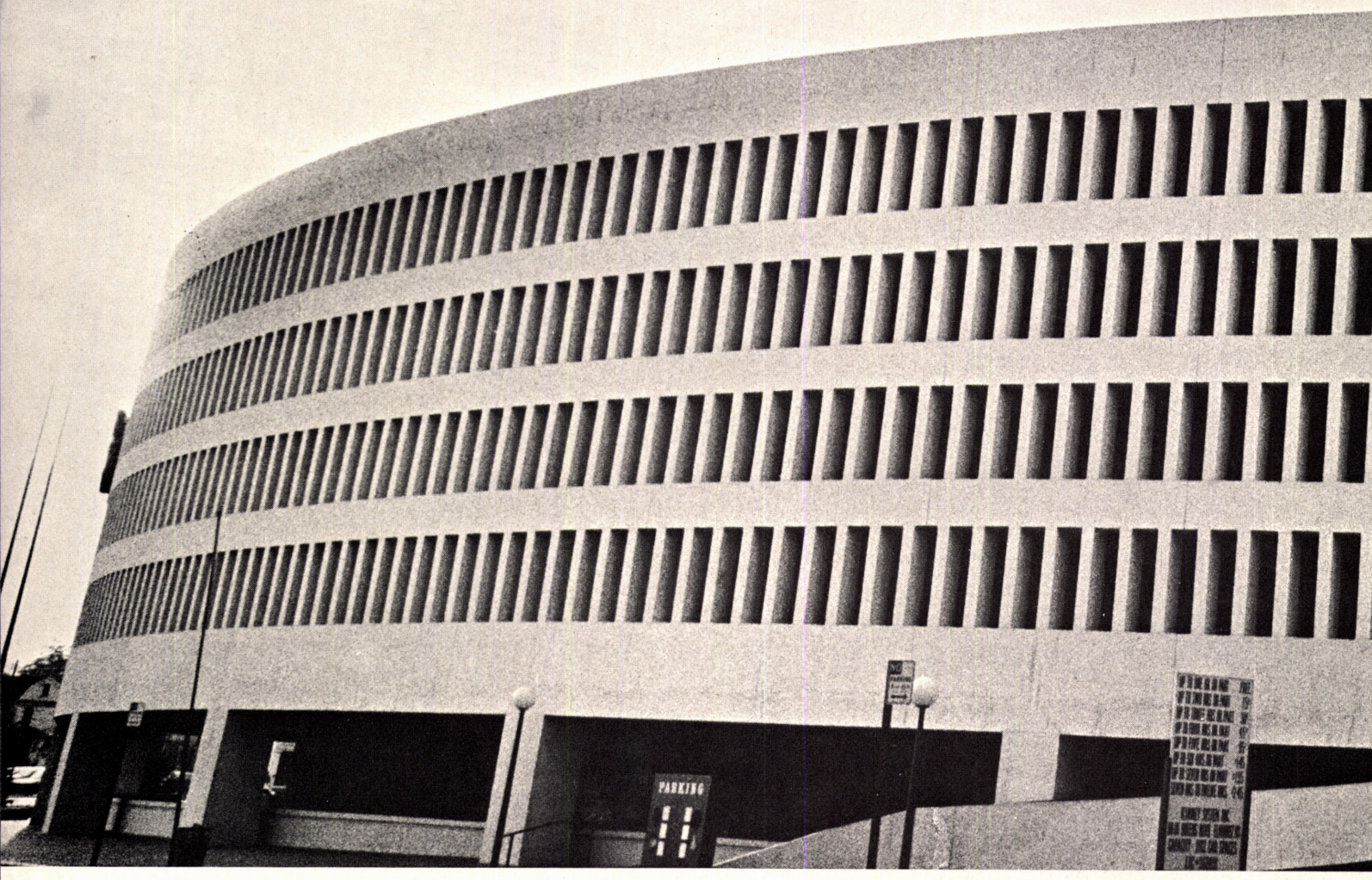
We'll gladly supply all the facts about Modine finned-tube for use on steam or hot-water systems. Call your Modine representative, or write for Bulletin 4-101. Modine, 1510 DeKoven Ave., Racine, Wis. 53401. FT-1535-B

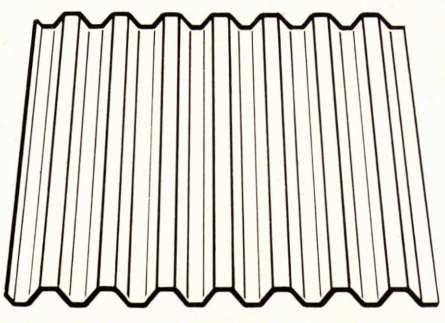
*For more data, circle 171 on inquiry card*

MODINE

# Wheeling sold Macy's 335,000 sq. ft. of for its spectacular new store in Queens,

**(We wish they'd tell Gimbels.)**



We'd like everyone to know about Tensilform.®

Tensilform. Our permanent steel base for concrete floors and roofs that's being used in so many contemporary buildings.

Why are so many people using it? Because it helps them hustle.

You see, unlike wood it doesn't have to be removed. And it's easier and quicker to install for both conventional and lightweight aggregate concrete.

Other quick facts? Tensilform provides an immediate work surface during installation. You walk on it while you build with it.

And its neat fit reduces welding time and speeds construction.

Like Macy's, Wheeling has some

# Tensilform New York.

smart comparative shopping guides which help us sell.

For example: Uncoated or galvanized, Tensilform is made from Wheeling's own cold-rolled steel. It's quality-controlled from ingot to installation.

Compared to many other forms it saves up to 20% concrete.

In its galvanized form it serves as a ceiling and its greater strength allows for lighter structural supports. Also it gives lateral stability to structural members.

On top of everything else, Wheeling will detail blueprints so Tensilform arrives on the site pre-engineered and ready to install.

And it arrives on time. (That's what all of Wheeling's hustle talk is really about.)

So come on, Macy's. We'd sure appreciate it if you'd tell Gimbels about Tensilform and where to buy it.

From Wheeling.

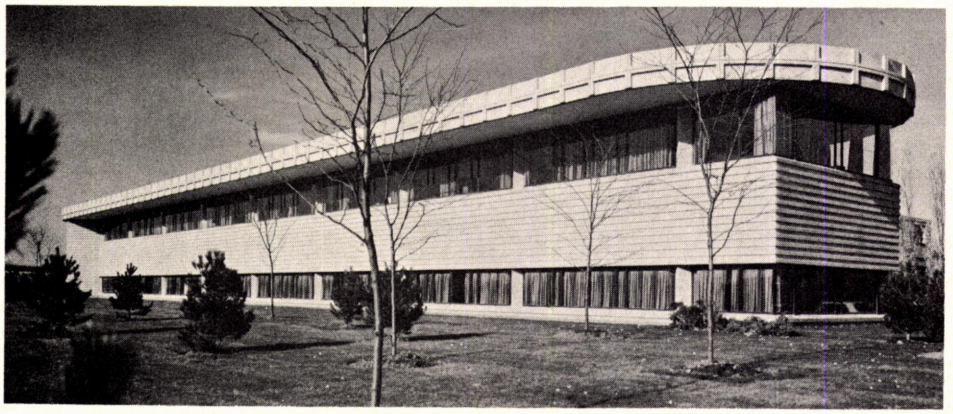
The steel store.

**Have you looked at Wheeling lately?**

**Wheeling**

Wheeling Corrugating Company / Wheeling Steel Corporation, Wheeling, West Virginia

*For more data, circle 172 on inquiry card*



## Building designed to be seen at 60 miles per hour

The recently dedicated executive offices of Dow Corning Silicones Limited in Downsview, Ontario, was designed "both as a working head office building and as an exhibit for the company," according to Macy DuBois of Fairfield & DuBois, architects of the structure. "The site is long and narrow, exposed to the highway on the south but approached from the north. This led us to design the south facade as a simple readable statement even at 60 miles an hour, while creating a smaller-scaled, more approachable appearance from the north."

The structure is constructed largely of concrete, glass, metal, wood, and other conventional materials. Silicone materials were used as finishes and for glass-to-glass sealing of corner windows. Patterns on the facade and within the interior are created by patterned lay-up of concrete blocks.

According to the architect, private offices face south under a sun-protected overhang. The general office space, in part, is a two-story area to the north. The main corridor divides the two spaces with a heavily planted balustrade on the upper floor. The building contains 13,500 square feet.

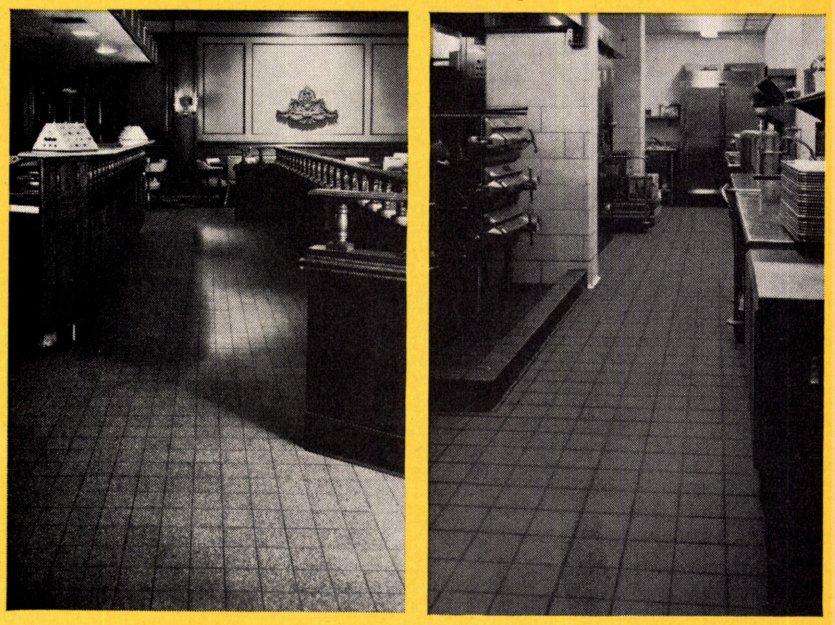
Square columns, turned 45 degrees, give contrast of form to north side of building.

Conference room has skylight but no windows.


At Marie Schreiber's elegant Tavern Chop House it's

**HYDROMENT JOINT FILLER**

for handsome, easy-to-clean quarry tile and brick paver floors



HOLLENDEN HOUSE—Architect: Snyder, Tekushan, Cleveland, Ohio / General Contractor: Gil Bane Building Co., Providence, R. I. / Tile Contractor: Interior Marble & Tile Co., Cleveland, Ohio

HYDROMENT JOINT FILLER is the unique formulation with a 25 year service record. No wonder architects and contractors feel "safe" specifying and applying it. Joint Filler provides hard, dense joints that do not sag with wear. No sand screening or possible chance of mechanic error with Joint Filler—ever!

*Send for our free Color Compatibility Chart!*

*We're in Sweets, too.*

**THE UPCO COMPANY** 4805 Lexington Ave. • Cleveland, O. 44103

a subsidiary of USM **United Shoe Machinery**

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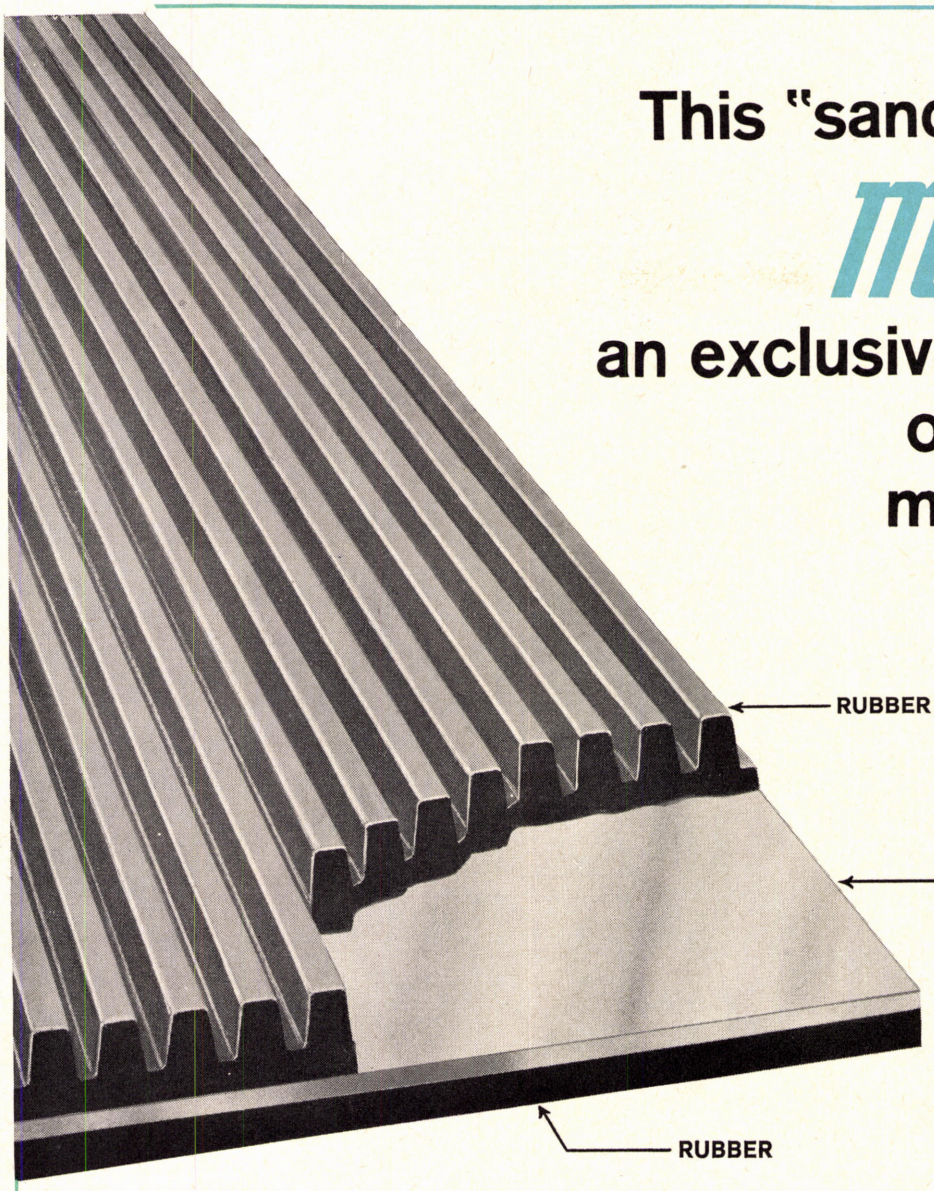
# This "sandwich" gives SANDVIK Movator an exclusive advantage over all other moving walks




intercontinental experience

SANDVIK

A continuous, SANDVIK hardened and tempered spring steel belt with a permanently-bonded rubber covering gives SANDVIK MOVATOR moving walks an exclusive combination of advantages. The heavy gauge, one-piece endless steel belt provides the rigidity and permanent strength to assure a smooth, safe and comfortable ride. The grooved rubber covering assures a safe, non-slip surface. Sandvik's wide-rib, narrow-groove tread contour combined with a special landing plate design prevents the catching of ladies heels to a greater degree than any other design. ☐ Sandvik can apply ten years of design, manufacturing, installation and service experience to your moving walk requirements anywhere in the U. S. A. today. Write for SANDVIK MOVATOR booklet or contact your nearest Sandvik office.

SS-8663

SANDVIK

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MOVATOR DIVISION
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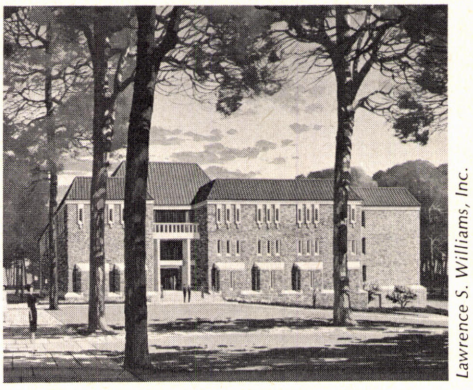
## California library will have maximum study facilities

A library unit at the University of California, Santa Barbara, has been engineered for computerized services, including electronic information storage and retrieval, and closed-circuit television with an expected 1,000 receivers. The eight-story, $3-million building, now under construction, was designed by Cooke, Frost, Greer and Schmandt, architect-planners. The building will combine modular, open-stack units with research areas—a typical floor containing 18 studies, 46 individual carrels and two larger reading rooms. The building, faced with sculptured concrete panels, will house 750,000 volumes.



*Lawrence S. Williams, Inc.*

## Library will conform to traditional campus setting

The Thomas B. and Jeannette E. L. McCabe Library at Swarthmore College, Swarthmore, Pennsylvania, designed by Vincent G. Kling & Associates, will group four elements around a two-story central hall and student lounge, providing a total of 90,000 square feet. On each floor a corridor will run around the nucleus of the building, and many carrels, each with its own window, will be located on the perimeter of the building, removed from the circulation spaces. The library will hold 415,000 volumes as well as two special collections. Study space for 600 students will be provided. The exterior will be clad in warm gray-beige native stone to relate to older structures on campus.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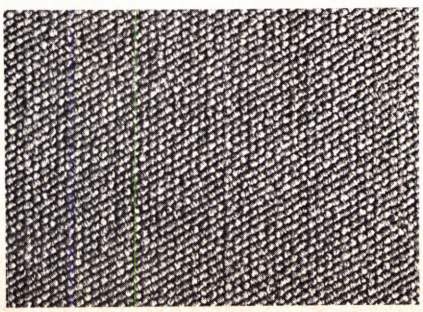

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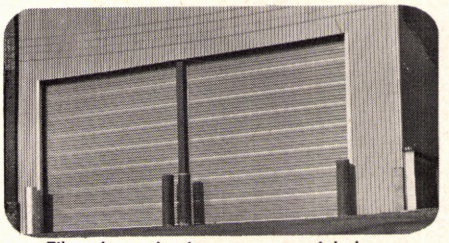
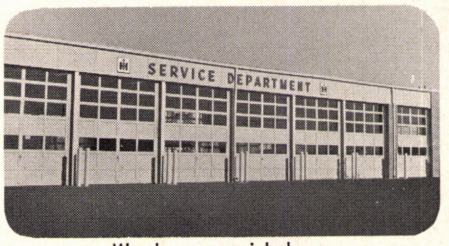
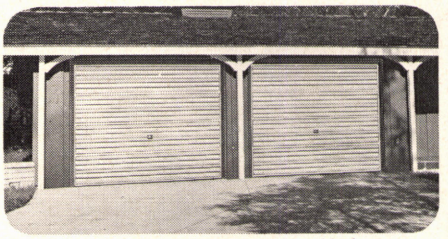


Fiberglass aluminum commercial doors




Wood commercial doors

Wood residential doors



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# Precast white concrete panels get pupils their school on time

The two-story precast concrete panels that enclose this new school incorporate many timesaving features. Made with ATLAS WHITE portland cement, they support the floor and roof slabs, form part of the framework and serve as the interior walls. The panels, averaging 7′ by 24′, with built-in fiber-glass insulation, were hoisted directly from the delivery trucks and set into place, tongue-in-groove, alongside adjacent panels. ■ The architect reports that efficiency in design and scheduling at the time of erection brought the building in at a favorable saving in square-foot cost. Modern precast concrete panels give unlimited scope in design. Almost invariably, they give more structure for the money available and faster completion. ■ See your local precast concrete manufacturer for details. Or write Universal Atlas, 100 Park Avenue, New York, N.Y. 10017.

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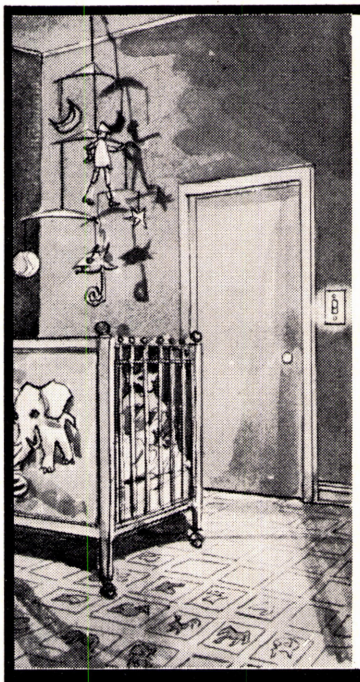

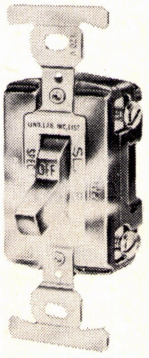

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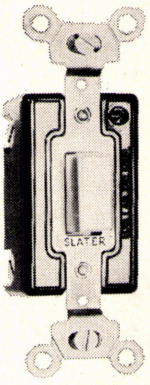


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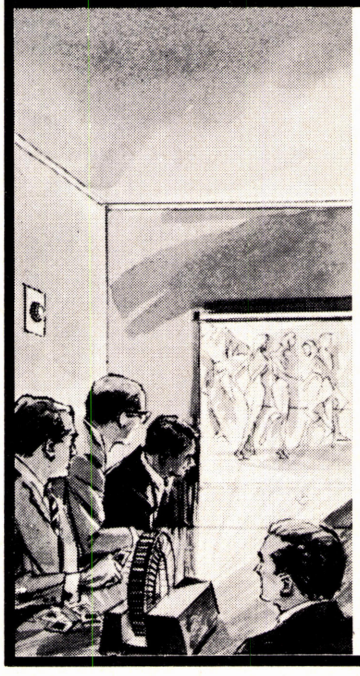

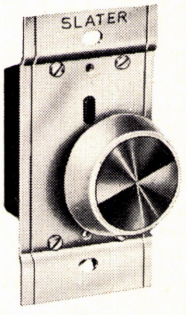


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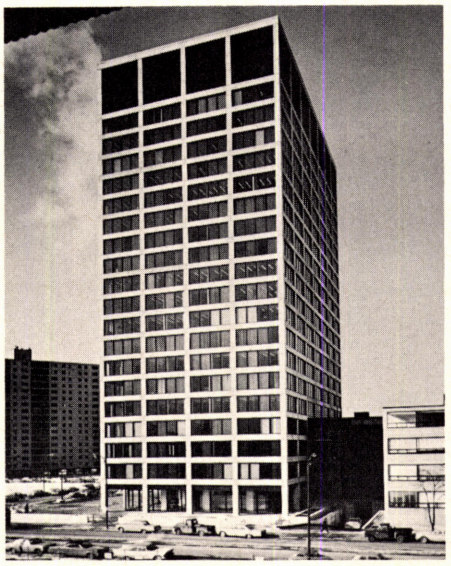
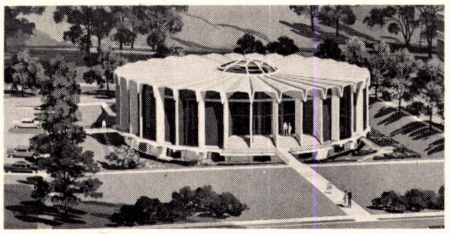


*Harr, Hedrich-Blessing*

## Research tower has maximum flexibility

The recently dedicated Research Tower for the Illinois Institute of Technology, Chicago, is a 20-story structure with a gross area of 382,636 square feet. The structure is based on a modular system of 24-foot-square bays to provide maximum interior flexibility. The building contains nine floors of laboratories and nine floors of offices. Also provided is an auditorium seating 235 and a cafeteria for 1,000. Architects are Schmidt, Garden and Erikson.



*Adolph Studley*

## Circular library designed for optimum control

The William D. Ticknor Free Public Library in Englewood, New Jersey, designed by Delnoce Whitney Goubert, arranges its departments radially for maximum security and supervision. The 25,000-square-foot structure, which will cost $650,000, is entered by two ramps spanning a lower garden level. The main level will contain reference and periodical facilities with reading areas on the periphery. The facility will accommodate over 100,000 volumes. The interior is lighted by a skylight. The exterior is of brick and concrete with solar bronze glass and the roof will be an off-white aggregate of marble chips and concrete.

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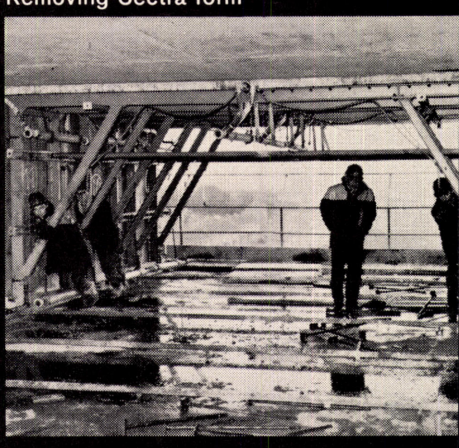
Removing Sectra form



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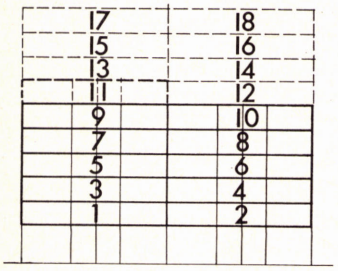
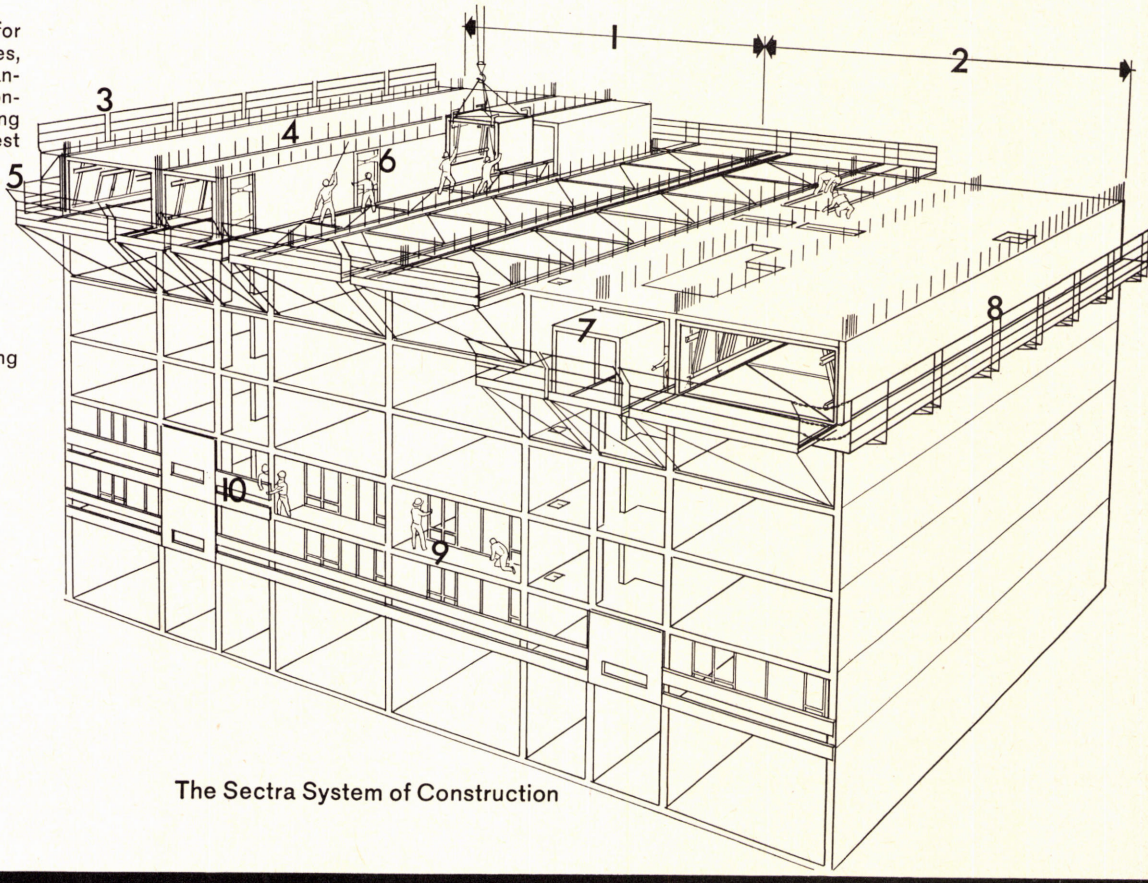
1. Phase 11 being shuttered
2. Phase 12 shutter track being placed
3. End wall shutter in position
4. "Tunnel" shutter
5. Platform for withdrawn shutters
6. Formwork to opening
7. Shutter being withdrawn
8. Platform for supporting end wall shuttering
9. Outside panel setting
10. Prefabricated balustrade setting

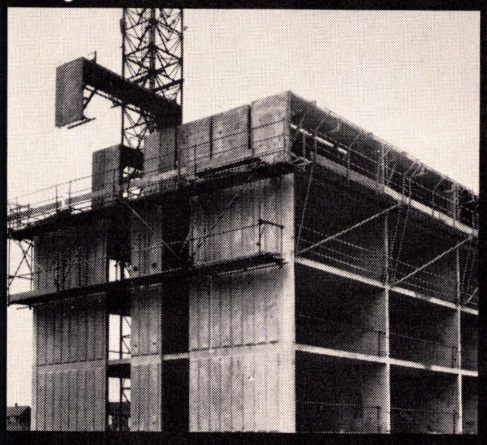



Sequence of Construction Phases



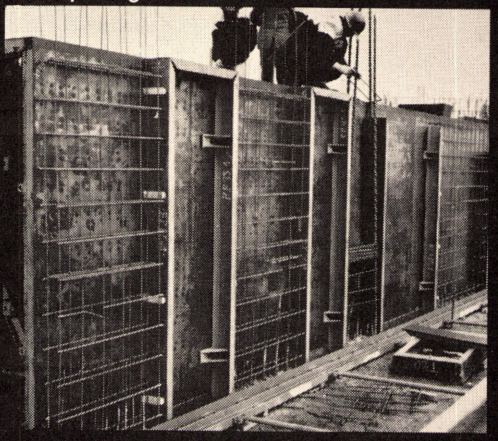

The Sectra System of Construction

Placing Sectra forms



Sectra apartments showing stair-well

Sectra form showing door openings



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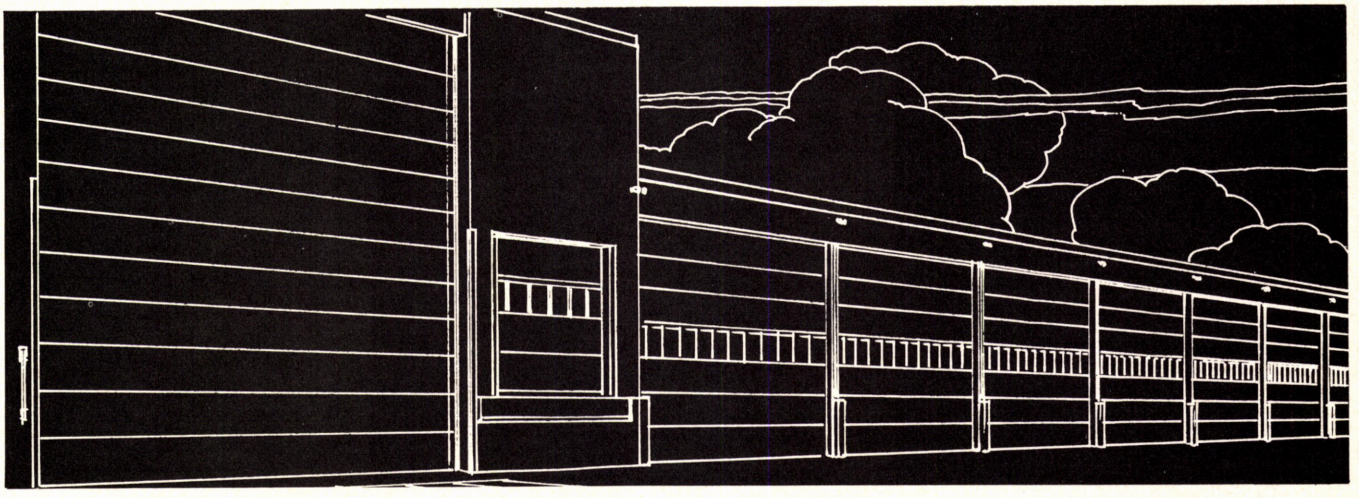

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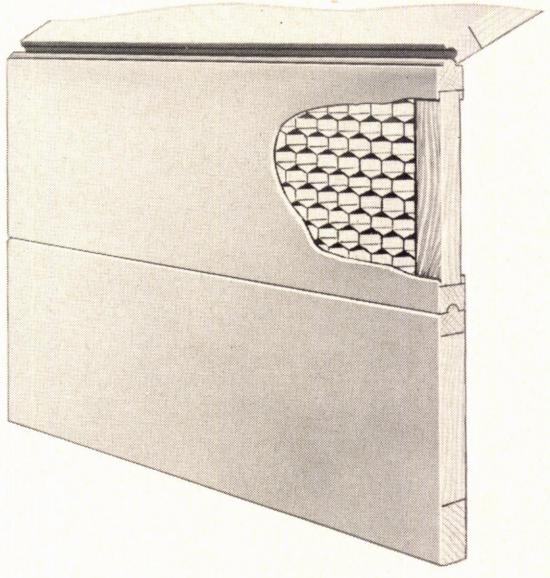

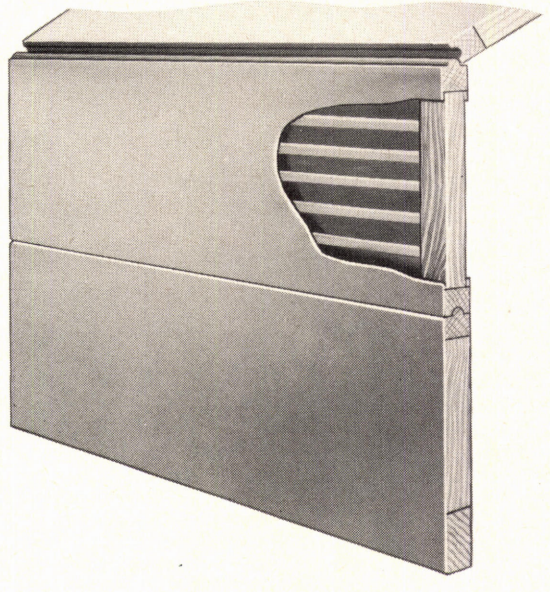

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**FLUSH HONEYCOMB-CORE** — **unexcelled quality and strength to withstand high frequency usage, high wind and weight loading.**

Special unitized flush-honeycomb construction features strongest "weight to strength" ratio of any door. High-quality *tempered* hardboard facings are permanently bonded with a neoprene base contact adhesive . . . to resist water, heat, cold, oil and fungus. Honeycomb core is treated with phenolic resin. Resilient, flexible construction withstands heavy wind and weight loading . . . controls problem of warpage and delamination. Furnished with protective, two-coat, *factory-applied* prime paint. Excellent insulation (U-factor .257). Consult factory for over 400 sq. ft. door area or special construction.

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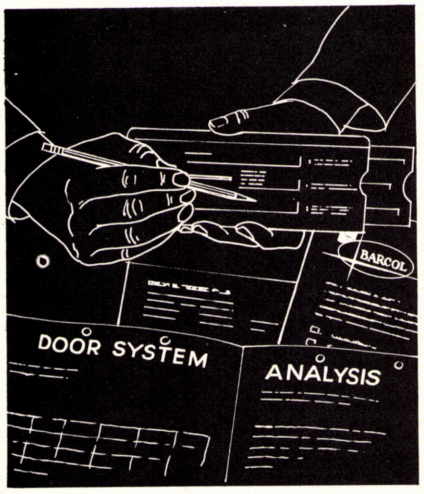


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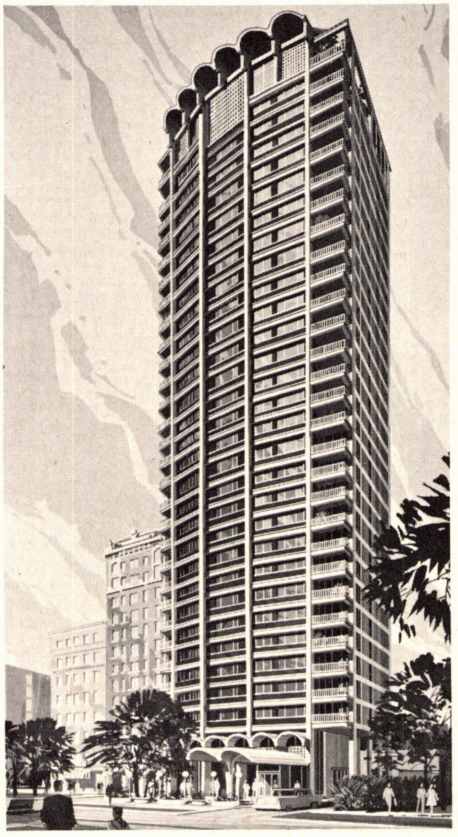
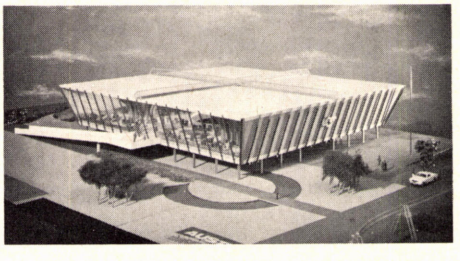


## Chicago apartment building contains enclosed pool

The 30-story Bel-Harbour apartment building in Chicago will have 204 studio, one-bedroom and two-bedroom apartments. The facility will contain an enclosed swimming pool, a sun deck on the top floor, and a hospitality room which tenants may use for private entertainment. The structure was designed by the firm of Schiff and Freides, Inc. General contractor is the Mars Construction Company.



## Australian pavilion at Expo '67 is "a floating square box"

The $3.6-million Australian pavilion for Expo '67, the Universal and International Exhibit to be held in Montreal, is described by architect James Maccormick as "basically a floating, square box." Four hollow pillars will bring light into the 24,000-square-foot structure. Architect for the interior Robin Boyd.

## the architect's railing

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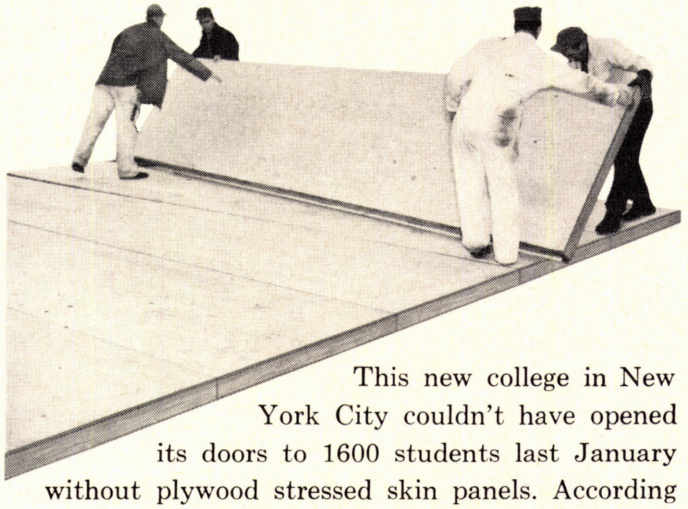
# The hurry-up school.

# Queensboro Community College. 22 buildings. 62 days from footings to completion.

# How?

# Plywood components.



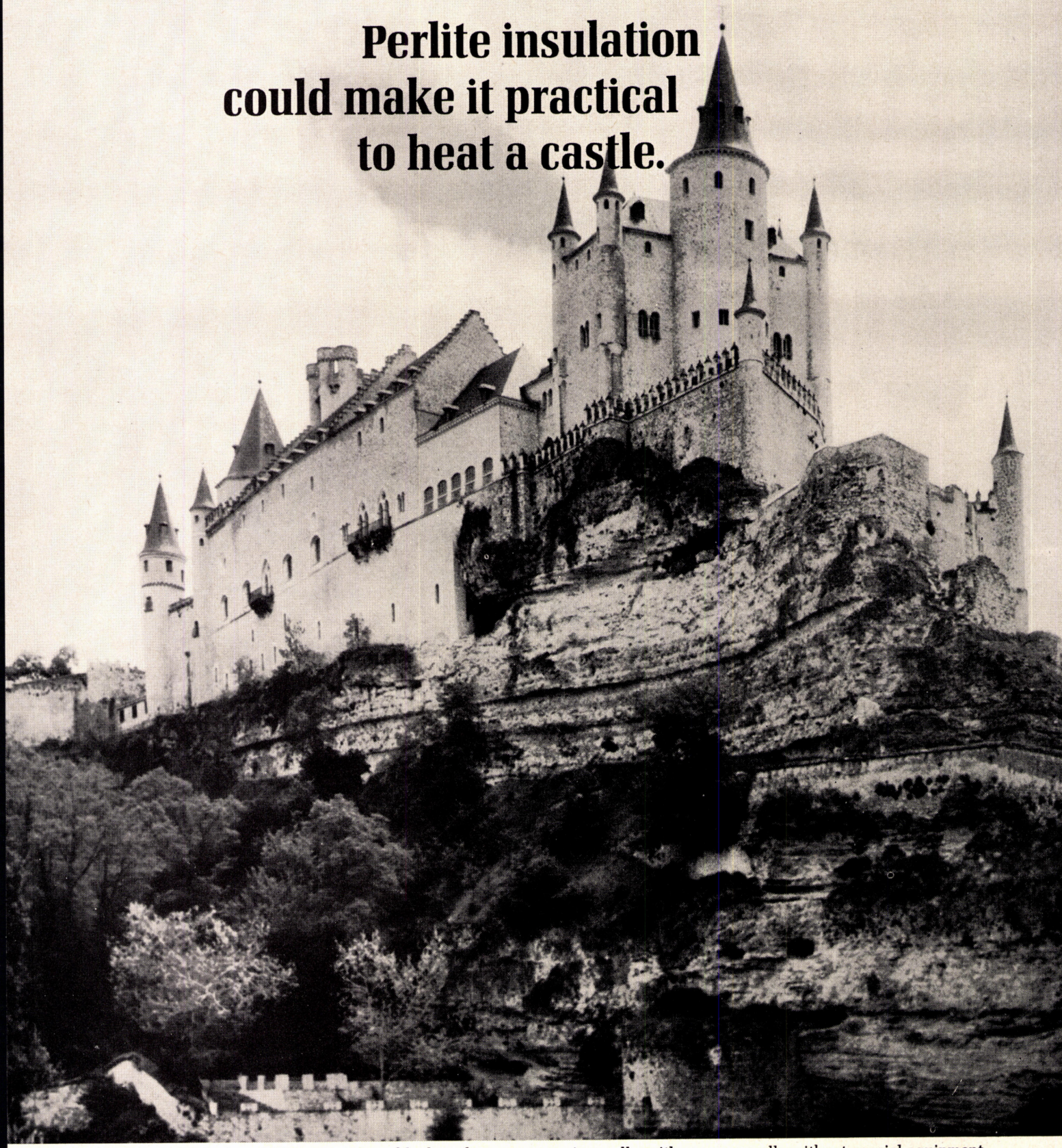
This new college in New York City couldn't have opened its doors to 1600 students last January without plywood stressed skin panels. According to the contractor's architectural consultant, the plywood component system was the best possible solution to the tight schedule – less than three months from plans to finish. The panels were used for floors, walls and roof.

The 22 buildings were prefabricated in Tulsa at the rate of one a day. Panels were prepainted, then trucked or piggy-backed to New York. Floor components are 24 feet long, the full width of the building. Roof panels span 12′ 6″, and are supported by a ridge gluelam, 7″ by 17⅞″.

On-site finishing consisted largely of installing carpet, furniture, plumbing, and equipment. Actual site work took just over two months.

Queensboro Community College, Queens, New York City / Owner-Lessor: CIT Educational Buildings, Inc., New York City / Fabricator and Contractor: Southern Mill Fabricators, Inc., Tulsa, Oklahoma / Architects: H. A. Tucker, Tulsa; and M. J. Goodman, consulting architectural engineer for CIT

# Perlite insulation could make it practical to heat a castle.



Castle building has fallen apart in recent years, but anyone setting out to design one today would have the answer to every castle owner's complaint. How to get enough heat.

The development of Silicone Treated Perlite provides the insulation needed to control heat loss and gain through masonry walls. By filling concrete block and masonry cavity walls with perlite the contemporary designer improves insulating efficiency more than 50% and savings in heating and cooling costs are considerable. Other savings are realized when smaller, less costly mechanical equipment is used. Silicone Treated Perlite also provides low cost installation. It pours easily into masonry walls without special equipment or skills. Moisture does not impair its insulating efficiency and tests prove its water repellency lasts indefinitely.

For technical data write to PERLITE INSTITUTE, INC., INTERNATIONAL ASSOCIATION OF PERLITE PRODUCERS, 45 WEST 45th STREET, NEW YORK, N.Y. 10036.

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Frank Davidson, CSI, specification writer, *Harrison & Abramovitz*, New York

**Frank Davidson says, "inadequate catalogs make an architect's day longer—his job tougher."**

When architects turn to Sweet's, they're looking for facts to help them write product specs into their plans—sizes, weights, capabilities, ranges, maintenance requirements, styles. When a catalog doesn't contain these facts, architects have to waste precious hours, even days, searching for them.

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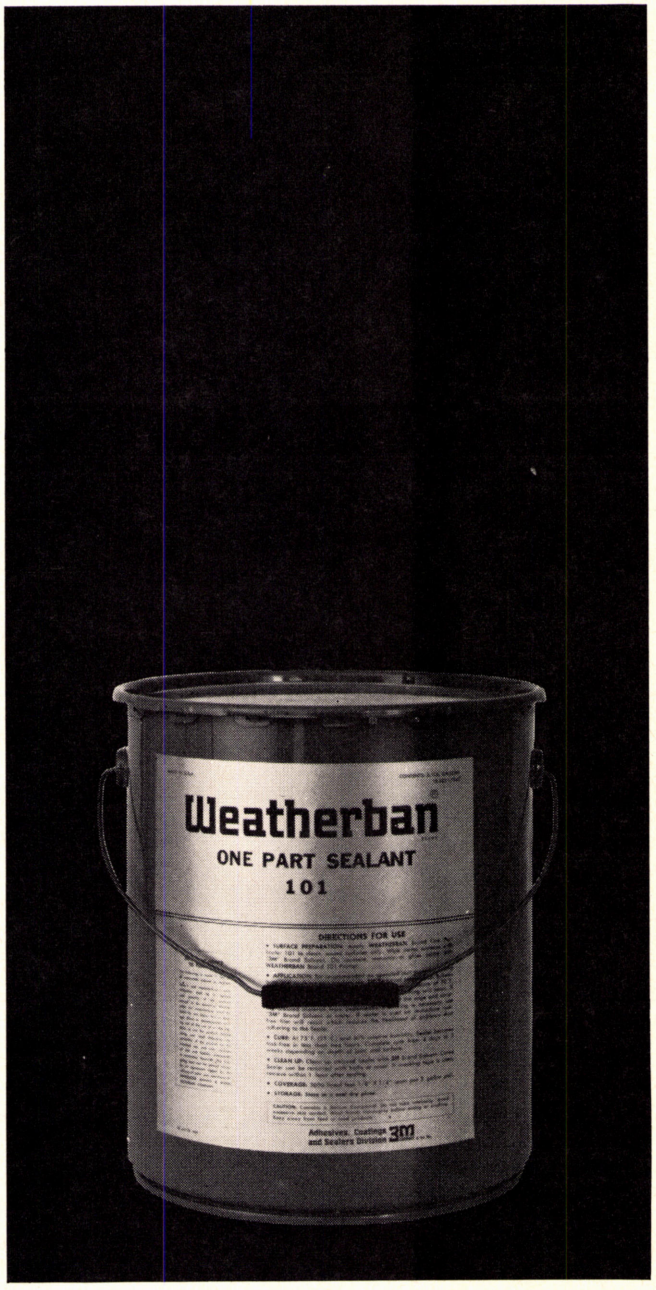
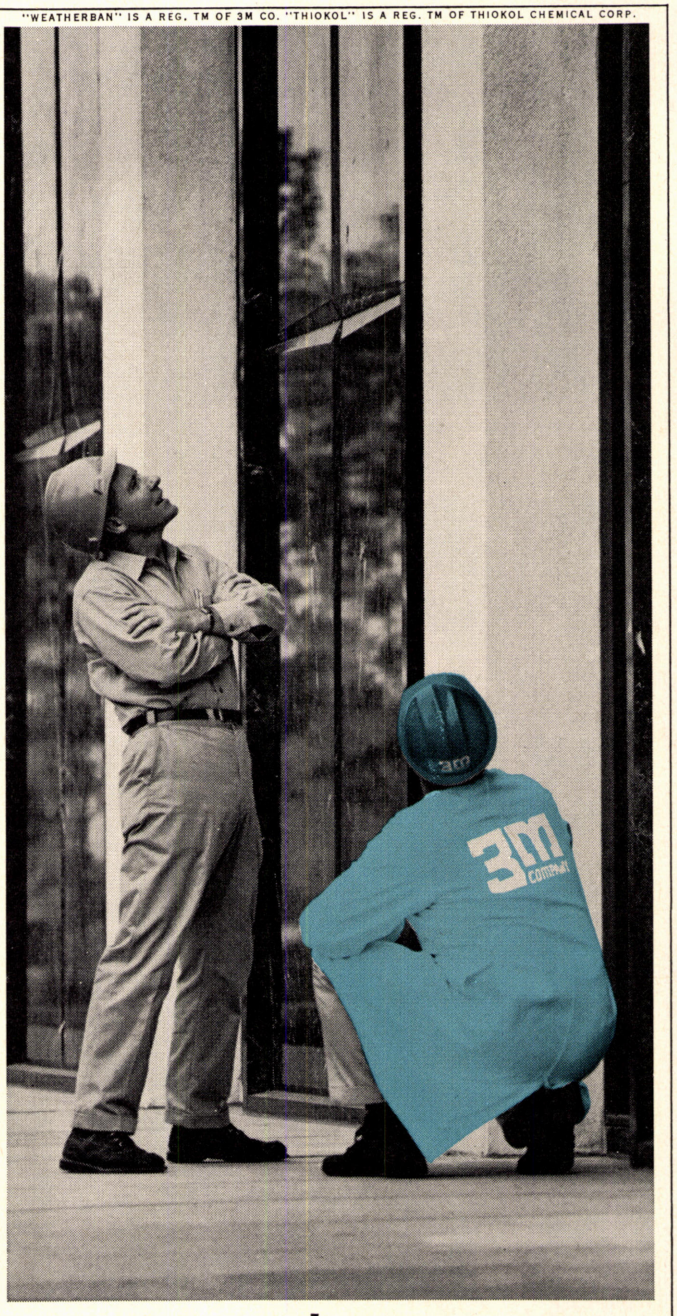



**Sealing problems solved by can**

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When fully cured, "Weatherban" Sealant 101 exceeds requirements of ASA Spec. A 116.1-1960 and Interim Fed. Spec. TT-S-00230 (Feb. 3, 1964). In black, gray, white, stone colors—1/10 gal. cartridges, 5-gal. pails. Ready to start with a free demonstration? Just write 3M AC&S, Dept. SBD-76, St. Paul, Minn. 55119.

*It pays to rely on your "Weatherban" Man.*

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In foreground is planetarium. Behind it is the museum, left, and library.

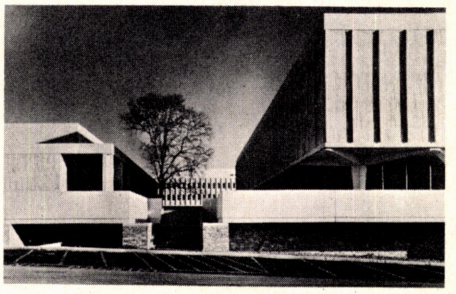
## Cultural center combines four distinct elements

The four units of the New Jersey Cultural Center in Trenton were designed by architects Frank Grad & Sons with three goals in mind. The first was to provide visual relief from the existing monolithic government buildings by using low-silhouette structures. The second was to relate elements of the neoclassic style of the older state buildings into "contemporary, graceful geometrical outlines." The third goal was to develop the four-unit plan with a coherence of design, providing "an individual identity for each building in relation to its purpose." Provided are a library, museum, auditorium and planetarium.

The marble-faced museum, which has two stories and a basement, contains a gross area of 74,134 square feet. The interiors are designed for maximum flexibility. The floor-to-ceiling displays (see below) are set into horizontal channels along the circumference of the exhibit galleries.

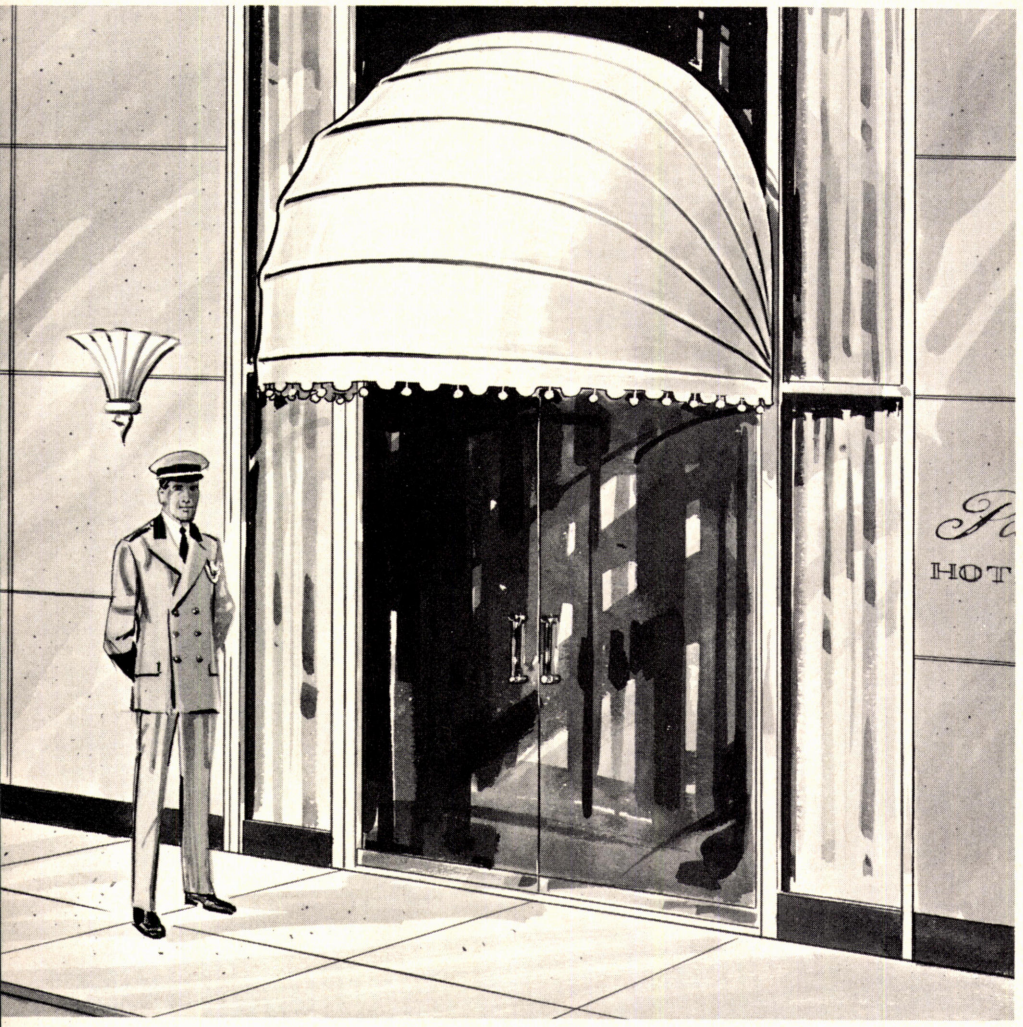
The State Library, which has three stories and two basement levels with the upper stories overhanging, is supported by concrete columns at the glass-enclosed first-floor level. The structure, containing 111,052 square feet, is also faced with marble. The 25-foot-high auditorium contains 17,330 square feet, and the planetarium has 11,220 square feet—seats 170 adults, 200 children.

The general contractor was Belli Company.



Path between auditorium on left and state museum on right leads to the state library.

Interior of the museum.

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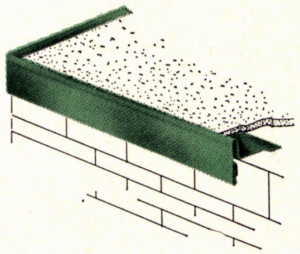
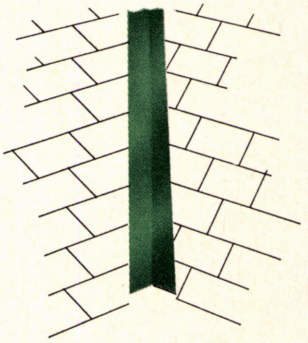
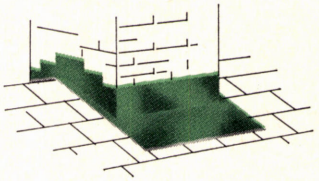


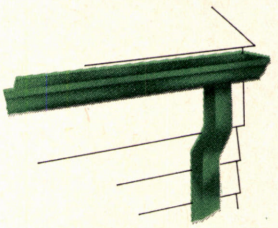
Combination Gravel Stop and Fascia



Valley



Chimney Flashing



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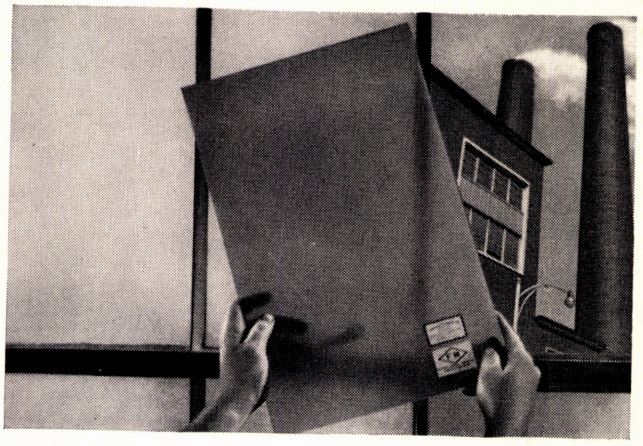
They don't admit glaring light. Since they are translucent, they diffuse the light, help eliminate shadows.

They don't corrode. They withstand severe chemical environments.

They *do* shrug off weather.

And they *do* install easily and economically because of their light weight and high strength. No extra framing is required when used on standard purlin spacings.

We make the Hetron. Fabricators supply the panels. Large or small, corrugated or flat, for replacement or new construction. We'll be glad to provide detailed information. Just write Durez® Plastics, 8007 Walck Road, North Tonawanda, N.Y. 14212.



Overseas: Hooker Chemical International, Ltd.
6 Place Madou, Brussels, Belgium
Telephone: 186336

HOOKER CHEMICALS PLASTICS

DUREZ PLASTICS DIVISION

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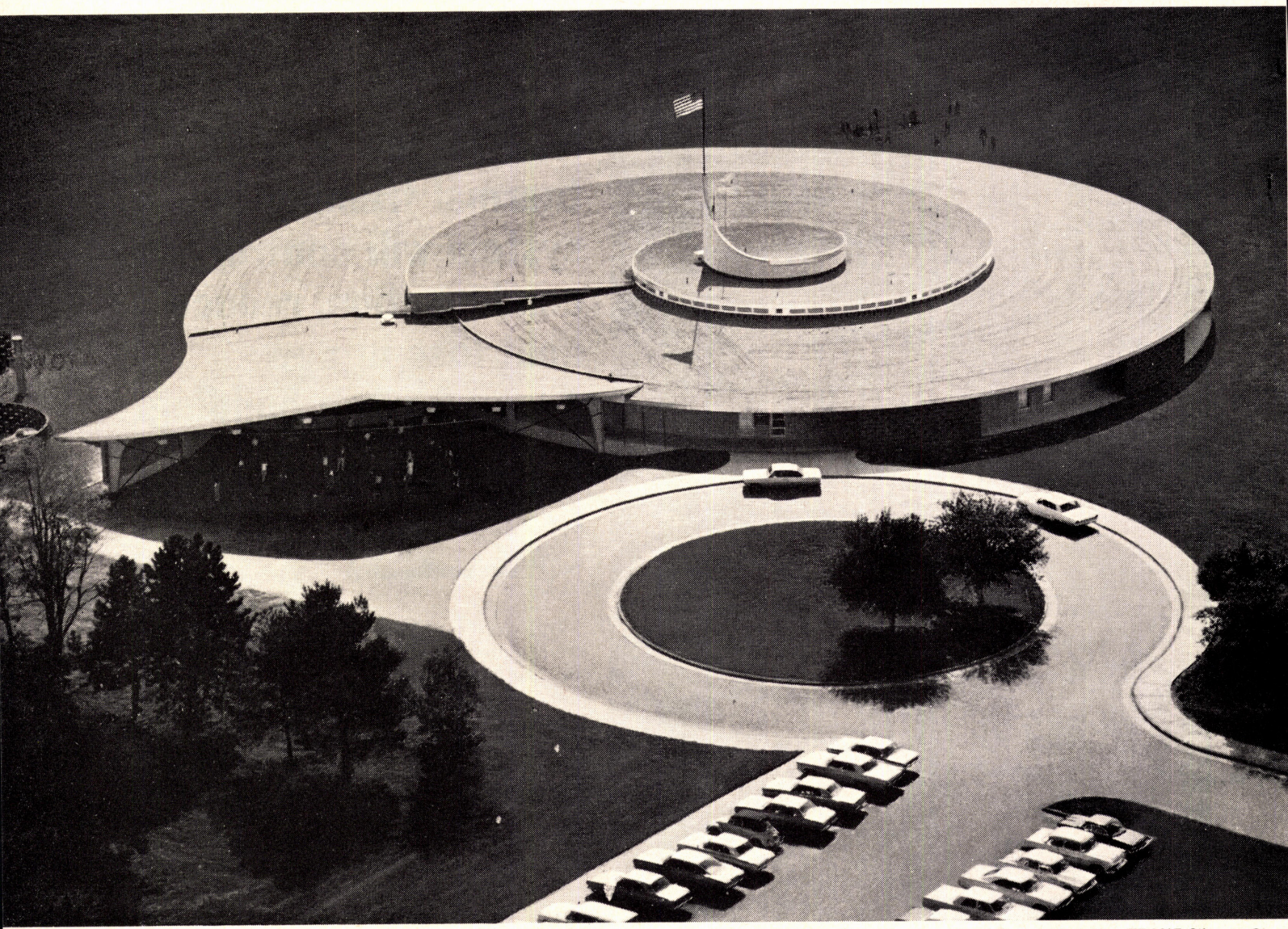
# Talk to Trane for total school



**Valley Winds Elementary School,** School District of Riverview Gardens, St. Louis County, Mo. Winner of NATION'S SCHOOLS award as one of 12 outstanding elementary schools in the country. Unique snail-shaped building, with wedge-shaped classrooms, employs TRANE air-cooled condensers, reciprocating compressors and central station TRANE Climate Chan ers. Building was erected at $13.60 per sq. ft. Architect: Shaver & C Salina, Kansas. Consulting Engineer: Burgess, Latimer & Miller, Kans City, Missouri. Contractor: St. Louis Sheet Metal, St. Louis.

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Today's total air conditioning needs for schools require specialists in many fields. With TRANE you get all the answers from a single source.

### 35 years' experience in school field

TRANE knows the school market and what is needed to provide the ideal climate for learning. It has 35 years' experience in the school market and is also a major manufacturer of air conditioning and refrigeration products. That's why TRANE has long been recognized as the company to call upon to air condition schools of all types.

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### Single source responsibility

With *all* the air conditioning, heating and ventilatin equipment for your school from TRANE, you can look t *one* manufacturer for equipment performance and servic needs. There's no "buck passing." TRANE assumes re sponsibility. *That's single source responsibility!*

They don't shatter. Even under attack by vandals, hail or high winds. Hetron panels prevent the broken window problem, reduce maintenance and replacement costs.

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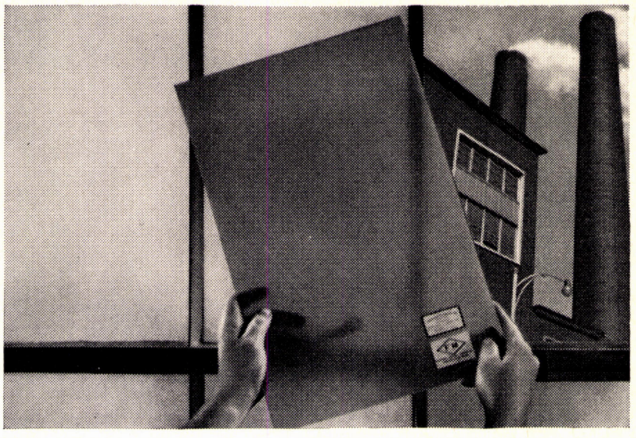

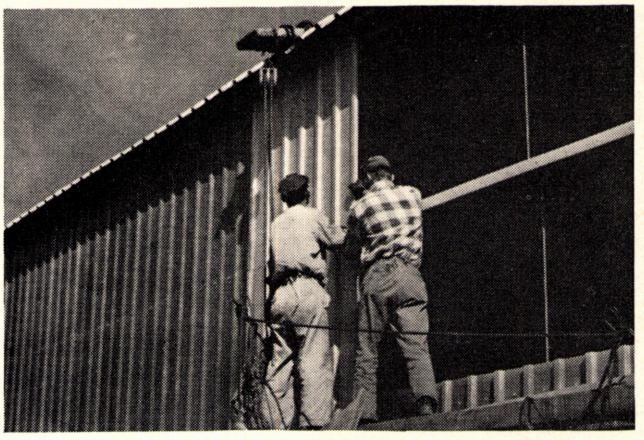

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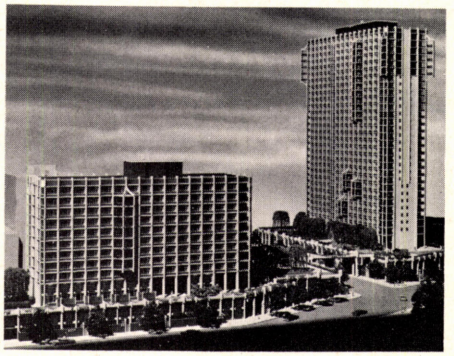
## Residential complex will blend older urban neighborhood

Brooklyn Heights Towers, a 400-family cooperative complex will be the first project in urban redevelopment in New York City to incorporate high-rise apartment towers with duplex terrace houses and townhouses. According to William J. Conklin of Whittlesey & Conklin, architects associated on this project with M. Milton Glass: "The aim of Brooklyn Heights Towers is to provide and enhance family living in an urban neighborhood already rich in architectural and social significance. Brooklyn Heights Towers will strengthen the community by continuing the present patterns of townhouses and gardens along the street and by offering private parcels of open space—on the street level, on landscaped upper levels, and in the air." The architecture will be "a composition of high-rise apartment towers and townhouses into one over-all residential plan, including New York City's first new pedestrian shopping mall—Pineapple Walk—designed to add to the aura of Brooklyn Heights' streets and 19th-century mansions," Mr. Conklin said.

The project will consist of two towers, one having 32 stories and the other 13 stories, both rising from a landscaped terrace plaza 25 feet above street level. The towers will be connected by a pedestrian bridge. Floor-through terrace houses will be located off the terrace level on the third floor of each building. In addition, there will be a perimeter of townhouses encircling the towers. The townhouses and terrace houses will be duplexes with private entrances and gardens.

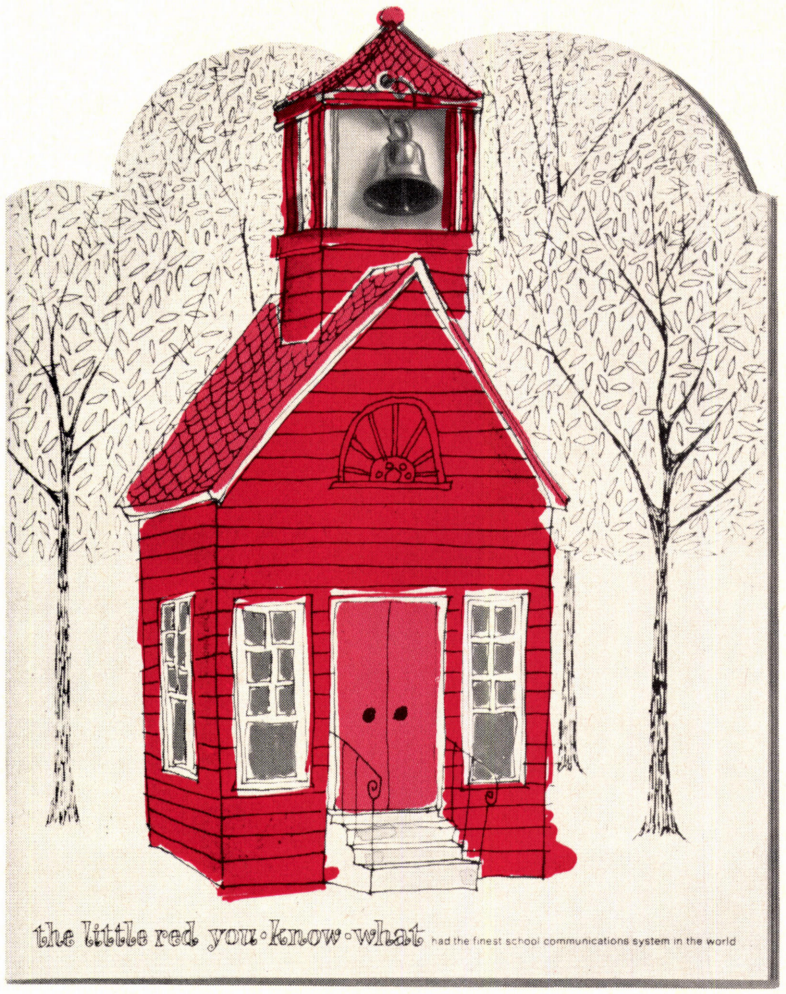
The $17-million project will provide indoor parking for 300 cars, a 500-seat theater, and 20,000 square feet of commercial space. Developers of the complex are Cadplaz Sponsors, Inc. Completion is set for 1967.



Many balconies have 22-foot curved lookouts.

Pineapple Walk—shopping arcade.

Townhouses encircle apartment towers.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For more information on this new PITTCO framing system, see Sweet's Architectural File, section 3a/Pi, or write for our 4-page descriptive folder. Pittsburgh Plate Glass Company, Pittco Architectural Metals Department, Ohio Street, Kokomo, Indiana 46901.

*Performance test data published March 1, 1965, by Pennsylvania State University.

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Xerox Square, Rochester, N.Y.
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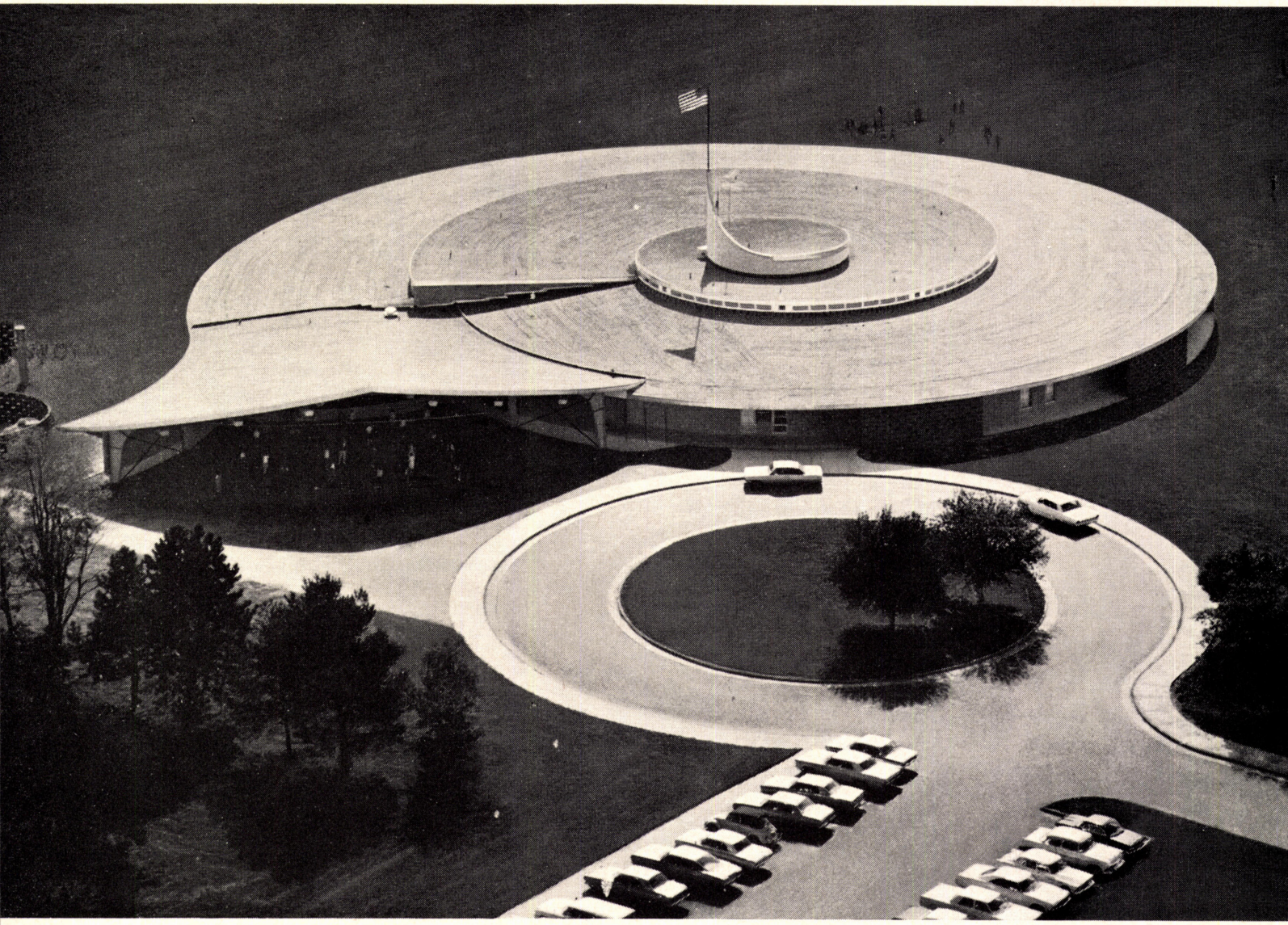
# Talk to Trane for total school



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### Single source responsibility

With *all* the air conditioning, heating and ventilating equipment for your school from TRANE, you can look to *one* manufacturer for equipment performance and service needs. There's no "buck passing." TRANE assumes re sponsibility. *That's single source responsibility!*

# air conditioning requirements

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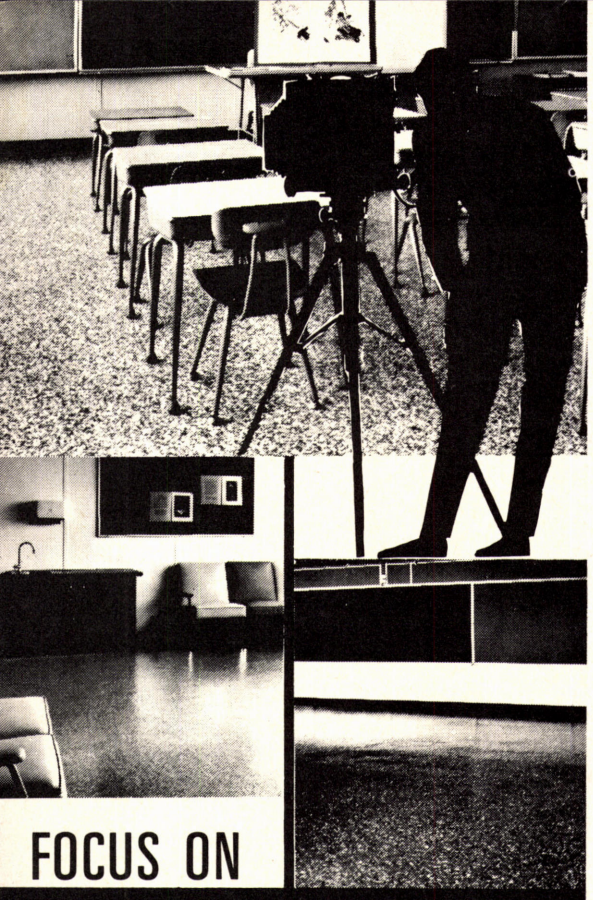

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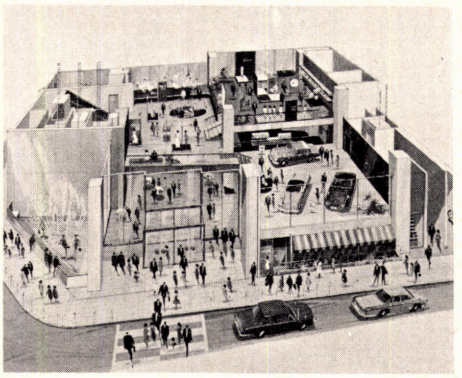

## Showroom tower has a series of 23 staggered decks

The new showroom tower for Sony Corporation now rising in the Ginza district of Tokyo has a series of 23 staggered decks rising from about 10 feet above ground level to a height of 66 feet. The building's total height is 100 feet. Each of the platforms is about one quarter of the area of the base, and they are arranged spiraling upwards around a center column. Vertical distance between platform levels is 2.9 feet, and the levels are connected by stairways. Architect for the $8.35-million structure is Yoshinobu Ashihara.

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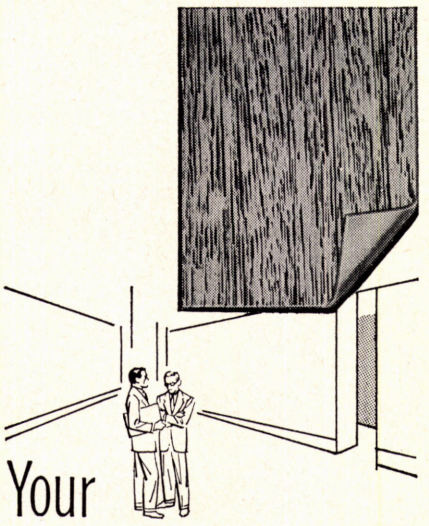

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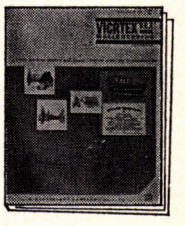

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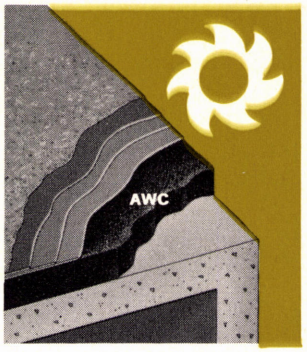
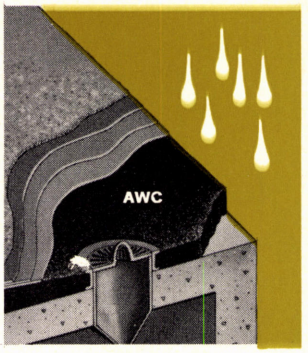
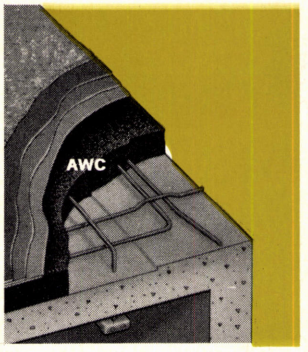


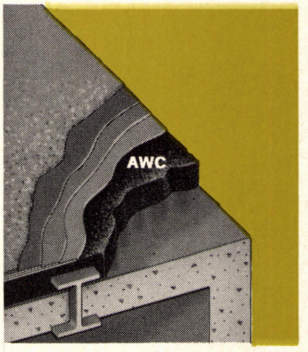

All-Weather Crete offers a K Factor, better than *any* other poured roof deck insulation!



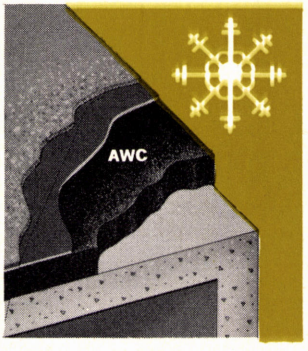

AWC can be sloped to drains thus preventing dead level roofs or water pockets.



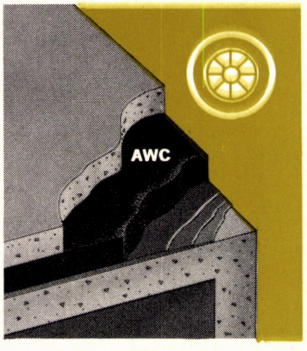

Its amazing working properties make it ideal for covering conduit or other roof irregularities!




Easy removal makes AWC ideal for future floor applications. Even covers reinforcing stubs and beams.




AWC contains no water—can be applied even in freezing weather. A monolithic insulation needing no curing time.

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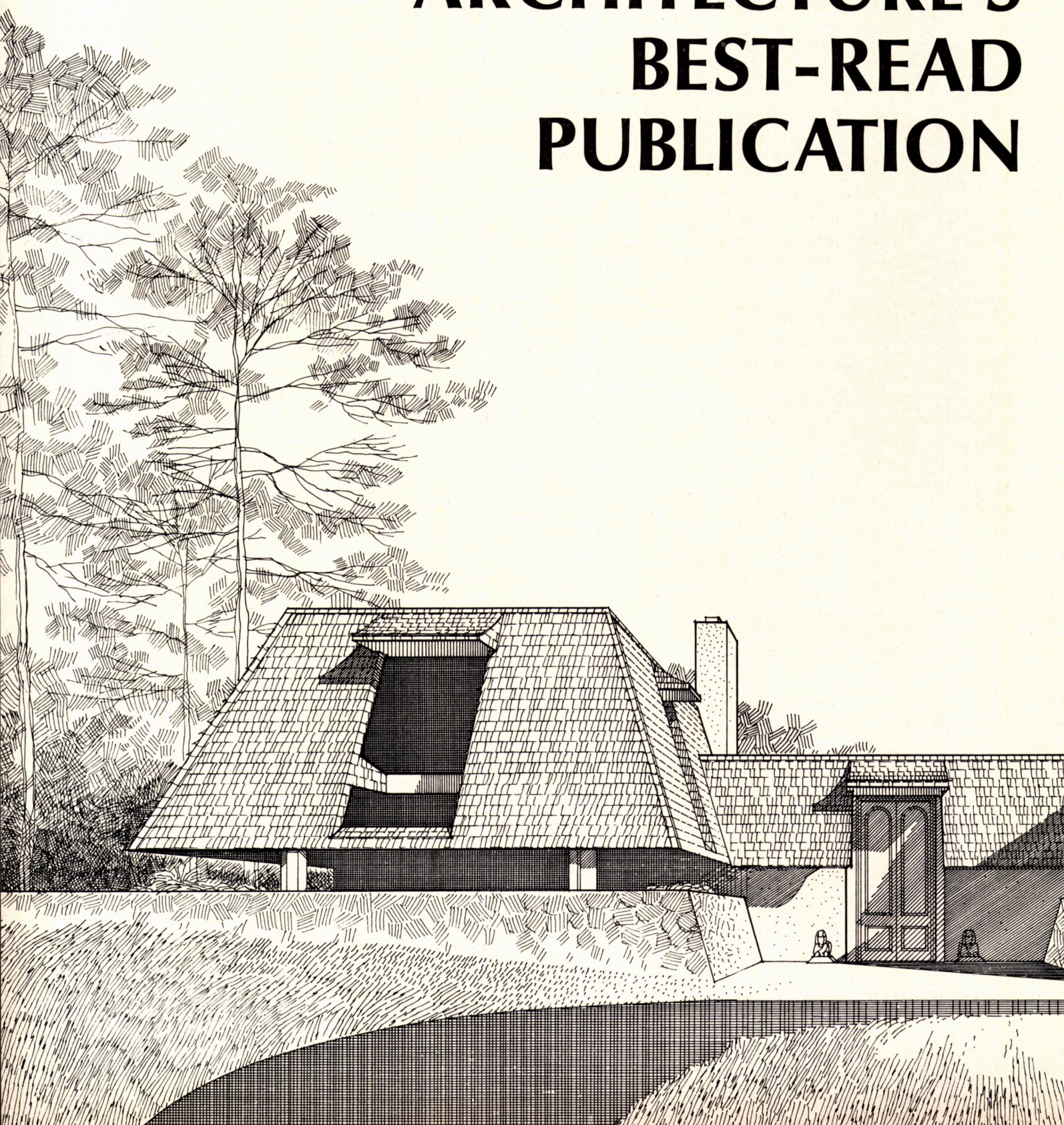

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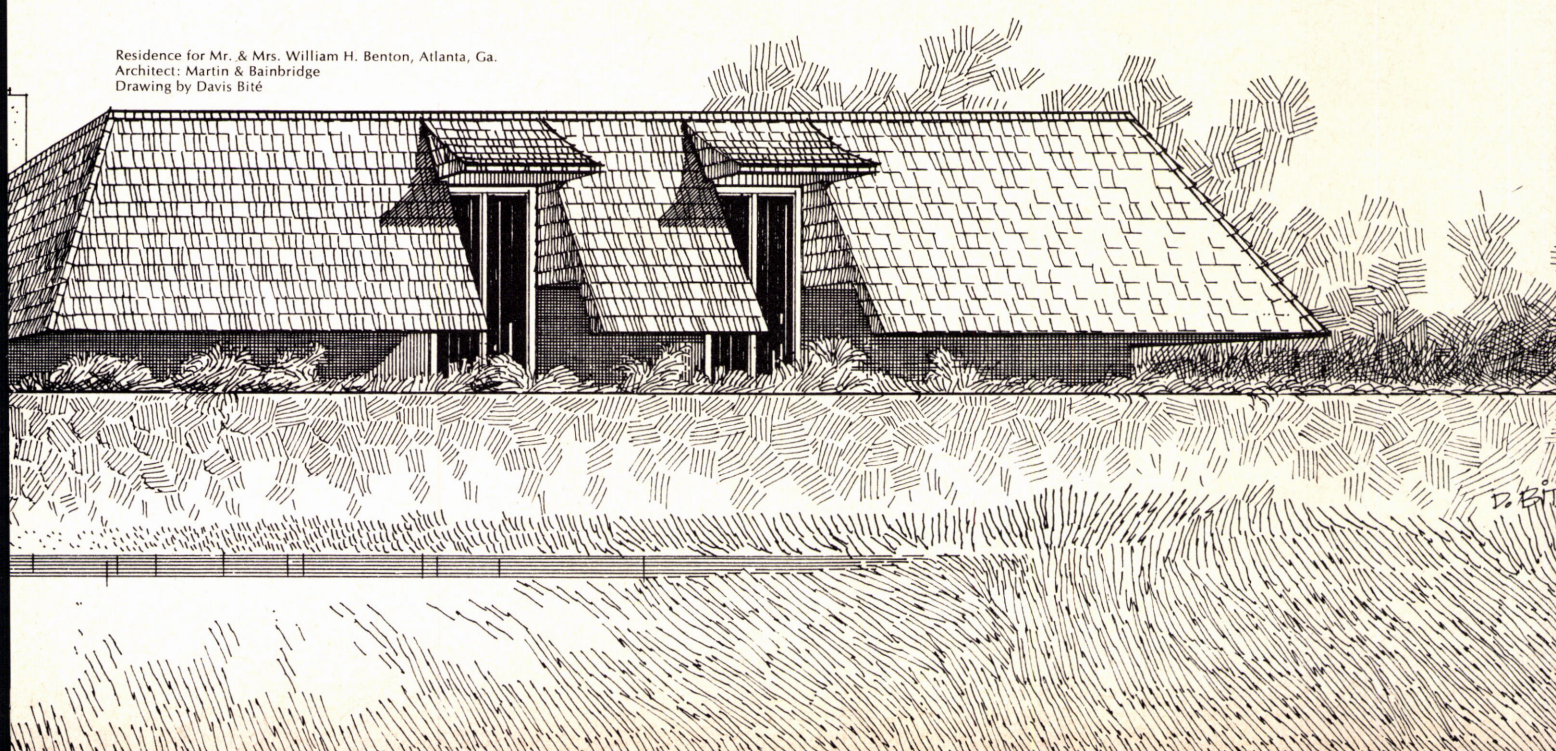

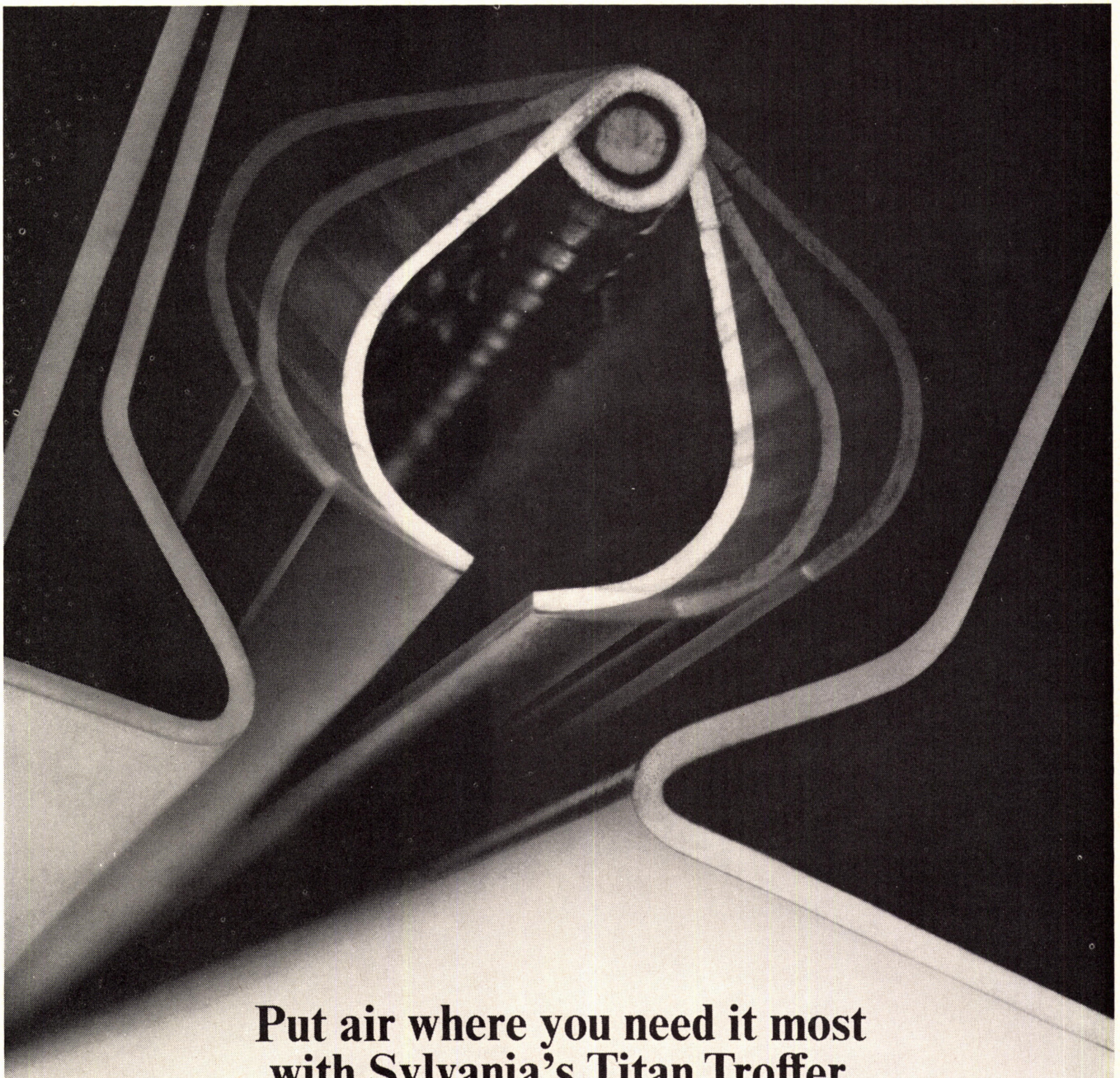

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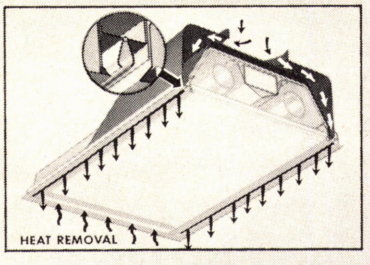


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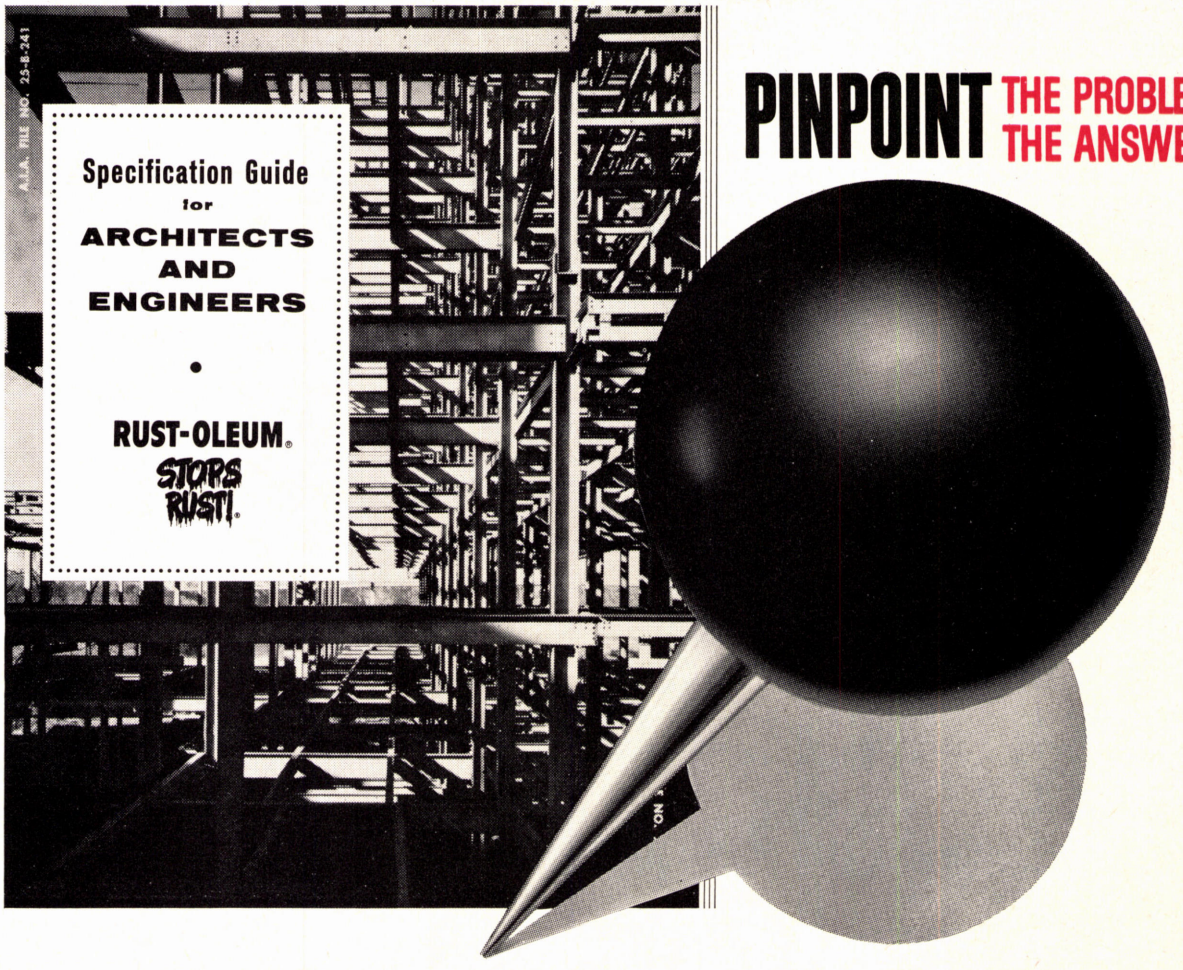


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# ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1966 Sweet's Catalog File as follows.

**A** Architectural File (green)
**I** Industrial Construction File (blue)
**L** Light Construction File (yellow)


**A**

Aerofin Corp. ..... 124
Air Devices, Inc. ..... 26
A Allen Mfg. Co., W. D. ..... 313
Allied Chemical Corp. .....364-365
Alma Desk Co. ..... 315
A-I Altec Lansing Corp. ..... 28
A-I Aluminum Co. of America .....57 to 60
A-L Amarlite Div., Anaconda Aluminum Co. .....85 to 88
I American Air Filter Co., Inc. .....310-311
American Cement Corp., Riverside Div. .....32-20–32-21
A-I-L American Plywood Association .....388-389
A-I-L American Saint Gobain Corp. .....134-135
A American Standard, Plumbing & Heating Div. ..... 45
A-I American Telephone & Telegraph Co..... 47
A AMETEK, Inc., Troy Laundry Machinery Div. ..... 76
Anaconda American Brass Co. .....285-286
A-L Andersen Corp. .....93 to 96
Architectural Record .....404-405
A-L Armco Steel Corp. ..... 32
A-I-L Armstrong Cork Co.....2nd Cover, 1, 82-83
A Art Metal, Inc. ..... 56
"Automatic" Sprinkler Corp. ..... 29

**B**

A Bally Case & Cooler, Inc. ... .....110-111
A-I Barber-Colman Co...21 to 24, 84, 282, 297, 318
A-I Barcol Overdoor Co., sub. Barber-Colman Co. .....386-387
Basalt Rock Co., Inc. ..... 32-7
A-I Bell Telephone System ..... 47
A Beneke Corp. ..... 69
A-I Bethlehem Steel Corp. ..... 324-325
A Bobrick Corporation, The ..... 346
A-I Borden Metal Products Co. ..... 37
A-I Bradley Washfountain Co. ..... 73
A Butler Mfg. Co. ..... 127

**C**

Canvas Awning Institute, Inc. ..... 318
A Carpenter & Co., L. E. ..... 402
Cast Iron Soil Pipe Institute ..... 290
A Ceco Corp. .....274-275
A-I-L Celotex Corp. .....140-141
Chicago Faucet Co. ..... 139
Chicago Hardware Foundry Co. ..... 332
Cissell Mfg. Co., W. M. ..... 19
Commercial Carpet Corp. 251, 253, 255, 257, 259
Cookson Co. ..... 20
A Co-Polymer Chemicals, Inc. ..... 402
Cramer Industries, Inc. ..... 138
A-L Crane Co. ..... 312
Crouse-Hinds Co. ..... 336-337

**D**

A Darling Co., L. A., Workwall Div. ..... 298
A-I-L Day & Night Mfg. Co. ..... 277-278
Day-Brite Lighting, Div. of Emerson Electric .....90-91
DeSoto Chemical Coatings, Inc. ..... 11
A-I-L Devoe & Raynolds Co., Inc., sub. Celanese Corp. .....384-385
A Dover Corp., Elevator Division ..... 2-3
A-I-L Dow Chemical Co. ..... 25
Duraflake Company .....32-19
Durez Plastics Div., Hooker Chemical Corp. .....396-397
A-I-L Dur-O-Wal, Inc. ..... 333

**E**

A Eastern Products Corp. .....3rd Cover
A-I Eaton Yale & Towne Inc., Norton Door Closer Div. ..... 117
A-I Eaton Yale & Towne Inc., Yale Div. ..... 123
Edison Electric Institute .....38-39
Electric & Gas Industries Assn., Electric Heating Div. .....32-23
A-I Electric Power Door Co. ..... 334
A Electromode Climate Control Div., The Singer Co. ..... 295
Eljer Plumbingware Div., Wallace-Murray Corp. ..... 97
A-L Engineered Products Co. ..... 282
Executone, Inc. ..... 130

**F**

Fabri-Form Co. .....390
A-L Fiat Prods. Dept., American Cyanamid Co. 129
Fleet Owner ..... 382
A-I-L Flintkote Co. ..... 265
A Follansbee Steel Corp. ..... 395
Ford Motor Company ..... 256
A-I-L Frantz Mfg. Co. ..... 284
A Fuller Co., H. B. ..... 375

**G**

A-I-L General Electric Co. ..48, 114-115, 282, 300-301
Glen Raven Cotton Mills, Inc. ..... 394
A Global Steel Products Corp. ..... 52
A-I Goodrich Co., B. F. ..... 254
A-I Granco Steel Products Co. ..... 133
A-I GREFCO, Inc., Building Products Div. ... 92
A Guth Co., Edwin F. ..... 258

**H**

A Hadco Products, Inc., sub. of Esquire, Inc. ..... 61
Harbison-Walker Refractories Co. ....96A-96B
A-L Harris Mfg. Co. ..... 380
A Haughton Elevator Co. ..... 327
A Haws Drinking Faucet Co. ..... 70
A Hickman Co., W. P. ..... 112
A-I Hillyard Chemical Co. ..... 122
Holophane Co., Inc. .....118-119
L Honeywell .....273, 340-341

**I**

A-I-L Inland Steel Products Co. .....108-109
International Harvester Co. ..... 142
A International Pipe & Ceramics Co. ..... 32-13
A-I Irving Subway Grating Co. ..... 268

**J**

A Jamison Cold Storage Door Co. ..... 72
Jarvis & Jarvis Div., United Service Equipment Co., Inc. ..... 260
A-I Johns-Manville .....74-75, 354-355
A-I Jones & Laughlin Steel Corp. .....262-263
A-I Josam Mfg. Co. ..... 307

**K**

Kaiser Steel Corp. .....32-14–32-15
A Kawneer Company .....104-105, 387
I Kelley Co., Inc. ..... 52
A-I-L Kentile, Inc. ..... 7
A-I Kohler Company ..... 144
A-I-L Koppers Company .....347 to 352
K-S-H Plastics, Inc. ..... 323

**L**

A Laclede Steel Co. ..... 89
A Laminating Services, Inc. ..... 344
A-I Lamson Corp. ..... 296
Latco Products ..... 297
A LCN Closers, Inc. .....100-101
Lehigh Portland Cement Co. .....316-317
LeRoy Construction Services .....32-24
A-I-L Libbey-Owens-Ford Glass Co. .....319 to 322
Limestone Products Corp. of America ... 294
A Linen Supply Assn. of America ..... 33
Lockwood Hardware Div., Independent Lock Co. .....27, 252
Lone Star Cement Corp. ..... 146
A Ludowici-Celadon Co. ..... 269

**M**

A-I Macomber, Inc. .....376
A-I Macton Machinery Co., Inc. ..... 30
A-I Mahon Co., R. C. ..... 328
A Market Forge Co. ..... 121
Marley Company ..... 126
McKinney Sales Co. ..... 12
McQuay, Inc. ..... 293
A Meadows, Inc., W. R. ..... 410
A Mercer Plastics Co., Inc. ..... 298
A Miami-Carey Div., The Philip Carey Mfg. Co. .....32-12
A-I-L Mississippi Glass Co. .....371-372
Modern Partitions, Inc. .....66-67
I Modine Mfg. Co. .....358-359
A-I Mosaic Tile Co. ..... 137
A Mo-Sai Institute, Inc. ..... ....334-335

**N**

A NAARCO .....98-99
A-I-L National Gypsum Co. .....49 to 51
A Nevamar Co., Div. National Plastic Products Co., Inc. ..... 272
Norris Dispensers, Inc. ..... 299
A-I Norton Door Closer Div., Eaton Yale & Towne Inc. ..... 117

**O**

A O'Brien Corp., The ..... 390
Olin Mathieson Chemical Corp., Winchester Western Div., Ramset ..... 81
A-I Onan Div., Studebaker Corp. ..... 291
A Otis Elevator Co. ..... 345
A-I Overhead Door Corp. ... .....62 to 64
A-I-L Owens-Corning Fiberglas Corp. .....266-267

**P**

Pacific Gas & Electric Co. .....32-18
A-L Pella Rolscreen Company ..... .....131-132
A-I Pennsalt Chemicals Corp. ..... 143
A-I Perlite Institute, Inc. ..... 391
Pilkington Brothers Limited ..... ..... 145
A-I Pittsburgh Corning Corp. .....329-330
A-I-L Pittsburgh Plate Glass Co. .....280-281, 399
P-N Luminous Equipment Co. ..... 332
Ponderosa Pine Woodwork ... ..... 292
Portland Cement Association .....15 to 18
A Powers Regulator Co. ..... 326
A Presstite Div., Interchemical Corp. ..... 303
A-I Prestressed Concrete Institute ..... 357
Price Pfister Brass Mfg. Co. ..... .. 31
A-I Products Research & Chemical Corp. ..... 368

**R**

A-I Raynor Mfg. Co. .....138, 139
A-L Red Cedar Shingle & Handsplit Shake Bureau ..... 279
A-I-L Reynolds Metals Company .....120-121, 343
A-I Richards-Wilcox Div., Hupp Corp. ..... 128
A Rohm & Haas Co. ..... 125
A Rowe Mfg. Co. ..... 302
A RUSSWIN, Div. Emhart Corp. .....288-289
A-I Rust-Oleum Corp. ..... 407

**S**

Sandvik Steel, Inc. ..... 363
A Sanymetal Products Co., Inc. ..... 283
A Sargent & Company ..... 71
A Sargent & Greenleaf, Inc. ..... 136
A Schlage Lock Co. .....54-55
A Schokbeton Prods. Corp. .....380-381
Shell Chemical Co. ..... 113
A-I Silbrico Corp. ..... 403
A Simmons Co. ..... 370
A-I-L Sisalkraft Div., St. Regis Paper Co. ....308-309
Slater Electric, Inc. ..... 379
A-I Sloan Valve Company .....4th Cover
Southern California Edison Co. .....32-6, 32-8
So. Calif. & So. Counties Gas Cos. .....32-16
A Southern Equipment Co. ..... 34
A-L Southern Pine Association ..... 331
Square D Company ..... 367
A-I Standard Conveyor Co. ..... 84
Steelcase, Inc. ..... 383
A Steel Deck Institute ..... 116
A-I Stromberg-Carlson, sub. General Dynamics Corp. ..... 398
A Sunbeam Lighting Co. ..... 14
Sweet's Catalog Service .....392, 409
A-I Sylvania Electric Products, Inc. ..... 406
A-I-L Symons Mfg. Co. ..... 68
Synkoloid Company .....32-17

**T**

Talk-A-Phone Co. ..... 314
A-I Taylor Co., The Halsey W. ..... 287
A Thermoproof Glass Co. ..... 84
A-I-L 3M Company .....306, 393
Trane Company .....400-401
Trinity White, General Portland Cement Co. ..... 8