

ARCHITECTURAL RECORD

April 1960

Building Types Study: Hospitals

by van der Rohe

New Office Buildings in San Francisco

by Wurster

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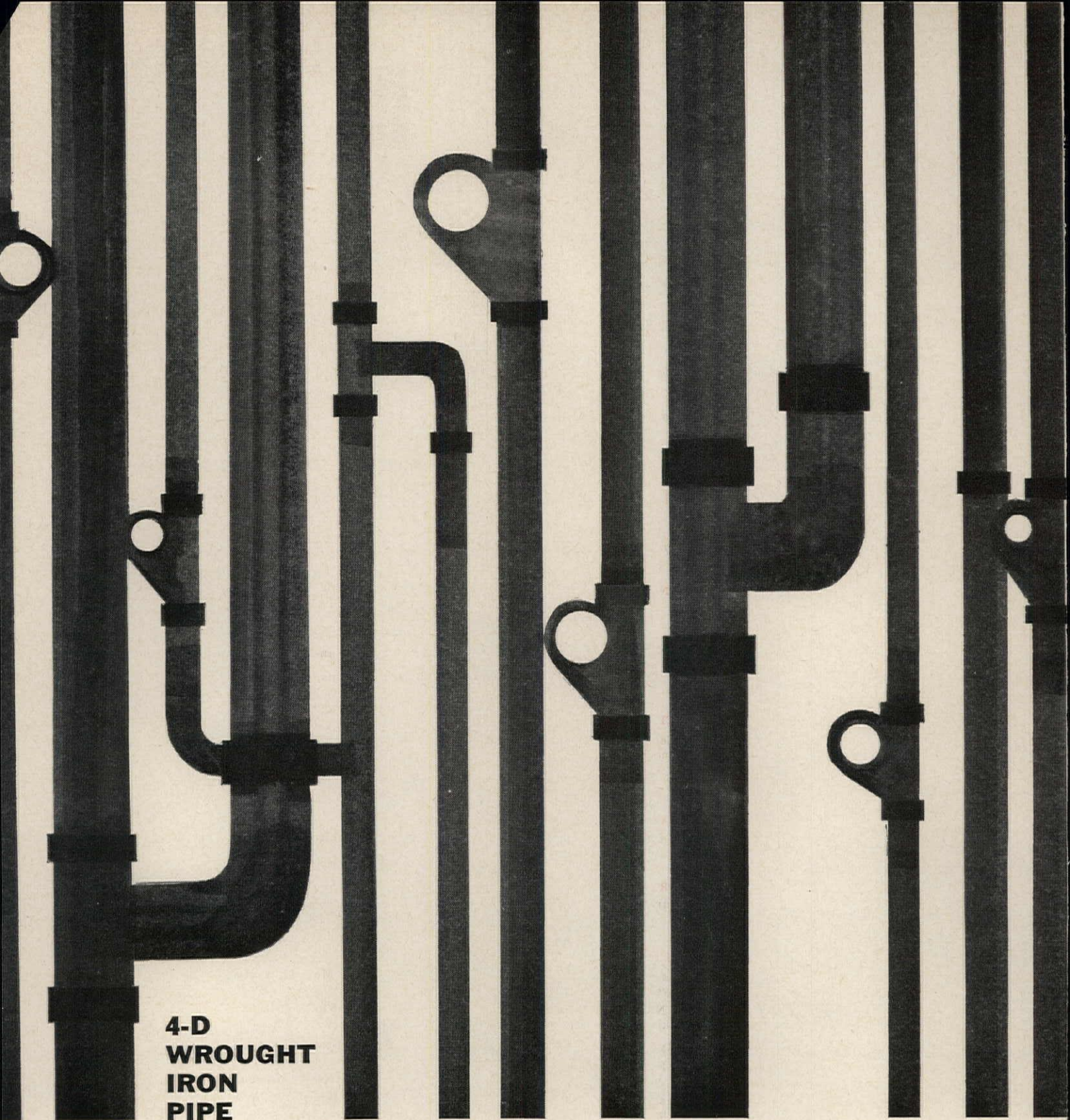
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Pavilion Apartments, Newark, N. J. Mies van der Rohe, architect. Joseph W. Molitor, photo.

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Coming in the Record

MODERN ART AND MODERN ARCHITECTURE

In the embattled history of modern architecture, it has had to face no more embittered accusation than that of modern artists who charge that the mother of the arts has deserted them. It is far from clear who has deserted who; but the facts of economic life control the situation in so many cases that there has been little opportunity to consider the important question of the relationship of modern art and modern architecture in terms of a significant effort at collaboration on a major architectural occasion. The UNESCO Headquarters in Paris offers the most important opportunity to date; and John Burchard, who has recently visited the building, writes another of his major critical articles for the RECORD on the results of this effort.

SCHOOLS FOR TODAY AND TOMORROW

Architects confronted with the all-too-pressing problems of designing schools to fit today's educational programs and today's budget are expected also to have an eye on tomorrow's needs: a more than ordinarily difficult assignment in these days of shifting educational philosophies. One of the new sources of aid for architects in assessing the implications of educational trends has come to be the Educational Facilities Laboratory of the Ford Foundation, with its sponsorship of varied research projects relating to just these problems. Next month's Building Types Study on schools will lead off with an article summarizing the conclusions of a forthcoming E.F.L. report on "Tomorrow's Schools." Also promised by the study: several outstanding examples of today's school design.

DESIGNED FOR COMMERCE

A free-standing bank building in an industrial section in the outskirts of Chicago and an office building for a major bank in the heart of Miami are among new buildings to be featured. The Chicago bank, for which Harry Weese was the architect, employs an intriguing structural system of precast concrete to provide a column-free banking space lighted by clerestory windows; the interiors of the Miami bank (Weed-Johnson Associates, Architects) have had the collaboration of a sculptor and an interior designer.

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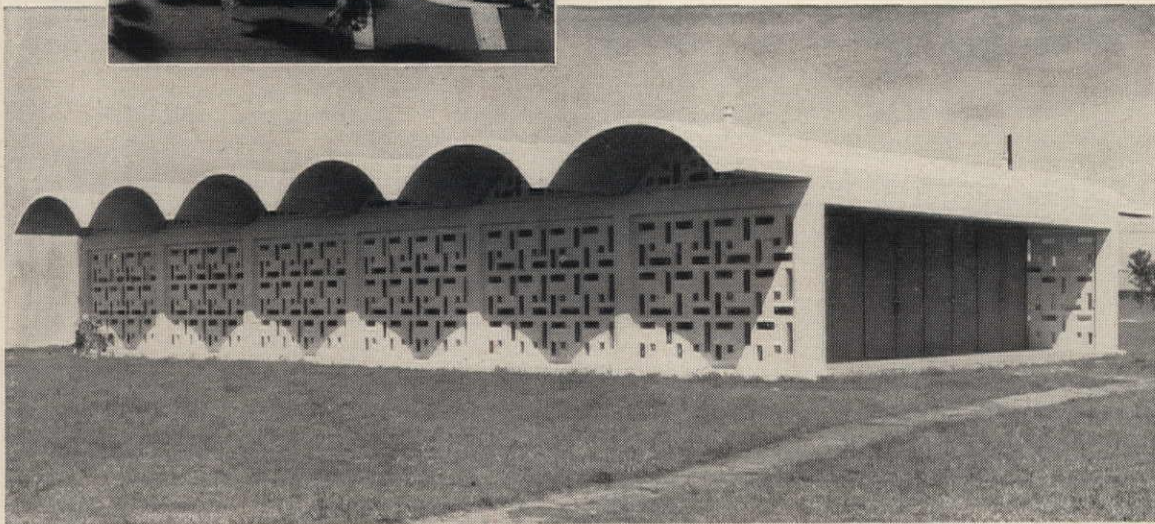
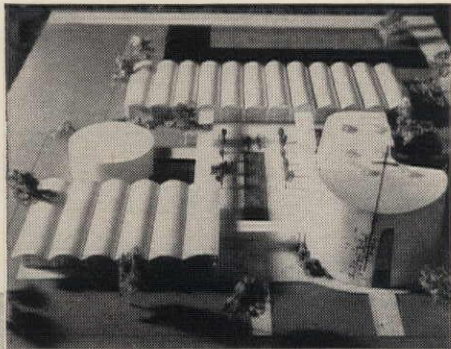
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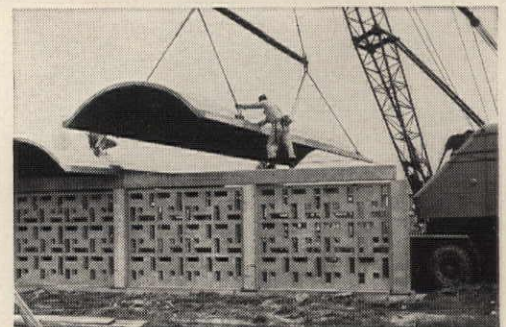
Above, newly completed church school. Top, model of entire project, shows first phase in left foreground, main sanctuary at right and other educational buildings at rear.

● Structural attractiveness and construction simplicity go hand-in-hand in this interesting precast concrete church school in New Orleans. Serving temporarily as both school and church, the building is part of a three-phase project that will include similar precast concrete school buildings plus a unique cast-in-place concrete sanctuary.

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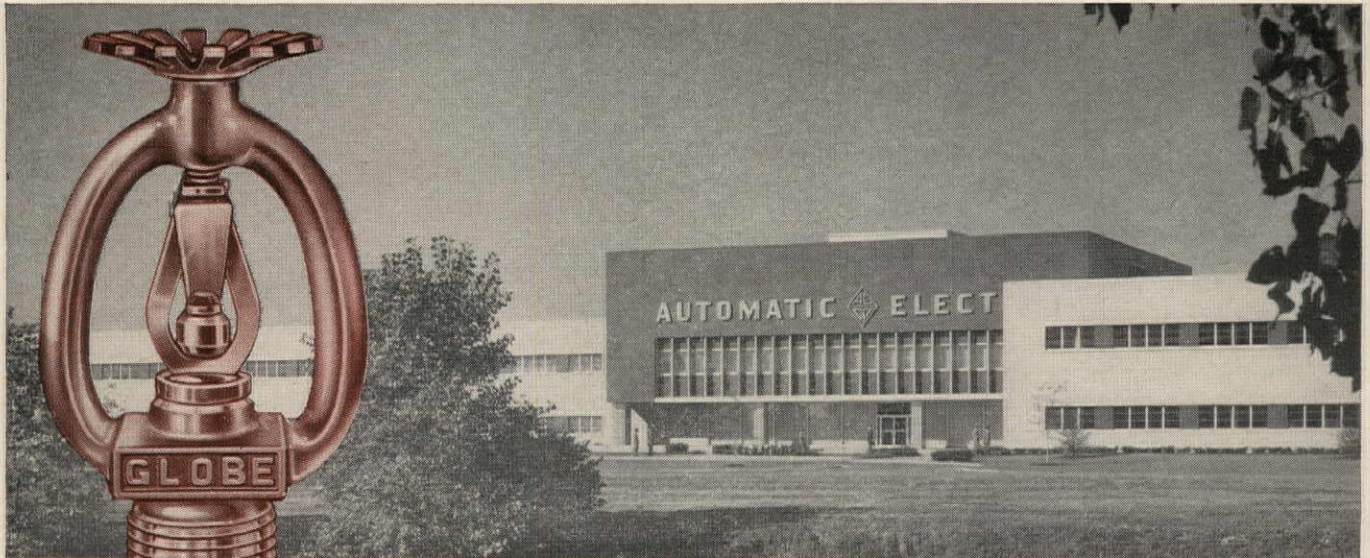
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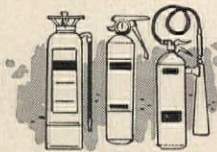
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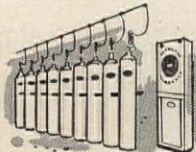
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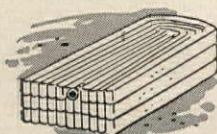
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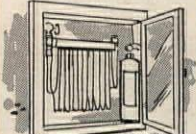
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End of an Era

A recent news item reports the appointment of Jack Burke as public relations director of the Frank Lloyd Wright Foundation of Architects. Mr. Burke was formerly assistant to William T. Evjue, editor-publisher of the *Madison (Wis.) Capitol Times*.

Leonardo's Three-Level City

Somebody looking through an old issue of the RECORD the other day came upon an article describing Leonardo's "fascinating scheme for replanning the city of Milan" which is not only a fresh reminder of how tough it is to come up with an idea Leonardo had not somehow foreshadowed but also a rather grim indication of how long some ideas must wait for their time to come. "After the plague of 1485 and 1486," the article (May 1918) recounts, "he addressed to the Duke, his patron, a letter describing a new type of thoroughly hygienic metropolis, so that his fellow citizens might no longer be required to live 'packed together like goats and pollute the air for one another.' The plan involved the construction of ten smaller cities, each average accommodation for 30,000 inhabitants. A system of artificial rivers or canals, with lock connections and regulations, was to provide circulation facilities and a means of carrying off sewage. A maximum of light, air and cleanliness was accounted for in the plan; streets within the ten cities were as wide as the buildings bordering them were tall; great squares and market places were also included. Streets were, furthermore, arranged in two levels, the upper for pedestrians, the lower for traffic; the latter were also accessible from the canals, thus providing ready means for cleaning them and also for

transportation of goods. A still lower level was occupied by a complex system of smaller canals to be used by gondolas. This level and the traffic level both had access to all houses for purposes of easy delivery of goods. To be sure, this huge project was at that time far beyond human means and exchequer to finance, though we do not doubt that da Vinci could readily have brought it physically into being. Today such enormous undertakings are everywhere in progress; many even of much larger scale are a matter of common practice. There is much in this Utopian plan of Leonardo's that will merit investigation, and for modern methods and materials it would not be of exaggerated magnitude." Five centuries after Leonardo, and 42 years after the article quoted, this month's news includes (page 20) still another bold proposal for a new city which would segregate pedestrian and vehicular traffic, still another reminder of all the proposals and some brave experiments in between. Any real signs the time of this idea has come?

Anybody for Un-design?

Sir Hugh Casson, the man who surmounted the incredible obstacles involved in producing *designed* street decorations for the Coronation (everybody knows he's also an architect of buildings of distinction) said one of those thoroughly candid things he often has to say at a meeting of London's "A.A." not long ago: "... I share the craving, which amounts at times almost to insanity, to drink coffee out of a thick white cup or eat apples out of a brown paper bag and to find something where some damned designer has not been at work. It is intolerable that you cannot get a brown paper bag without some

pattern on it designed by an industrial artist."

Vandalism and Architecture

The cost of juvenile delinquency in New York is affecting the design of its school buildings. New schools, by order of the Board of Education, will have fewer and smaller windows following "excessive" breakage by vandals. In one school cited, 598 windows had been smashed (at a replacement cost of \$2680) in the first nine months after it opened. In future schools, size of large windows will be reduced from seven feet to five and a half feet; fewer windows will be allowed on street sides of buildings; and street-side windows will generally be placed out of reach of passers-by. Wire-mesh screens, steel panels and fences will provide further protection. Michael L. Radoslovich, A.I.A., director of architecture for the Board, has observed that with these protective devices "the building will look like a jail" but adds that school officials have no choice but to act as they have in the circumstances.

\$1,000,000,000,000???

A trillion dollars is a thousand million in this country, a million million in the United Kingdom: at any rate, more money than the ordinary imagination can even begin to grasp. But this unimaginable sum is the amount of materials and services to be required by new construction, plus maintenance and repair, over the next ten years, according to Dr. George Cline Smith, vice president and chief economist of the F. W. Dodge Corporation, who estimates \$600 million will go into new construction. How much will architects design?

How Should Architecture Be Taught?

Profession Asked to Participate as Plans Develop
For Fourth Annual A.C.S.A.-A.I.A.
Summer Seminar for Teachers

BY HAROLD BUSH-BROWN
CHAIRMAN, R-17 COMMITTEE 1960

As the days grow longer and the end of school approaches, the thoughts of some will be turning towards that change of scene which follows the black-gowned Commencement-day procession;—none more eagerly than the fortunate teacher in a school of architecture who has been awarded a scholarship to go to Sagamore Lake in the Adirondacks to attend the fifth seminar on the teaching of architecture. Here will assemble fifty or more teachers from as many schools coming from all parts of the country to explore, to discuss and to exchange ideas on the preparation being accorded the future architect while a student in college.

There is much talk these days about the need of improving education—and rightly so. The Soviet challenge has shaken us out of our complacency. In holding up the mirror and looking at ourselves, some of our own shortcomings become glaringly apparent. And in the field of teaching, there is no more difficult or complex area than architecture.

What Are We Doing?

The need for self-examination has been recognized for some time by many of our professional leaders. Following World War II, Douglas Orr, then president of the American Institute of Architects, felt this need and Ralph Walker, who followed, set up a commission in 1949, which issued the well-known report in 1954, often spoken of as the Burdell Report, under the title "The Architect at Mid-Century." So it will be seen that the architectural profession has not been asleep, nor have the schools been idle. Many have been making a re-study of the problems which confront them. Perhaps also the National Architectural Accrediting Board should be mentioned as having had a salutary effect.

But all of these are top-level activities; those concerned are for the

most part administrators; and in national and regional meetings it is the administrators who, in general, have been in command. One suggestion for improvement contained in the survey report was Recommendation 17, advocating the setting up of study institutes, not for heads of schools, but for teachers.

Teachers as Thinkers

The program, under the auspices of the Association of Collegiate Schools of Architecture, was inaugurated in Cambridge on an experimental and trial-run basis in October 1956. Later it came to be administered by a Joint A.C.S.A.-A.I.A. Committee, R-17. There have followed a series of annual summer seminars.

The architectural teacher, once having freed himself from the round of academic duties, found isolation to his liking; first at Aspen, Colo., in 1957, and each summer seminar has followed this precedent in getting away from a collegiate setting: next at Nantucket and last year at Grindstone Lake—a real hideout whose only principal disadvantage proved to be the difficulty many had in finding their way to this quiet spot in the north woods of Wisconsin. Here one could give full attention to the subject in hand without the usual distractions, and concentrate on vital matters of the mind and the all-absorbing interest of one's profession.

Next June it is planned to meet at another unfrequented lakeside, free from the noise and the smell of traffic,—Sagamore Lake in the Adirondacks in northern New York State, and while this is the antithesis of the usual college campus, it does provide all the facilities, as it is a "conference center" operated by Syracuse University.

Focus on Objectives

These seminars are for teachers,

largely younger teachers, and a limited number of prospective teachers. Our discussions, while not neglecting methods, techniques, and course content, have reached out beyond these more pedestrian matters and have considered the broad aims of the schools in preparing men for the profession.

It has seemed appropriate to begin by asking what is happening in the profession itself, what changes are taking place, what is actually going on in office practice and procedure. Recognizing that it was important to consult the practitioner, we have been fortunate in the response we have had from leaders in the profession in agreeing to come to us.

From Aspen to Grindstone

In planning a program, there are two possible approaches:

1. An all-comprehensive program in which all facets of architecture and the curriculum are given proper consideration according to their relative importance, with no special emphasis anywhere. (Thus it would be possible to give the same program every year assuming that those enrolled would always be a completely new group.)

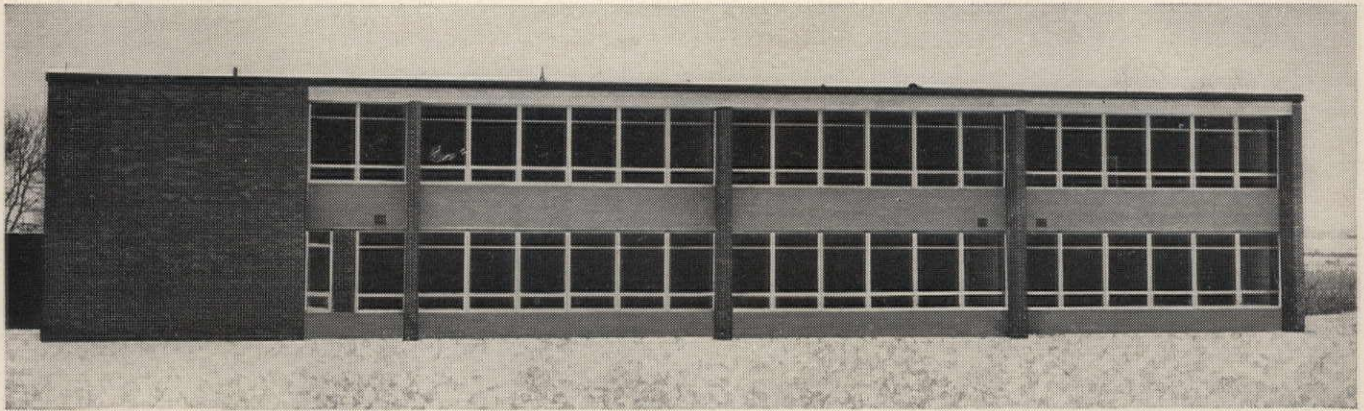
2. A program with a theme representing limited coverage centering attention upon a particular phase or facet of architecture and architectural teaching.

We have fluctuated between these two approaches.

At Aspen the theme was "The Determinants of Design," not the consideration of design teaching itself as such; but rather, a consideration of all those areas of study within the curriculum which impinge upon design and relate to it and contribute to it.

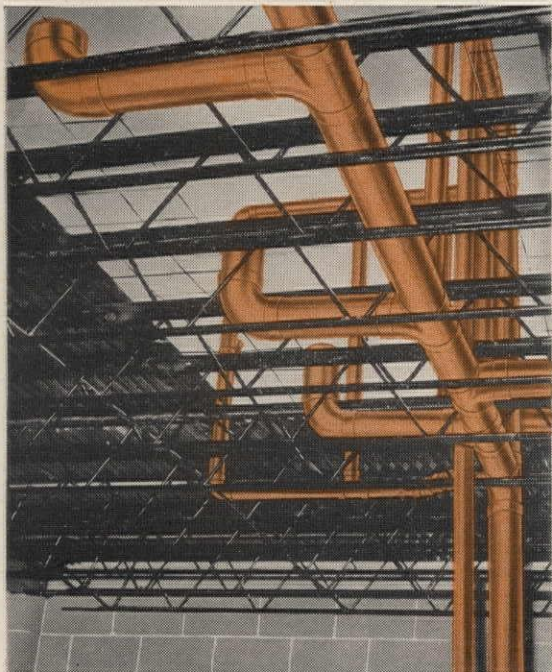
At Nantucket the overall approach was used—the whole range of architecture was separated into five divisions, each given equal weight in

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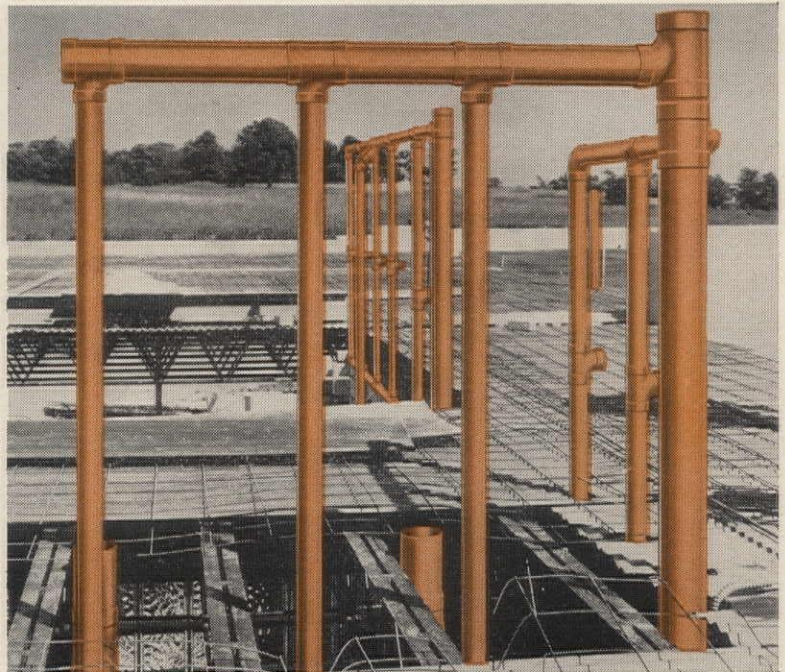


GOWER SCHOOL ADDITION, Hinsdale, Illinois. *Architect:* Wight & Schlaebitz, Downers Grove, Illinois.
Plumbing and heating contractor: Jerry & Phil's Plumbing & Heating, Inc., Brookfield, Illinois.

SUPERIOR **ALL-COPPER PLUMBING** IN THIS SCHOOL AT LOWER COST TO TAXPAYERS



COPPER SANITARY DRAINAGE LINES roughed-in among structural members at Gower School. This space-saving installation would have been impracticable with heavy, bulky pipe requiring threaded or caulked joints.



COPPER SANITARY DRAINAGE LINES for second floor lavatories at the Gower School. Light weight of copper tube and ease of making solder joints save many dollars on multiple installations like this. Compact assemblies eliminate wide plumbing walls, give greater usable floor area.

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because their consistent fine quality and close tolerances makes our work easier and keeps the job costs within our estimates.”

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Collaborative Medal of Honor: Westmoor High School, Daly City, Calif.; Mario J. Ciampi, architect; Paul W. Reiter, associate architect; Isadore Thompson, structural engineer; Buonaccorsi & Murray, mechanical engineers; Harold A. Wright, electrical engineer; Lawrence Halprin, landscape architect; Anne Knorr, muralist; and Ernest Mundt, sculptor



Gold Medal of Honor in Architecture: Seagram Building, New York City; Ludwig Mies van der Rohe and Philip Johnson, architects

LEAGUE OPENS EXHIBITION

Since its founding in 1881, the Architectural League of New York has sponsored 61 National Gold Medal Exhibitions. Many of these have been important, but this latest must be regarded as a major step forward—in size, in breadth, and in care of selection.

The process of selecting these finalists required a year of preliminary exhibitions of work in the arts, as they related to architecture, and in several categories of building types. The resulting collection, in the view of League president Morris Ketchum Jr., “provides pictorial proof that the last five years of material prosperity have given our country’s practitioners of the building arts the opportunity to create a new and brilliant renaissance in the art and science of building.” It also constitutes an architectural exhibition of the first importance.

The League has over the past few years been making special efforts to revitalize its role as a liaison between the fine and building arts. In this connection, it has established a new medal: the Collaborative Medal of Honor, given “to that project which . . . best exemplified the result of outstanding collaboration between at least four practitioners of the building arts, including architecture and three other categories.”

The exhibition, which opened at New York’s Museum of Contemporary Crafts on February 25, will be on view through May 15. The American Federation of Arts plans to send the collection on a tour of galleries and museums in both the United States and Canada.

Members of the juries selecting awards winners in
continued on page 14



Gold Medal of Honor in Sculpture: mobile for UNESCO, Paris; Alexander Calder, sculptor; Marcel Breuer, Pier Luigi Nervi and Bernard Zehruss, architects and engineers

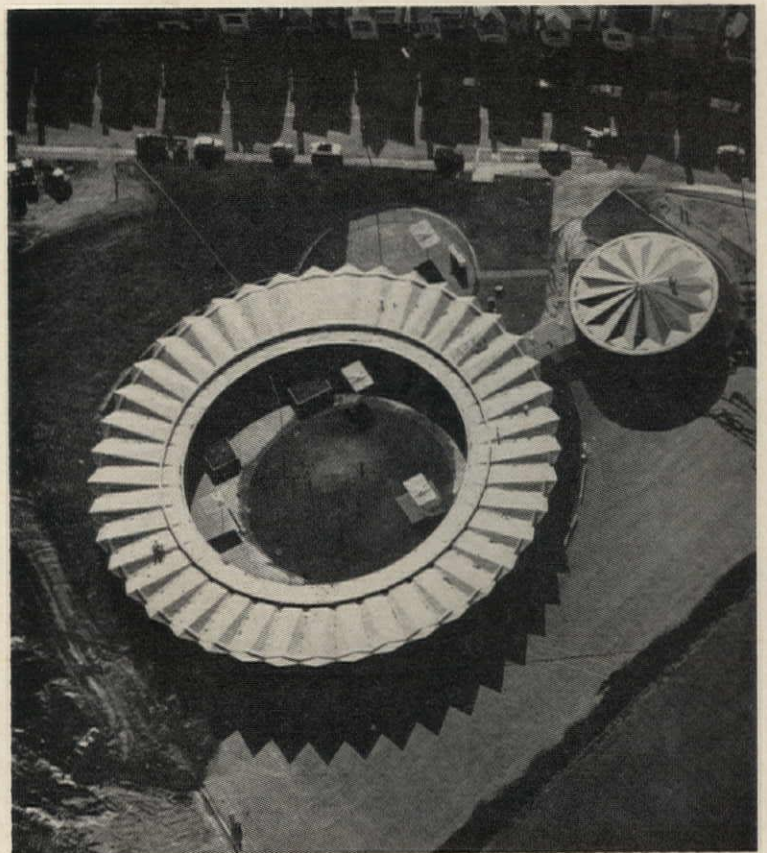


Gold Medal of Honor in Landscape Architecture: a joint award for the Connecticut General Life Insurance Building, Hartford, Conn.; Skidmore, Owings & Merrill, architects and landscape architects; Isamu Noguchi, sculptor and landscape designer

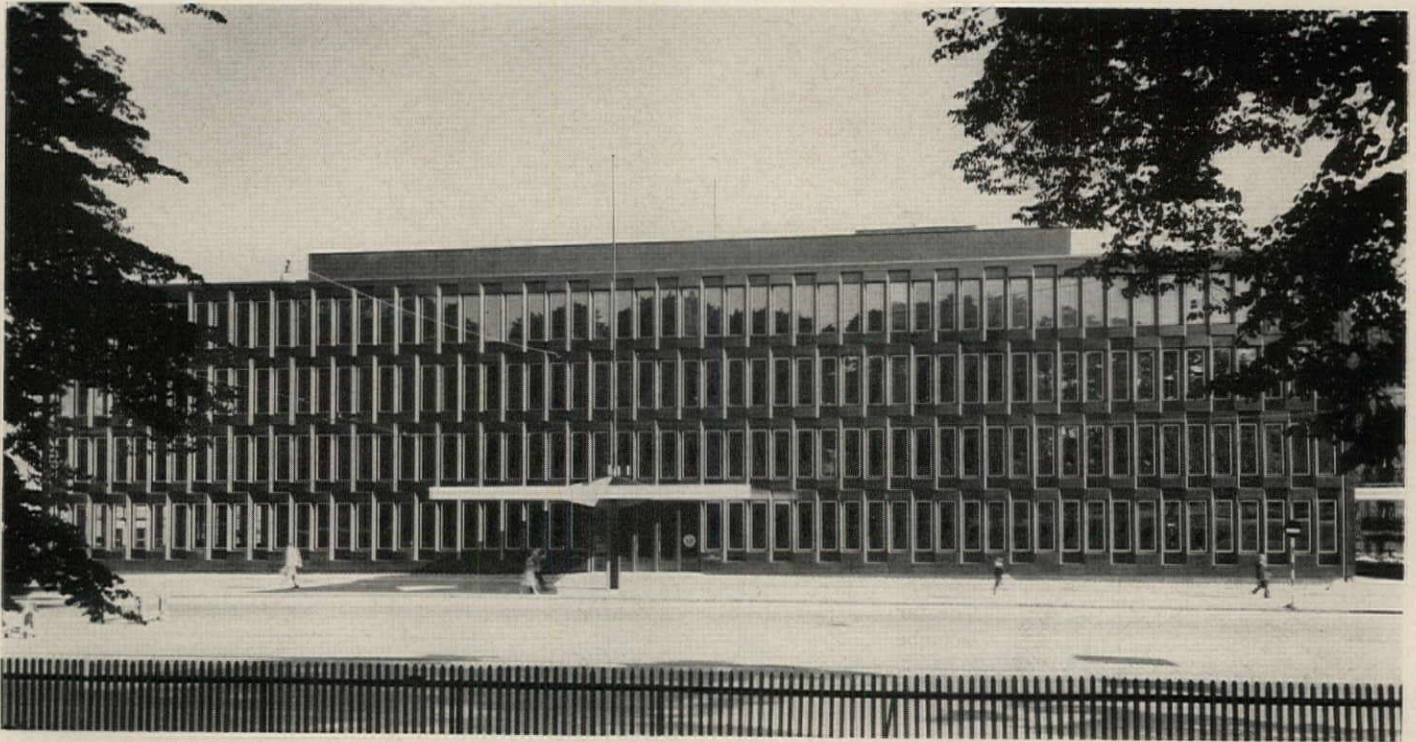
OF GOLD MEDAL LISTS



Gold Medal of Honor in Design and Craftsmanship: Christ Episcopal Church, Portola Valley, Calif.; Hervey Parke Clarke and John F. Beuttler, architects

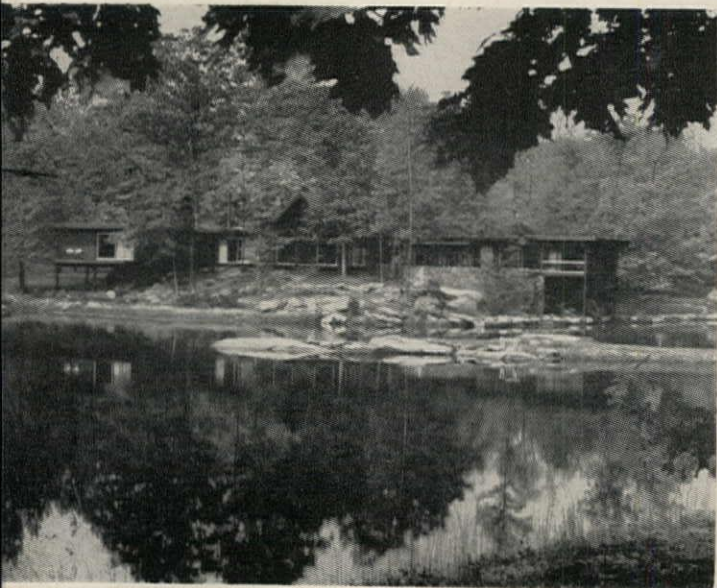


Gold Medal of Honor in Engineering: Vista Mar Elementary School, Daly City, Calif.; Isadore Thompson, structural engineer; Mario J. Ciampi, architect



Silver Medal of Honor in Architecture: United States Embassy, Oslo, Norway (AR, December 1959)

GOLD MEDAL EXHIBITION *continued*



Silver Medal of Honor in Architecture: Residence for John W. Strauss, Pound Ridge, N. Y.; Edward Larrabee Barnes, architect

each of the categories, in addition to Mr. Ketchum, who served as ex-officio member of all committees, included: for Architecture—Jose A. Fernandez (chairman), Giorgio Cavaliere, Louis I. Kahn, L. Bancel LaFarge and Ladislav L. Rado; for Engineering—Ira Hooper (chairman), Thomas Kavanagh, Guy Panero, Paul Weidlinger and Lev Zetlin; for Mural Decoration—Francis Scott Bradford (chairman), Dean Cornwell, Adolf Gottlieb, and Max Spivak; for Sculpture—Frank Eliscu (chairman), Marshall Frederichs, Costantino Nivola and Vincent Glinsky; for Landscape Architecture—Richard C. Guthridge (chairman), Francis Cormier, Michael Rapuano and Hideo Sasaki; for Design and Craftsmanship—Dan Cooper (chairman), Harry Bertoia, David R. Campbell, Dorothy Liebes, Gwen Lux and Mr. Bradford; and for the Collaborative Medal of Honor—Mr. Ketchum (chairman), and the chairmen of each of the committees.

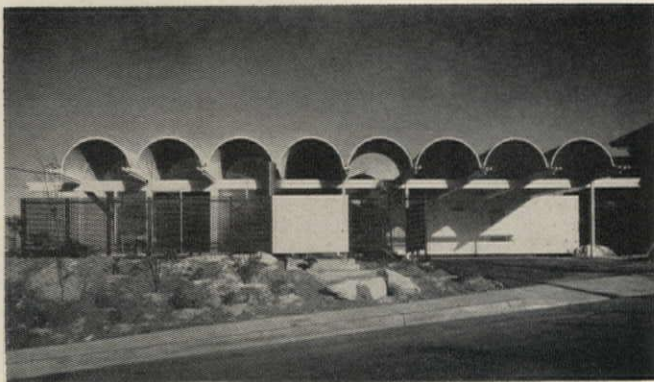
In addition to the awards shown, these additional citations were made: in Engineering—a Silver Medal to B. M. Dornblatt & Associates, structural engineers, for the Phyllis Wheatley Elementary School, New Orleans, (Charles R. Colbert, architect); in Sculpture—a Silver Medal to Richard Lippold for his sculpture at the Inland Steel Building in Chicago (Skidmore, Owings & Merrill, architects); in Design and Craftsmanship—Silver Medals to Robert Alden for the pulpit baffle at St. Mary's Church, Sioux Falls, S. Dak. (Harold Spitznagel and Associates, architect), and to George Nakashima for building and furniture design at his showroom in New Hope, Pa. Honorable Mentions were given in all categories.



Honorable Mention in Architecture: Kneses Tifereth Israel Synagogue, Port Chester, N. Y.; Philip Johnson, architect (AR, December 1956)



Honorable Mention in Architecture: Mile High Center, Denver; I. M. Pei and Associates, architects

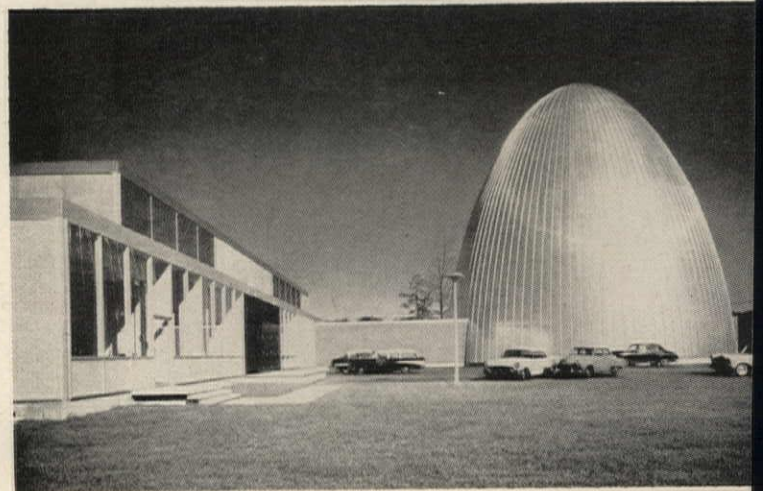


Honorable Mention in Architecture: House, Sherman Oaks, Calif.; Richard Dorman and Associates, architects



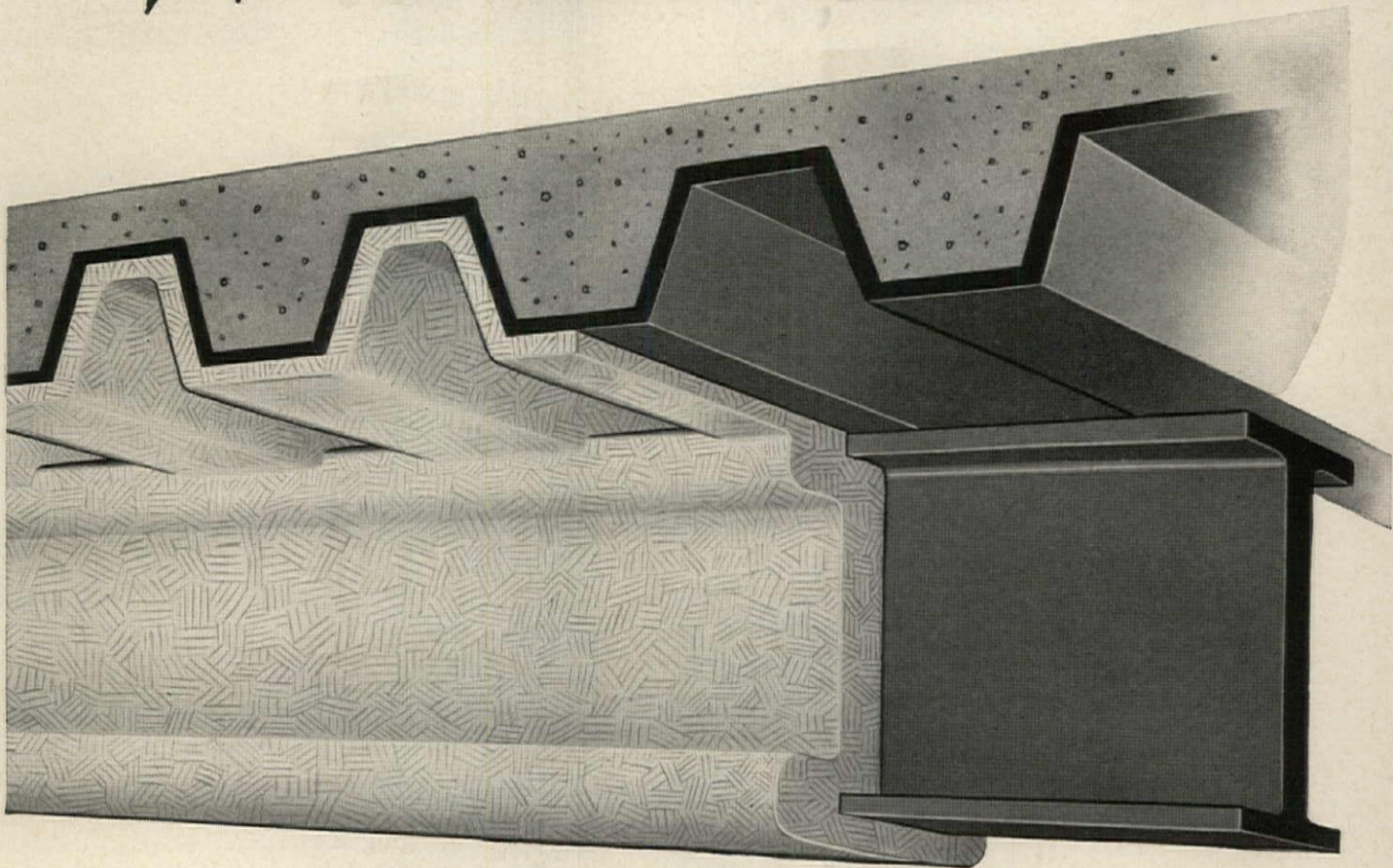
Honorable Mention in Architecture: McGregor Memorial Community Conference Center, Wayne University, Detroit; Minoru Yamasaki & Associates, architects

Honorable Mention in Architecture: Industrial Reactor Laboratory, Plainfield, N. J.; Skidmore, Owings & Merrill, architects



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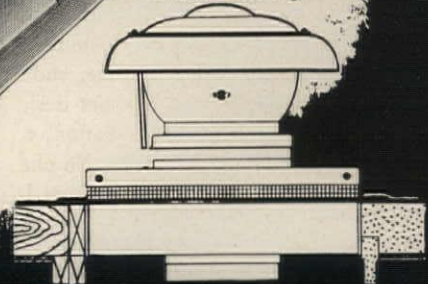
- The QT SOUND CONTROL CURB absorbs, in just 10" of space, as much noise as 18 feet of lined duct 14" in diameter and 1" thick.
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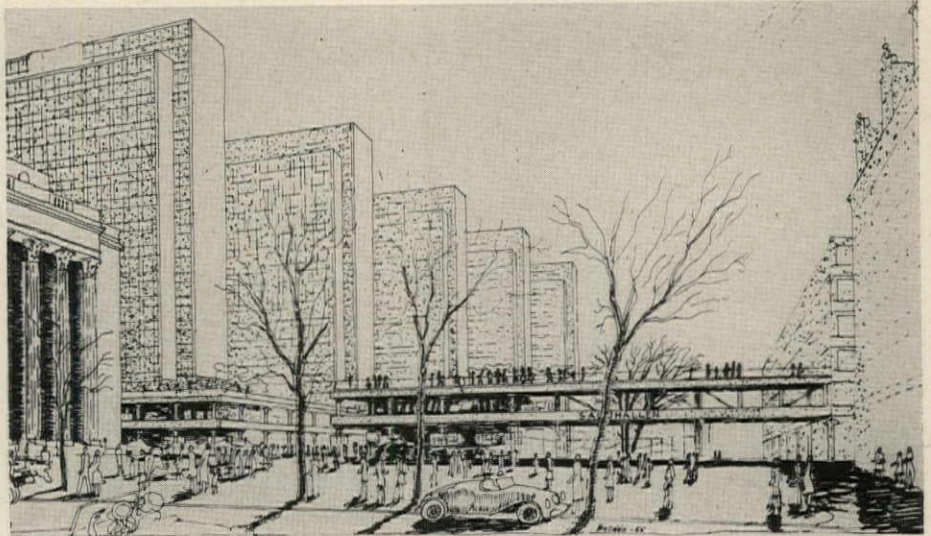
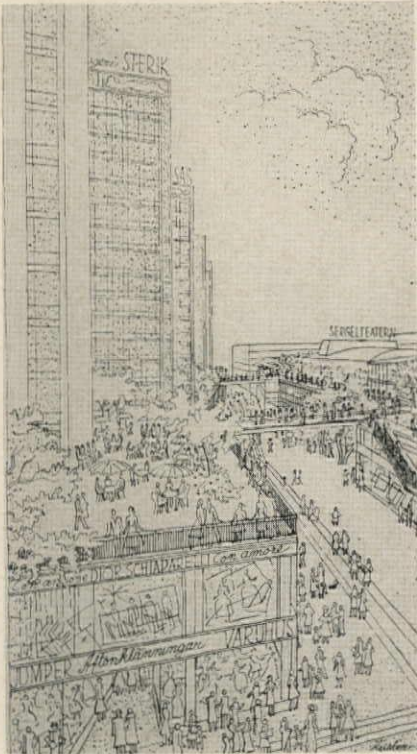


Four sizes. Overall height is 10" or 11" mounted like a conventional curb with or without cant strip. Can also be installed into roof for lower contour.

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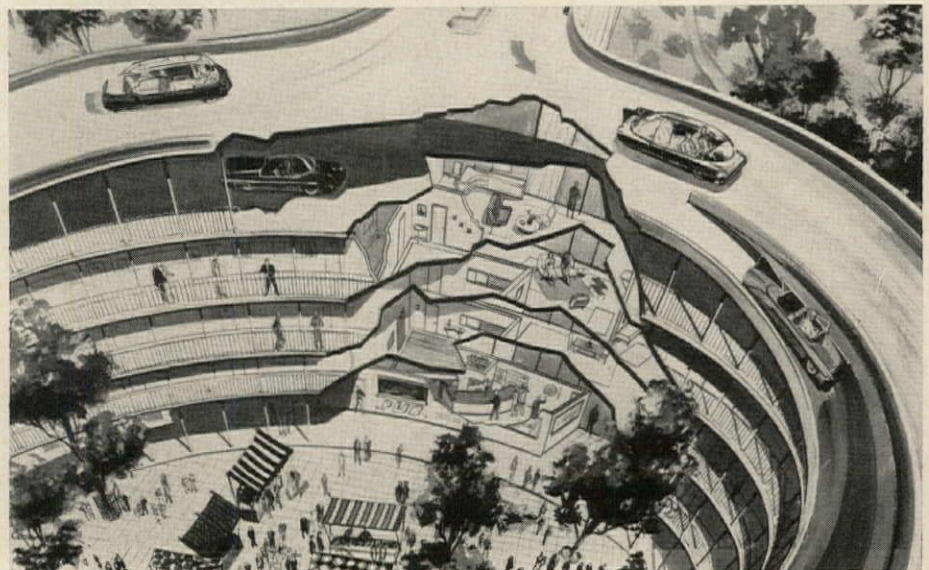


IN STOCKHOLM: Dominating the city's new downtown commercial center will be five 18-story office buildings, one of which has already been completed, the others of which will be finished by 1962. The first two floors of these buildings will be occupied by shops, on top of which roof gardens will be built, to be connected to each other by footbridges. The central area will be closed to vehicular traffic. Underground services include a much-needed 700-car garage and subways. Project was developed by municipal planning commission, with David Hellden as chief architect

TWO PROJECTS,
IDEAL AND REAL,
SEPARATE
PEOPLE AND CARS



IN LONDON: The Glass Age Development Committee, sponsored by glass manufacturers Pilkington Brothers, Ltd., and comprising architect Geoffrey Alan Jellicoe with, as consultants, architect Edward Mills and engineer Ove Arup, has undertaken to design an ideal city for the motor age—in fact, a “Motopia.” The commuting town was designed, in a sense, from the top down, with roads at the top, garages immediately underneath, and apartments under these. All ground on the 1000-acre site would be left free for the tenants’ safety and pleasure. Construction would cost an estimated \$168 million; no bidder, so far



How much fire protection should a floor-ceiling assembly provide?

Many specifiers doubt that there ever is a real question of how fire resistant a floor-ceiling assembly should be. They know that to provide less protection than that required by local codes is illegal. And they believe that extra protection not only "over protects" a building, but also automatically costs more.

local building codes should be minimum standards

However, recent experience has shown that local code requirements should be *minimum* standards and that additional fire protection need *not* cost more. Consider the example of Armstrong Acoustical Fire Guard, the only acoustical ceiling tile to offer rated fire protection to the structural components of a building.

when one-hour construction is required

Where only a one-hour rating is required in incombustible construction, you can have Acoustical Fire Guard with a *two-hour* rating at little, if any, extra cost. In such cases, Acoustical Fire Guard means (1) a safer building, (2) possible reductions in fire insurance premiums on the building and its contents, and (3) unlimited accessibility to the area above the suspended ceiling.

Where the method of achieving one-hour protection involves "wet" application, Acoustical Fire Guard can offer another advantage: savings of up to six weeks' construction time. These weeks can mean more revenue to stores, bowling alleys, and restaurants, and more rental income to building owners.

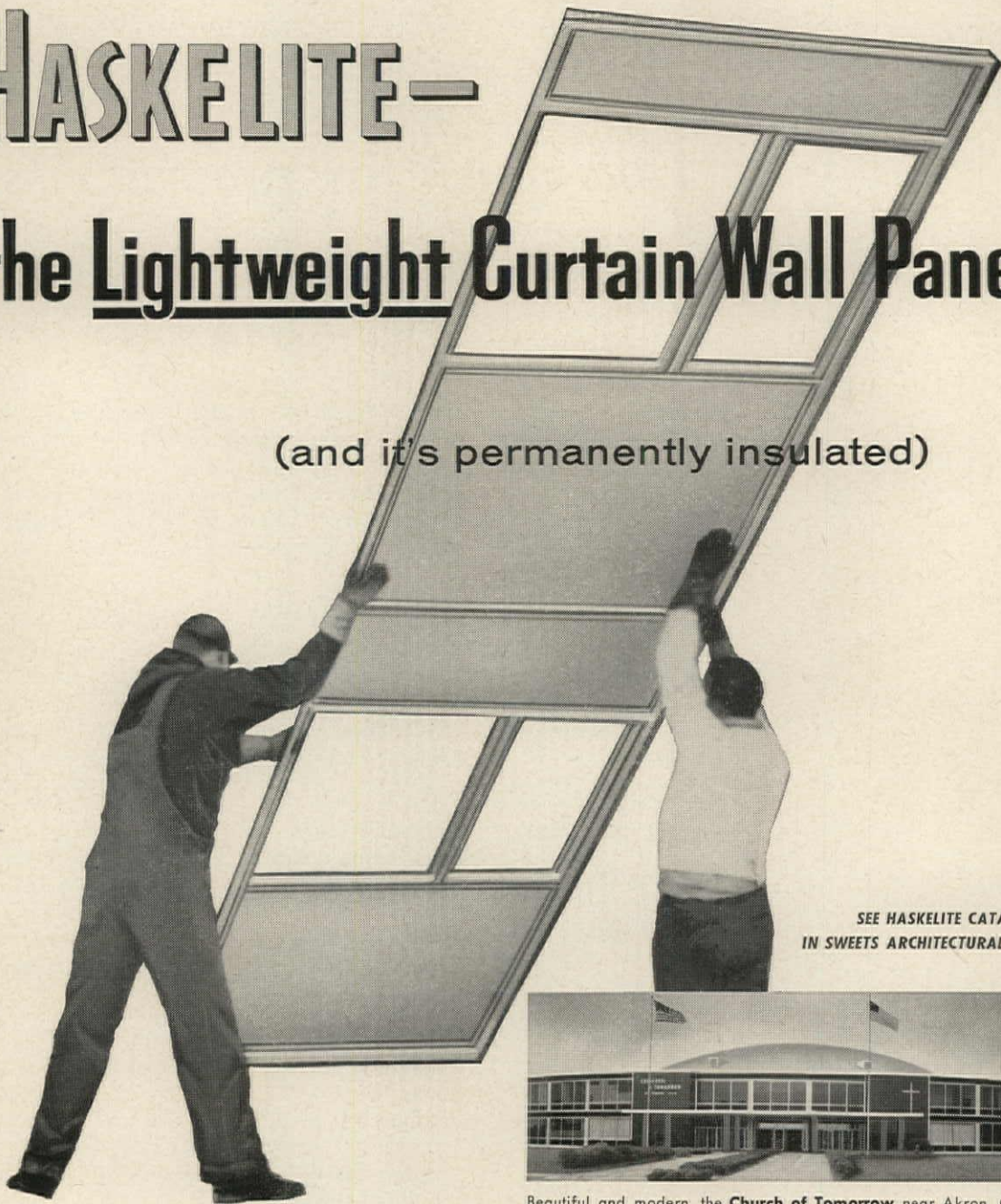
when no time-design rating is required

When no time-design rating is required, Acoustical Fire Guard gives you rated fire protection *plus* all its advantages as a superior ceiling material. It has excellent sound absorption. It is available in three attractive designs. It offers excellent resistance to room-to-room sound transmission (particularly important where ceiling-height movable partitions will be used). It poses no maintenance problems. And Acoustical Fire Guard costs little, if any, more than a regular suspended mineral tile ceiling.

Before you specify your next ceiling, consider Armstrong Acoustical Fire Guard. It may be that you can give your client a safer building and all the other advantages that this remarkable, new ceiling offers—at no increase in cost. For more information, contact your Armstrong acoustical contractor or your nearest Armstrong district office. Or write to Armstrong Cork Company, 4204 Rock Street, Lancaster, Pennsylvania.

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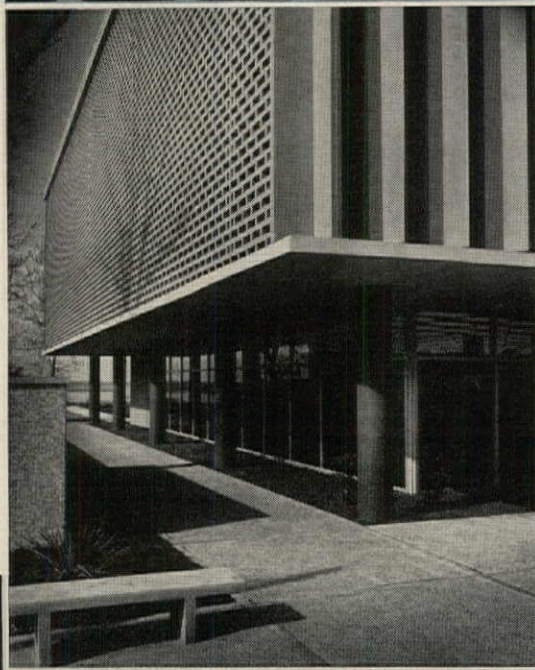
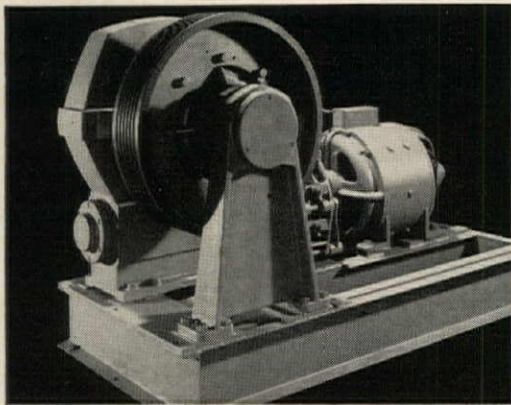
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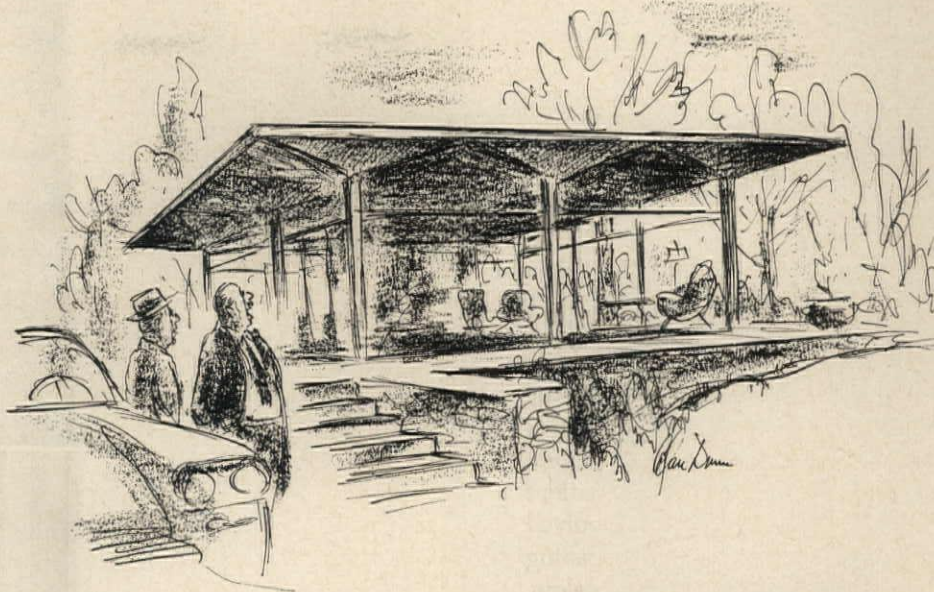
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—Drawn for the RECORD by Alan Dunn

“Well, all I asked for was a roof over my head—”

San Francisco!

Some 2000 architects are expected to converge on San Francisco for the 1960 national convention of the American Institute of Architects April 18-22. Theme of the convention is “Expanding Horizons”; panel discussions (March, pages 25 and 28) and business sessions will be held in San Francisco’s new Masonic Temple, with convention headquarters in the Mark Hopkins Hotel. Ludwig Mies van der Rohe will receive the 1960 Gold Medal, the A.I.A.’s highest honor, and a long list of other traditional awards will be given (March, pages 12-15, 25 and 28). As pre-convention nominations closed March 9, Philip Will Jr. of Chicago remained the only candidate for the presidency of the Institute (to succeed John Noble Richards of Toledo). A full slate of officers will be elected, and further nominations are, of course, possible at the convention. Forty-three members of the Institute will be advanced to Fellowship in recognition of “distinguished performance in architectural design, education, science of construction, public service or service to the Institute.” The 1960 Fellows are:

George E. Beatty, Brooklyn—Public Service.
 Martin L. Beck, Newark—Education.
 John J. Carey, Mobile—Public Service.
 Mario J. Ciampi, San Francisco—Design.
 Gilbert H. Coddington, Columbus—Design.
 Neil J. Convery, Newark—Service to The Institute and Public Service.
 Charles F. Davis Jr., Birmingham, Ala.—Design.
 Charles H. Dornbusch, Chicago—Design.
 Lathrop Douglass, New York—Design.

Robert A. Eyerman, Wilkes-Barre—Public Service.
 O’Neil Ford, San Antonio—Design.
 Wayne S. Hertzka, San Francisco—Service to The Institute.
 John Hunter Jr., Altoona, Pa.—Design and Service.
 Paul R. Hunter, Los Angeles—Service to The Institute.
 Perry B. Johanson, Seattle—Service to The Institute and Public Service.
 A. Quincy Jones, Los Angeles—Design.
 Kenneth S. Kassler, Princeton, N. J.—Science of Construction.
 Bradley P. Kidder, Santa Fe—Service to The Institute and Public Service.
 Vincent G. Kling, Philadelphia—Design.
 Louis B. LaFarge, New York—Design.
 Geoffrey N. Lawford, New York—Design.
 Robert M. Little, Miami—Design.
 Allan G. Lorimer, New York—Science of Construction.
 Harold B. McEldowney, Chicago—Education.
 John W. McLeod, Washington, D. C.—Design and Service to The Institute.
 H. A. O’Dell, Birmingham, Mich.—Service to The Institute and Public Service.
 John H. Pritchard, Tunica, Miss.—Service to The Institute.
 Joseph P. Richardson, Boston—Design.
 Lulah M. Riggs, Santa Barbara, Cal.—Design.
 Burton Romberger, Newport Beach, Cal.—Service to The Institute.
 Chester O. Root, San Jose, Cal.—Public Service.
 Robert W. Schmertz, Pittsburgh—Education and Public Service.
 Walter Scholer, Lafayette, Ind.—Public Service.
 Daniel Schwartzman, New York—Service to The Institute and Public Service.
 Solis Seiferth, New Orleans—Service to The Institute and Public Service.
 John W. Severinghaus, New York—Design.
 Chloethiel W. Smith, Washington, D. C.—Design and Service to The Institute.
 Harvey P. Smith, San Antonio—Public Service.
 Robert F. Smith, Miami—Public Service.
 Hugh A. Stubbins Jr., Cambridge, Mass.—Design.
 Robert L. Weed, Miami—Design.
 David R. Williams, Lafayette, La.—Design.
 Minoru Yamasaki, Birmingham, Mich.—Design.

Swiss Wins Reynolds Award

The fourth annual Reynolds Memorial Award of \$25,000 for crea-

tive use of aluminum in architecture will go to a Swiss professor of architecture, Jean Tschumi, for his design of the seven-story Nestle Administration Building in Vevey, Switzerland, on the shore of Lake Geneva. In the four years of the award, no American has ever won it; and this year’s jury report had this to say: “The jury assumes that the lack of imaginative use and sensitive detail in some U. S. entries may reflect the ready availability of standard and pre-engineered building components in the United States and the restraints imposed by U. S. building codes and insurance requirements.” The jury for the award, which is administered by the American Institute of Architects, was headed by Walter Gropius as chairman and included Philip Will Jr., James M. Hunter, Arthur Fehr and C. E. Pratt.

Major Competition Honors FDR

A memorial of unspecified nature is the subject of a major national architectural competition to honor the late President Franklin Delano Roosevelt, with a total of \$110,000 in prizes to be awarded by the Franklin Delano Roosevelt Memorial Commission (Tariff Commission Building, Washington 25, D. C.). The first stage of the two-stage competition is open to registered architects; or to associations of landscape architects,

continued on page 32

For every room . . . on-grade

For every room . . . above-grade

For every room . . . below-grade

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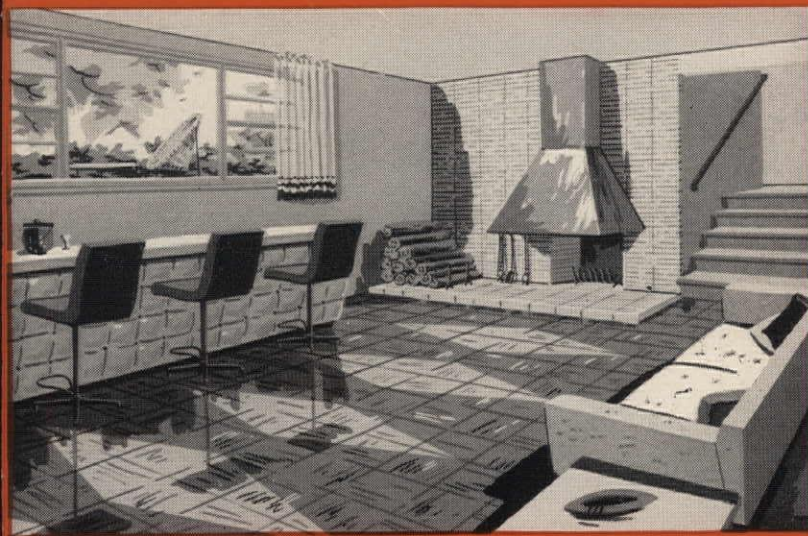
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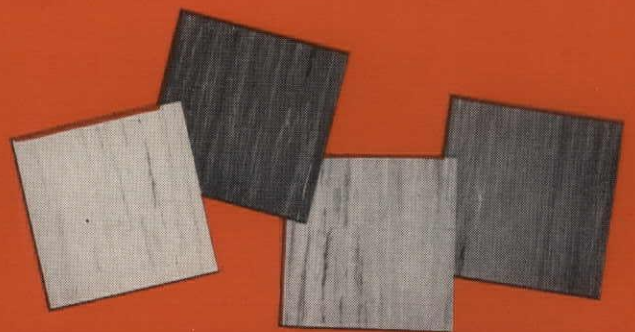


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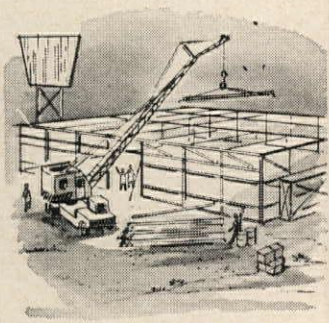
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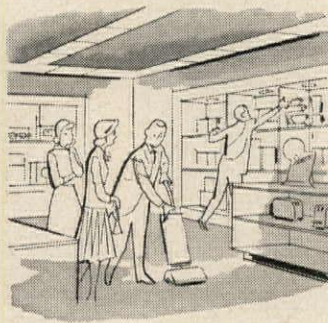
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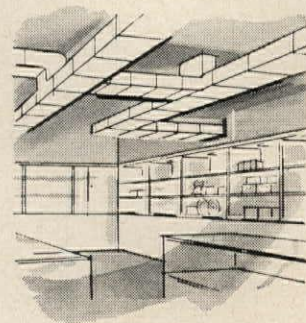




One-story construction?



Floor space valuable?



Don't want long runs of ductwork?

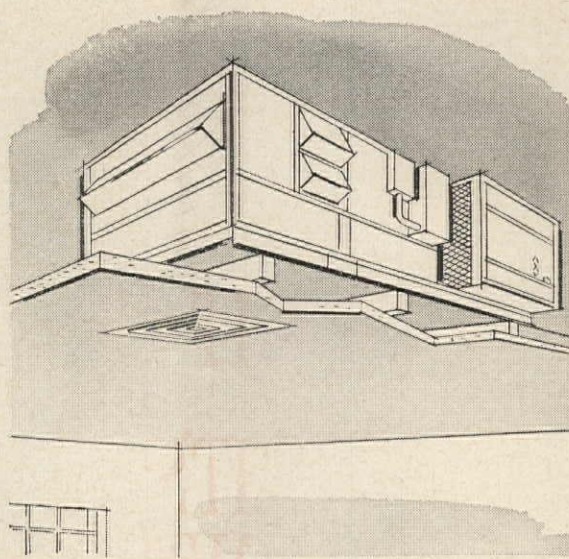
9 times out of 10 this is the most economical way to heat and cool a one-story building!

With the new Carrier Commercial Weathermaker*, year-round air conditioning can be designed and installed more economically than ever in one-story commercial or industrial buildings. It isn't necessary to give up an inch of valuable floor space, because this Weathermaker unit installs on the roof. And it isn't necessary to install expensive and unsightly ductwork, because the unit connects directly to a ceiling air grille. Notice the application here.

This unit is also designed to install with a minimum of time and trouble. It needs no water, no refrigeration piping, no charging with a refrigerant. One or more units can be installed as required, and with the following capacities: 7.5 tons of cooling and 200,000 Btus of heat . . . or 10 tons and 250,000 Btus. What's more, the motor-compressor is protected by a 5-year warranty.

For complete details about this Carrier Commercial Weathermaker, call the Carrier dealer near you. He's listed in the Yellow Pages. Or write Carrier Corporation, Syracuse 1, New York.

*Reg. U. S. Pat. Off.

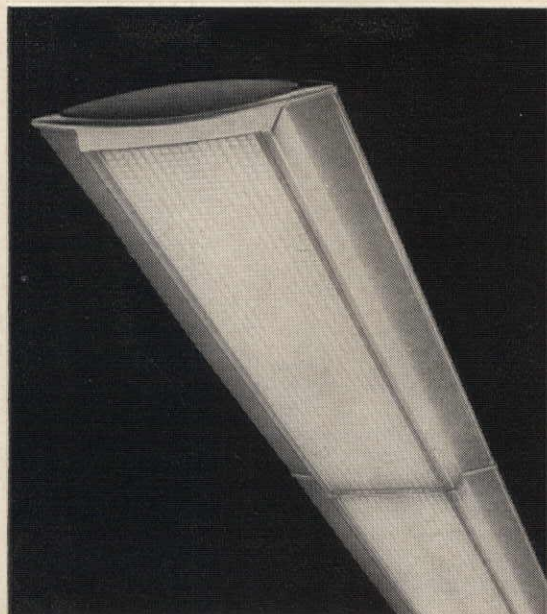


This Carrier 48B Commercial Weathermaker puts both the heating and cooling plant in the most economical of locations—the roof! It is supplied ready for fast one-unit installation. It is factory charged with refrigerant, equipped with refrigeration piping and quickly connected through the roof to a ceiling air grille.

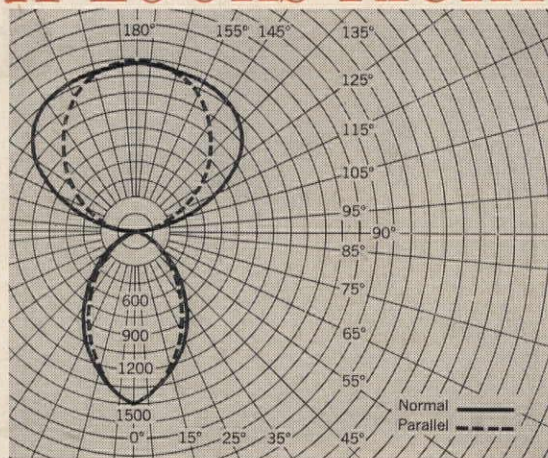
BETTER AIR CONDITIONING FOR EVERYBODY

EVERYWHERE





IT LOOKS RIGHT



IT LIGHTS RIGHT

IT'S MADE RIGHT
WITH EVENGLO®

Sylvania's new *Classic* suspension luminaire has the graceful shape of flight—essential for a suspended fixture in today's clean design concepts. . . **It Looks Right.** The thin walled, $\frac{5}{8}$ " cells of 45° x 45° shielding produce a pleasant semi-indirect lumination, and the textured plastic louver adds softness to the lumination. The flared side panels create a glow, possible only through plastic. . . **It Lights Right.** The louver and side panels are made from light-stabilized EVENGLO polystyrene, a Koppers plastic that comes in many colors, can be extruded into a variety of shapes, is tough and lightweight. . . **It's Made Right.** For more information on EVENGLO polystyrene, or for a list of manufacturers using EVENGLO in fluorescent fixtures, write to Koppers Company, Inc., Plastics Division, Dept. AR-4, Pittsburgh 19, Pa. Offices in Principal Cities • In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario. **KOPPERS PLASTICS**





Safety Switches for Normal and Hazardous Locations



Industrial Circuit Breakers for Normal and Hazardous Locations



Load Centers—Circuit Breaker and Fusible



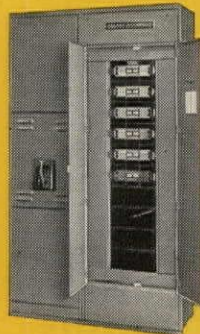
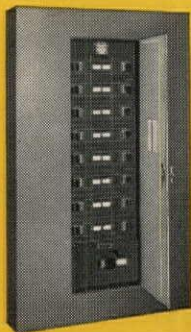
... design leadership



... design



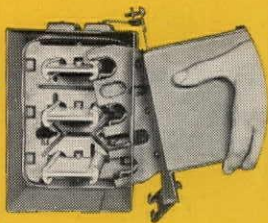
Fusible and Circuit Breaker Lighting and Power Panelboards



Power Distribution Switchboards and Switchgear

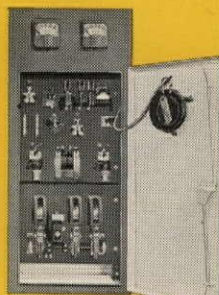
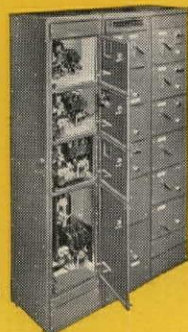


Plug-In Duct

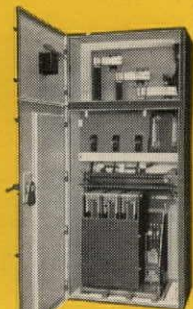


Feed-In Duct

Motor Control Centers



Synchronous Motor Starters



High Voltage Starters

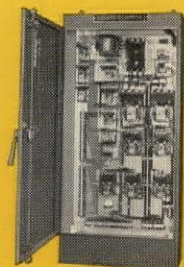


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SQUARE D COMPANY



Drum Switches



Control Relays



Timing Relays



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EQUIPMENT

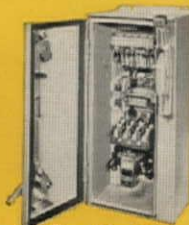
Leadership **D** ... design leadership



Limit Switches



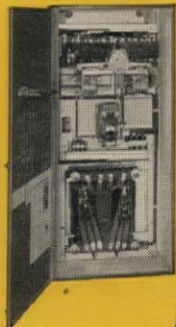
Push Buttons



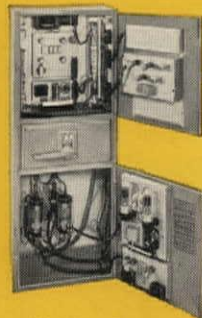
Combination Starters



Starters for Hazardous Locations



Reduced Voltage Starters



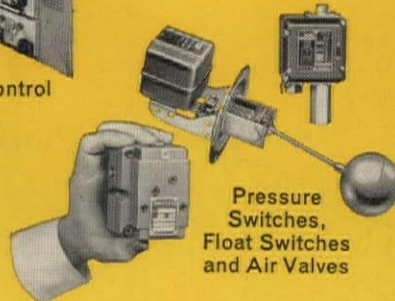
Welder Control



Static Control Components and Systems



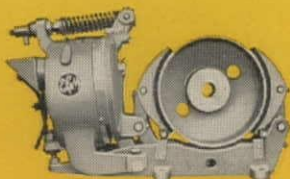
Lifting Magnets



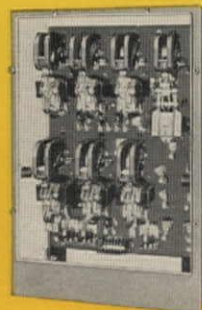
Pressure Switches, Float Switches and Air Valves



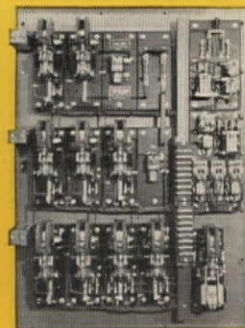
Resistors



Magnetic Brakes



Crane and Mill Control



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- LIGHTING CONTROL — LOW VOLTAGE
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- PUSHBUTTONS
- RELAYS AND CONTACTORS
- RESISTORS
- SAFETY SWITCHES
- SERVICE ENTRANCE EQUIPMENT
- STAGE DIMMERBOARDS
- STEEL MILL CONTROL
- SWITCHGEAR & UNIT SUBSTATIONS
- SYNCHRONOUS MOTOR CONTROL
- TERMINAL BLOCKS
- TEXTILE MACHINE CONTROL
- TIMERS
- VOLTAGE TESTERS
- WELDER CONTROL

wherever electricity is distributed and controlled

Meetings and Miscellany

continued from page 25

sculptors, painters or others provided they include a registered architect. The second stage is limited to six competitors or associations selected by the jury from the first stage. Each of the six finalists who competes in the second stage will receive a prize of \$10,000. The winner of the second stage will receive \$50,000. Registration forms, available from the Commission, should be filed before April 25. Professional ad-

viser for the competition is Edmund N. Bacon, executive director of the Philadelphia City Planning Commission. The jury consists of Pietro Belluschi, F.A.I.A., dean of the School of Architecture and Planning, M.I.T., chairman; Thomas D. Church, landscape architect, San Francisco; Bartlett Hayes Jr., director of the Addison Gallery of American Art, Phillips Academy; Joseph Hudnut, professor of architecture

emeritus, Harvard University; and Paul Rudolph, A.I.A., chairman of the Department of Architecture, Yale University. It is planned to build the memorial, largely with funds raised through public subscription, on a reserved site in Washington stretching from Independence Avenue south of the Lincoln Memorial to the Inlet Bridge north of the Jefferson Memorial between the Potomac and the Tidal Basin.

ARCHITECTURAL HISTORIANS LOOK AT URBAN RENEWAL

The Society of Architectural Historians began twenty years ago at Harvard when a few men doing summer research decided to take a trip to see some old houses in the region. Partly to keep them in touch over the winter, Turpin Bannister, now Dean at the University of Florida, got out a mimeographed bulletin. This was the start of the Journal of the Society, an example which was duly noted and later followed in Japan and England.

In January the S.A.H. members, now fourteen hundred strong, gathered in New York for their thirteenth annual meeting. The general session and the one devoted to the history of Renaissance and Baroque architecture followed customary interests, but a possible new trend could be noted in one section on the history of city planning and another on historic architecture as it relates to urban renewal. The first was organized by Christopher Tunnard, head of Yale's graduate program in city planning, and the second by Dean Holmes Perkins of the University of Pennsylvania. The papers on modern architecture were given in the auditorium of the new Guggenheim Museum and covered the architecture of such men as Wright, Gaudi, Parker and Unwin and Howe and Lescaze. Wright proved to have done a little erasing to bring one of his early project drawings up to twentieth century standards, Gaudi was shown to relate to a larger Art Nouveau movement in Spain and Parker and Unwin were linked up with William Morris and the Arts and Crafts. Welcoming remarks to the Society were given by James Johnson Sweeney, Director of the Museum. No formal evaluation of

the Guggenheim itself was forthcoming from the historians. However, a great deal of "space" and "structure" were privately analyzed and there appeared to be agreement that the building had been intended to make an impression and had done so by breaking everybody's rules except Wright's. Art and the great city had him at bay but he had put up a magnificent struggle.

The banquet speech was given by President Richard Howland of the National Trust for Historic Preservation, a former vice president of S.A.H. He outlined the functions of the Trust particularly as they refer to the establishment of standards of preservation, the holding and financing capacities of the Trust, and the problems presented by 19th and 20th century monuments.

The Alice Davis Hitchcock Award for the outstanding scholarly work in the history of architecture for 1959 went to Kenneth J. Conant, professor of architecture emeritus of Harvard for his *Carolingian and Romanesque Architecture: 800 to 1200*. One of the British Pelican series, it was especially cited for its balanced judgment and vast erudition, adorned with many of the author's lucid restorations.

The three days of sessions were concluded by a three-bus tour of Brooklyn architecture arranged by Marvin D. Schwartz of the Brooklyn Museum. Such trips have been traditional at S.A.H. conventions and provide an opportunity for getting better acquainted and seeing some of the city in which the meeting is being held. Next year's gathering will be in Minneapolis.

Strong local chapters and frequent summer tours have also continually

distinguished the Society. Last summer a trip was made to inspect the Georgian architecture of Dublin, Ireland, and this year preparations are underway for a Palladian tour in Vicenza, Italy, in May. Warm weather trips are also made within the United States. Last August, Harper's Ferry and the route of the canal and railroad out of Baltimore were toured and this August S.A.H. members will visit Bristol, R. I. Daniel M. Hopping, 120 Midland Ave., Bronxville, N. Y., is in charge.

In later years the Society of Architectural Historians has tended to become more international in outlook, sending its Journal and Newsletter to Europe, Africa and Asia and exchanging views and information particularly with the scholars of Great Britain, Italy and the Netherlands. It has, nevertheless, remained an organization with a deep interest in American architectural and planning history. Current and fugitive material is handled in an American Notes section under the editorship of Charles E. Peterson of the National Park Service, while even more minute problems such as those which deal with blinds, door-knobs and painted bricks are taken care of in the Newsletter, ably edited by Agnes Addison Gilchrist.

A number of preeminent scholars in the field have been its officers and editors but the Society has continued to remain open to those who simply enjoy an amateur taste for the subject, since the four founding aims included the promotion of enjoyable contacts and the fostering of appreciation of buildings as well as the encouragement of research and the preservation of significant architectural monuments.—Walter Creese



PRODUCT
REPORT

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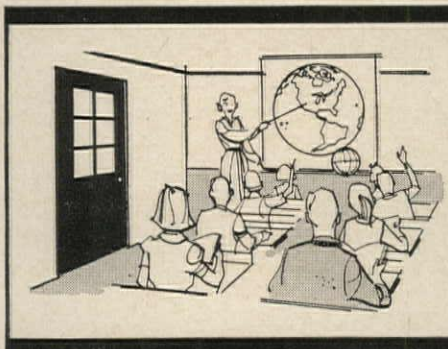
New Roddis prime-and-seal and custom-finishing service for architects and builders!

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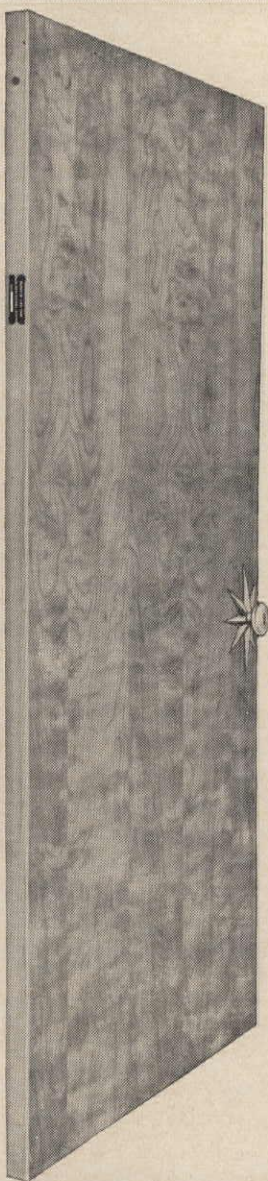


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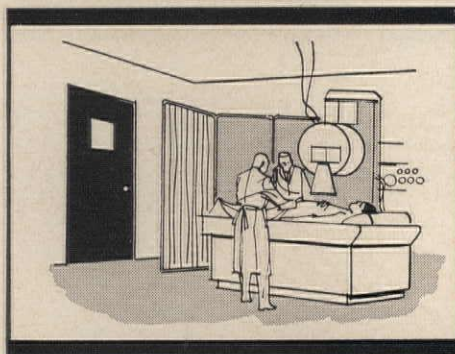
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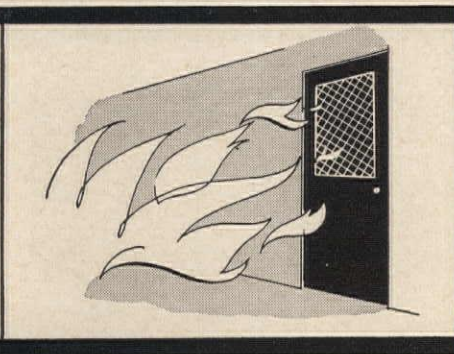
Solid Core Doors. Choose the Golden Dowel Door with lifetime guarantee. Or Standard solid core doors. For interior and exterior.



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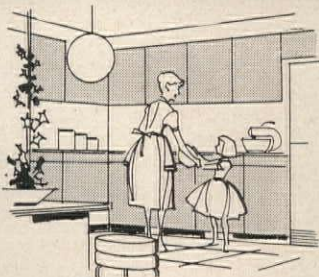
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1st shavings board plant in United States! To fill the demand for Timblend, the Roddis people have recently completed a \$4,000,000 plant in Arcata, California, the first of its kind in America. A triumph of electronics and automation, this facility is in operation around the clock, seven days a week. Even so, the demand for Timblend is so great Roddis is now proceeding with a new 50% expansion program!

A new designing and building opportunity! Timblend surpasses both lumber and plywood in many building applications. Use it for soffits, walls and sheathing. Ideal for cabinets, built-ins, sliding doors, underlayment, too.

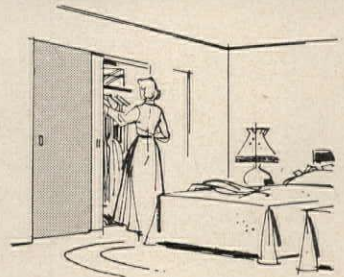
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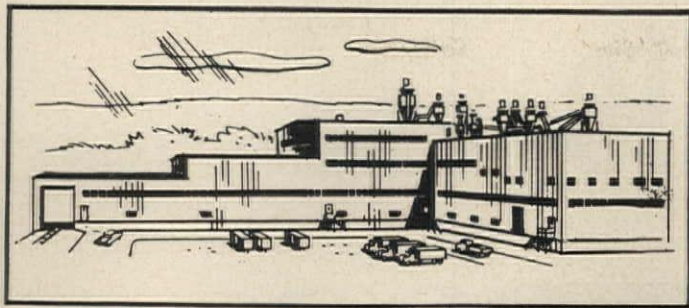
Standard Timblend. It's the original wood-blend panel. Use instead of plywood for many interior applications. Ideal for all underlayments.



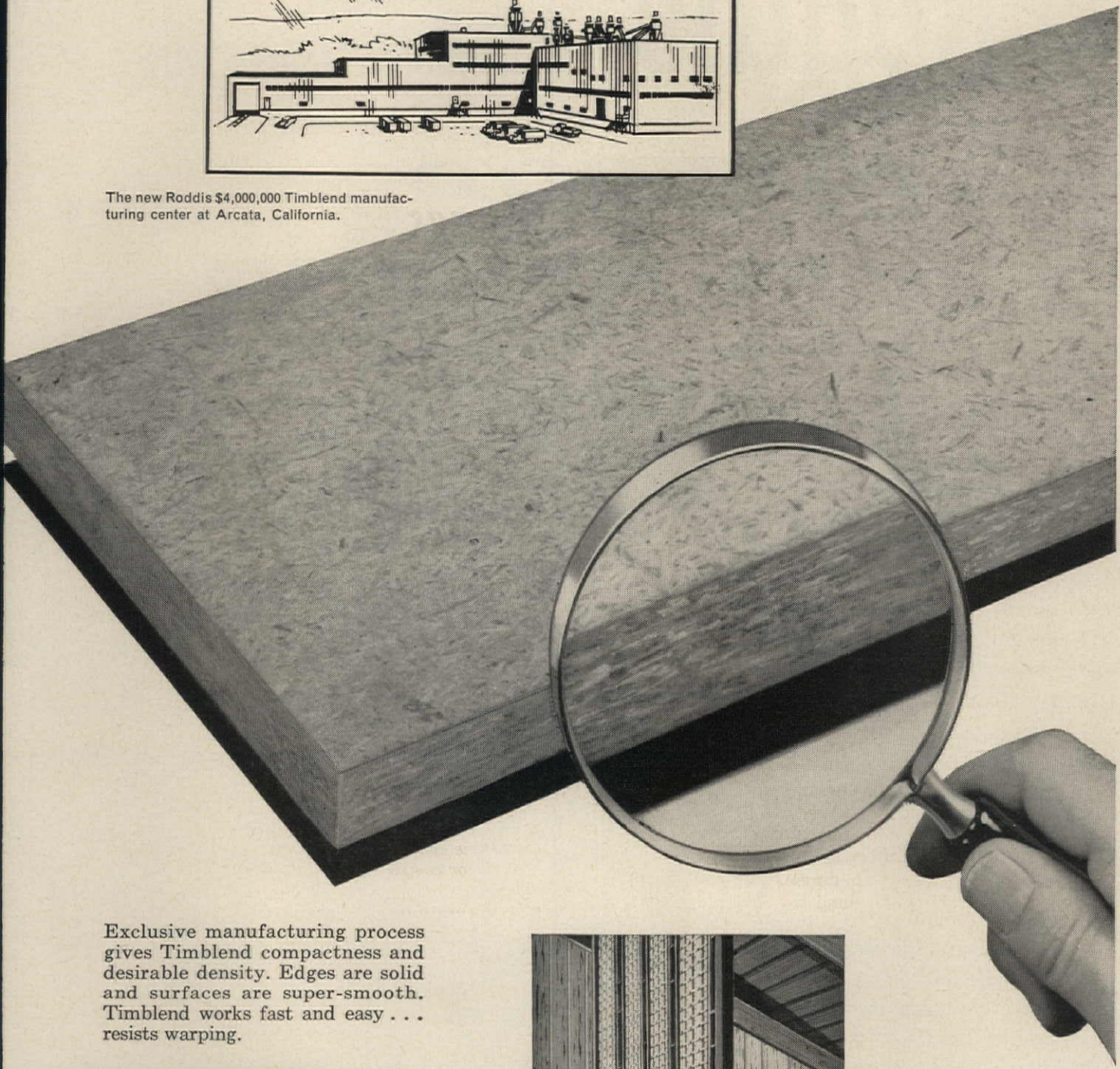
Veneered Timblend. All the beauty of your favorite hardwoods, plus the strength and warp-resistance of Timblend core. For cabinets, sliding doors, etc.



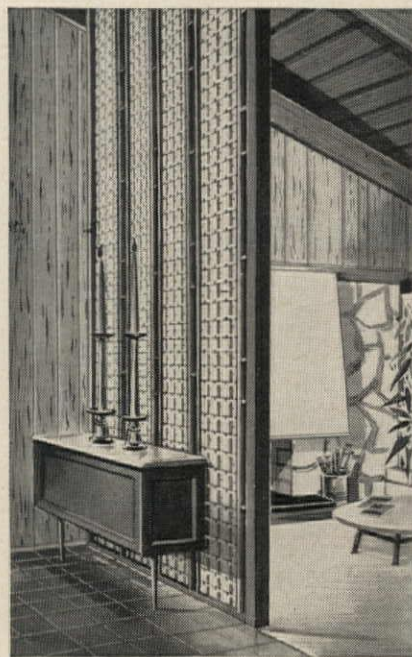
Filled Timblend. The perfect surface for paint. Factory-treated with special fillers for ease of application . . . super-smoothness.



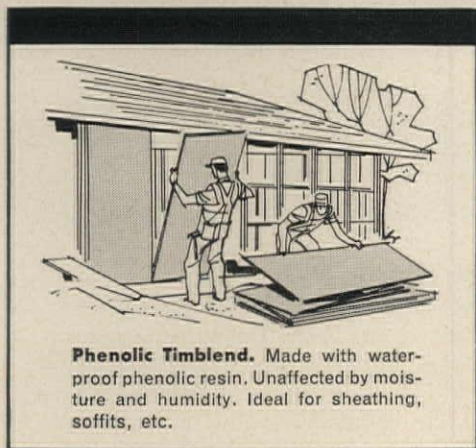
The new Roddis \$4,000,000 Timblend manufacturing center at Arcata, California.



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Sculptured Timblend. The outstanding workability of Timblend makes possible a new dimension in decorative design applications. For new intricate patterns are actually "carved in" to provide a variety of artistic effects. This "Sculpturewood" is ideal for room dividers, acoustical ceilings, window displays, etc. Outside, it adds beauty and permanence to fences, walls, facades and sun screens.



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Whatever your application—commercial, residential or institutional—you'll find that Roddis has the paneling that's "right" for your design.

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Anything made of wood—furniture, paneling, floors, doors—will look better and last longer when treated with Roddis' special wood finishes. There's one that will enhance your wood's beauty and give outstanding protection against scuffs, stains and household chemicals.

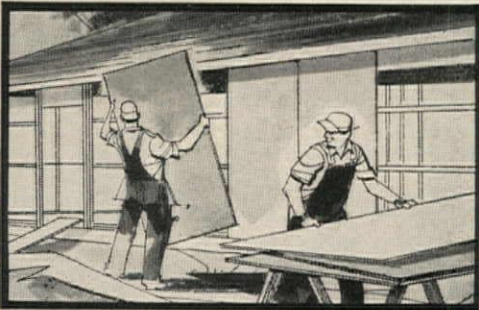
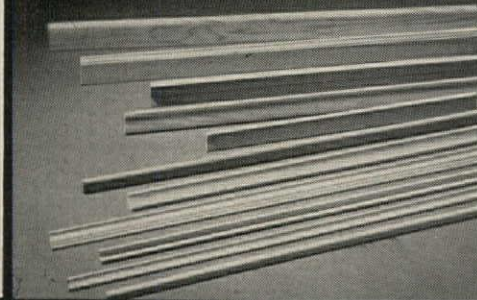


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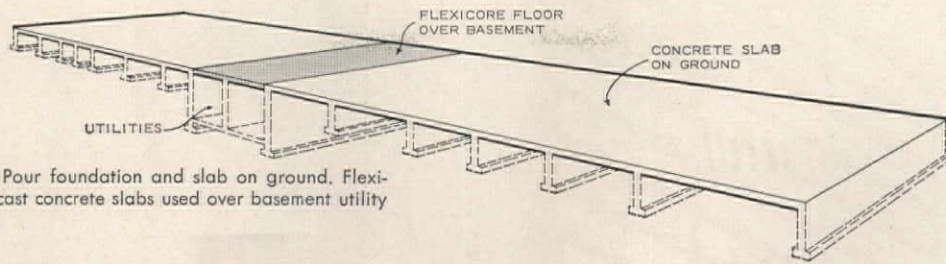
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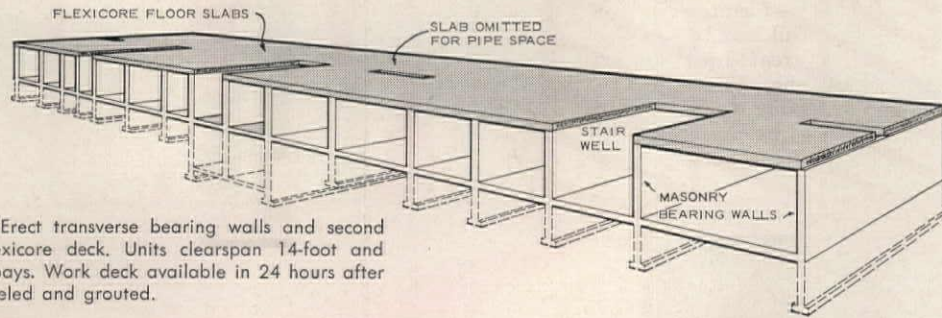
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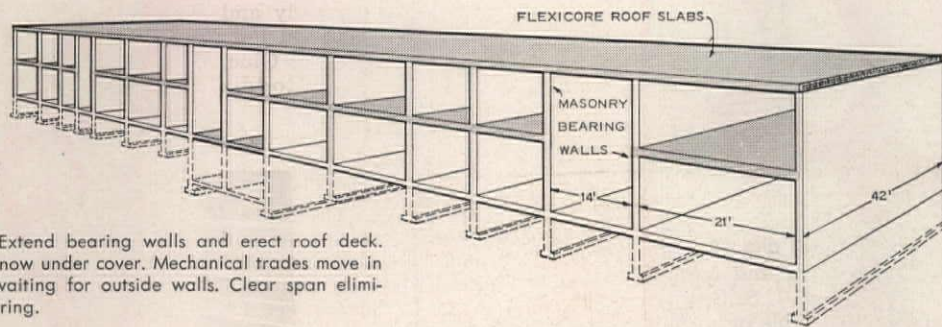
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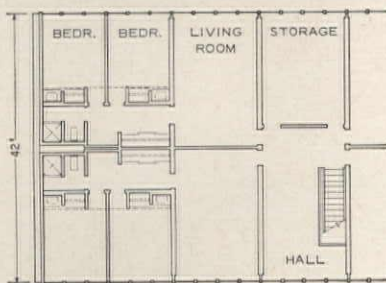
STEP 2. Erect transverse bearing walls and second floor Flexicore deck. Units clearspan 14-foot and 21-foot bays. Work deck available in 24 hours after slabs leveled and grouted.



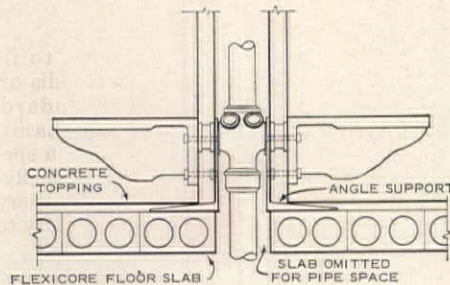
STEP 3. Extend bearing walls and erect roof deck. Building now under cover. Mechanical trades move in without waiting for outside walls. Clear span eliminates shoring.

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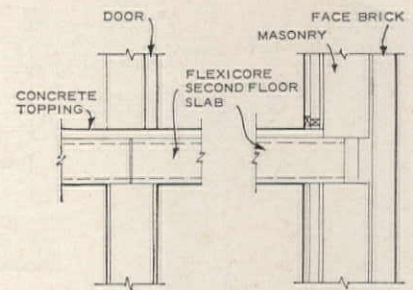
How Air Force Academy Got New Buildings Under Cover Quickly



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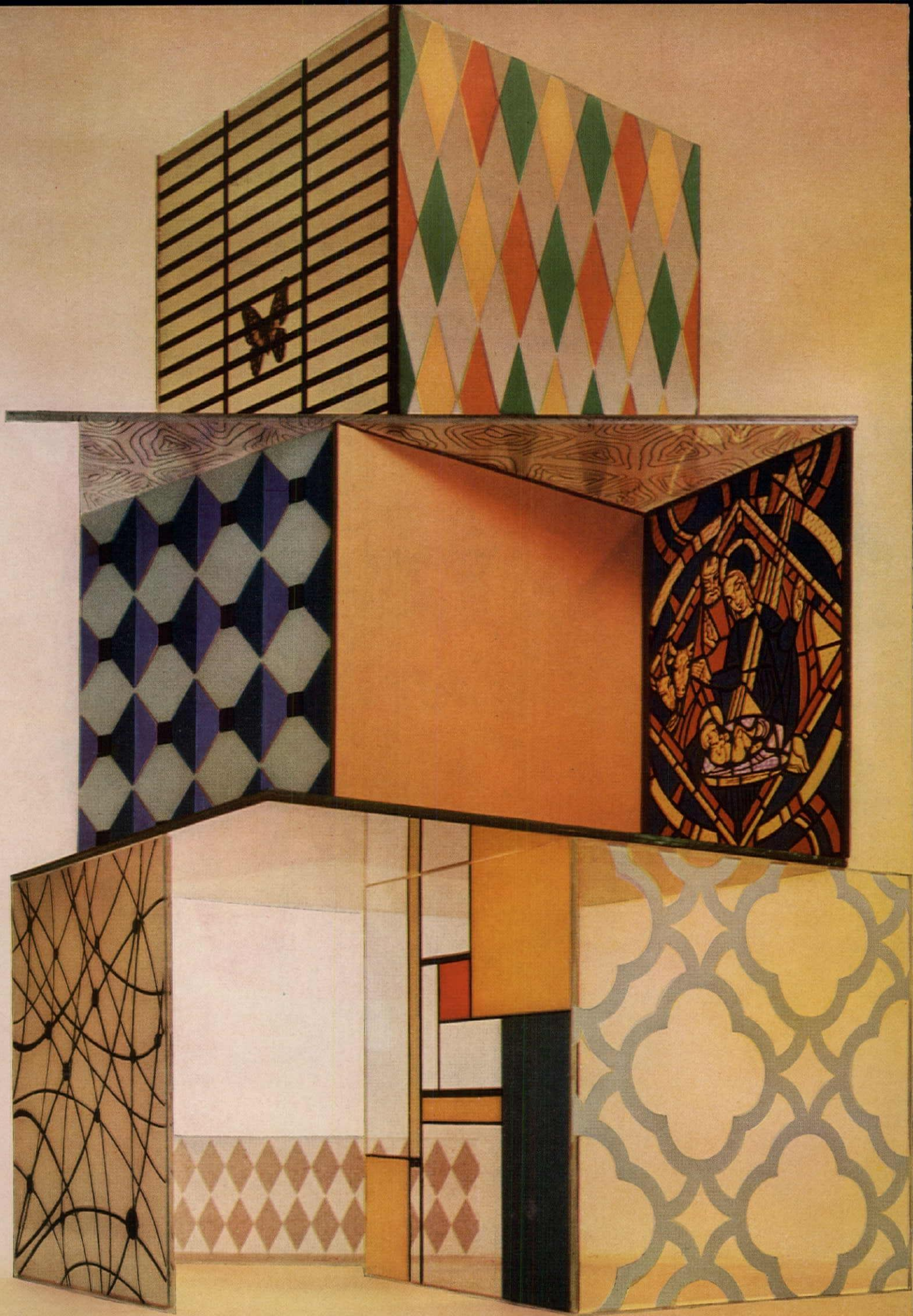
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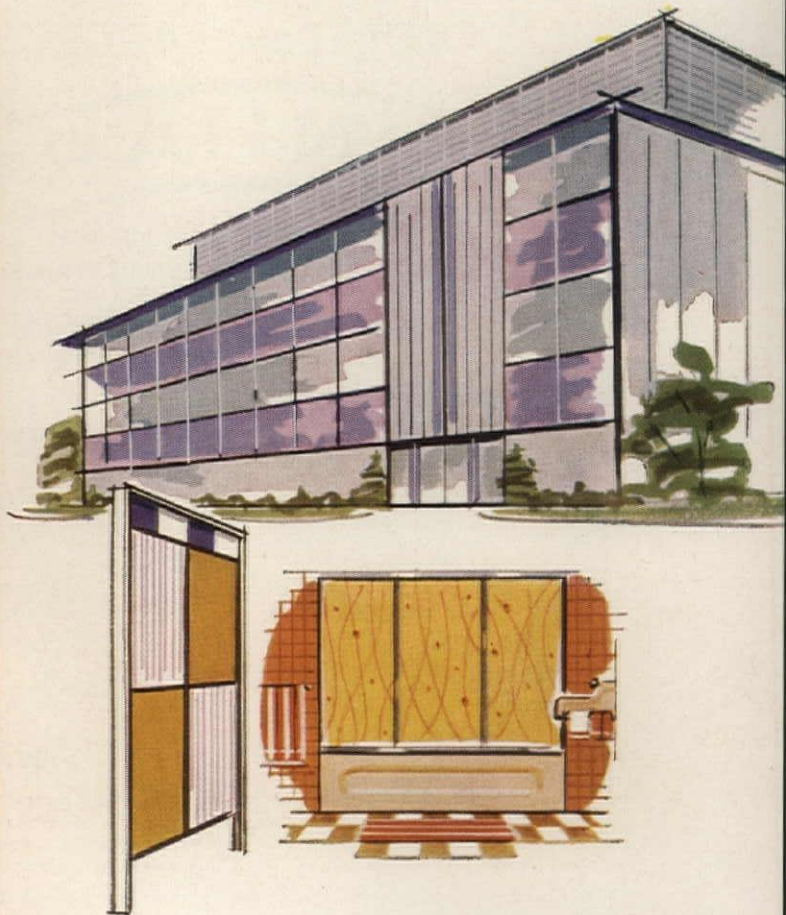
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Eight More Schools to Receive Tile Council Scholastic Aid

The Tile Council of America, Inc., has announced that eight additional schools have been included in its scholastic aid plan.

The plan, which was initiated in 1956, grants each school \$2250, to be divided equally in three annual payments. Annually, \$500 is to be used for scholarships or student loans in the college's architecture

or architectural engineering departments. The only stipulations made by the Tile Council are that the recipients of the scholarships be citizens of the United States, and that they intend to enter architectural practice upon graduation; academic, financial and character requirements are those usually demanded by the college administering the scholarships.

It is also to be left to the college's discretion whether to use the money

for scholarships or for student loans. If loans are made, no time limit is to be defined for repayment, nor is interest to be charged.

The remaining \$250 of the yearly payments are to be applied by the college to "furthering its program of instruction in courses on building materials." The money can be used as each college deems necessary to its requirements in this field: "for the purchase of equipment, space or display materials, working materials, books, visual aid projectors and screens, or any other equipment or materials, or for staff salary increments."

In return, the Tile Council asks only for yearly reports on the academic progress of students receiving aid, and yearly reports on the disposition of the sum used for instruction.

The eight schools selected to participate in the program this year are the University of Arkansas, the University of Florida, Howard University, the University of Illinois, Kansas State College, the University of Notre Dame, Pennsylvania State University, the State College of Washington and Syracuse University. The grants may be renewed at the end of the three-year period, though ordinarily schools will drop out of the program at the end of that period, to be selected again later in a system of rotation. The Tile Council hopes to reach all of the 61 accredited architectural schools in the United States.

Schools which are included, or have been included, in the program are: in 1958—Clemson College, Cornell University, the University of Michigan, the University of Minnesota, the University of Nebraska, North Carolina State College, Agricultural & Mechanical College of Texas; in 1957—Carnegie Institute of Technology, Pratt Institute, the University of Southern California, the University of Texas, the University of Utah; in 1956—Georgia Institute of Technology, Iowa State College, the Ohio State University, Princeton University, Syracuse University, Virginia Polytechnic Institute and the University of Washington.

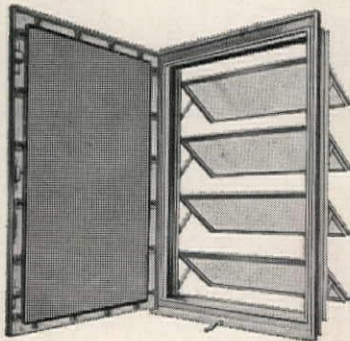
The program is administered for the Tile Council by the American Institute of Architects and the Association of Collegiate Schools of Architecture.

OLDEST AND LARGEST



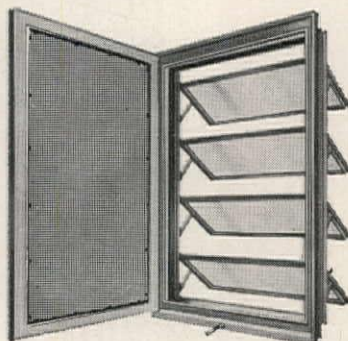
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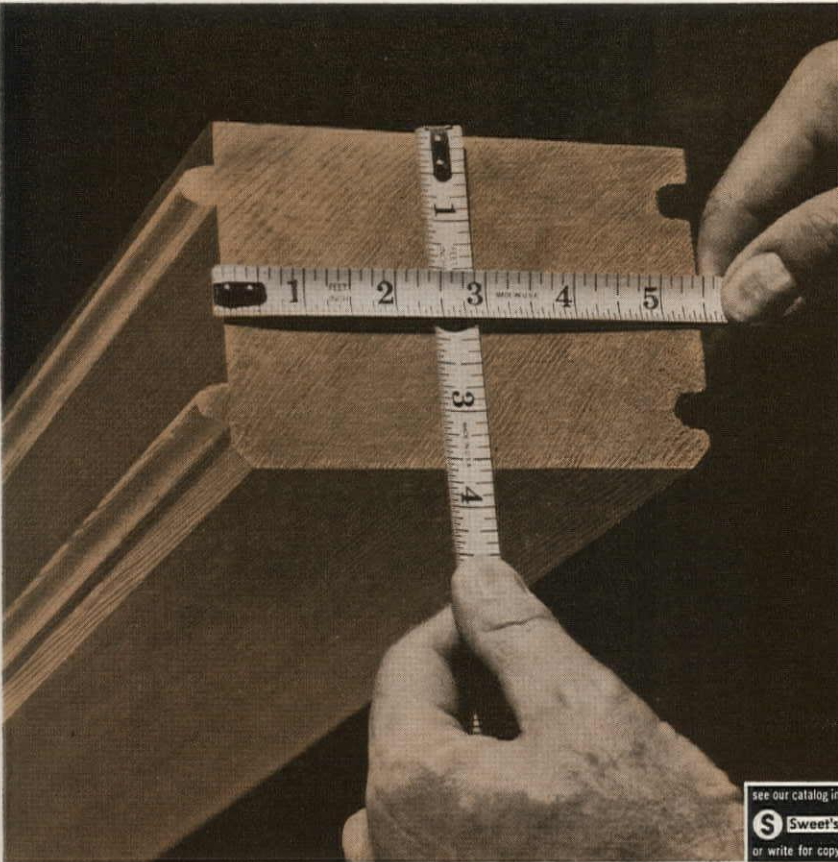
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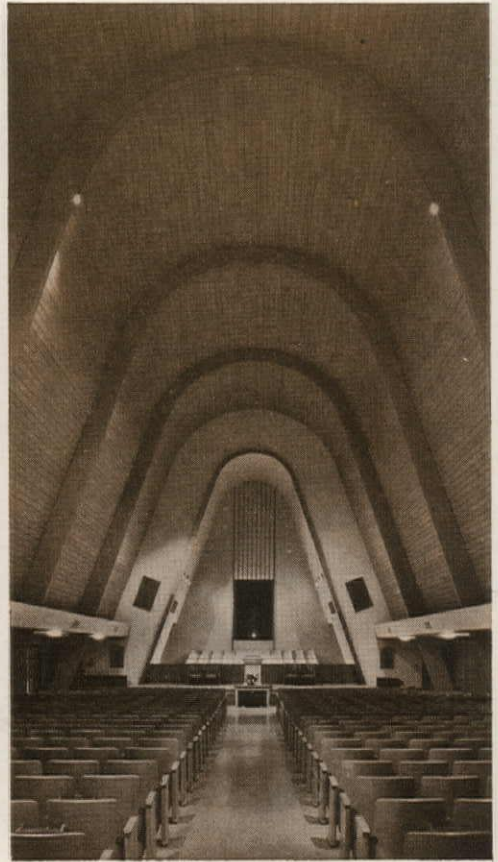
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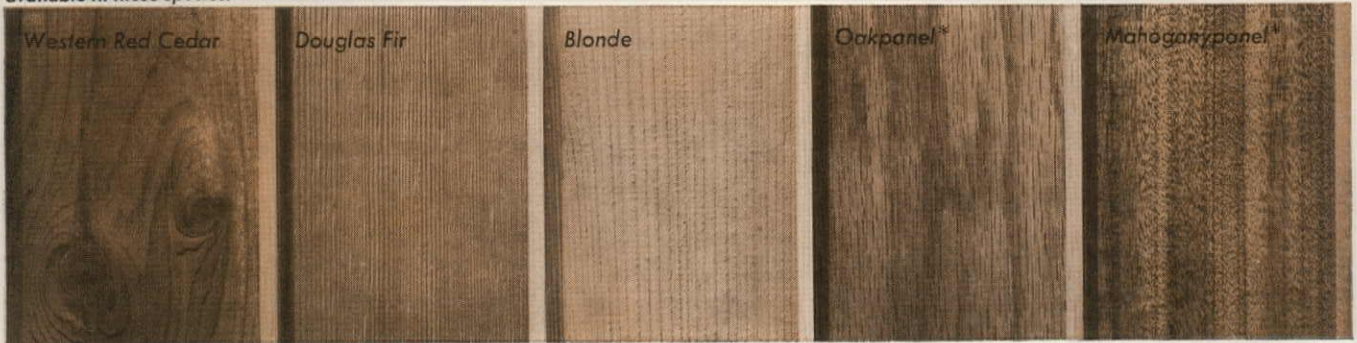
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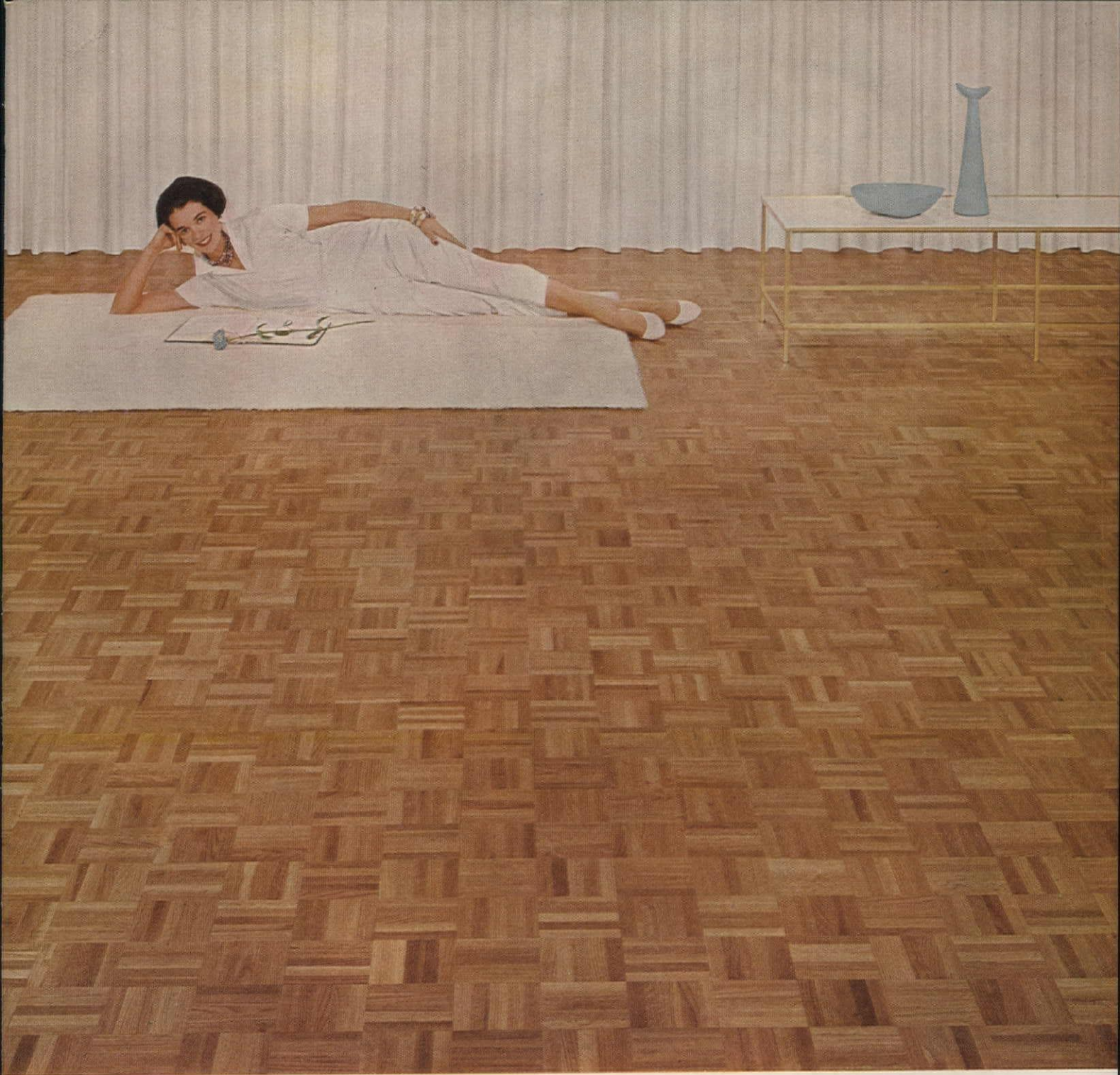
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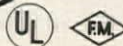


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called Salhaven for Sal B. Hoffmann, president of the union, was opened in the end of 1957. It is on a 600-acre site in Florida, north of Palm Beach.

Rufus Nims was the architect of the original community buildings and first 12 cottages; Russell Van-nest Black was site planner. There are now an administration building, a recreation building, a 500-seat auditorium (used by people from the surrounding areas as well), a convalescent center and cafeteria, and a security building. There are also 18 cottages, each with one to three bedrooms, and two lodges with eight apartments each. The latter originally were intended for single retired people, but experience has shown little demand for that type of living by elderly people; thus the lodges are now used for visitors and vacationers. Another change based on

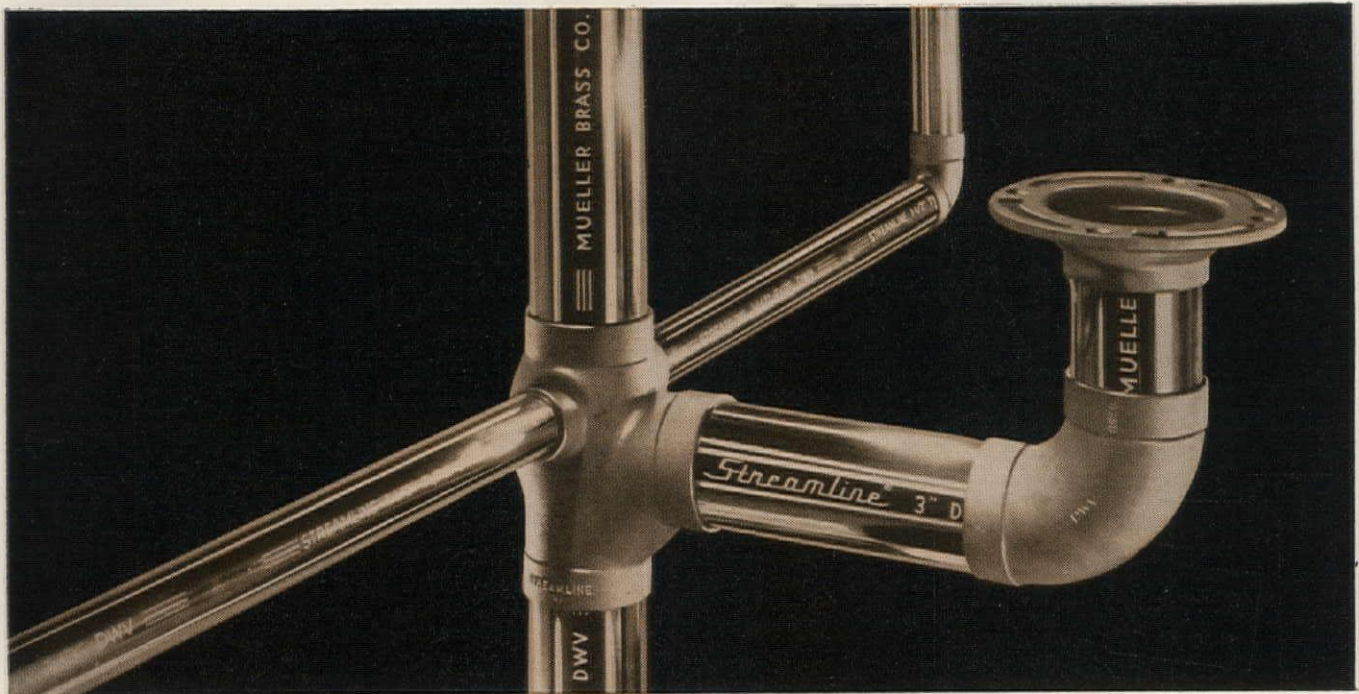
continued on page 52



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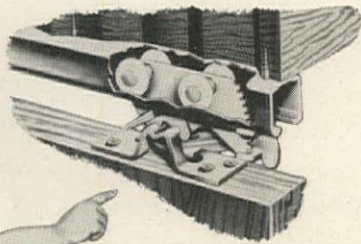
*This comparison is based on actual material and labor costs in effect on January 7, 1960, in a mid-west metropolitan area of 75,000 population.

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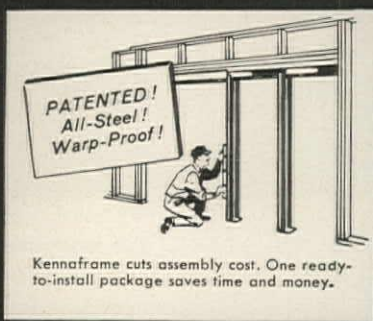
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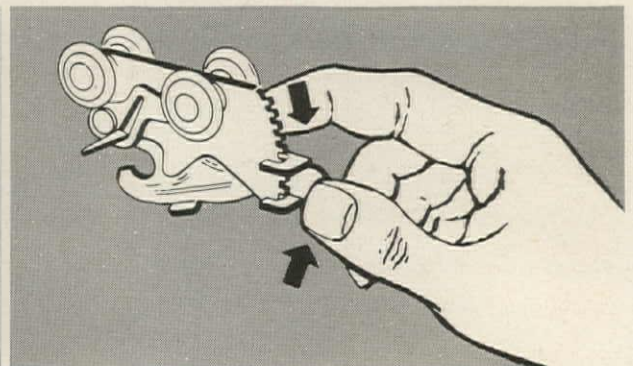
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New Design Directions for Nursing Homes Suggested in Report on Aging

McNamara Subcommittee Proposes U. S. Office of Aging—Emphasizes Emerging Medical Concepts Affecting Attitudes in Planning for the Elderly—Focus on Rehabilitation vs. Custodial Care

A changing concept of medical care for the aging will bring about a changed concept in the design of nursing homes of the future. The architect is directly involved in this new attitude toward medical care of the elderly insofar as the planning of these future homes will have to reflect the new opinions.

These changing ideas were highlighted in the recent report of the McNamara subcommittee (Senate) on problems of the aged and the aging which dwelt at some length on nursing homes—the shabby condition of many of those in operation today, the need for additional beds and the current confusion as to the purpose of nursing homes in society. This report might well be stirring architects as well as doctors and social workers as it looks at the complex problems of caring for the elderly and how nursing home and hospital treatment can be expected to change in future years.

There is a growing view, according to the McNamara subcommittee, that chronic illness and disability are not inevitable consequences of aging. Confusion results, it states, from the fact that chronic diseases have only recently emerged as a major concern of medical practice and research. It appears from the exhaustive studies made in connection with preparation of the 155-page document that the medical and related professions as well as the public have not yet crystallized their concepts for the care and treatment of chronic illness among the aged and the institutional arrangements necessary to provide such care.

"Some still regard chronic illness as inherent in aging and irreversible," the report comments. "If this view is held, then nursing homes need only provide basic comforts of living, sufficient medical care for acute episodes of illness, and nursing care and personal services to com-

pensate for the patient's increasing deterioration. . . .

"Much can be done through the application of modern medical evaluation and care, including the entire gamut of rehabilitation therapies to restore and maintain a chronically disabled older person's ability to meet most of his own daily needs, to live a more normal existence, and to be less of a financial and emotional burden to himself, his family, and society."

Studies in four states—New York, Pennsylvania, Michigan and Illinois—have shown that up to 50 per cent of present patients in nursing homes, if given the chance for real rehabilitation, would no longer require the institutional care if independent housing, foster care, and supportive social services were available.

The subcommittee drew this conclusion: "Thus it appears that in the long run, the nursing home as we know it, as a separate health facility, will change. Essential today for the provision of care for a residual, disabled population whose health needs were severely neglected in the past, the nursing home as a health facility may provide a new service if preventive health measures and community services lessen the impact of disability and if the general hospital accepts its responsibility for restorative services in the field of chronic illness."

The subcommittee attributes much of the present confusion on the role of nursing home in society to the fact that studies have shown that about 50 per cent of the patients living in facilities designated as nursing homes require no nursing services."

Another factor in this confusing picture, it holds, is the growing pressure to incorporate into the direct services provided in public nursing homes such additional programs as medical clinics, laboratory and X-ray facilities, psychiatric services, social

casework, physical and occupational therapy programs, and other services more normally associated with hospitals.

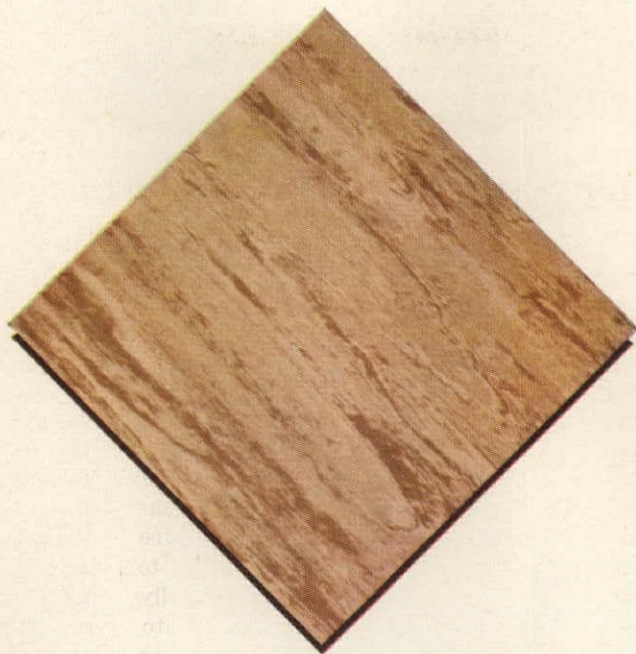
After visiting many commercial and nonprofit nursing homes and taking extensive testimony on others, the subcommittee said it found that the large majority provided no more than bare custodial care, generally directed by untrained personnel, and consigned hundreds of thousands of patients to "pitiable vegetation."

The median age of patients in all homes now is 80 years. Two thirds of them are women. In 20 years the problem is expected to intensify with the total number of aged (those past 85) doubling. The subcommittee placed prime responsibility for supervision of the nursing home establishment with state and local bodies but argued that a Federal responsibility was present in the design and construction area, stemming from public assistance grants, Hill-Burton grants, and from the Federal Housing Administration's mortgage insurance for private construction under the Housing Act of 1959.

Among the subcommittee's major recommendations was that legislation be considered in 1960 to establish a U. S. Office of Aging to be concerned full time with all problems of America's senior citizens. There followed this comment: "The aged of this nation have been buffeted from agency to agency, from committee to council in a separatist, fragmented fashion. They are ready for and require a high level, Congressionally created agency with the interrelationship of their problems and speaking out for them."

The best data currently available on the supply of and need for skilled nursing home beds are those submitted by the states to the U. S. Public Health Service under Hill-Burton

continued on page 402

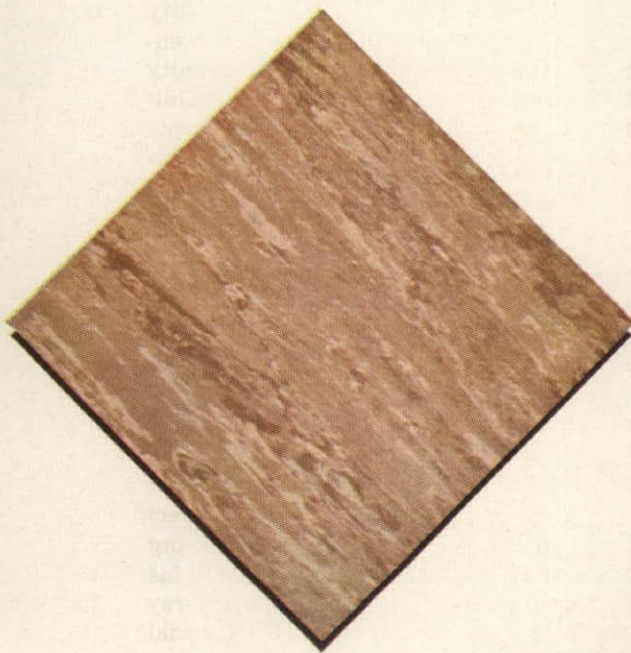


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Broad Activity Reported on Post Office Projects

Testimony given a House appropriations subcommittee earlier this year showed that the Post Office Department was engaged in engineering and design work for 20 priority projects in larger cities so that construction and mechanization might be started in fiscal 1961. Construction of new facilities in nine large

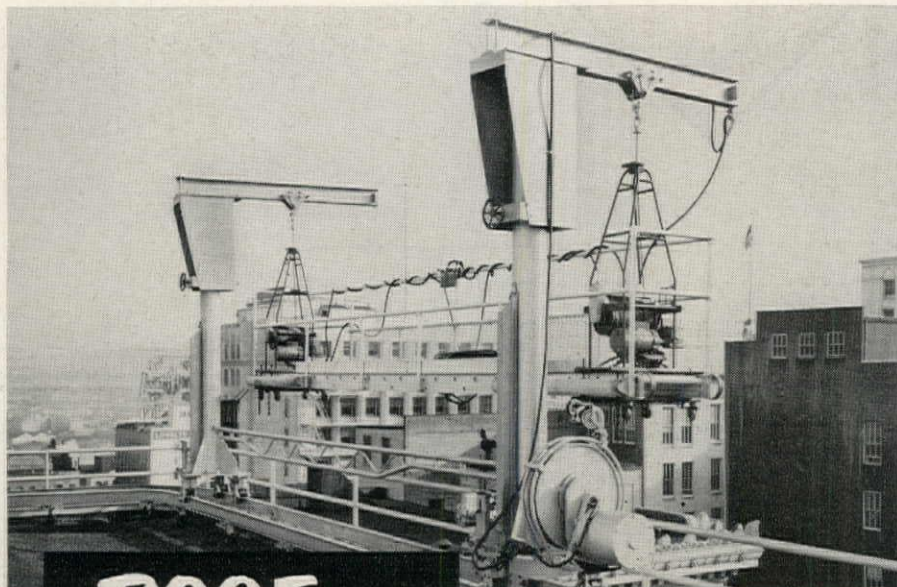
cities and three smaller locations already was under way.

The department staff reportedly was busy with engineering plans for modernizing a substantial number of Federal buildings with post offices this fiscal year and the preparation of building designs and equipment layouts for another group of structures in fiscal 1961.

The engineering work involved in constructing leased facilities at

smaller offices was proceeding at a rate of approximately four projects per day. PO officials have said they hope to advance this rate to six projects per day within a year.

Most of the department's engineering staff now is working on the facilities modernization program. The Department is asking \$72 million in fiscal 1961 for the modernization program designed to improve and regenerate some of the worst post office facilities in the country at the earliest possible date. Another \$25.5 million is asked for the regular modernization program including alteration, air conditioning and rehabilitation.



Operating Position

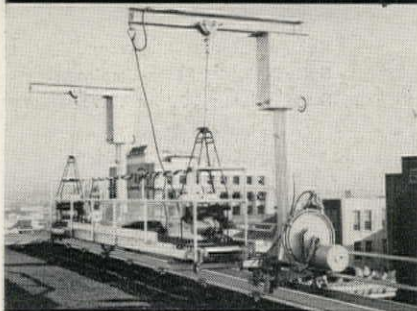
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Big Need for Small Airports Seen by U.S. Official

Little or no progress is being made in meeting the growing demand for small secondary airports for corporate and executive flying, air taxi operations, training and other purposes, said E. R. "Pete" Quesada, Federal Aviation Agency Administrator.

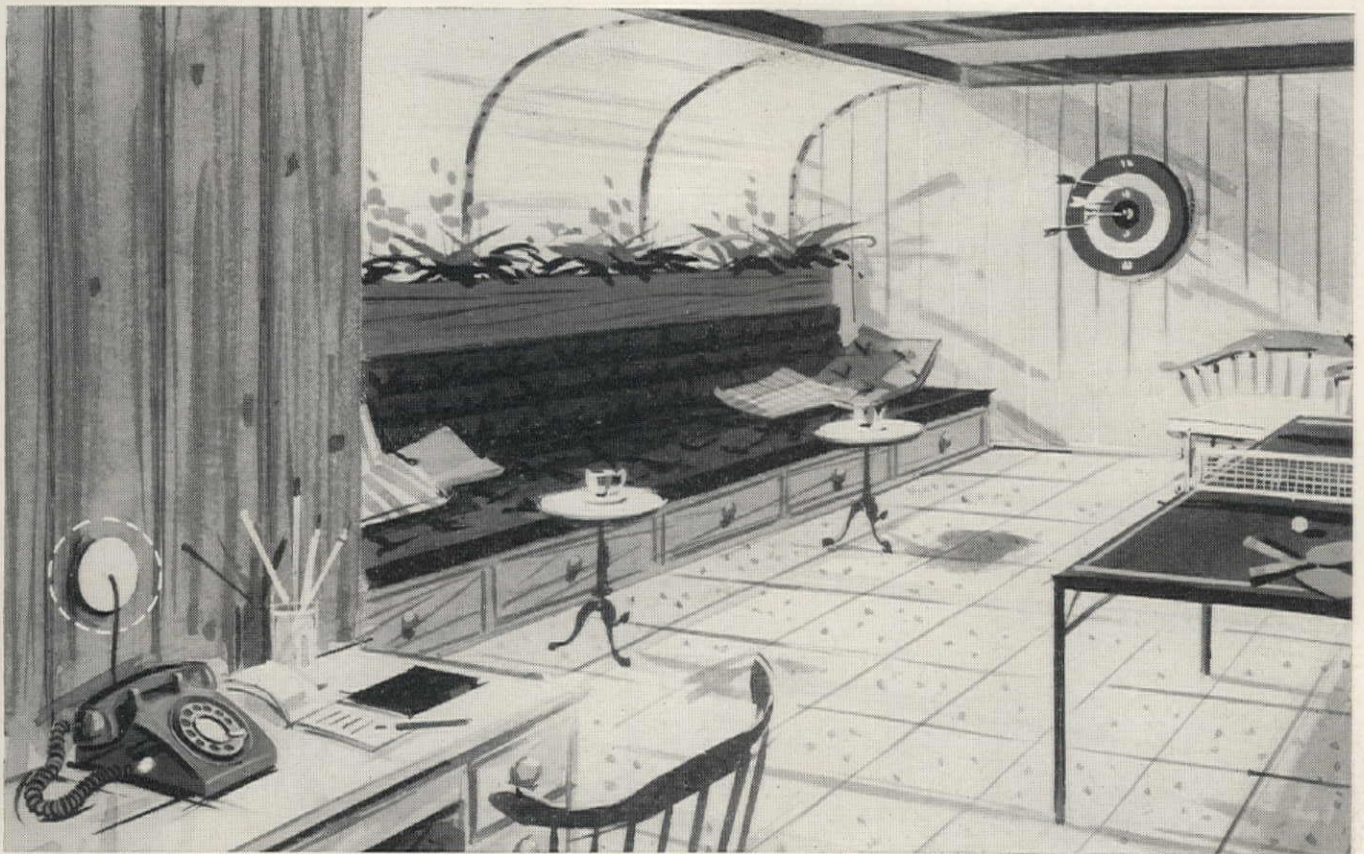
New secondary airports are being built around the country, but only at approximately the same rate these types are being lost to shopping centers, subdivisions and other land assembly activities. Some 1300 of the smaller airfields have been gobbled up in such development during the past four or five years, Mr. Quesada estimated.

The net result is that in number of general aviation airports, the industry is practically standing still.

Most state, county and local executives favor having these smaller airports in their areas, Administrator Quesada said, but friction often develops when the fields are proposed, sites selected, zoning drafts presented, and master plans prepared.

Stressing that absence of an airport usually means revenue loss, Mr. Quesada observed, "Given the rapid spread of our suburbs, the consequent tremendously increased demand for new taxes for schools, roads and similar improvements—given these violent stresses, the airport cause is often lost in the shuffle."

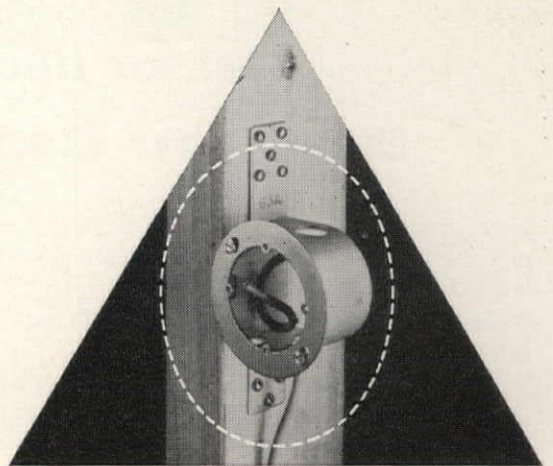
continued on page 374



▲ For details of home installations, see Sweet's Light Construction File, 11c/Be.

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Construction Cost Indexes

Presented by Clyde Shute, Director of Statistical Policy, Construction News Div., F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assoc., Inc.

Labor and Materials: U.S. average 1926-1929=100

NEW YORK

ATLANTA

PERIOD	RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.		RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.	
	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8	178.8
1949	243.7	240.8	242.8	246.6	240.0	189.3	189.9	180.6	180.8	177.5
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7	185.0
1951	273.2	271.3	263.7	274.9	271.8	212.8	214.6	204.2	202.8	205.0
1952	278.2	274.8	271.9	265.2	262.2	218.8	221.0	212.8	210.1	214.3
1953	281.3	277.2	281.0	286.0	282.0	223.0	224.6	221.3	221.8	223.0
1954	285.0	278.2	293.0	300.6	295.4	219.6	219.1	233.5	225.2	225.4
1955	293.1	286.0	300.0	308.3	302.4	225.3	225.1	229.0	231.5	231.8
1956	310.8	302.2	320.1	328.6	324.5	237.2	235.7	241.7	244.4	246.4
1957	318.5	308.3	333.1	345.2	339.8	241.2	239.0	248.7	252.1	254.7
1958	328.0	315.1	348.6	365.4	357.3	243.9	239.8	255.7	261.9	262.0
1959	342.7	329.0	367.7	386.8	374.1	252.2	247.7	266.1	272.7	273.1
Nov. 1959	345.6	332.6	370.9	388.6	377.0	254.9	249.9	269.5	276.2	276.2
Dec. 1959	346.9	333.9	372.6	389.8	378.3	255.3	250.3	270.1	276.4	276.4
Jan. 1960	346.9	333.9	372.6	389.8	378.3	256.8	252.0	272.2	279.0	278.6
	% increase over 1939					% increase over 1939				
Jan. 1960	180.9	172.8	185.1	192.2	190.8	197.6	203.2	186.2	186.4	194.2

ST. LOUIS

SAN FRANCISCO

1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.6	104.9	100.4
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7	249.6
1953	263.4	256.4	259.0	267.0	259.2	255.2	257.2	256.6	261.0	259.7
1954	266.6	260.2	263.7	273.3	266.2	257.4	249.2	264.1	272.5	267.2
1955	273.3	266.5	272.2	281.3	276.5	268.0	259.0	275.0	284.4	279.6
1956	288.7	280.3	287.9	299.2	293.3	279.0	270.0	288.9	298.6	295.8
1957	292.0	283.4	295.2	307.1	302.9	286.3	274.4	302.9	315.2	310.7
1958	297.0	278.9	304.9	318.4	313.8	289.8	274.9	311.5	326.7	320.8
1959	305.4	296.4	315.0	329.8	323.9	299.2	284.4	322.7	338.1	330.1
Nov. 1959	307.3	297.9	317.6	332.8	326.8	303.3	287.8	327.7	344.2	334.3
Dec. 1959	308.0	298.9	318.4	333.4	327.6	304.7	289.2	329.5	345.6	335.7
Jan. 1960	308.0	298.9	318.4	333.4	327.6	304.7	289.2	329.5	345.6	335.7
	% increase over 1939					% increase over 1939				
Jan. 1960	179.5	179.3	168.2	178.3	175.3	188.5	191.2	180.7	183.5	188.1

Cost comparisons, as percentage differences, for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

$$\begin{aligned} \text{index for city A} &= 110 \\ \text{index for city B} &= 95 \end{aligned}$$

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.



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<p>80¢ - 95¢</p> <p>"Futuresq" Vinyl Corlon .070" "Futuresq Supreme" Vinyl Corlon .070" Cork Tile $\frac{3}{16}$" Rubber Tile $\frac{1}{8}$" "Tessera" Vinyl Corlon .090" Linotile $\frac{1}{8}$" Custom Corlon Tile $\frac{3}{32}$"</p>	<p>\$1.00 and over</p> <p>"Imperial" Custom Corlon Tile $\frac{3}{32}$" Custom Corlon Tile $\frac{1}{8}$" Cork Tile $\frac{3}{16}$"</p>	<p>\$1.00 and over</p> <p>Rubber Tile $\frac{3}{16}$" Custom Vinyl Cork Tile $\frac{1}{8}$" Opalesq Vinyl Tile $\frac{1}{8}$"</p>

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Other merits aside, the big news in this newly published series, *Masters of World Architecture*, is that it brings first-rate writing on first-rate architects into a price range which even the proverbial poor student should be able to afford.

At the very least, each of them is a convenient collection of the major works of major architects in a single volume. At the most, notably Mr. Collins's study on Gaudí—which, apart from Henry-Russell Hitchcock's book of three years ago, is the first major study in English on the Catalan architect—they are important books in their own rights.

Whether by the accident of each author's long association with his subject, or by the design of the editors of the series, the style of each writer seems peculiarly to suit his subject—from Mr. Drexler's calm delineation of Mies's work and theory, through Mme. Choay's intellectual approach to Le Corbusier's same, to Mr. Scully's broad use of 19th century associations in describing Wright's *milieu*. Though each of the authors is naturally in sympathy with his subject, each also succeeds in preserving his detachment.

All the books are well-written, and likewise readable, though the uninitiated might have trouble with casual references to related architectural movements and developments. The plates are not luxuriously printed, but, except for some of the plans, are clearly read; in any case, carping about the quality of the plates is not quite in order, considering the generosity of their number, and the fact that the Gaudí book includes eight color plates.

One minor criticism does come to mind, though it is by no means confined to this series: readers are by this time accustomed to, and can even forgive, the necessity of flipping back and forth from text to plates, but when the text bristles with references not only to plates but also to ganged footnotes, the reader needs three hands as well as patience.

The whole is recommended, nonetheless, as a handsome, useful series.

A Cool Book on Squares

TOWN AND SQUARE: FROM THE AGORA TO THE VILLAGE GREEN. *By Paul Zucker.* *Columbia University Press, 2960 Broadway, New York 27. 287 pp., illus. \$15.*

The manuscript of this book won the Brunner Scholarship Award of the American Institute of Architects in 1953; the published version demonstrates the wisdom of that choice.

Town and Square sets out "to develop the history and esthetics of the artistically shaped *void*, which finds its most outspoken and characteristic form in the square. . . . the focal point in the organization of the town."

But much more is achieved. Because the spatial essence of urban life is crystallized in the square, the spotlight focused on it by the author illuminates two larger areas: the evolution of cities in a context of social, political, and economic change; and the evolution of taste in a context of cultural change.

One of the best features of the book is that it keeps both these elements—civic and esthetic—in balance, so that one never overwhelms the other. Thus we learn, for example, that the appearance of the square in ancient Greece is linked both to the unfolding of democracy and to a developing spatial perception; that the vivid medieval contrast between human and divine architectural scale in some episcopal towns may be traced to the revival of commerce; and that the town planning of the Renaissance was influenced at least as much by utopian social ideas as by theories of proportion.

Modern planners will find much to guide and warn them here. It is no coincidence that three imperfect squares—Trafalgar Square in London, the Place de la Concorde in Paris, and Washington Square in New York—all originated in the nineteenth century, "an era which had almost no feeling for three-dimensional qualities."

Texts as good as this one are often spoiled by indifferent illustrations, indifferently presented. Happily, a well-printed collection of plates, remarkable for their aptness and visual appeal, make this book invaluable for the historian, architect, civic planner, and interested layman.

—ARTHUR FISHER

Vitruvius Britannicus

MODERN ARCHITECTURE IN BRITAIN. *By Trevor Dannatt, with an introduction by John Summerson.* *B. T. Batsford Ltd., 4 Fitzhardinge St., London W. 1. 216 pp., illus. 63 shillings.*

This book is a survey of modern British architecture since the war. It is based on an exhibition held in 1956, but the material has been revised and brought up to date. The selection, reflecting the choices of the committee for the original exhibition, seems to be both as representative and as discriminating as a book of this type can possibly be. It is a pity, however, that lack of space forced the omission of some competition designs and some work done by British architects abroad, which—less constrained by the harsh realities of post-war British building conditions—would reveal an imaginative scope that is lacking in many of the buildings actually included.

The book is divided by building types into five sections, of which those on Housing and on Buildings for Education are undoubtedly the most significant, as these categories were given top priority in the years following the war. The presentation succeeds admirably in conveying the essential character of each building, and the photographs are of a uni-

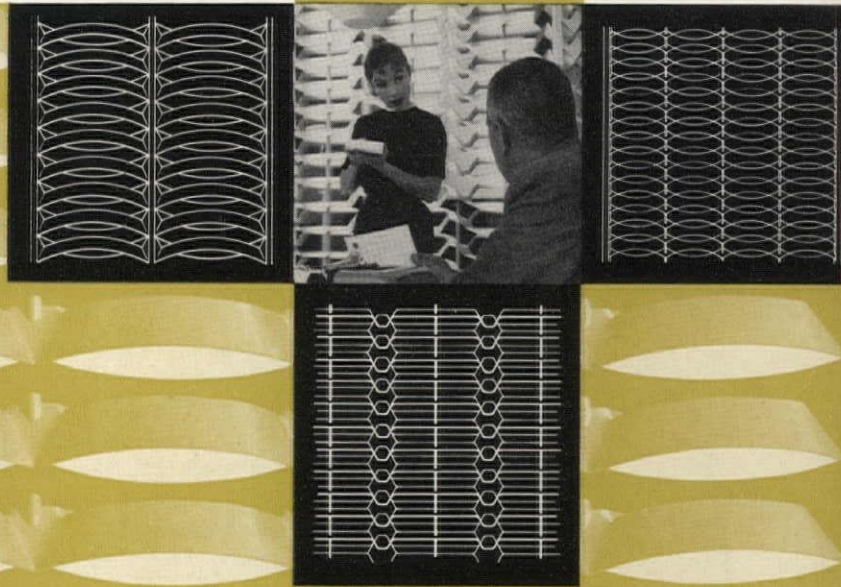
continued on page 72

Announcing a new architectural concept for sun control

Arcadia Brise Soleil (*breez so-lay'*) culminates an extensive research program to fulfill the dual needs of modern curtain wall design: 1) scientific control of solar impact upon large glass areas, and 2) freedom of expression in achieving the architect's esthetic solution. Brise Soleil is a modular system of aluminum components. It can provide any required degree of shading, yet retain maximum visibility. It permits unlimited flexibility in design, either through variations of the three sculptured configurations shown below, or through custom fabrication of the architect's specification. A wide range of colors and finishes is available. It is based on a design principle which permits economic fabrication and maintenance. And, because it is a true sun control system, it offers the potential of cost savings in air conditioning equipment and operation far exceeding its initial cost. Brise Soleil is a new, and, we believe, exciting architectural concept. For added information, write Arcadia Metal Products, Fullerton, Calif.

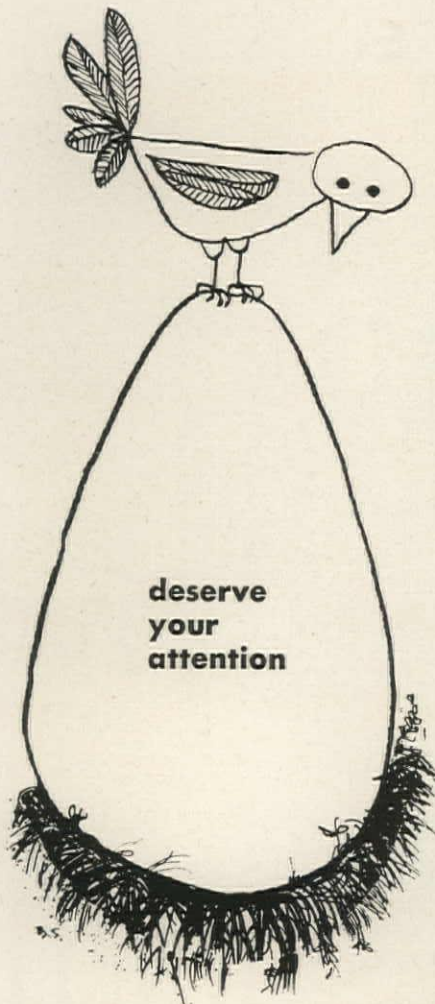
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Required Reading

continued from page 70

Vitruvius . . .

formerly high standard. Readability is somewhat diminished, however, by the constant juxtaposition of a page of text with a page of illustrations from the preceding example. John Summerson has contributed an introduction which includes a short history of the modern movement in Britain before the war, and some highly interesting speculation on the significance of the work produced since. Surely, if all writers on architecture possessed Summerson's lucid prose style and ability to grasp basic issues, the field of architectural theory would be much simplified.

Surveys of the architecture of a particular nation invite speculation on that most nebulous of topics, the national artistic character. The definitive work on that of Britain is Nikolaus Pevsner's *The Englishness of English Art*, the B.B.C. Reith Lectures of 1955, since published by the Architectural Press. This work has met with a certain lack of enthusiasm from some British architects, who seem to have an almost superstitious fear of being categorized. Nevertheless, looking at the present volume, some of the characteristics Pevsner isolates, notably compartmentation, linearism, and an emphasis on reasonableness to the verge of pragmatism, really do seem to be present. In fact, they even control and modify concepts of foreign origin, such as influences from the work of Le Corbusier. This "Englishness" should probably be kept in mind by American readers of this book.

—JONATHAN BARNETT

Two European Architects

MINOLETTI. *Milano Moderna*. 103 pp., illus.

ARKITEKTEN ARNE JACOBSEN. *By Johan Pedersen*. Distributed in U.S. by Wittenborn and Company, 1018 Madison Ave., New York 21. 119 pp., illus. \$6.

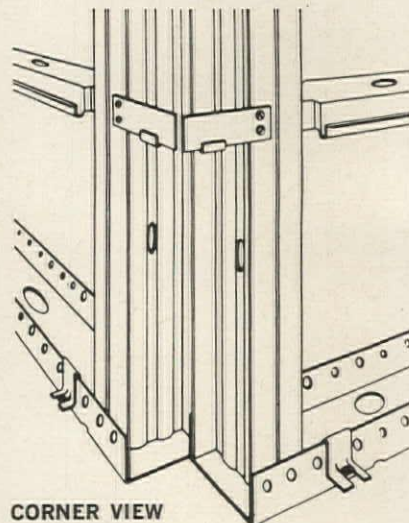
The Italian book on Giulio Minoletti is the first of a projected series of monographs on Milanese architects, continued on page 408



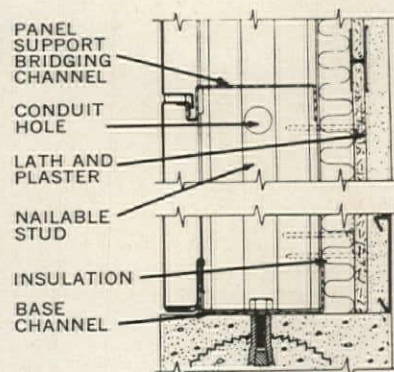
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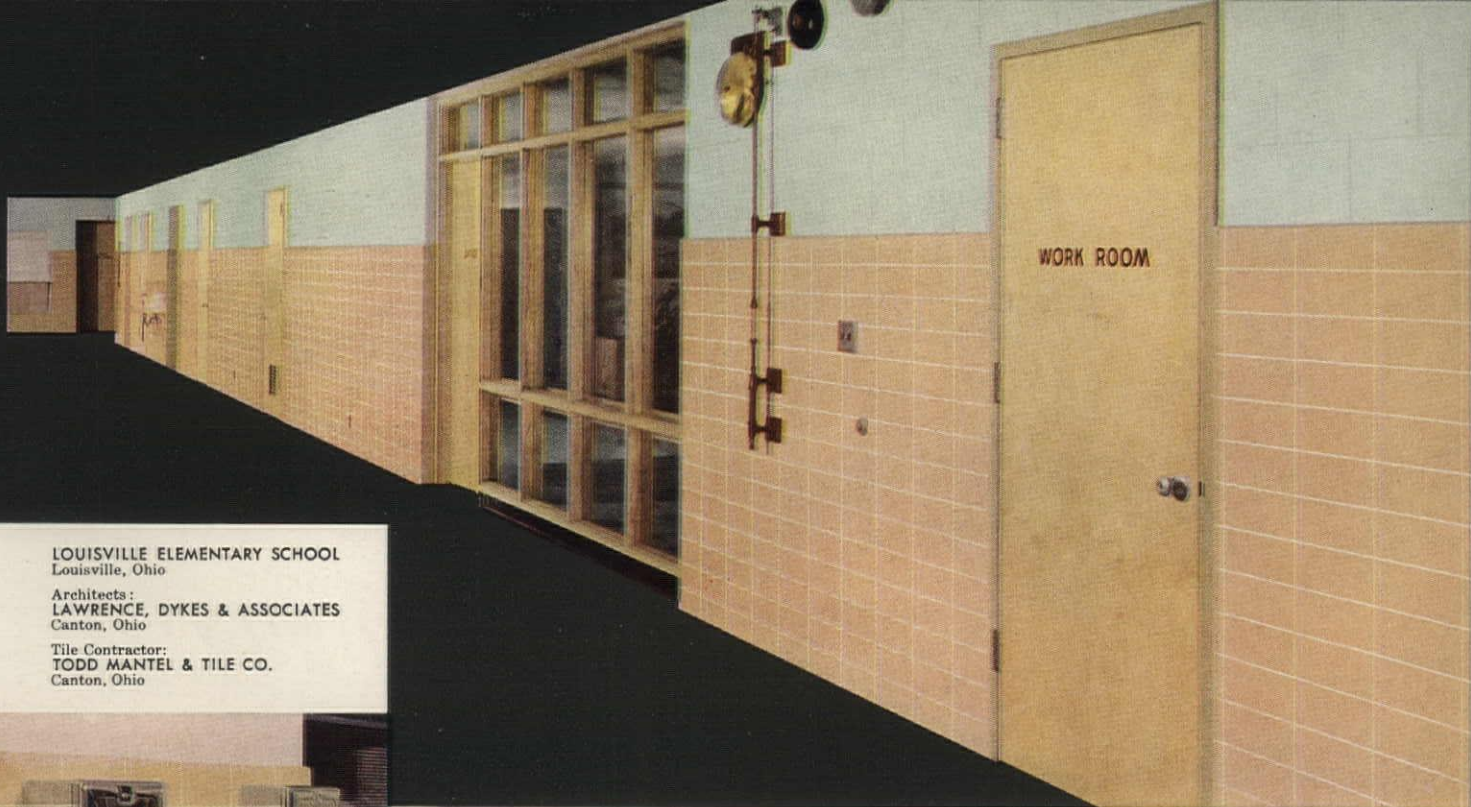


CORNER VIEW



WALL CROSS SECTION





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Tile Contractor:
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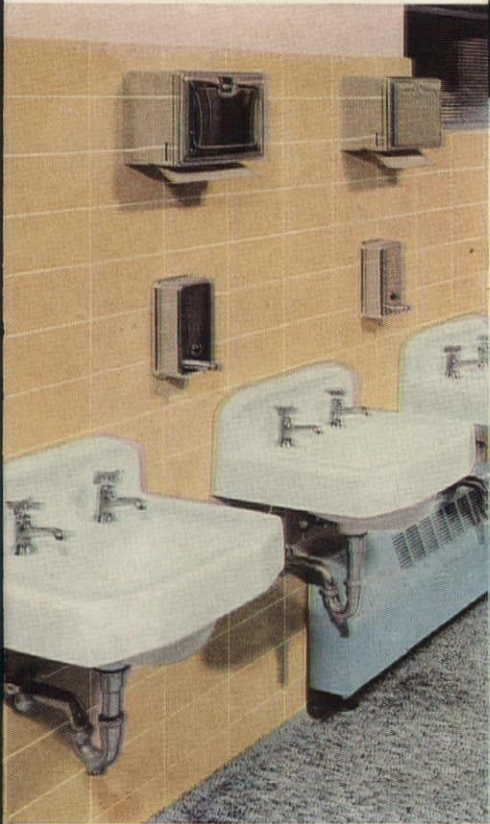
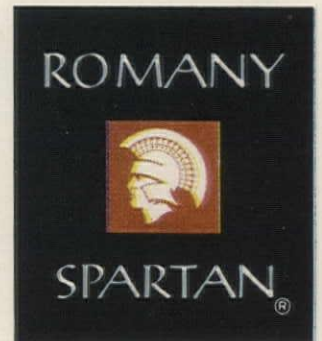


Plate No. 1086

Louisville Elementary School makes use of Romany-Spartan glazed wall tile in corridors, kitchen, gymnasium and toilet rooms.

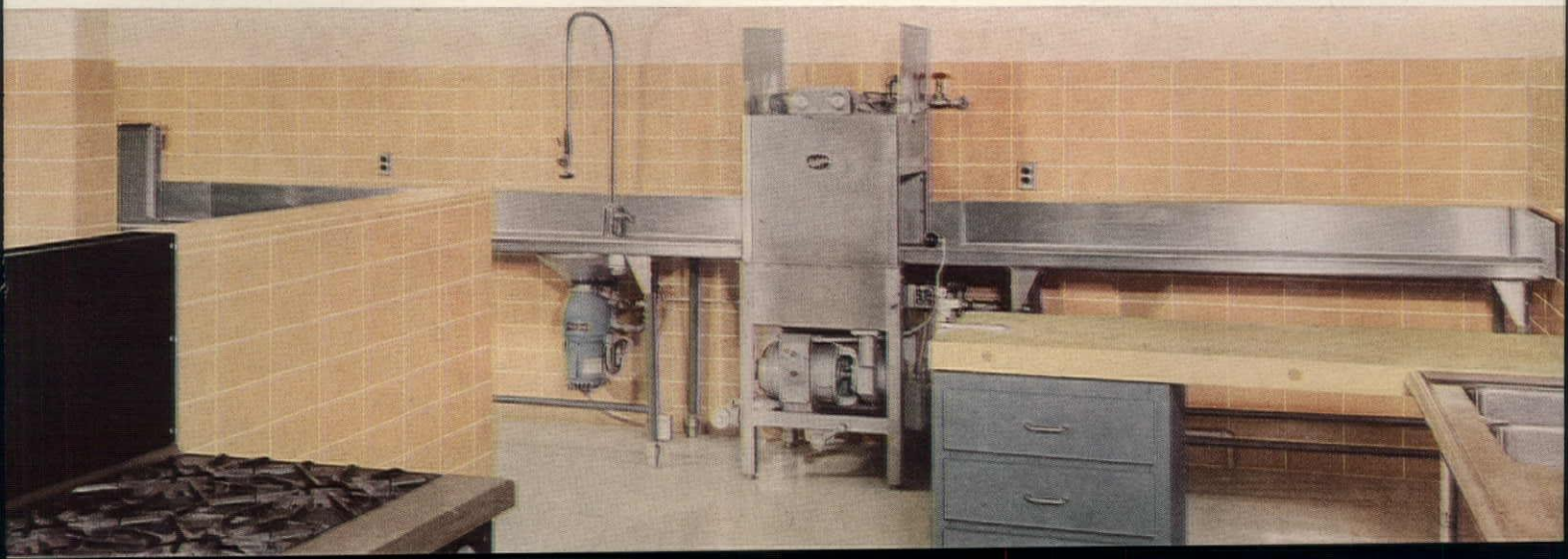
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Architect Walter Pierce specified *Structoglas* for skylights in Berea College's new Industrial Arts Building. These translucent, shatterproof fiberglass reinforced panels let in free natural light—filter out glare. *Structoglas* eliminates the problem of maintenance: no breakage, no repairs, no painting. And continuous exposure tests after more than three years prove that *Structoglas* resists fading, erosion and discoloration 2½ times longer than ordinary fiberglass panels. For descriptive literature, write *Structoglas Inc.*, Dept. 302 Cleveland 9, Ohio.

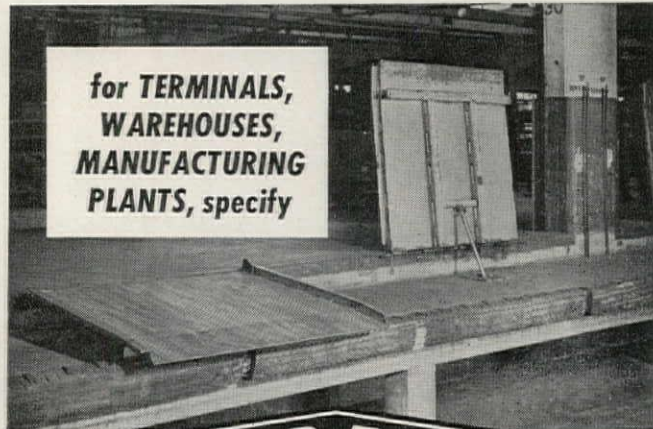
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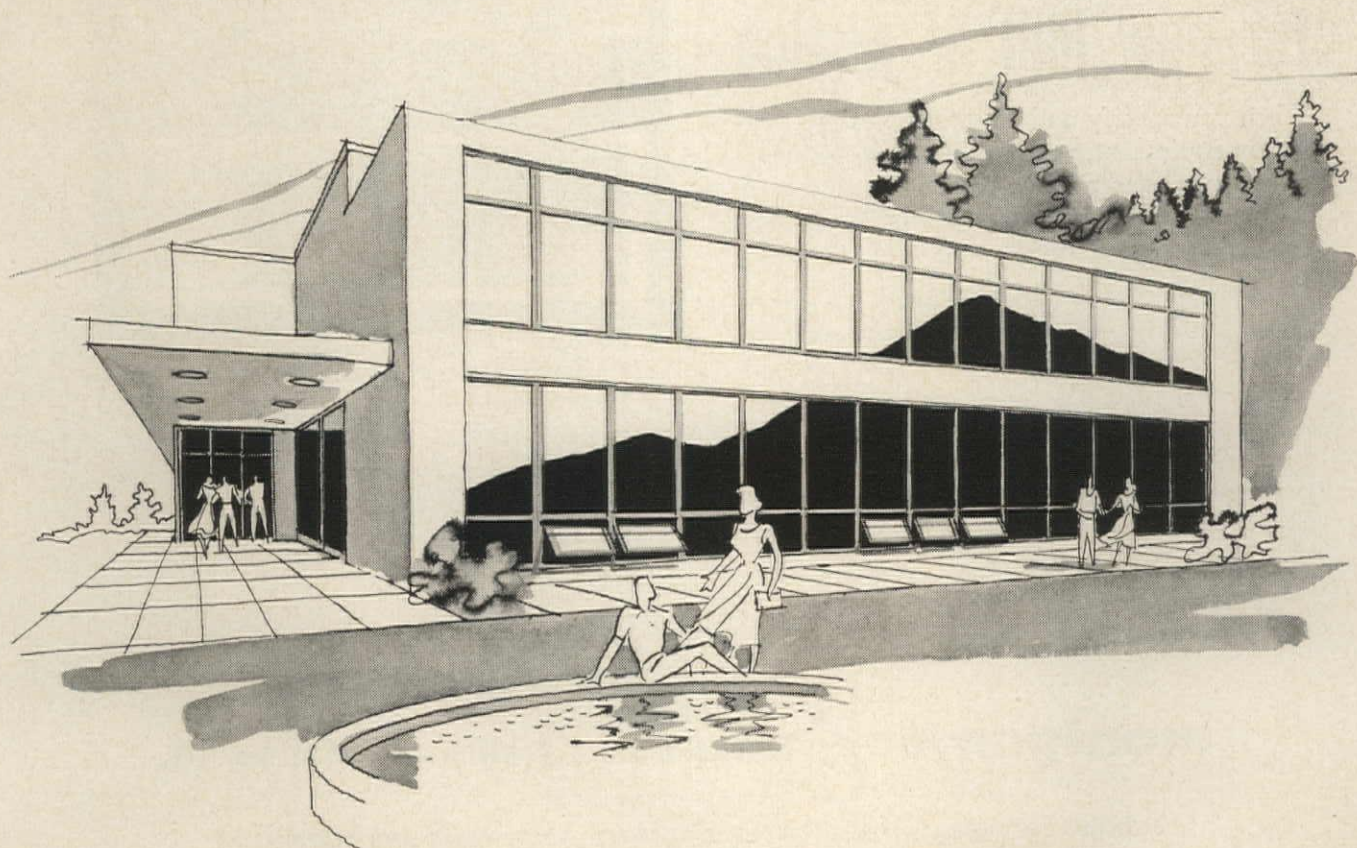
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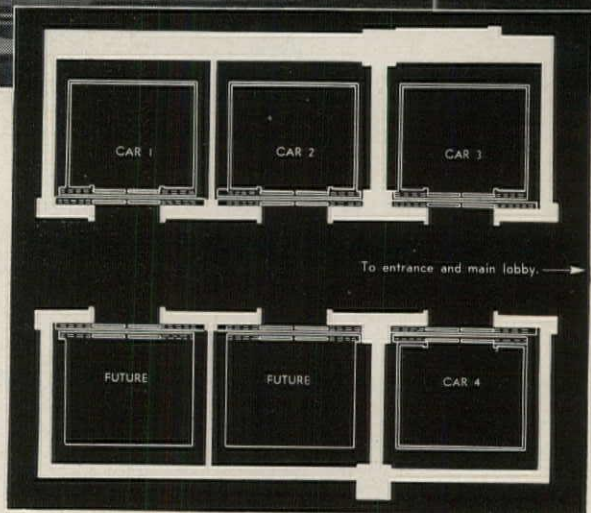


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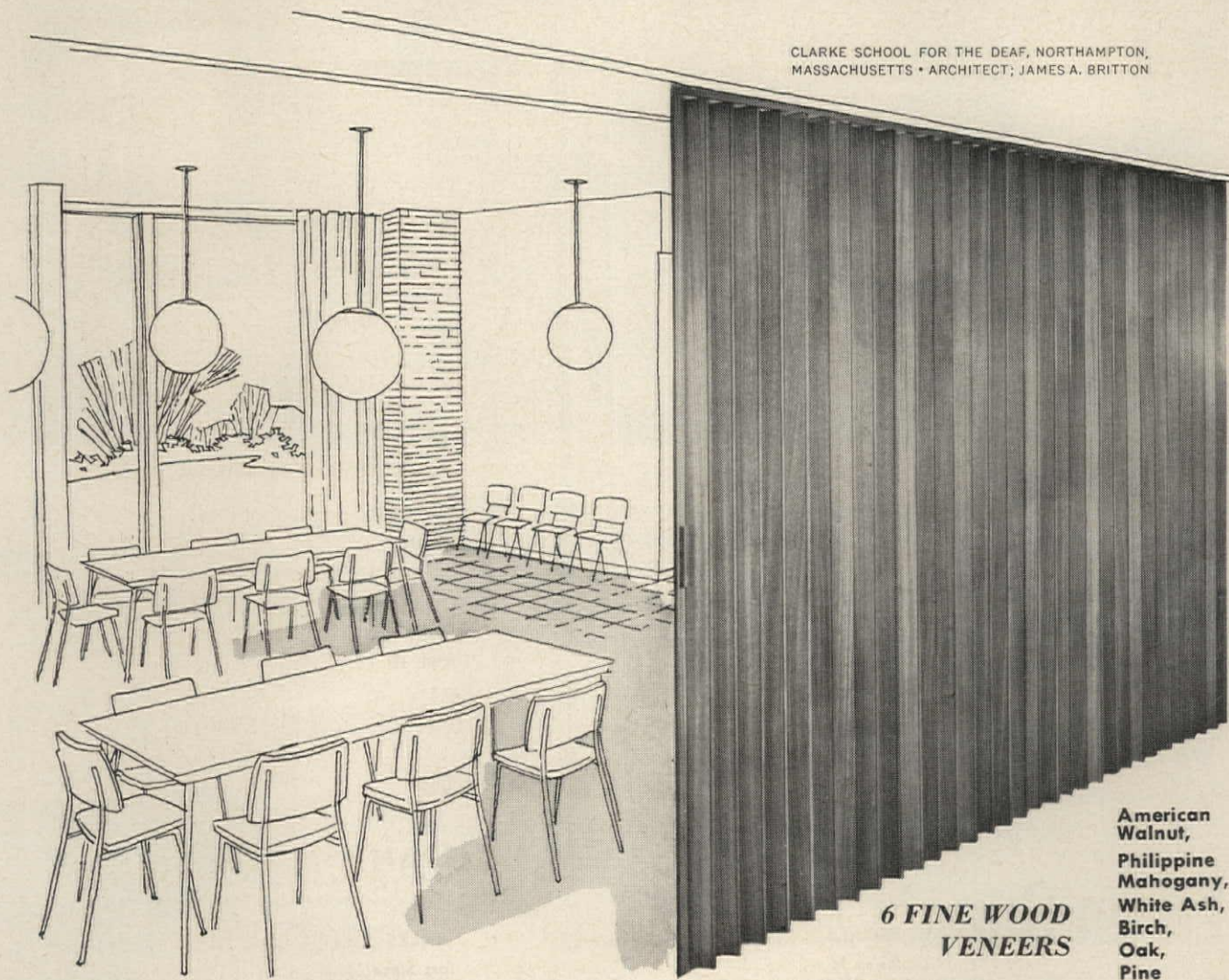
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provide warm texture of natural wood

After you've decided to use folding doors, consider the ones that carry the name PELLA. The *rich-grained beauty of their genuine wood veneers* complements brick, tile, glass and plaster surfaces. Available factory-finished or unfinished, PELLA WOOD FOLDING DOORS provide lasting beauty with their quality materials and fine craftsmanship. Patented "live action" steel spring hinging assures dependable, effortless operation for even the largest units. Solid wood "Lamicor" panel construction prevents

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VENEERS**

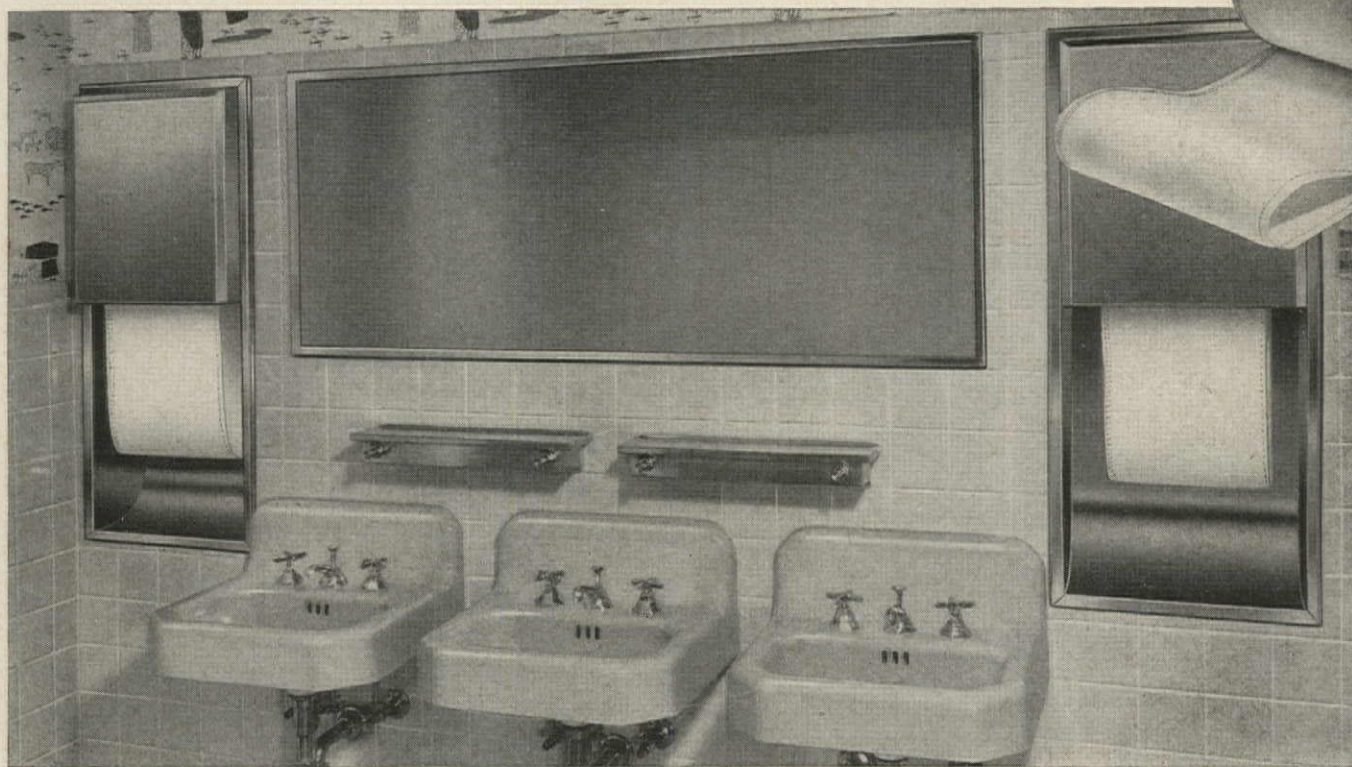
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The **New Trend** in functional washroom design . . .



Architect, Theodore Rogvoy, A.I.A., Detroit. New Greenfield's Restaurant Headquarters in Detroit, Mich.

Continuous Cotton Towels



This facility in the new Greenfield's Restaurant demonstrates the advantages of specifying continuous towel cabinets in modern washrooms. Installed and serviced by the linen supplier, cabinets end litter . . . disposal problems . . . fire hazard.

The variety of cabinets available offer complete flexibility . . . *do not obligate* your client to any specific service even when you specify recessed cloth towel cabinets.

Of course, the big advantage is quality. There is no substitute for the luxury and quality of cotton toweling. You provide the best at low cost when you specify continuous cotton towel cabinets.

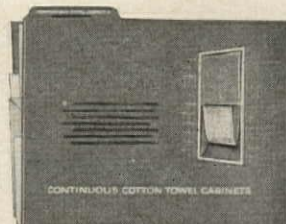
Linen Supply Association of America
and National Cotton Council • 22 West Monroe Street, Chicago, Ill.

Recessed continuous towel cabinets harmonize with the clean, modern design . . . ends clutter of waste receptacles. (Recesses are designed to accept other cabinets if owner desires.) These facilities and all linens serviced by Marathon Linen Service, Inc., Detroit.

Send for this free *Planning-for-Cloth* kit

Illustrated, includes specifications for recessed unit and continuous cloth towel cabinets.

Write—to Linen Supply Association on your letterhead.



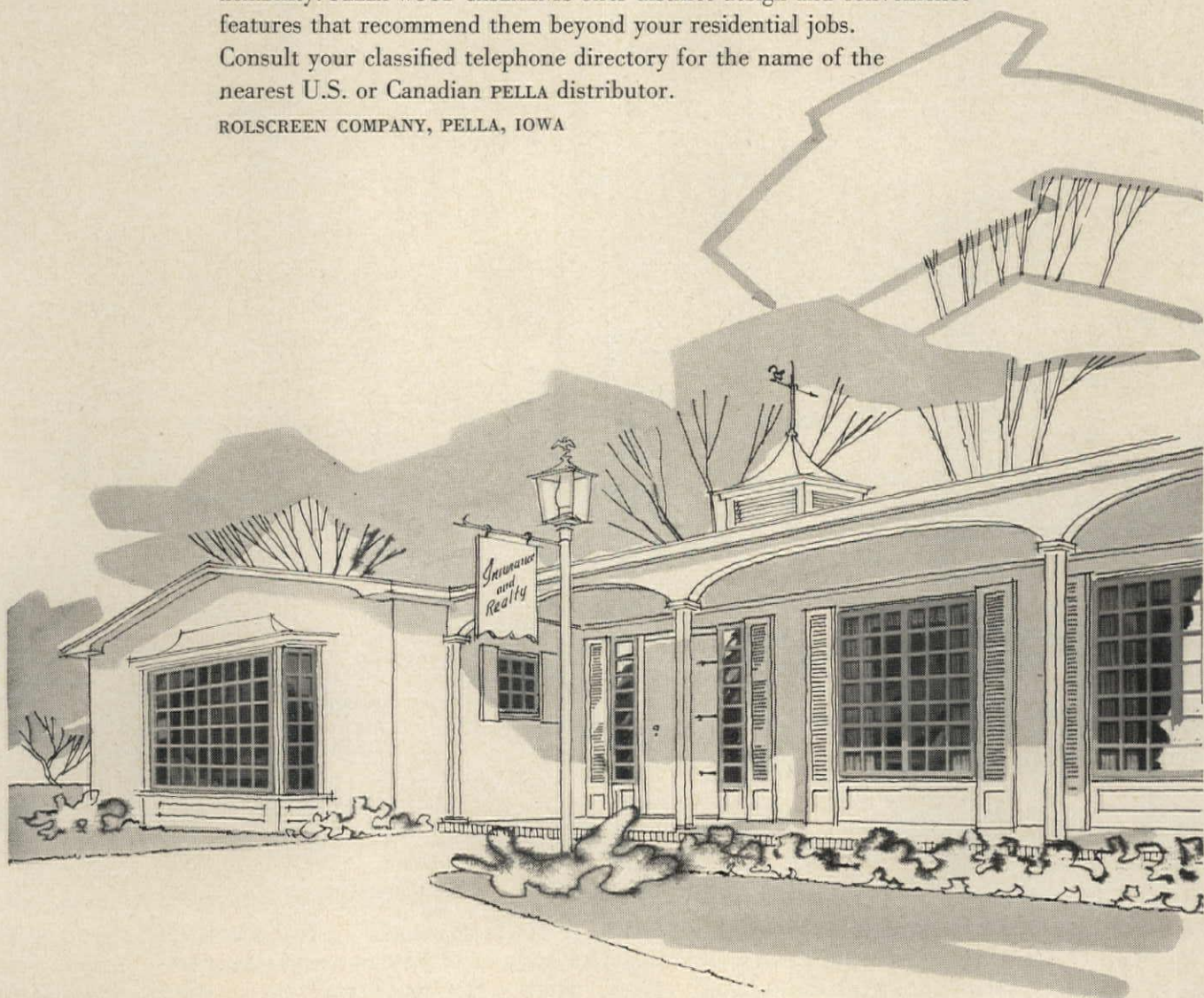


wood casements with muntins

accent colonial office building

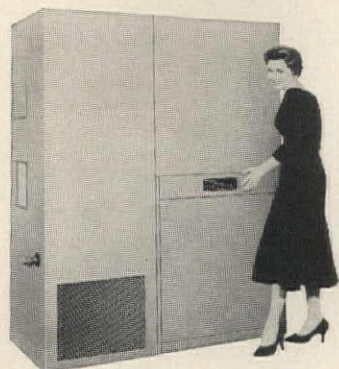
PELLA WOOD CASEMENT WINDOWS offer interesting solutions to the problem of making a commercial building compatible with residential neighborhoods. Fenestration can be easily varied through the use of removable muntins which are available in three styles: Diamond, Horizontal and Regular. In glass heights up to 68", PELLA WOOD CASEMENTS are pleasingly proportioned to blend with both traditional and contemporary architecture. A wide variety of sizes permits planning flexibility. PELLA WOOD CASEMENTS offer distinct design and convenience features that recommend them beyond your residential jobs. Consult your classified telephone directory for the name of the nearest U.S. or Canadian PELLA distributor.

ROLSCREEN COMPANY, PELLA, IOWA





In the Chicago area you'll find hundreds of Arkla-Servel Sun Valley Gas air conditioners in food stores, drug stores, general stores, restaurants, taverns, halls, beauty parlors, medical centers, business offices, service offices, plant offices, small factories, small shops, repair shops, barber shops, branch offices... bringing year 'round comfort to customers and employees.



more and more Chicago businesses are cooling

with GAS! Many Chicago firms need a compact, automatic unit that will both heat and cool at low cost. That's why—in a one year period—275 Arkla-Servel Sun Valley Gas air conditioning units were specified and are being used in business places throughout the Chicago area.

With this central Gas unit, there's no need for fans, window air conditioners or separate cooling units. The design is so clean and simple that it can be installed wherever there is room...out in the open, on the roof, in the basement, or in the back room.

In addition to heating and cool-

ing, the Arkla-Servel Sun Valley unit also cleans the air, dehumidifies and ventilates to assure year 'round comfort.

The Arkla-Servel Gas air conditioner is flexible, too—comes in 3½ and 5-ton units which can operate singly or be adapted to multiple installations depending upon the amount of space to be air conditioned.

If your customers and employees sweltered this summer, think now about installing a Gas cooling system before next year's heat wave is here. For specific information, call your local Gas company or write to the Arkla Air Conditioning Corporation, General Sales Office, 812 Main St., Little Rock, Ark. **AMERICAN GAS ASSOCIATION**

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Trouble-free Donley Incinerators were specified for this large residential development in Philadelphia.

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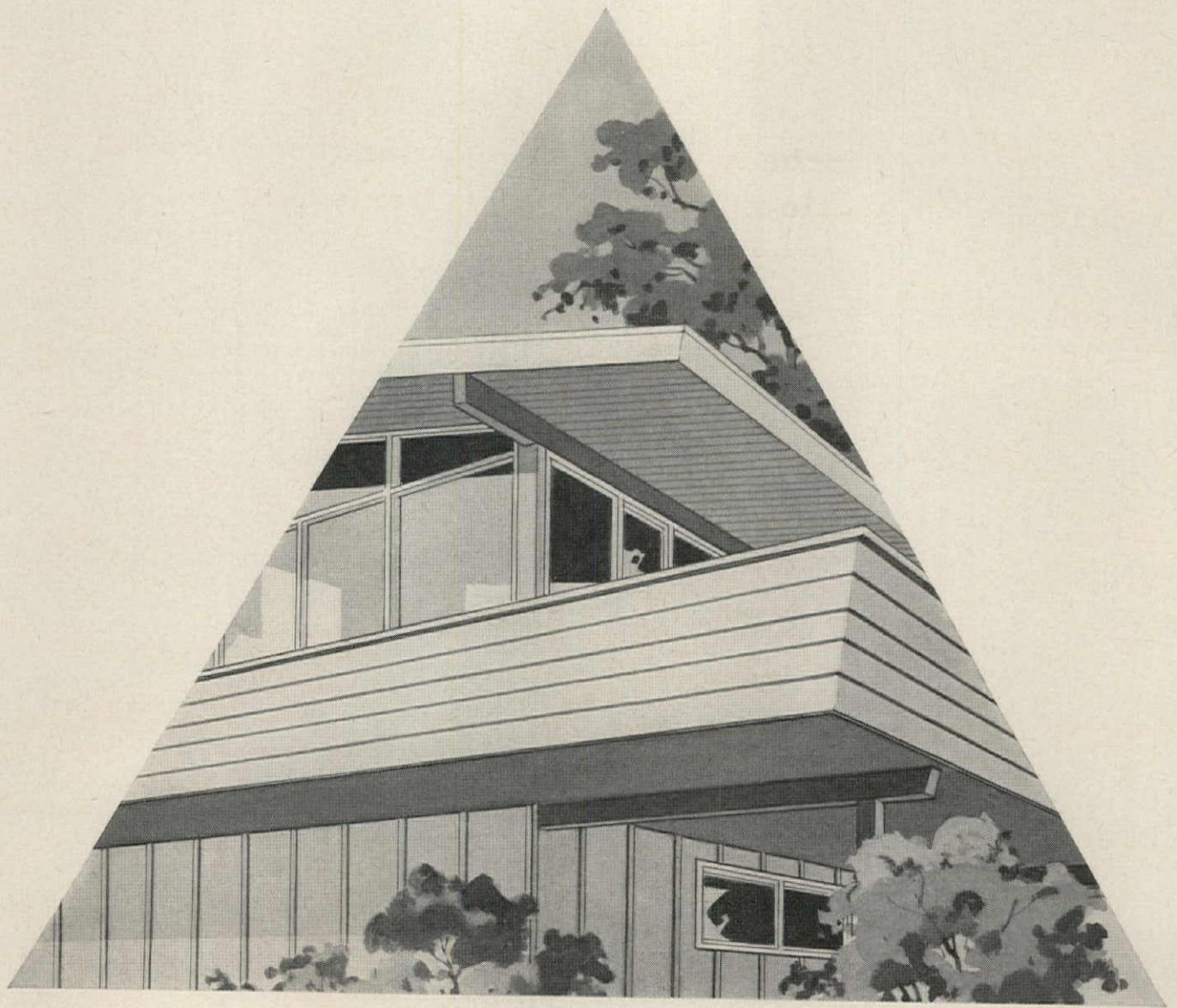
Today architects and builders are demanding a better quality.

We believe it is important for all to know that U.S.F. DOORS ARE QUALITY. But they do offer the economy of engineering ingenuity and production line methods unmatched today.



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DOOR AND FRAME DIVISION



You cut building cost—improve appearance— when you specify Weyerhaeuser NU-LOC

NU-Loc is Weyerhaeuser's manufactured lumber, made to your measure in both width and length. With it you can achieve the clean lines and unbroken surfaces that add so much to appearance—and achieve them without expensive, time-consuming carpentry work. You save in more ways than one when you specify NU-LOC—save in lower labor costs . . . less construction time . . . and you save by minimizing waste.

NU-Loc is manufactured from kiln-dried clear lumber in 8 species, carefully sorted and matched for grain and color before gluing. Only exterior type glues are used, and it is interchangeable with regular lumber in all non-structural uses. For detailed information, see the facing page or write: Weyerhaeuser Company, Lumber and Plywood Division, First National Bank Building, St. Paul 1, Minnesota.



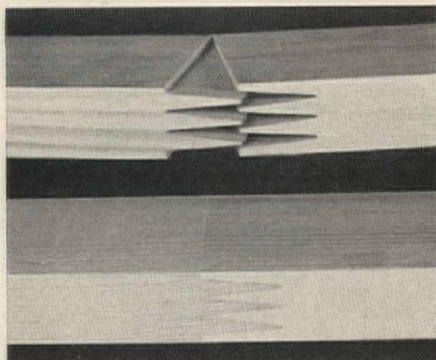
Weyerhaeuser Company

Lumber and Plywood Division



Weyerhaeuser NU-LOC is lumber produced for specific needs and better performance

NU-LOC is made of selected pieces of scientifically kiln-dried lumber, carefully machined for precision fit. The pieces are end-glued or end- and edge-glued together with a light-color waterproof exterior glue, then finished to uniform smoothness. Lumber to be used for NU-LOC is cut thicker than regular stock to allow for surfacing after gluing. In order to minimize differences in color and grain, the pieces are sorted and matched into as many as five groups (depending on species) before gluing. Melamine urea resin adhesive is used because it creates a strong bond that is both waterproof and colorless.



Close-up shows precision-machined, interlocking NU-LOC end joint before and after bonding.

Principal Advantages

NU-LOC improves appearance by presenting a smooth, even surface with snug fitting joints. It takes and holds paint or varnish extremely well. NU-LOC cuts labor costs by minimizing cutting, fitting, and handling time. It speeds construction by covering more area faster, and reduces waste because you order it in the lengths and widths you need. Made only of kiln-dried lumber, it has good dimensional stability, lays flat, resists cupping and warping.

Principal uses of NU-LOC

NU-LOC is interchangeable with regular lumber in all non-structural uses. NU-LOC is offered in American Lumber Standard and in West Coast Industry sizes. It is made in clear grades of Douglas Fir, Western Red Cedar, West Coast Hemlock, Ponderosa Pine, Idaho White Pine, Inland Red Cedar and Larch . . . and is also available in common grades of Idaho White Pine, Inland Red Cedar and Larch/Douglas Fir.

Nu-Loc exterior wall coverings—drop

siding, vertical patterns, board and batten—are available in lengths to 22', widths to 12"—bevel siding in lengths to 16'. *Nu-Loc casing and base*, and *Nu-Loc mouldings* are available in standard patterns, and in specified or random lengths. *Nu-Loc door jamb sets* are made in many sizes and patterns. Wide NU-LOC Lumber can be ordered in lengths to 20', widths to 28". NU-LOC Lumber is also ideal for window frames, cornices, rake trim, soffits, fascias, porch ceilings, signs, cabinet faces, shelving, drawer sides, drawer fronts, stair trim, valances, and bay window sills.

Fully Accepted

The combination of modern equipment, carefully trained operators, and strict quality controls assure consistent uniformity and durability. NU-LOC is backed by over 20 years of research, testing, and development. It is produced in accordance with grading rules of the West Coast Lumber Inspection Bureau or Western Pine Association.



For wide widths, the end-glued pieces are grain matched and edge-glued together.

Summary

Advantages in wider widths: Gluing up of narrow pieces tends to stabilize wide widths by reducing cup and twist. NU-LOC provides wider widths than available in regular lumber.

Advantages in long lengths: Long lengths of NU-LOC require fewer end-fitted joints to give better appearance and save labor. Both specified and fractional lengths are available in quantity.

For additional information write: Weyerhaeuser Company, Lumber and Plywood Division, First National Bank Building, St. Paul 1, Minn.



**FIRST TIME
IN A HIGH-RISE
BUILDING ...**

Neoprene structural gasket reduces glazing operation to three quick steps in Libbey-Owens-Ford Building

Skidmore, Owings & Merrill, architects for the new, 15-story, glass-clad Libbey-Owens-Ford Building in Toledo, Ohio, utilized "Inlock" neoprene structural sealing gaskets to simplify wall design and reduce installation labor. This marked the first use of neoprene structural gaskets in a high-rise building.

Resilient neoprene gaskets, alone, retain the 6 x 10 foot Thermopane window units and seal out weather. No complicated extrusions (and the extra labor of drilling and tapping them).

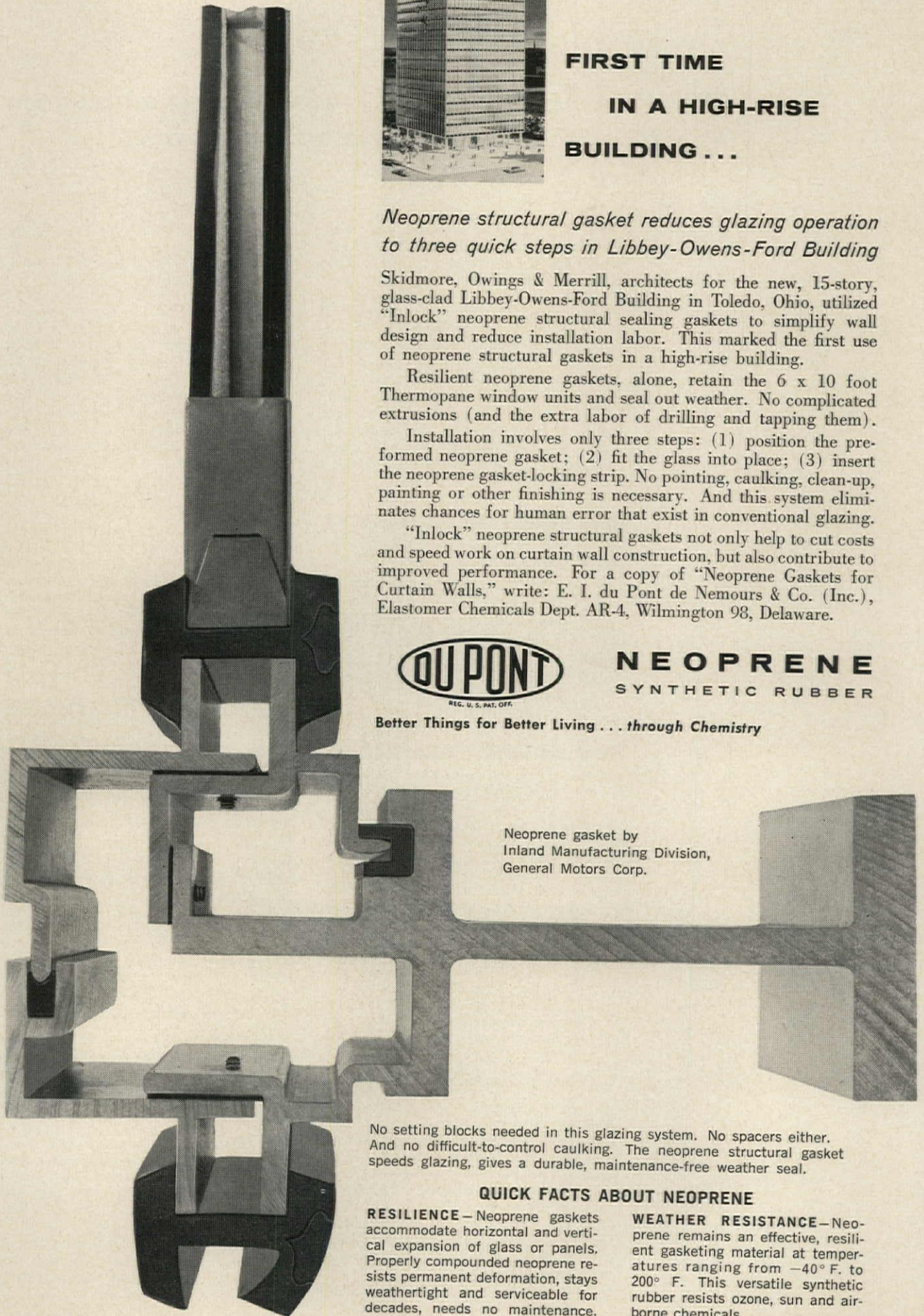
Installation involves only three steps: (1) position the pre-formed neoprene gasket; (2) fit the glass into place; (3) insert the neoprene gasket-locking strip. No pointing, caulking, clean-up, painting or other finishing is necessary. And this system eliminates chances for human error that exist in conventional glazing.

"Inlock" neoprene structural gaskets not only help to cut costs and speed work on curtain wall construction, but also contribute to improved performance. For a copy of "Neoprene Gaskets for Curtain Walls," write: E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Dept. AR-4, Wilmington 98, Delaware.



NEOPRENE
SYNTHETIC RUBBER

Better Things for Better Living ... through Chemistry



Neoprene gasket by
Inland Manufacturing Division,
General Motors Corp.

No setting blocks needed in this glazing system. No spacers either. And no difficult-to-control caulking. The neoprene structural gasket speeds glazing, gives a durable, maintenance-free weather seal.

QUICK FACTS ABOUT NEOPRENE

RESILIENCE—Neoprene gaskets accommodate horizontal and vertical expansion of glass or panels. Properly compounded neoprene resists permanent deformation, stays weathertight and serviceable for decades, needs no maintenance.

WEATHER RESISTANCE—Neoprene remains an effective, resilient gasketing material at temperatures ranging from -40° F. to 200° F. This versatile synthetic rubber resists ozone, sun and airborne chemicals.

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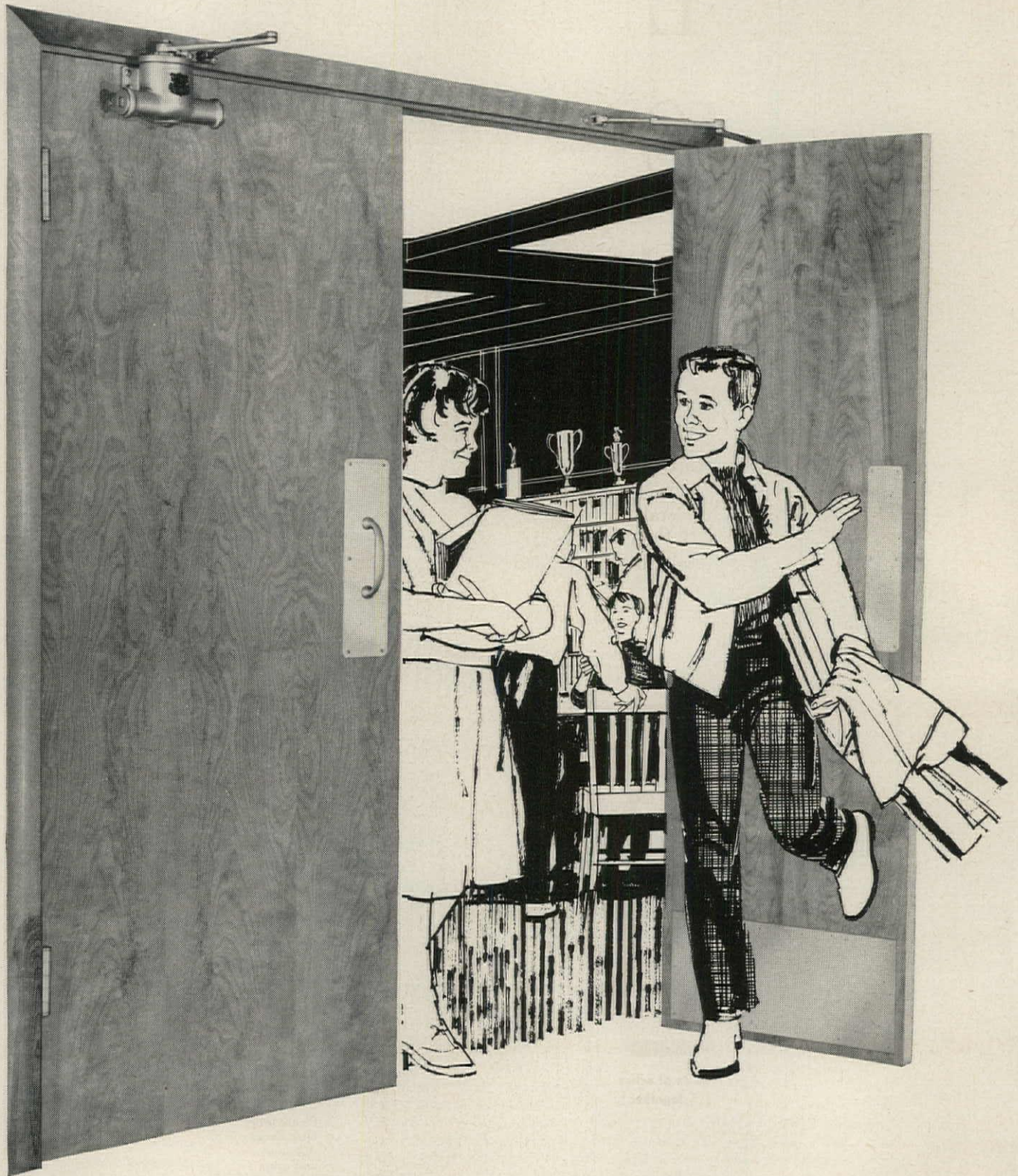
See our catalog 19e/Ca in Sweet's Architectural Catalog or write for a free copy. It contains original and practical ideas plus helpful information for specifying canvas.

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CURTIS®

NEW LONDONER HOLLOW-CORE

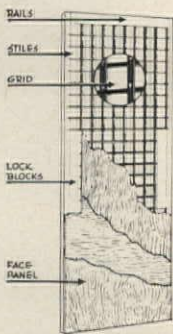
DOORS offer beauty plus stamina

A hollow-core door for classroom use?

Certainly—if it's a New Londoner® by Curtis. Many a school architect specifies them. Not only do the beautifully matched wood grain patterns complement modern classroom design, but New Londoner balanced construction stands up to long years of classroom use.

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This famous guarantee provides that any Curtis New Londoner or American® flush door, found defective within the meaning of the guarantee, will be replaced, and rehung, at Curtis' expense.

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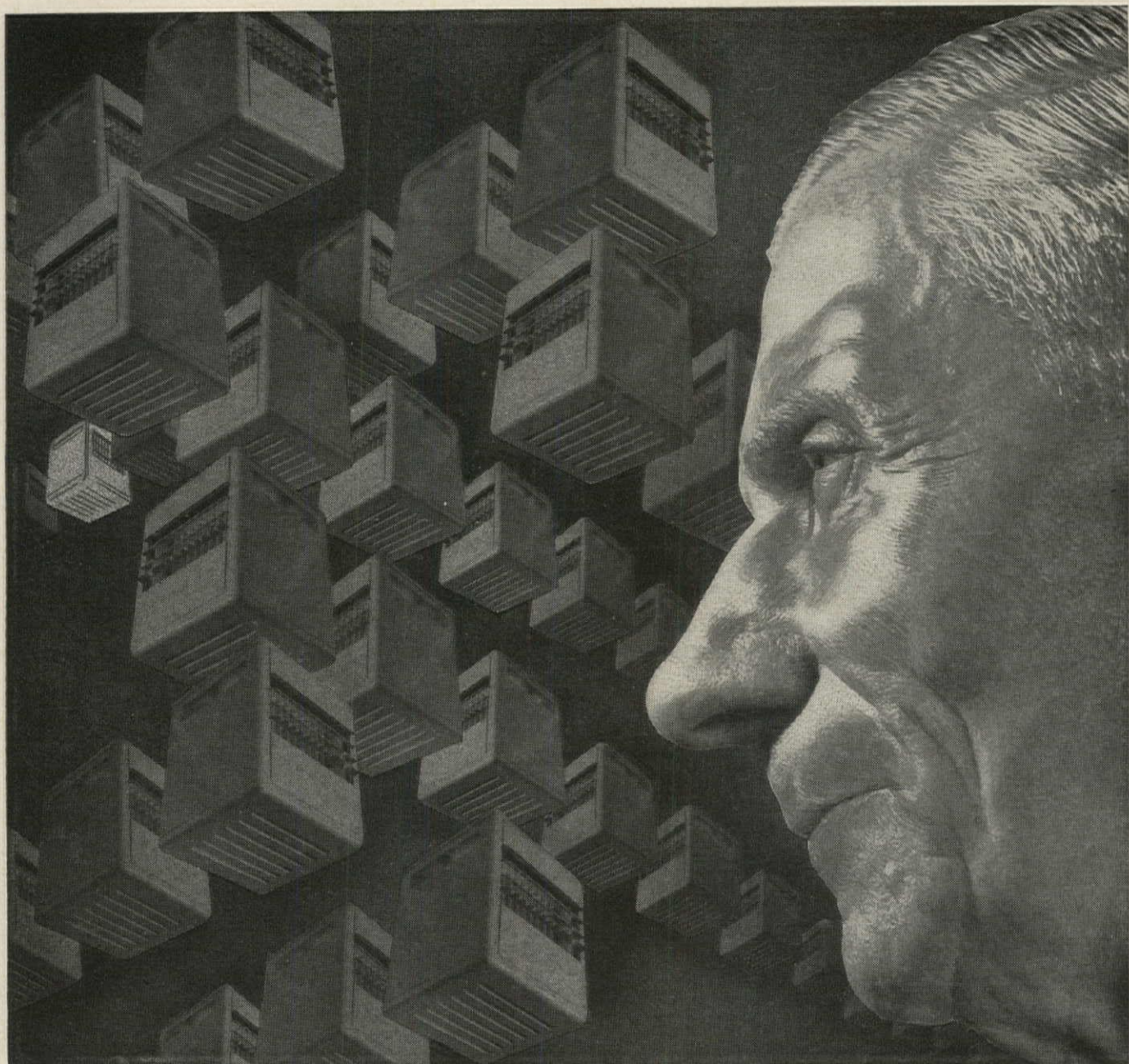
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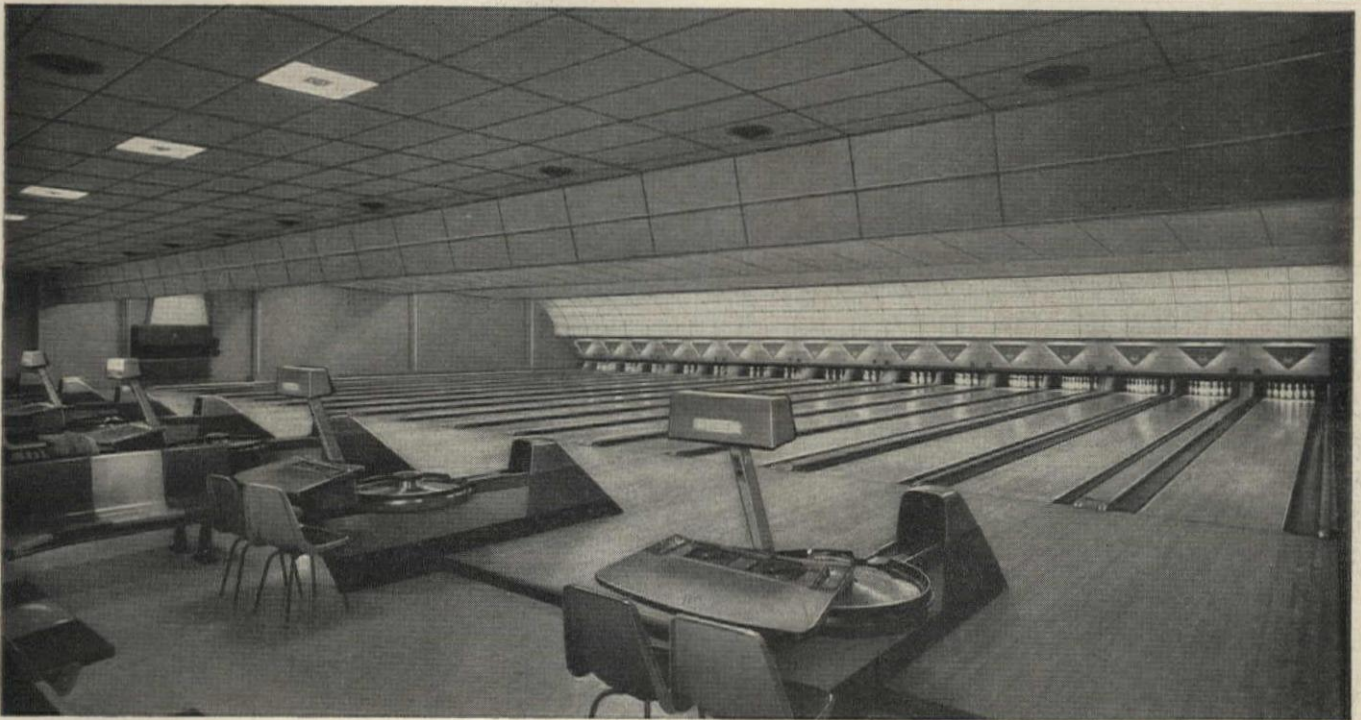
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HEATERS**

"THE TOUGH BUYERS' LINE"

IDEAS



The Grady Bowl, Chickasha, Oklahoma
Architects: Hudgins, Thompson, Ball & Associates, Oklahoma City.

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Gives Full Freedom For Functional Design



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Allowing wood to function structurally *and* decoratively helped realize significant economies in the construction of this modern church. These dramatic supporting members are 2x6's over laminated arches. Sargent, Webster, Crenshaw and Folley, architects.

Because it brings its own beauty to basic design . . .

for new answers . . . look to WOOD!



The natural beauty of weathered wood helps wed this house to its site, harmonize with masonry and painted surfaces. Batters create a strong design line. Ernest Born, architect.

Wood's beauty goes to the very heart of a design problem, because it rests on a strong foundation of structural integrity. When you designate wood, you have a material that functions on two levels . . . structural and decorative . . . *simultaneously*. Any material that can perform this double duty is the welcome ally of today's inflation-harassed architect!

For example, wood's use on exteriors . . . its ability to weather subtly, beautifully, even as it protects and insulates . . . the ease with which it harmonizes with so many color schemes. In interiors, wood construction need not be hidden. Rather, you can boast of its beauty with exposed post, plank and beam . . . with floors, paneling and handsome built-in cabinetry. For more information on designing with wood, write to:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1319 18th St., N.W., Washington 6, D.C.

nlma

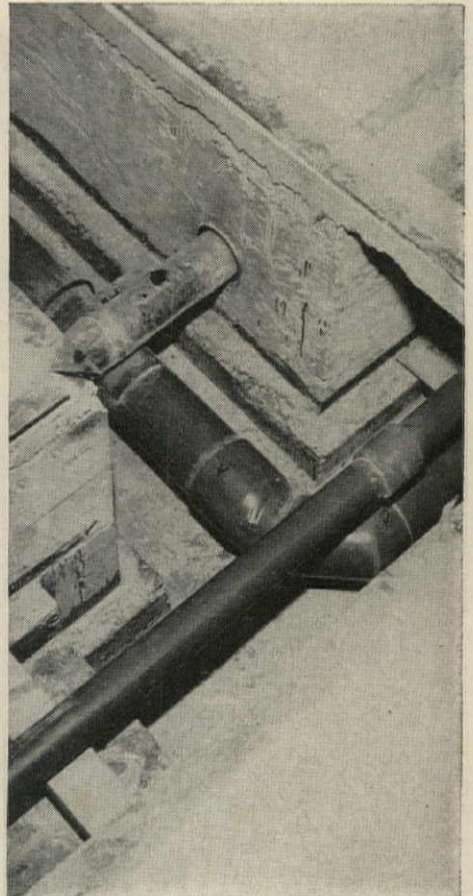
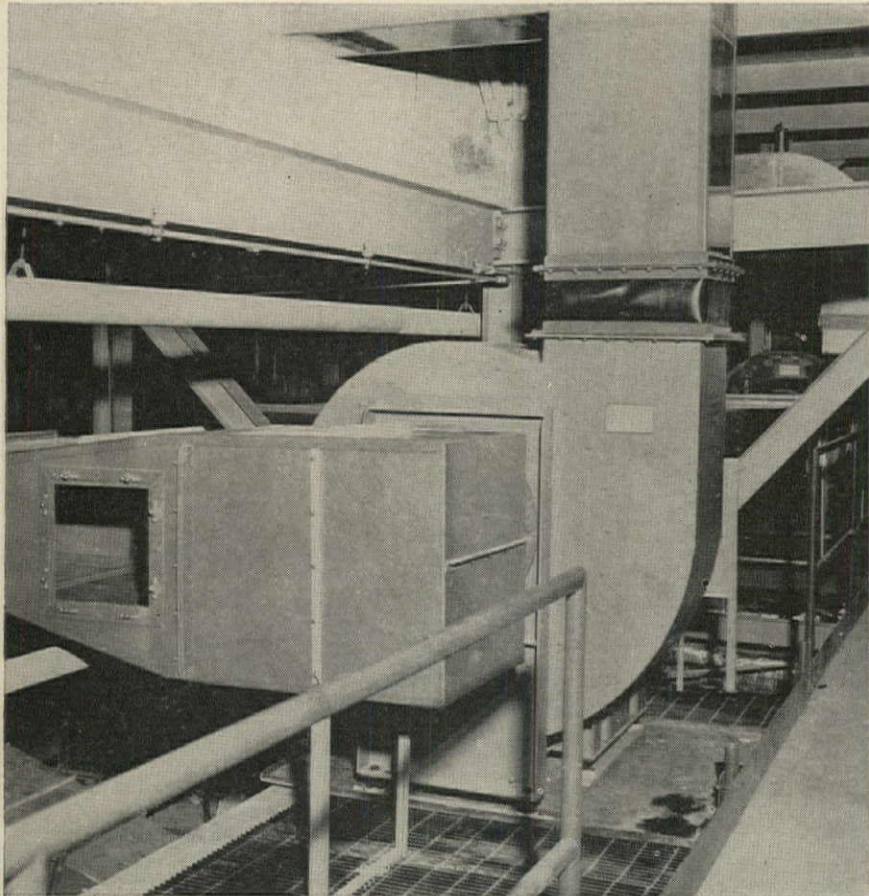
for freedom of design, look to **wood**



Wood's capacity for capturing the color of Nature, plus its ability to withstand the elements, makes it the logical choice for the architect trying to bridge the gap between indoors and out. Wood's acoustical properties enhance the richness of high-fidelity sound in this modern home. Schweikher & Elting, architects.

News about

B.F. Goodrich Chemical *raw materials*



Electrical manufacturer ends corrosion problem *... uses fume ducts and sewer pipe of Geon*

This major electrical equipment manufacturer solved his maintenance problems and cut costs by installing ductwork and pipe made from Geon vinyl. Ordinary pipe or duct would create corrosion problems in no time—but Geon is unaffected by most causes of corrosion.

Sheet for duct use or pipe made of Geon vinyl is easy to use. Installation crews like it because it is so light in weight and easy to work with. Fittings, nuts and bolts of Geon vinyl are also available. Pipe can be

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How can your plant gain from ductwork or pipe of Geon vinyl? Get more information today. Write Dept. GF-2, B.F. Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.



B.F. Goodrich Chemical Company
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GEON vinyls • HYCAR rubber and latex • GOOD-RITE chemicals and plasticizers

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IS PROFIT WISE



"We specify and use **UTILITY** grade West Coast framing lumber for quality construction. Properly used, it saves \$200.00 on every job," report builders Lyons and McDonell.

Here is a building partnership which has discovered a short cut to bigger profit with "Utility" grade West Coast dimension and boards. Lyons and McDonell's solid reputation for quality construction has never varied, yet these progressive builders have achieved lower total job costs regularly by using "Utility" grade lumber in specified applications.*

You, too, will find "Utility" grade is a money-maker for One and Two Living Unit-construction. And you will have the plus-value of the consistent quality of West Coast lumber.

*When used in accordance with FHA Minimum Property Standards for One and Two Living Units, FHA Bulletin No. 300.

WEST COAST LUMBERMEN'S ASSOCIATION

1410 S. W. Morrison Street, Portland 5, Oregon

CHECK THESE USES* for "Utility" grade West Coast Lumber

(in accordance with FHA Minimum Property Standards):

RAFTERS FOR LIGHT ROOFING (Roof slope over 3 in 12) (Weighing less than 4 lbs. per sq. ft. in place)

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2x6	16" o.c.	9'-8"
2x8	16" o.c.	14'-4"
2x10	16" o.c.	19'-8"

FLAT ROOF JOISTS supporting finished ceiling (Roof slope 3 in 12 or less)

2x6	16" o.c.	7'-8"
2x8	16" o.c.	11'-6"
2x10	16" o.c.	15'-8"
2x12	16" o.c.	18'-2"

CEILING JOISTS (no attic storage)

2x6	16" o.c.	11'-8"
2x8	16" o.c.	17'-6"

FLOOR JOISTS

		30 lb. live load*	40 lb. live load†
2x6	16" o.c.	7'-2"	6'-4"
2x8	16" o.c.	10'-8"	9'-6"
2x10	16" o.c.	14'-8"	13'-0"
2x12	16" o.c.	17'-0"	15'-4"

*sleeping rooms only

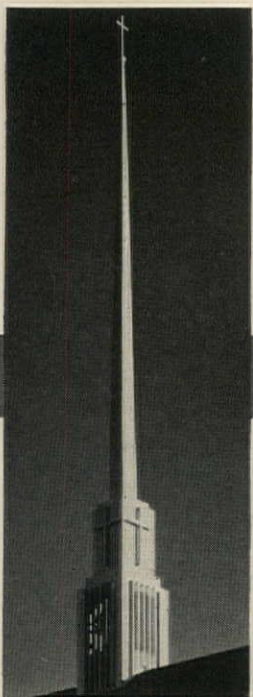
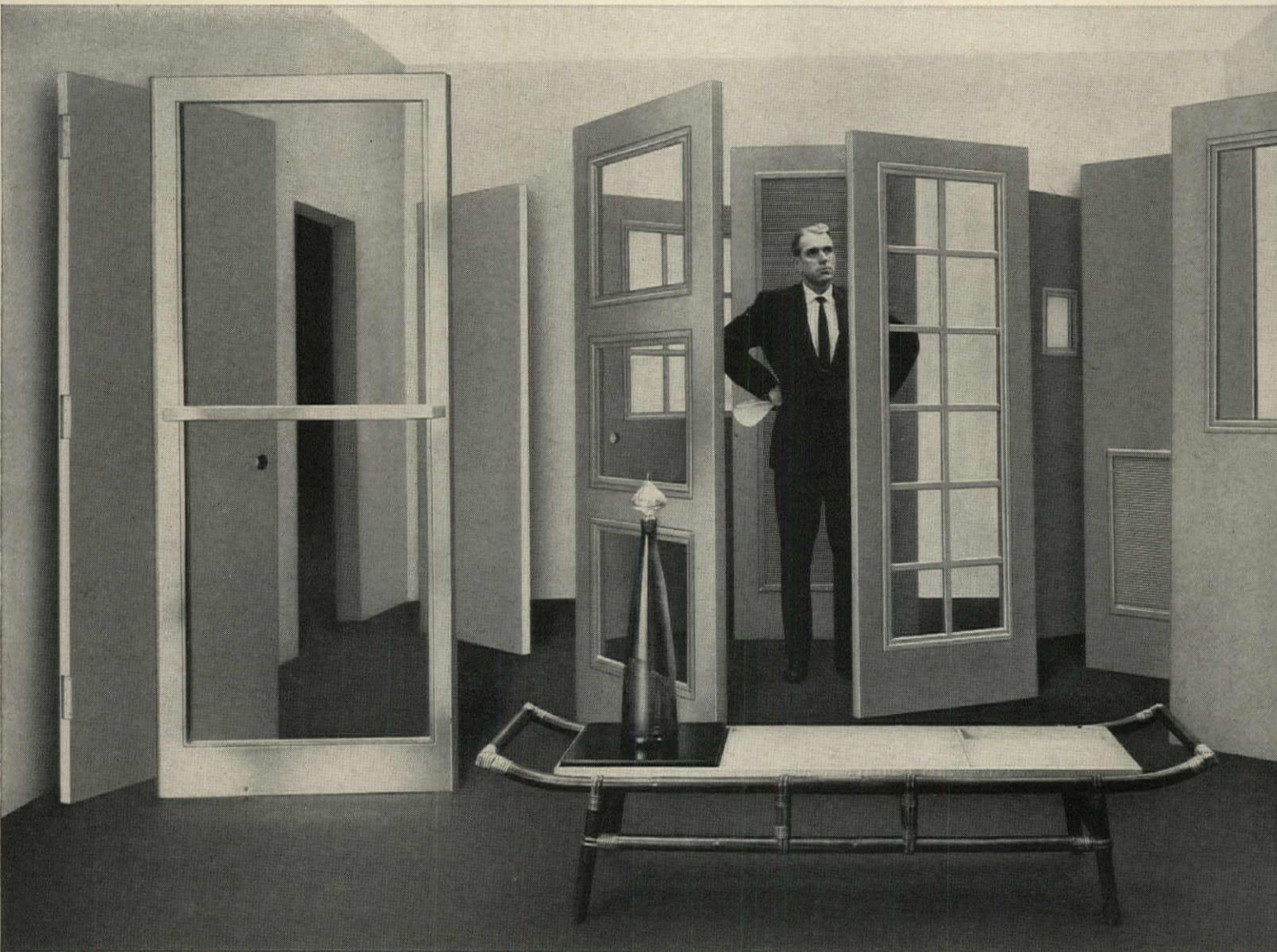
†other than sleeping rooms

BOARDS. Ample strength and satisfactory coverage make "Utility" boards a primary material for sub-floors, wall sheathing and solid roof boarding in permanent construction. This grade is widely used for light concrete forms.

GET THE TECHNICAL FACTS

Write today for your copy of "Where to Use Utility Grade."





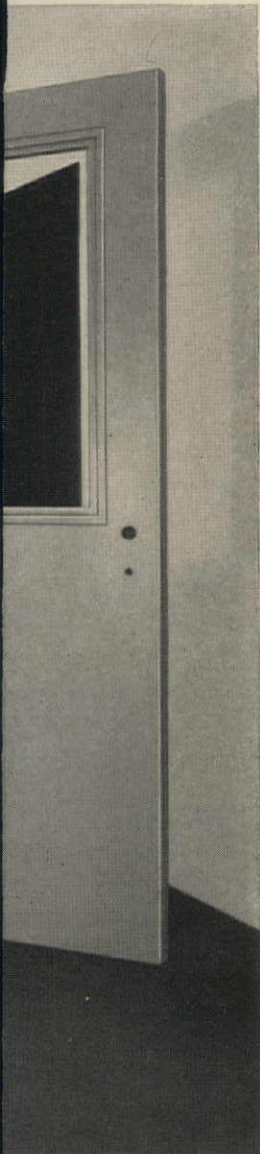
Overly Church Spires



Overly U/L Labeled Fire Barriers



Overly Stainless Steel Entrances



More design freedom with Overly Doors

Overly hollow metal doors and frames are crafted to complement any division of space, providing attractive and functional entrances and doorways. The architect has a choice of over 90 basic door styles, designed for every type of location and tailored to suit the installation.* Each door design is available in steel, stainless steel, bronze, aluminum or other metals, with prime, baked enamel, laminated fabric and hand-grained wood finishes. For every special installation, Overly custom doors are crafted to meet the most exacting architectural specifications.

The architect also has a complete line of Overly labeled doors for his selection. These doors have been tested by Underwriters' Laboratories, and in many instances, their performance records were in excess of the U/L standards. And the Overly Fire Barrier, only U/L tested and labeled Fire Barrier available today, is designed to protect corridors and stairwells in schools, institutions and public buildings.

Other Overly architectural products include Overline Stainless Steel Entrances, Overly Tilt-A-Front installations, Overly Goodwin batten-type roofs to match any shape or form, and Overly Church Spires rendered tastefully in modern or Gothic. Each of these products, and the new products to follow, will be subjected to the same sensitive scrutiny and exhaustive testing that have been part of Overly craftsmanship in the past. For your architectural metal needs, why not contact Overly?

**No other manufacturer catalogs so many different door designs. Among the recent installations using Overly doors are the Libbey-Owens-Ford Building, Toledo, Ohio; the H. K. Porter Building, Pittsburgh, Pa.; the Beverly-Hilton Hotel, Los Angeles, Calif.; the Kroger Building, Cincinnati, O.; the John J. Kane Hospital, Pittsburgh, Pa.; and the First National Bank Building, Fort Worth, Texas.*



The Architect's Craftsman

Overly

MANUFACTURING COMPANY

Greensburg, Penna. • St. Louis 19, Missouri • Los Angeles 39, California

Overly Goodwin Pre-fabricated Roofs

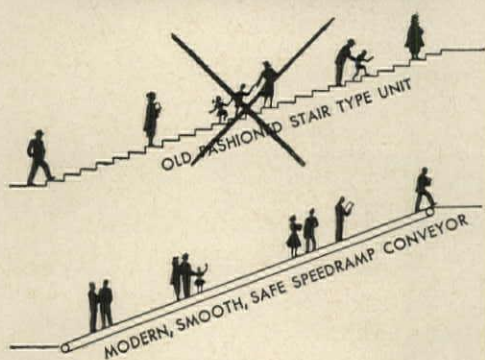


**NEEDLESS STEPS
ELIMINATED IN
MOVING PEDESTRIAN
TRAFFIC HORIZON-
TALLY OR ON AN
INCLINE WITH
COMPLETE SAFETY**



SPEEDWALK & SPEEDRAMP **PASSENGER CONVEYOR SYSTEMS**

SPEEDWALK and SPEEDRAMP Passenger Conveyor Systems like the one shown at Scott's Grand Central Market, Aberdeen, Washington provide for greater economy — 20% to 30% less initial cost than "Moving stair" conveyances. Simplicity of construction and less moving parts assure less "downtime" and lower maintenance cost. Utilizing exclusive S-A safety features, SPEEDWALK and SPEEDRAMP Passenger Conveyors are unmatched by architecturally outmoded "moving stair" type units. Stairways become beautyways when glamorized by the showcase beauty attained with SPEEDWALK and SPEEDRAMP Passenger Conveyor Systems. These versatile units can operate horizontally or on an incline, with one or more lanes, forward and reverse or in a system of several units carrying pedestrian traffic up and down simultaneously.



Step out of the past and move into the future with SPEEDWALK and SPEEDRAMP Passenger Conveyor Systems. Do away with those needless steps in moving people horizontally or on an incline.



SPEEDWALK DIVISION **STEPHENS-ADAMSON MFG. CO.**

GENERAL OFFICE & MAIN PLANT, 53 RIDGEWAY AVENUE, AURORA, ILLINOIS
PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

SEE THE MONTGOMERY ELEVATOR COMPANY REPRESENTATIVE OR THE
STEPHENS-ADAMSON REPRESENTATIVE IN YOUR AREA.



How Alcoa Aluminum saved taxpayers money on Minnesota school

The aluminum curtain wall construction of Bloomington High School, Hennepin County, Minn., cut wall costs on every square foot. Compared with other types of construction materials, even conservative estimates indicate a saving of many thousands of dollars with Alcoa® Aluminum.

And this aluminum wall weighs only about 5 lb per square foot—where masonry would weigh as much as 90

lb—which means another big saving to taxpayers from reduced loads on foundations and other structural elements. Aluminum saves in many ways! That's why Bloomington's new school used aluminum in so many places: 617 aluminum windows, 621 aluminum panel frames in the curtain walls, plus many pounds of aluminum in screens, louver frames, trim and elsewhere.

The savings go on and on, too.

Light, strong, corrosion-resistant Alcoa Aluminum stays beautiful, needs no maintenance, no painting. Its attractive and efficient design is another added value. Aluminum can save tax dollars in your community, just as it's doing in Bloomington. For complete information, just call your nearest Alcoa sales office, or write: Aluminum Company of America, 1823-D Alcoa Building, Pittsburgh 19, Pa.

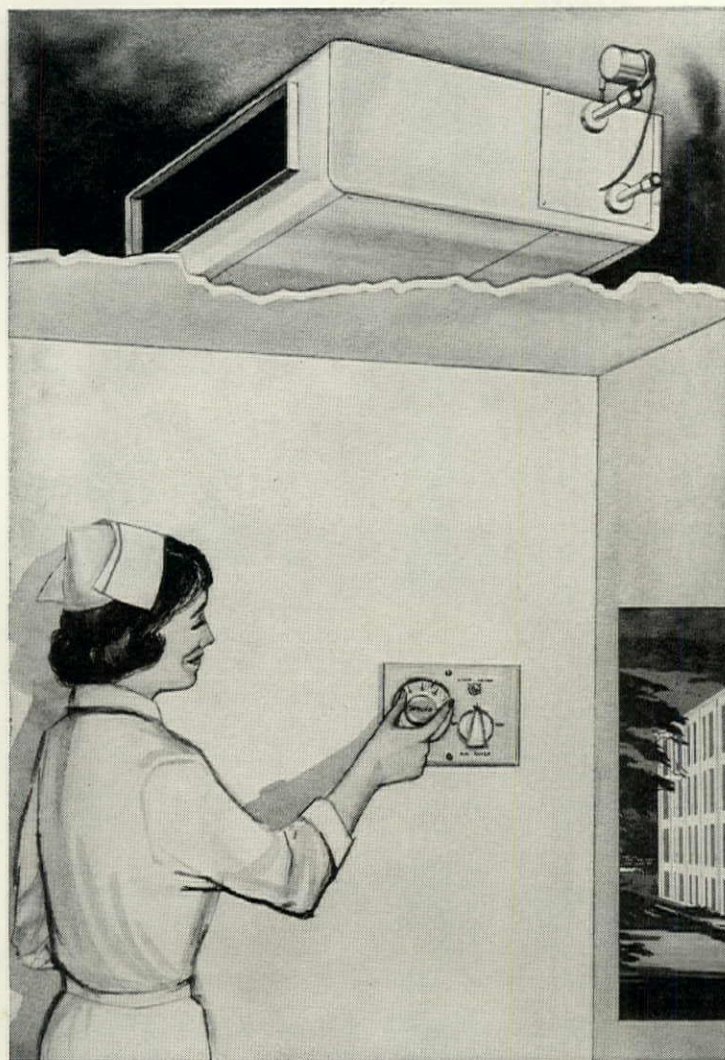


Owner: Bloomington Consolidated School District, Hennepin County, Minn.
 Building: Bloomington High School
 Architect: Armstrong and Schlichting, Minneapolis, Minn.
 General Contractor: Madsen Construction Company, Minneapolis, Minn.
 Aluminum Fabricator: Benson Manufacturing Company, Kansas City, Mo.

Your Guide to the Best in Aluminum Value

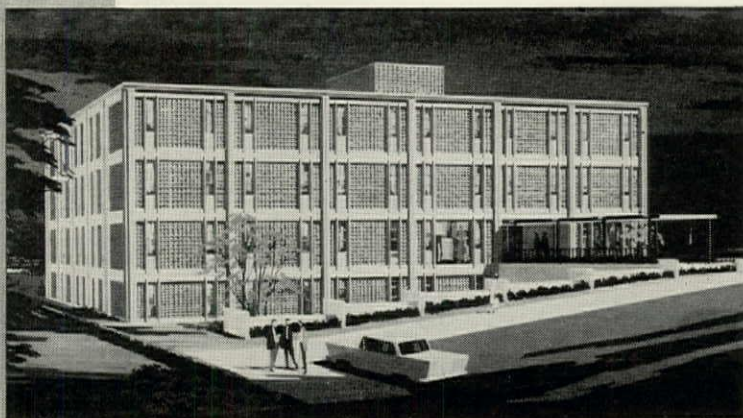
For exciting drama watch "Alcoa Presents" every Tuesday, ABC-TV, and the Emmy Award winning "Alcoa Theatre" alternate Mondays, NBC-TV





DOCTORS NORTH-ROADS BUILDING
Dellwood, Mo.

Architects: Smith & Entzeroth
Mechanical Engineers: Albert Rich Co.
General Contractor: Cousins Construction Co.
Mechanical Contractor: Condaire, Incorporated



Unique use of *Marlo* fan-coil units in handsome new doctors' building

The versatility of Marlo "Seazonaire" remote room air conditioning units is graphically demonstrated in the new Doctors North-Roads Building in suburban St. Louis.

In this installation, the "Seazonaires" were recessed above a removable furred ceiling and equipped with flexible ductwork leading to ceiling diffusers. Thirty-six "Seazonaires" were installed, one unit for each suite, each with its own thermostatic and fan control and fresh air duct from the outside wall.

By using this unique system — one of the first of its kind—the architects and engineers were able to produce a building of quality design and construction without increasing initial cost and offering important savings in operating costs.

Write for 16-page illustrated brochure on Marlo "Seazonaire" remote room air conditioning units. Contains photographs and drawings of all models available, construction and performance details, examples of typical installations.

Marlo coil co.

SAINT LOUIS 11, MISSOURI

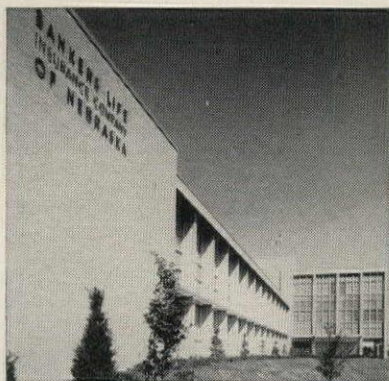
Quality Air Conditioning and Heat Transfer Equipment Since 1925

New
office building
designed
with
the future
in mind



YOU CAN BE SURE IF IT'S **Westinghouse**

Exterior view of new home offices of Bankers Life Insurance Company of Nebraska, in Lincoln. Two different lighting systems are provided for the building, one for day and periphery lighting for night.



COVER PHOTO: Westinghouse Mainliner recessed fluorescent luminaires light the spacious stair wells which are finished with ceramic tile and terrazzo stairs. Shown here are C. E. Pickering, Westinghouse Construction Specialist; W. F. Sterbens, Wesco, Omaha; J. P. Anderson, James P. Anderson Company, Consulting Engineers; J. O. Unthank, Unthank and Unthank, Architects; R. W. Changstrom, Branch Manager, Wesco, Omaha; P. J. Assenmacher, President, Assenmacher Construction Company, General Contractor; and T. G. McBride, Sales Manager, Market Planning, Wesco, Pittsburgh.

Bankers Life Building designed for comfort, convenience, economy and expandability

The home office building of Bankers Life Insurance Company of Nebraska, in Lincoln, was planned and constructed to provide maximum efficiency and future expansion. It incorporates many ideas which resulted from a study of other home office insurance buildings throughout the country, plus a careful study of the company's operation and plans for future growth.

Careful consideration was given to the selection of easily maintained materials for efficient maintenance and low operating costs. This was accomplished through use of permanent materials which require no painting, such as Westinghouse decorative Micarta® surfaces; large areas of ceramic tile; terrazzo floors; glare-reducing, heat-absorbing glass; movable walls; changeable fixtures and complete flexibility of heating, lighting and communications facilities.

One of the most important considerations in planning and construction of the building was the selection of an adequate electrical distribution system and the electrical comfort and convenience components such an electrical system made possible. Westinghouse was specified throughout for the distribution system, lighting, elevators, motors and controls. The expandability inherent in the building itself is ample for the present electrical needs and provides for 100% future electrical expansion.

(contd.)

YOU CAN BE SURE...IF IT'S
Westinghouse

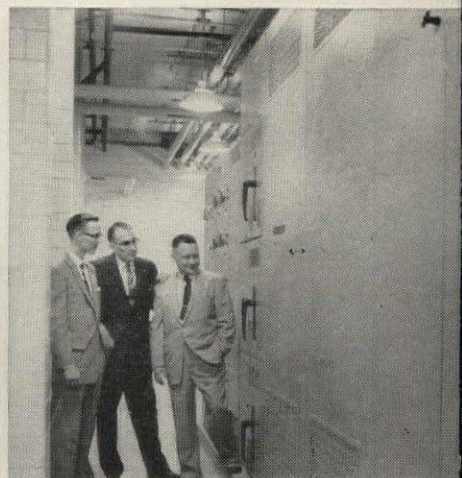
J-94136-2



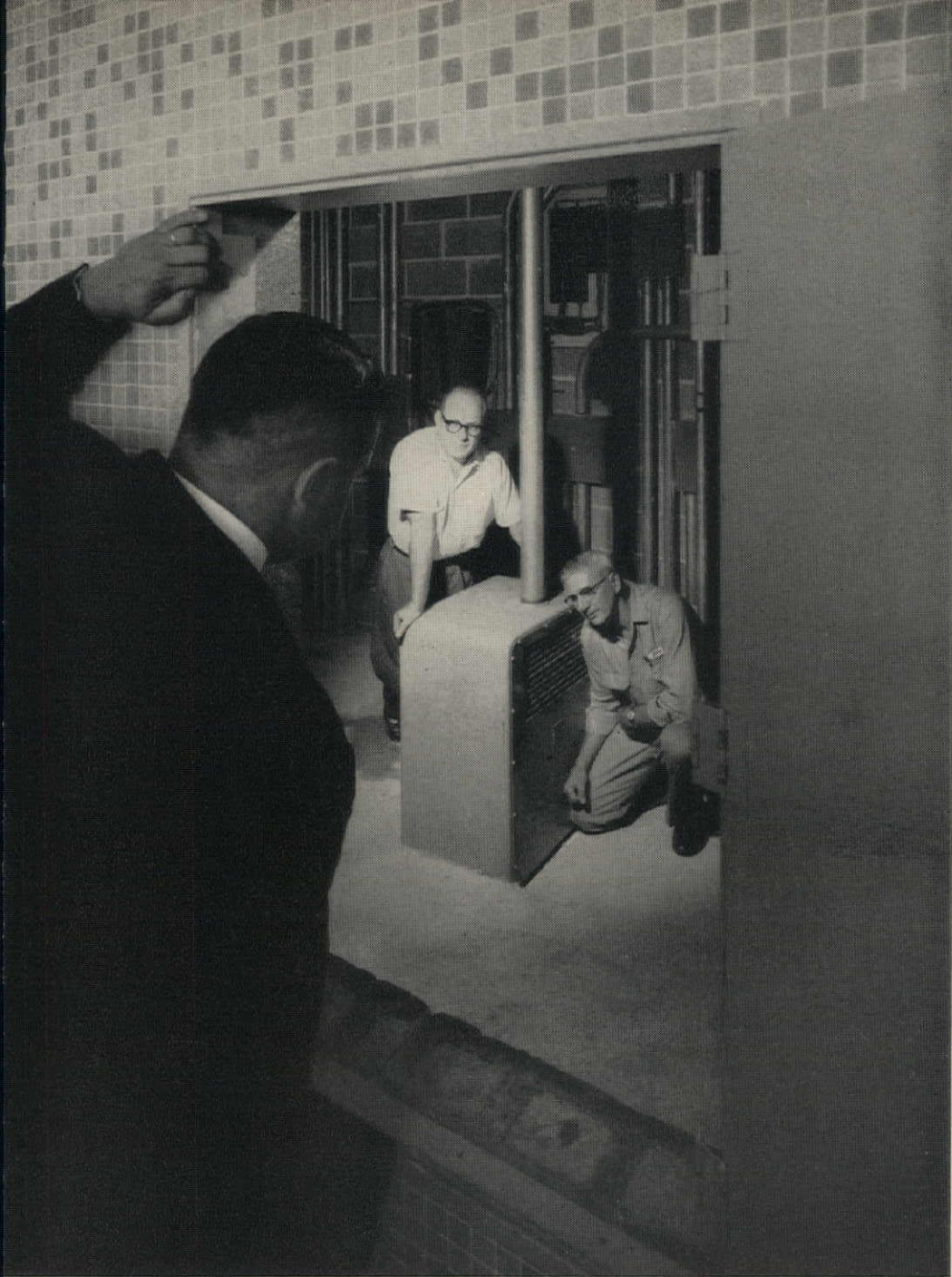
View of one of the scientifically planned work areas where the latest equipment is combined with planned use of space to make work easier and more productive. Complex electronic equipment necessary for accurate computations and record keeping requires special facilities including auxiliary air conditioners and humidifiers.



Office areas are illuminated with Westinghouse Mainliner recessed fluorescent luminaires. Modern functional furniture made with durable Westinghouse Micarta laminates was designed and built by Herman Miller of Zeeland, Michigan.



C. E. Pickering, J. O. Unthank and J. P. Anderson are shown in front of Westinghouse 1500-kva dry-type ASL power center. This power center steps incoming voltage down from 5 kv to 277y/480 for distribution through three Type DB-50 air circuit breakers.



W. F. Sterbens looks through the only opening of central ventilator-power duct shaft located in immediate office area of each floor. A compact 75-kva Westinghouse Type DT-3 dry-type transformer steps down voltage at point of utilization feeding underfloor duct. K. W. Bell, Building Superintendent, and Jacob Dietrich, Building Engineer, check noise level of transformer which must be inaudible to operate in office area. Size was also a prime consideration in fitting transformer through available opening. Only a Westinghouse DT-3 dry-type transformer combined small size, 75-kva rating and guaranteed silence.

J-94136-3



Jacob Dietrich, Building Engineer, Bankers Life of Nebraska; A. J. Whitmer, President, ABC Electric Company, Electrical Contractors; and W. F. Sterbens operate pushbutton of one of the combination Life-Line® starters in the motor control center portion of the 1500-kva power center. This control center feeds, protects and controls all motors and feeder circuits in mechanical equipment room.



One of two Westinghouse 200-hp Life-Line motors which drive compressors in air conditioning system. Westinghouse motors from 1 to 200 hp were specified for all auxiliary equipment drives. Having a single source of supply simplifies maintenance and spare parts problems for operating equipment. Discussing the installation are J. P. Anderson; C. E. Pickering; J. O. Unthank; and Harold Stebbins, Vice President, Bankers Life of Nebraska.

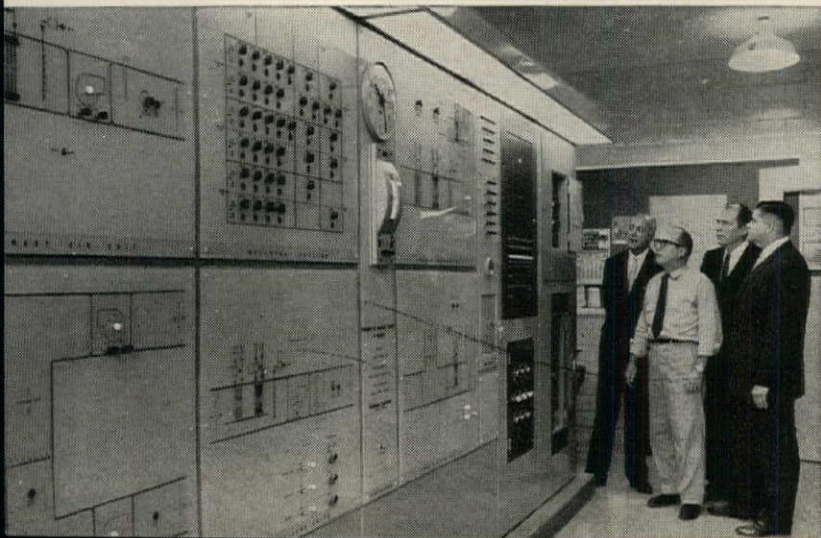


Harold Stebbins, C. E. Pickering, A. J. Whitmer, G. R. and J. O. Unthank are shown on one of the Westinghouse Selectomatic®-Automatic elevators which are traffic controlled to match, automatically, elevator service to traffic demand.



Jacob Dietrich views Westinghouse PRECIPITRON®, the Electronic Air Cleaner which removes up to 95% of all dirt particles, smoke and pollen in the air circulating throughout the building. This improves working conditions and also protects employe's health. The PRECIPITRON traps microscopic particles that cause streaks, smudges, damage to interior furnishings and office equipment, thereby reducing cleaning and maintenance costs.

This Supervisory Data Center in the Bankers Life Building is an electronic service board which registers temperatures and humidities throughout the building and automatically operates interior and exterior lighting, air conditioning and heating and even automatically turns on the sprinkling system for the landscaped grounds. Harold Stebbins, K. W. Bell, A. J. Whitmer and W. F. Sterbens inspect two Westinghouse NPLAB lighting panelboards included in the central control board.



Building designed for comfort, convenience, economy and expandability (contd.)

The planners and builders also recognized that, in specifying Westinghouse, they would enjoy the economics possible when buying from a single source of supply and later being able to minimize maintenance, spare parts inventory, replacement and expansion problems.

Westinghouse welcomes the opportunity to work with you in finding the best solutions to your own special electrical requirements. Call the Westinghouse Construction Specialist nearest you, or write to Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa.

OWNER: Bankers Life Insurance Company of Nebraska, Lincoln, Nebr.
 ARCHITECT: Unthank and Unthank, Lincoln, Nebr.
 CONSULTING ENGINEER: James P. Anderson Company, Omaha, Nebr.
 GENERAL CONTRACTOR: Assenmacher Construction Company, Lincoln, Nebr.
 ELECTRICAL CONTRACTOR: ABC Electric Company, Lincoln, Nebr.
 WESTINGHOUSE DISTRIBUTOR: Westinghouse Electric Supply Company, Omaha, Nebr.

J-94136-4

YOU CAN BE SURE...IF IT'S
Westinghouse

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be sure of lasting performance with
Rust-Oleum GALVINOLEUM® Coatings

Galvanized metal surfaces present a special problem—"getting a coating that will really stick, to eliminate paint peeling headaches." Rust-Oleum Galvinoleum is that coating—it can be applied directly over *brand new* galvanized metal *without* etching, *without* weathering, *without* waiting—and it lasts and lasts! It is available in four attractive colors—red, gray, green, and metallic. Specify Rust-Oleum Galvinoleum coatings for galvanized buildings, metal gutters, downspouts, roofs, siding, vents, etc. Would you like a guide to lasting performance on galvanized metal surfaces? Write for your free copy of the new 30-page Rust-Oleum Architectural Catalog. Just attach the coupon to your letterhead and we'll send it promptly.



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?

7 important things for



... and you:

1. First of all, on a foundation of our 107 years' experience, our new management has established a growth policy that stresses new product development, quality control, and expansion of field services.

2. New branch offices are being opened and the sales-engineering staffs of existing branches as well as of the home office are being increased.

3. A compressor of new design is being developed. This, like our current dependable line, will handle a variety of refrigerants such as Freon, ammonia, propane, butane and carbon dioxide.

4. A new circulating system using refrigerated sea water has been introduced to commercial fishing fleets, at a saving to boat owners.

5. Completely insulated Shell-Ice makers have been "packaged" for convenient field installation.

6. Service to the growing poultry industry has been highlighted by our new counter-flow-continuous poultry chiller, which uses refrigerated water instead of ice.

7. As part of the growth policy, we are increasing the number of Frick distributors. Some of our distributors have been with us 50 years.

All of which indicates one thing: Frick is "on the move!" If you're passing through Waynesboro this summer, stop in and see for yourself; you'll be able to enjoy our remodeled and air conditioned offices.

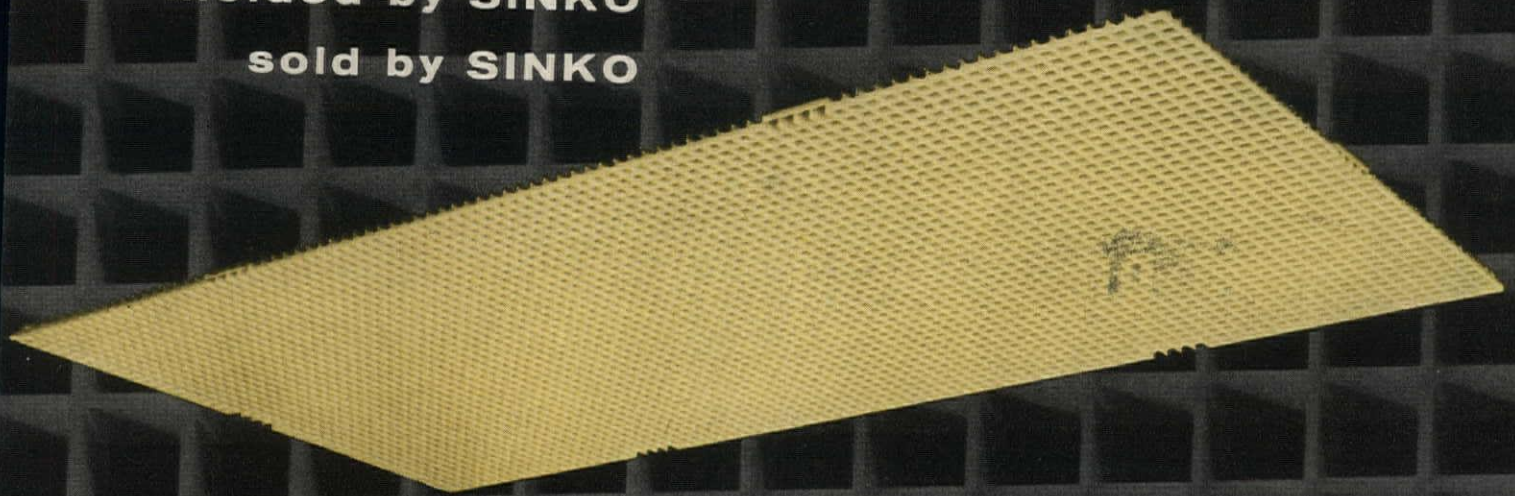
FRICK COMPANY

Waynesboro, Penna.

*Pioneers in dependability since 1853: air conditioning, refrigerating, ice making and quick freezing equipment, power farming machinery and portable sawmills.

SINKO LOUVERS

designed by SINKO
engineered by SINKO
molded by SINKO
sold by SINKO



ASSURES YOU OF THE *finest* LOUVERED LIGHT DIFFUSERS
BECAUSE OF... QUALITY CONTROL • COLOR STABILITY
• FLEXIBLE JOB APPLICATION • PRODUCT AVAILABILITY

These facts are the reasons why Sinko THIN-CELL Louvers are being specified by leading architects, lighting manufacturers, interior decorators and builders for all types of lighting installations where a practical and artistic approach to their lighting problem is required.

Since all phases of louver production, from start to finish, are handled within the Sinko plant, you are assured of the finest plastic louvers through Sinko continuous supervision.

For complete job satisfaction specify Sinko's THIN-CELL Louvers in white or pastel colors on your next project.

We invite you to write for Bulletin 32A which gives you pertinent facts on Sinko THIN-CELL Louvers.



SINKO

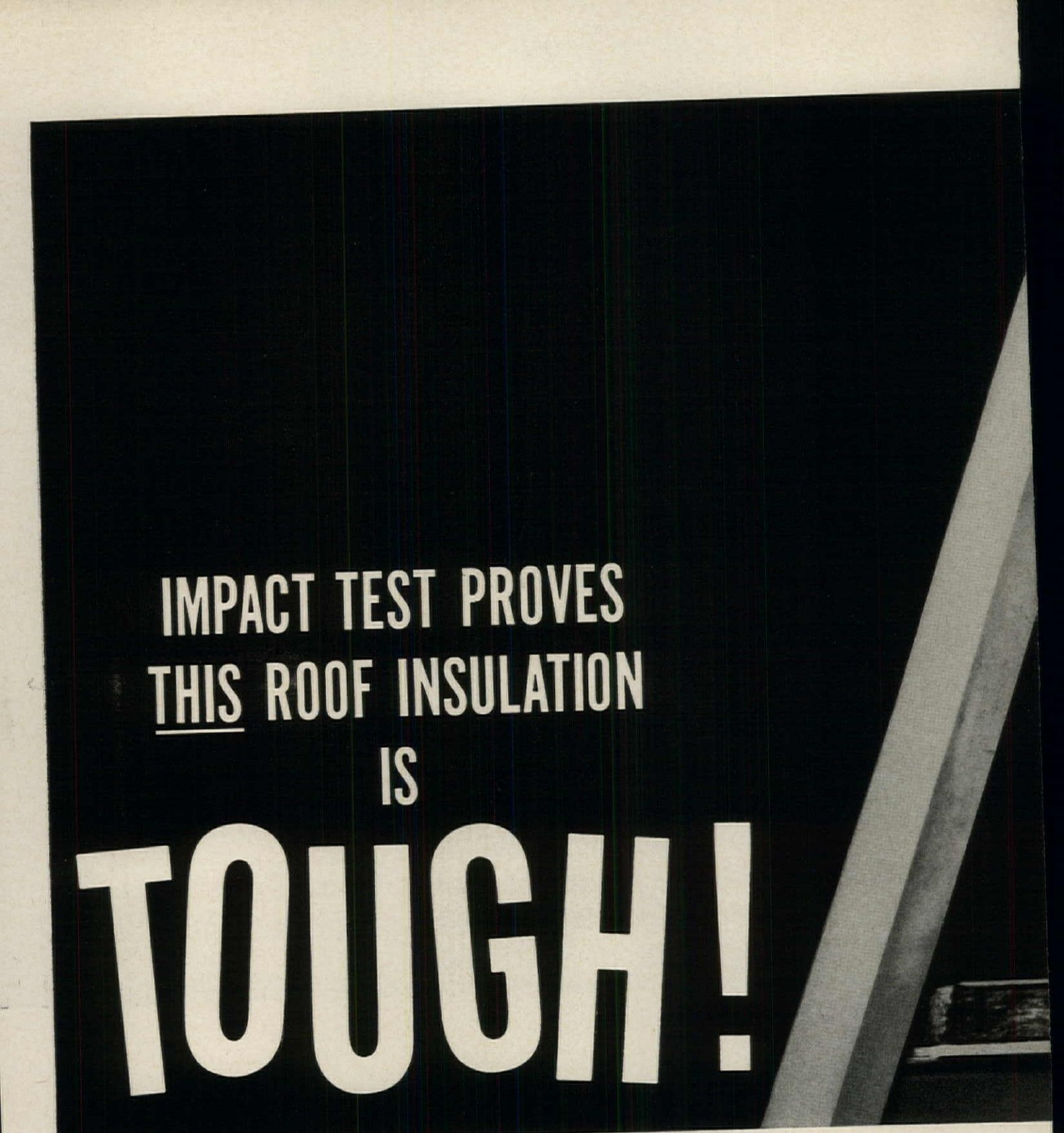
"THIN-CELL"

louvers

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IMPACT TEST PROVES
THIS ROOF INSULATION
IS
TOUGH!

ONE MORE WAY FIBERGLAS* ROOF INSULATION IS ENGINEERED FOR THE ROOF DECK:

This roof insulation meets every specification for a *rigid* insulation board. Composed of durable, inorganic glass fibers, it is faced with a tough, impact-resistant asphalt and paper mopping surface. This surface later becomes an integral part of the built-up waterproofing. The resulting insulation is rigid and *tough!*

Other major advantages include excellent thermal

resistance, non-corrosive properties, ease of cutting and laying, no warping or buckling, and larger sizes. No other roof insulation offers this remarkable combination of properties plus the advantages of larger 3' x 4' and 4' x 4' sizes. The ideal insulation specification for roof decks of all types.

Recommended for above the deck: Perma Ply*



Unretouched "delayed flash" photograph shows how impact tester demonstrates toughness and impact resistance of Fiberglas Roof Insulation. Test simulates impact of mobile roofing equipment.

RIGID CONSTRUCTION THAT STAYS FLAT AND WILL NOT WARP OR BUCKLE

Roofing Felt, the Fiberglas Built-Up Roofing that provides a long-lasting roof. Monolithic (single-unit) construction forms a solid, weatherproof slab of asphalt reinforced with Perma Ply—no layers as in conventional roofs. Best specification for quality roofs top to bottom: Fiberglas Roof Insulation and Fiberglas Built-Up Roofing. For complete, descriptive literature write:

Owens-Corning Fiberglas Corporation, Department 68-D, National Bank Building, Toledo 1, Ohio.

OWENS-CORNING
FIBERGLAS

T.M. REG. U.S. PAT. OFF.

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STEEL WINDOWS HAVE THE STRENGTH AND RIGIDITY THAT NO OTHER WINDOW CAN MATCH

FENN COLLEGE

West Campus Building
Cleveland, Ohio

*Architects, Joseph Ceruti
and Associates*

*Contractor, The Albert
M. Higley Co.*



SUCCESSFUL RECONSTRUCTION

Few words are needed to complete this picture-story. Hope's pressed metal Window Wall frames are used for this multi-story installation of Hope's Heavy Intermediate Projected Windows and porcelain enameled insulated panels.

Architectural inspiration and modern materials have joined successfully in this transformation of an old but sound-commercial structure into an attractive and useful city college building, with savings that all college trustees will envy.

Make use of Hope's engineering assistance. For information on Hope's Window Walls, write for Catalog No. 152.

HOPE'S WINDOWS, INC., *Jamestown, N. Y.*

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS



Genuine Walnut . . . the warmth and rich natural beauty of the real wood. Also available in genuine oak and cherry . . . or, if your client prefers, fine birch in Tawny or Fruitwood finish.

Only *St. Charles* gives you the freedom you need to design a truly custom kitchen.



Platinum . . . a new St. Charles custom color on steel . . . combined here with genuine walnut to harmonize style and texture. One example of the wide range of color-texture combinations available to you and your clients in Custom Kitchens by St. Charles. Even your own *special* colors can be reproduced by St. Charles.



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If you were designing your own **Drafting Chair...**



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Exclusive *Forward Tilt* Seat provides continuous posture support.



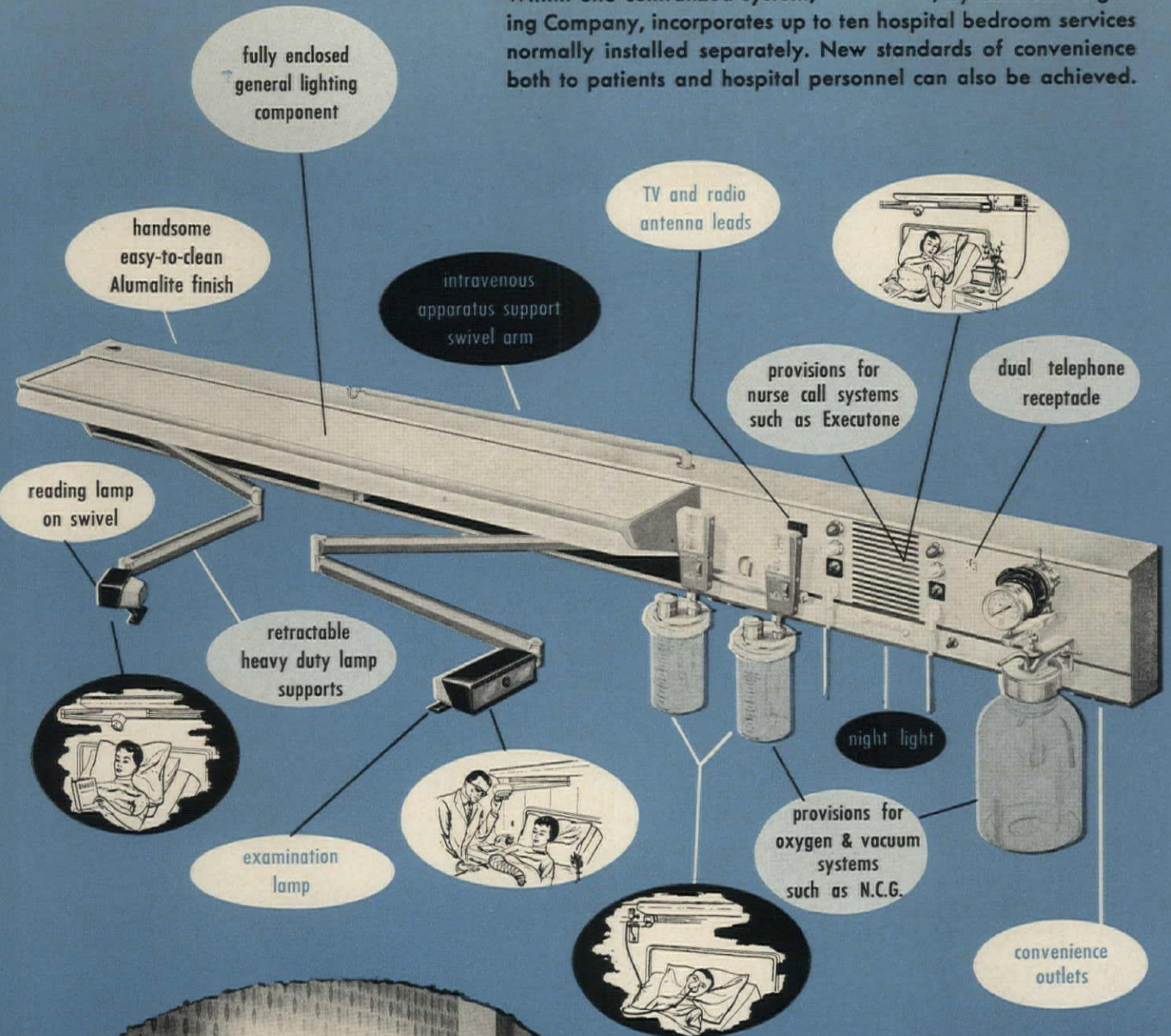
All Cramer Chairs have simple finger-tip adjustments—no tools required.

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 625 Adams Street Dept. AR-4 Kansas City 5, Kans.

PLAN NOW—ONE SYSTEM FOR TEN SERVICES!

Within one centralized system, **Centron-10**, by Sunbeam Lighting Company, incorporates up to ten hospital bedroom services normally installed separately. New standards of convenience both to patients and hospital personnel can also be achieved.



No longer is it necessary to clutter walls with scattered service outlets. Now, in one compact, cleanly styled "package" for each room, Centron-10 system provides home-like general lighting—moveable, shielded reading lamp—high intensity, color-corrected extendable examination lamp—provisions for 2-way nurse call systems—provisions for oxygen and vacuum systems—shielded night light—phone outlets—convenience outlets—TV lead-ins—and a swivel arm for intravenous apparatus.

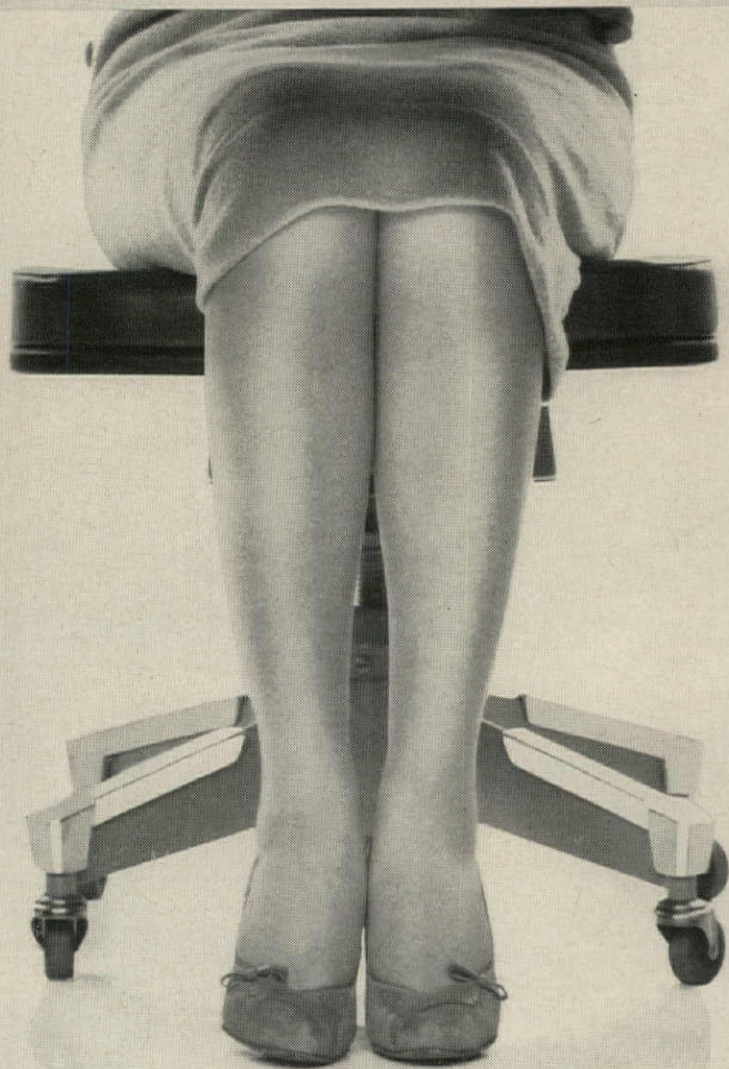
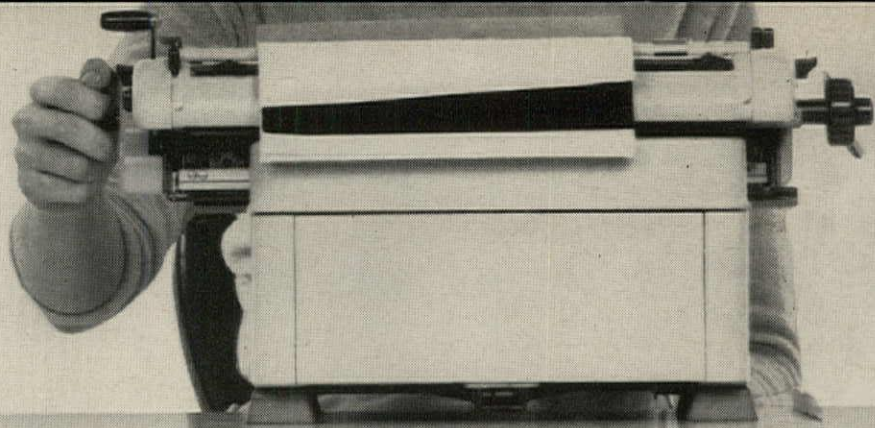
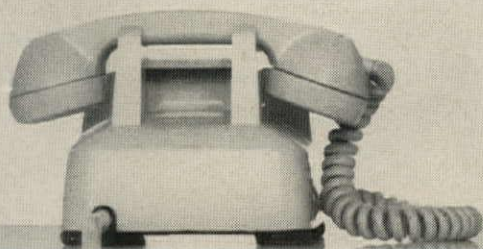
THERE IS NO OTHER SYSTEM LIKE IT!

Write today for details showing how you can save up to \$32.50 per bed in installation costs by planning and installing the Centron-10 system.



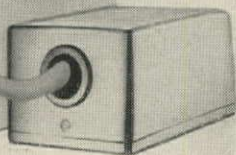
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Introducing:
the neatest
thing on the
floor!

**The New
SPANG®
Telephone
Service
Fitting**



Maximum Utility—This new fitting (Catalog No. 17203), designed to be used for office phones with the maximum push-button requirements, handles four Western Electric Terminal Blocks plus a signal buzzer.

Finest Appearance—The clean, simple lines of the brushed-aluminum fitting case are right in step with today's architectural styling. The tapered shape and low silhouette make the fitting very inconspicuous. It can be placed snugly against the side of a floor-flush desk or can be fitted under a leg desk with room to spare. Dimensions: 6" long, 4" wide, 3" high.

Firm Installation—The fitting employs the same basic method of firm coupling to the duct insert as do all Spang electrical raceway fittings. Once it's installed, it stays flush with the floor—won't wobble or twist from its correct position.

Easy to Work With—Unitized design of top housing saves installation time, speeds changes of circuits when needed. When top housing is removed, all wiring is exposed for easy access.

Complete SPANG Line—The new telephone service fitting joins the Spang family of fine electrical raceway fittings for communication and power distribution systems that offers architects, engineers and electrical contractors the finest fittings you can buy. Remember, when appearance counts most, Spang electrical raceway fittings are your best choice.

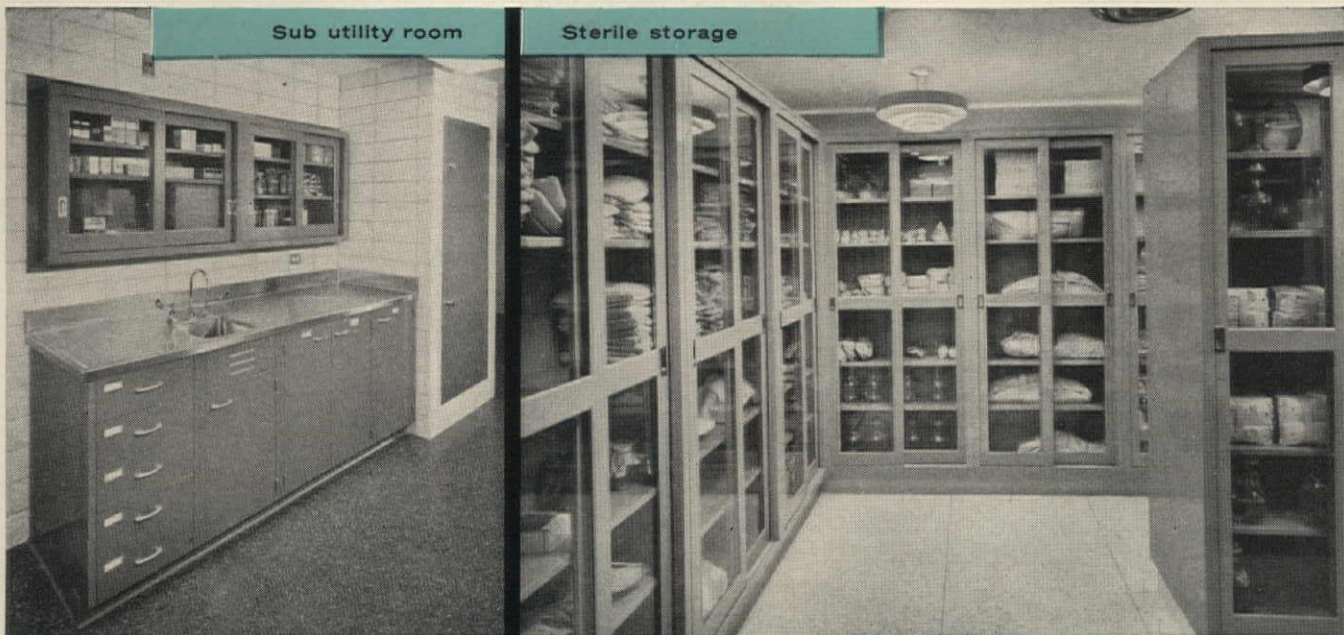
P.S. If you'd like more information, write Spang.



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Two Gateway Center, Pittsburgh 22, Pennsylvania
Subsidiary of Armco Steel Corporation





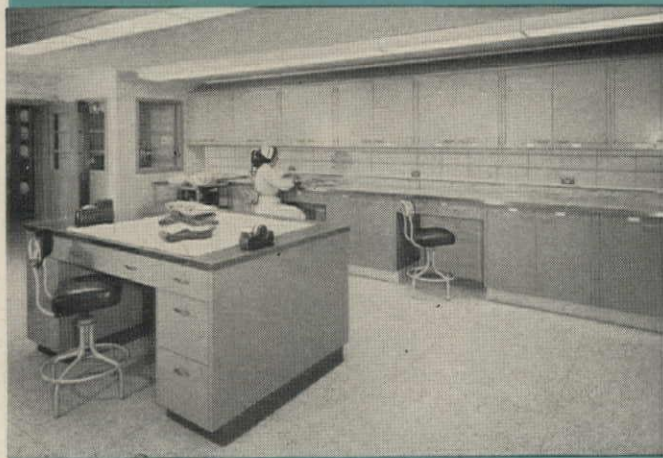
Sub utility room

Sterile storage

Hospital Casework by *St. Charles*

Installed in Muskogee General Hospital, Muskogee, Oklahoma

HORSTMAN & MOTT, *Architects* • ROSS GARRETT & ASSOCIATES, *Consultant*



Central sterile supply



Nurses' station

St. Charles acceptance and reputation as quality hospital casework is due to the careful attention given planning and construction details. Complete custom building, too, means casework flexibility to meet individual specifications, even to the most exacting demands.

***In this issue:**

More examples of St. Charles Hospital Casework . . . See articles featuring new Hot Springs County Memorial Hospital, Thermopolis, Wyoming . . . and new North Kansas City Memorial Hospital, North Kansas City, Kansas.

Send For Catalog. This complete catalog, "St. Charles Hospital Casework," is available at request on your letterhead.



St. Charles

CASEWORK SYSTEMS FOR HOSPITALS

St. Charles Manufacturing Co.,
Dept. ARH-13, St. Charles, Illinois

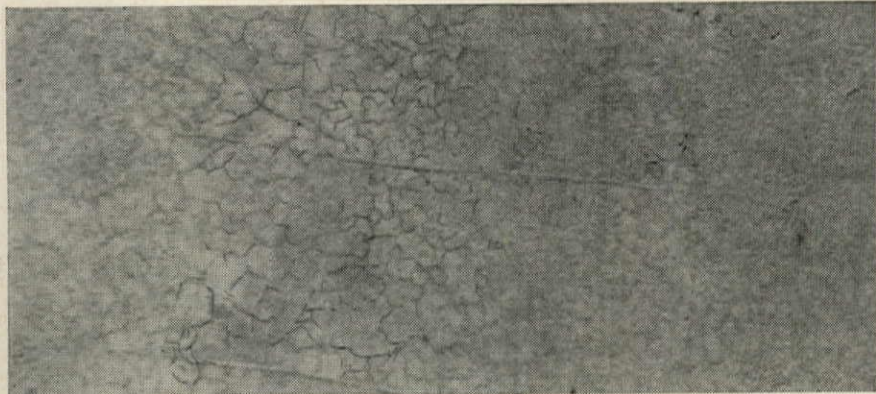


ALPHA

BETTER CONSTRUCTION THROUGH
BETTER USE OF CEMENTS

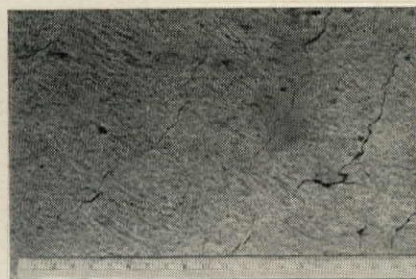
news and notes from the field

How to Avoid Cracking in Concrete Surfaces



CRAZING or map-cracking of a concrete surface. Excessive shrinking occurred before sufficient strength had developed to resist the shrinkage forces.

Crazing cracks which appear on the wearing course of concrete are superficial cracks that rarely penetrate deeply. They are caused by surface shrinkage resulting from improper finishing practices and/or inadequate curing.



PLASTIC SHRINKAGE CRACKS are often confused with crazing. Condition shown above occurs soon after or during finishing and results from early loss of mix water to dry subgrade, dry aggregates or to the air. They are much deeper and more widely distributed than crazing cracks.

Effect of Slump

The higher the slump, the greater the danger of over-troweling and bringing excessive fines to the surface of the concrete. High-slump concrete is also severely affected by improper curing.

In general, it increases the probability of surface problems including crazing.

Dusting on Sand or Cement



The practice of dusting on dry cement to hasten drying and make finishing easier should *not* be followed. This produces a rich cement mortar wearing surface which will craze and very likely scale.

To confirm this, Alpha laboratory technicians made two slabs of the same concrete mix. The first sample was finished according to recommended and accepted practices and produced a smooth, hard, crack-free surface. In the second sample, dry cement was dusted on the surface, and it was not properly cured. This slab was not over-troweled.

The results on this sample showed a perfect example of surface crazing.

Inadequate Curing

Inadequate curing causes the surface to dry faster and therefore to shrink faster than the bulk of the concrete. This produces a difference in movement at a time when the concrete wearing surface has attained little strength, resulting in hairline pattern cracks.

Proper Curing Practice

Proper treatment of the concrete after it has been finish troweled is most important in obtaining a smooth, hard, durable wearing surface.



1. Concrete must be kept moist so that cement hardens while continuing to combine chemically with the water.

2. Start curing process after finish troweling as soon as the surface is hard enough to resist damage.



3. Don't allow concrete to air-cure.



More Information

Send for the Alpha Craftsmanship in Concrete Folder #1 which presents much more data on "Steel Trowel Finishing". Reprints of this advertisement are also available on request.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building, Easton, Pa.



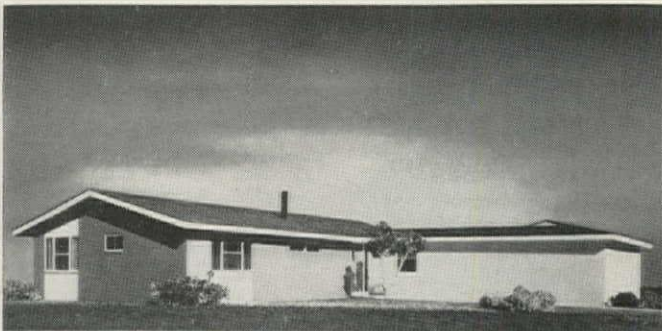
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An advanced concept which assures superior illumination for all of the lighting requirements in the patient's room . . . with significant economies for the hospital.



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Architects-Engineers: Kelly & Gruzen, New York; George G. Shimamoto, AIA Associate • General Contractor: S. S. Silberblatt Incorporated, New York • P&H Contractor: Northeastern Construction Co., Plattsburgh • Pipe Distributor: E. J. Monroe Co., Plattsburgh

Steel pipe serves hot-water heating system of 1,685-unit Armed Services Housing Project

One of the largest housing developments in the country is the \$27,500,000 project recently completed at Plattsburgh A.F.B., New York. Spread over 235 acres, the 396 buildings will accommodate Air Force officers, enlisted men, and their families.

A centralized hot-water heating system will keep

STEEL PIPE IS FIRST CHOICE
for lasting strength
economy
workability

insist on

STEEL PIPE MADE IN USA

the buildings comfortable even in the coldest of winters. And for the greatest of economies, the system was built with steel pipe—some 450 tons of Bethlehem Electric Resistance-Weld and Beth-Co-Weld steel pipe were used on the job.

For low original cost, low installation cost, and low maintenance, there's no substitute for steel pipe, the most economical and the most widely used general-purpose piping in America.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor:

Bethlehem Steel Export Corporation

BETHLEHEM STEEL





The Crucifixion —
an 11' x 15' mosaic mural
St. Andrew's Church
Columbus, Ohio
Muralist: Charles L. Madden
Resurgere Associates,
Phila., Pa.

TILE

...the new

glazed ceramic mosaic
produced in the U.S.A.
by **Suntile**

Here's a sure-fire way of giving your interior wall designs an interesting fresh appearance . . .
Design them with HORIZON TILE. This new, colorful wall tile has an informal, handcrafted appearance that's beautiful beyond description.

HORIZON TILE achieves its distinctive appearance through the intentional variation and irregularity of its shape, its surface texture and its 58 beautiful color shades that range from soft pastels to solid or textured tones.

Whether you use HORIZON TILE to create a beautiful mosaic mural, like the one shown here, or use one of the many interesting "Buckshot" or "Striped Pattern" designs created by Suntile's Design Department, you'll find that HORIZON TILE adds greatly to the beauty of your finished wall.

HORIZON TILE, made in America by Cambridge, is available through your local Suntile dealer. His name is listed in the Yellow Pages of your telephone directory.

OUR DESIGN DEPT.

under the direction of George Limke is ready to assist you with your tile design or layout problems. Send us your plans or elevations for suggested tile applications, or let us put your own tile designs in layout form.



THE CAMBRIDGE TILE MFG. CO.

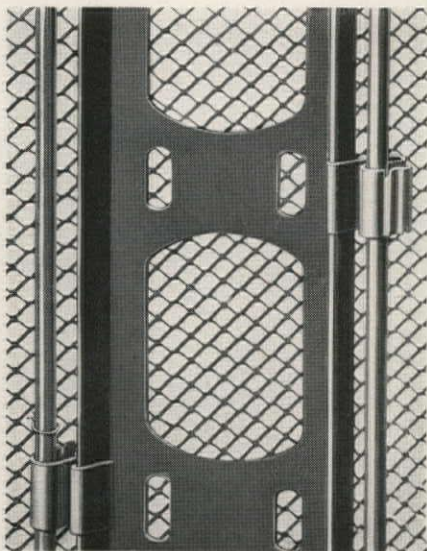
P.O. Box 71, Cincinnati 15, Ohio

Design No. M-2
Actual size tiles



HUSH CLIP Partition System

makes a fine building that much finer



The Hush-Clip system can provide a sound-transmission-loss rating as high as 56.4 decibels!

Obviously, tenant comfort was a primary consideration in the design of 1919 Bay Drive Apartments, Miami Beach, Florida. Each of the 42 apartments has its own balcony and a living area glassed in from floor to ceiling. Other amenities: Swimming pool, lounge, garden area and private parking.

Privacy has been assured through the use of Penmetal's Hush-Clip Partition System. Here, lath and plaster "float" on resilient clips snapped onto hollow-metal studs. Room-to-room noise is significantly reduced . . . and shocks are isolated within the structure.

Corner beads of special zinc alloy were specified throughout. These were developed by Penn Metal Company for use in corrosive climates such as this.

Ask for copy of catalog 631-L, which details the Penmetal line of lath and plastering accessories.

PENN METAL COMPANY, INC.

Metal Lath Sales Office:

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AXminster 5-4521

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PM-236



a name to remember

S. R. Joseph, Architect; W. C. Vladeck, Architect; E. Abraben, Designer; Escot Construction Corp., General Contractors; Woolf Plastering Company, Inc., Plastering Contractors



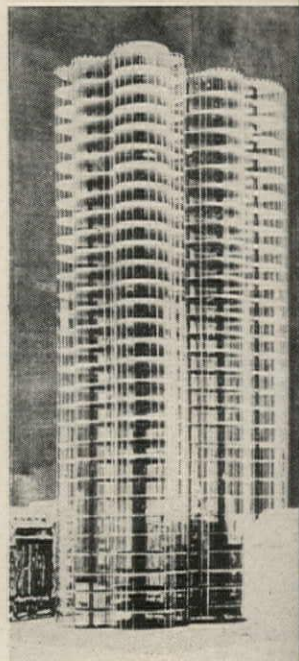
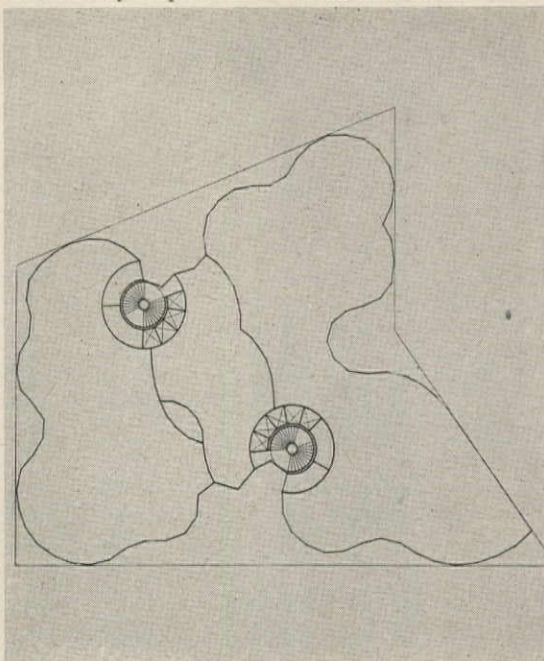
Berko

The 1960 Gold Medal of the American Institute of Architects has been awarded to Ludwig Mies van der Rohe, and will be presented to him at the annual dinner of the A.I.A. convention in San Francisco this month. In honor of Mies, ARCHITECTURAL RECORD presents a retrospective survey of his work from the glass skyscraper project of 1920-21 to the Seagram Building; followed by a recently finished apartment group, another housing scheme in construction, and a small office project.

MIES VAN DER ROHE

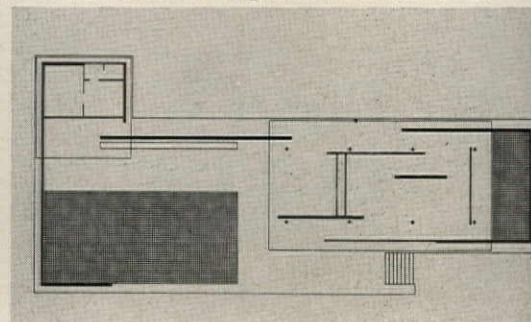
Since Mies van der Rohe has given twentieth century architecture several of its masterpieces, it is more than fitting that he should at last receive the A.I.A. Gold Medal. He should be so honored even if it were not for the masterpieces, for he has influenced present day American architecture more than any other architect. His is an architectural order which can be *learned*, and Philip Johnson, Eero Saarinen, Paul Rudolph and Gordon Bunshaft have been among his apt pupils. Some less able architects have been released from the imperatives of originality and architecture is the better for it. They have found in the reasonable, detached clarity of Mies a system of architecture within which they are able to do a decent job. There are forces which run counter to Mies; a preoccupation with shell construction, an emphasis on plasticity, and now "the new freedom." There are signs that Mies himself in several recent projects has handled details in a more plastic manner. He will not go too far. His strongly contrasted forms, precisely articulated structures and decisive details fulfill a yearning for a direct and simple experience of architecture more acute than ever in our complex age.

1920-1925: In the projects of this period Mies enunciated his major ideas. 1. Of the glass skyscraper he said, ". . . the important thing is the play of reflections and not the effect of light and shadow as in ordinary buildings." 2. Philip Johnson calls the concrete office building project the apotheosis of the ribbon window. 3. Plan of country house, 1923, is related to a painting by Theo van Doesburg. In describing this house Johnson has written: "The unit of design is no longer the cubic room but the free-standing wall, which breaks the traditional box by sliding out from beneath the roof and extending into the landscape. . . . Indoors and outdoors are no longer easily defined; they flow into each other. This concept of an architecture of flowing space, channeled by free-standing planes, plays an important role in Mies' later development and reaches its supreme expression in the Barcelona Pavilion of 1929." 4. The concrete country house project of 1924 was the first house planned to be "zoned" into separate elements for living, sleeping, etc.



1925-1930: 5. The "Brno" and "Barcelona" chairs illustrate Mies's unfailing craftsmanship. According to Philip Johnson: "Everything is calculated to the last millimeter: the width and thickness of the strap metal and the radius of the curves at the joints; the width and spacing of the leather strapping, the size of the upholstery buttons, the fineness of the welting and the proportions of the leather rectangles on the cushions." 6. The Barcelona Pavilion is the masterpiece of Mies' career as a European architect, and is considered the first modern building to rank with the great buildings of the past. Like the country house of 1923, its space flows through vertical and horizontal overlapping planes, but unlike its prototype, the flow of space is finally caught and held by enclosing walls at opposite ends of the podium. 7. Of the precise organization of the Tugendhat house interior Johnson has said: "Mies gives as much thought to placing chairs in a room as other architects do to placing buildings around a square."

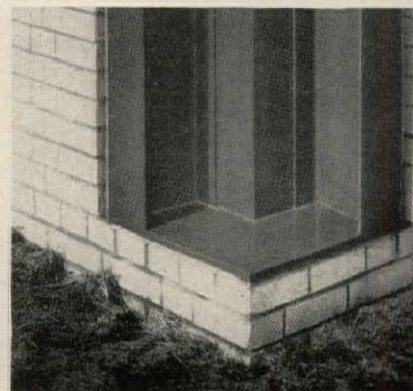
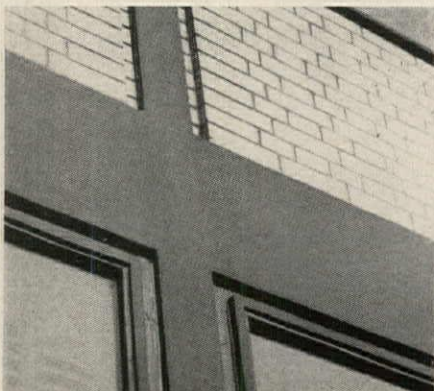
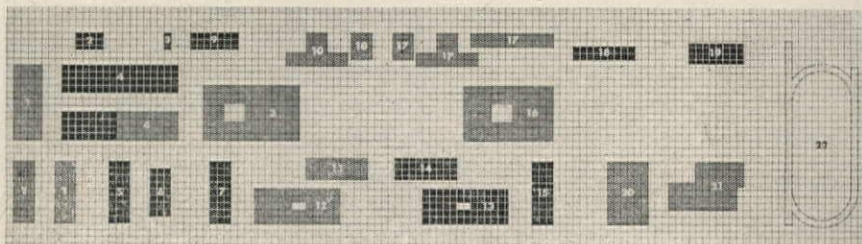
6. German Pavilion, International Exposition, Barcelona. 1929



5. Top: "Brno" chair. 1930. Bottom: "Barcelona" chair. 1929

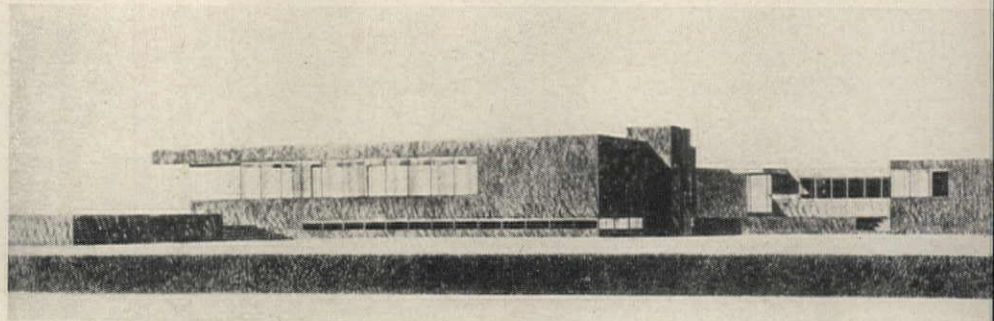
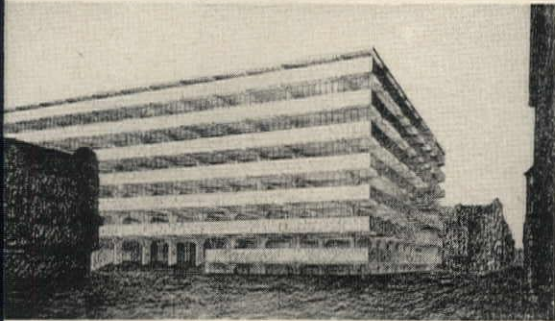
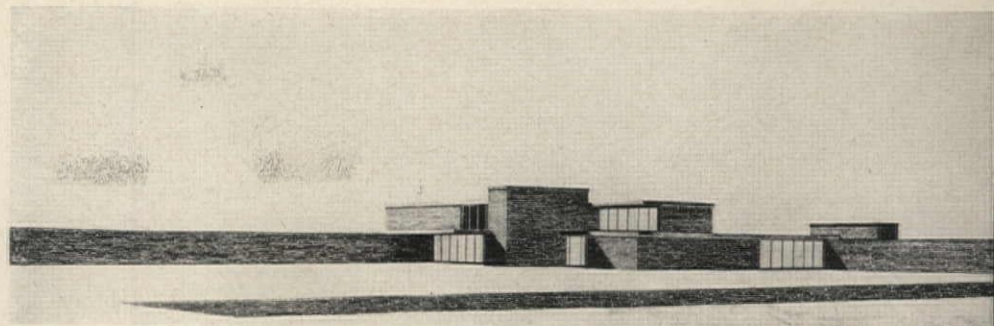
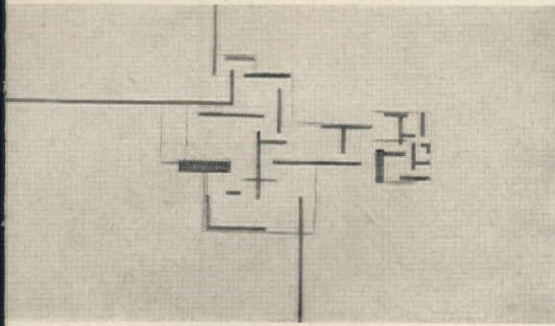
1938-1952: In 1938 Mies became Director of Architecture for Armour Institute, now known as Illinois Institute of Technology. 8. Entire campus planned by Mies for I.I.T. is based on a modular bay 24 by 24 ft and 12 ft high. Spaces between buildings are controlled by the same module. 9. Johnson describes the mullion and corner details of Alumni Memorial Hall as follows: "The columns . . . are faced with mullions, but these are not permitted to masquerade as supports; instead they are stopped short just above the ground to reveal their true nature. This is a remarkable subtlety, as is the fact that the mullions, in framing the brick and glass panels, never merge with them but are clearly separated by shadow casting indentations, giving to the walls somewhat the quality of a relief." 10. In the Farnsworth house, floor and roof fascias are welded to eight steel columns. 11. The Lake Shore Drive apartments are parents to Mies' subsequent skyscrapers. 12. The I.I.T. Chapel suggests that Mies' esthetic can accommodate worship.

8. Plot plan: Illinois Institute of Technology, Chicago. 1940



9. Alumni Memorial Hall, I.I.T., Chicago. 1945-46. Details

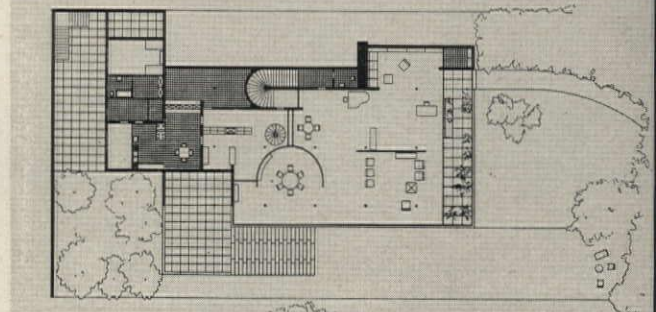
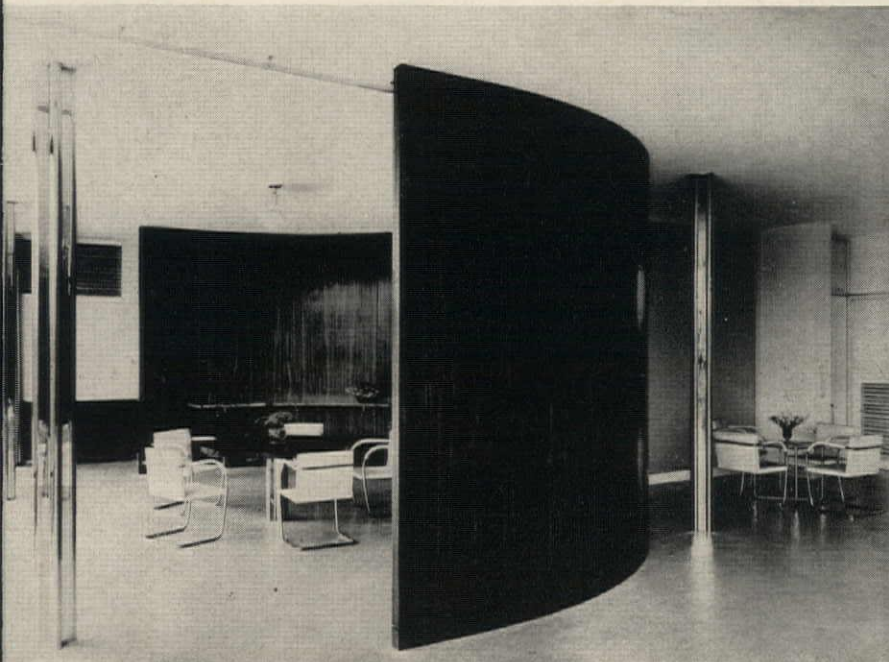
3. Project:brick country house. 1923. Plan and rendering



2. Project:concrete office building. 1922

4. Project:concrete country house. 1924

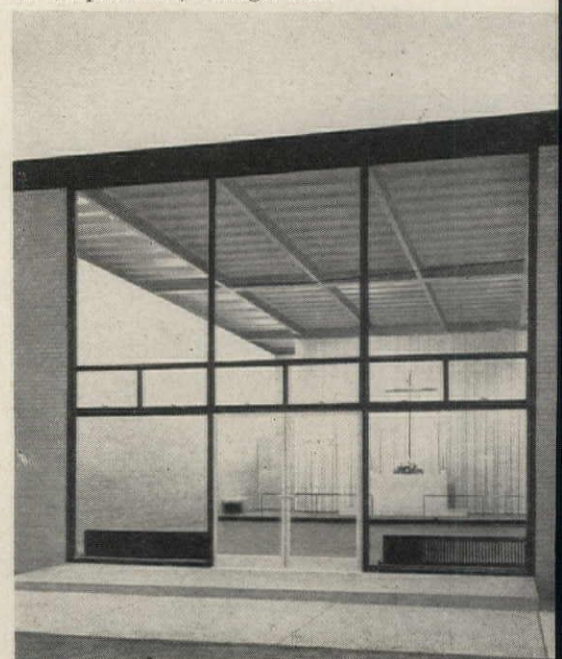
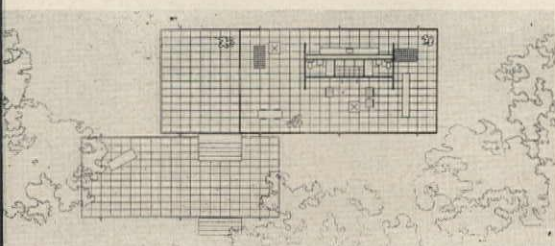
All photos except where noted, courtesy of Museum of Modern Art



7. Tugendhat house, Brno, Czechoslovakia. 1930

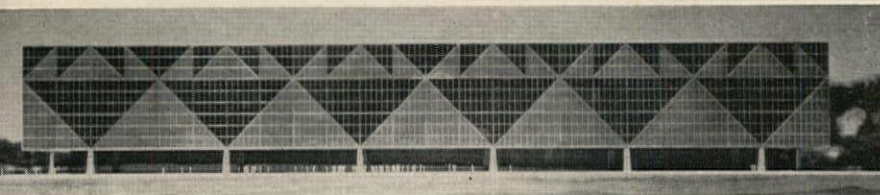


Hedrich-Blessing 12. Chapel. I.I.T., Chicago. 1952

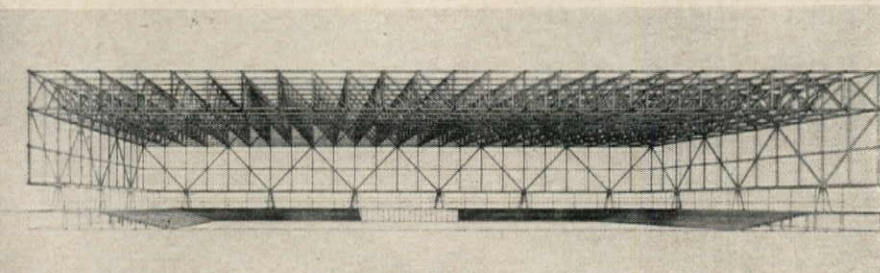


10. House for Dr. Edith Farnsworth, Plano, Illinois. 1950

11. Apartment houses at 860 Lake Shore Drive, Chicago. 1951

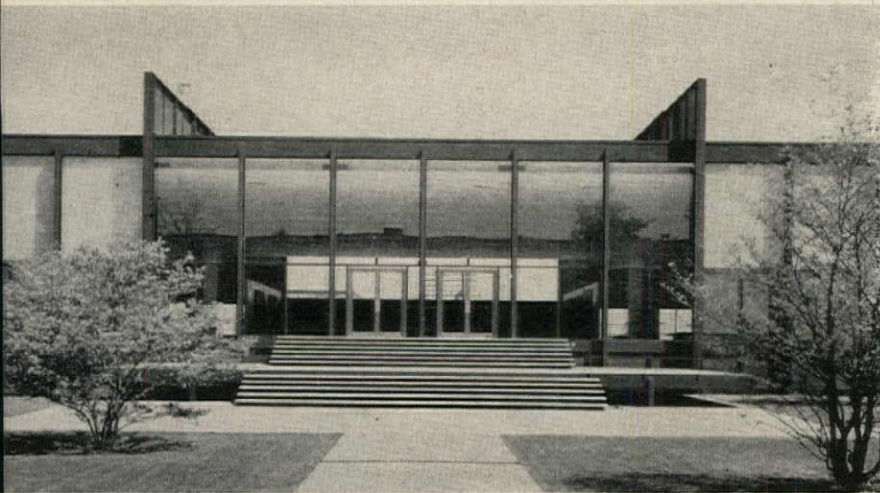


16. Right: Seagram Building, New York. 1958



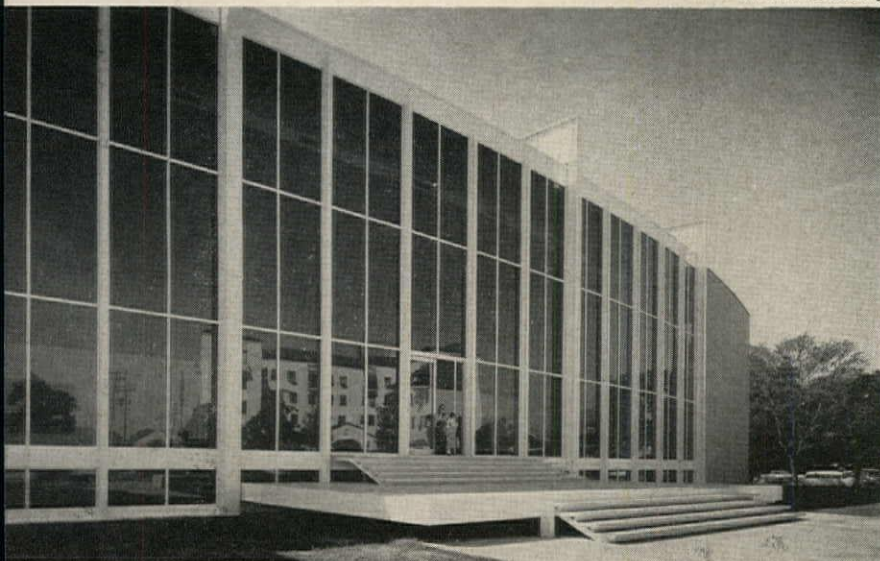
13. Convention Hall, Chicago, 1953. Project

Chicago Architectural Photographing Co.



14. School of Architecture and Design, I.I.T., 1952

Hedrich-Blesing



15. Cullinan Hall, Museum of Fine Arts, Houston, Texas. 1958

1953-1958: 13. A Convention Hall for Chicago's South Side. The roof is a great steel truss based on a modular cube 30 by 30 ft and 30 ft high. It will span 720 ft without interior columns, and will be 112 ft above the convention floor. The four walls act as flat trusses. As yet unbuilt, it is called by Arthur Drexler "the most monumental image twentieth century architecture has yet produced." 14. The main floor of the Architecture and Design Building for I.I.T. consists of a great undifferentiated space 120 by 210 ft enclosed by a roof hung from deep steel girders supported by exterior steel columns. The floor itself is supported by a regular bay system in the basement. This building does not function well for its present purpose either on the main floor occupied by architectural students or in the basement occupied by design students, but this was not Mies' chief concern. More interested in the construction of clear spans at a large scale than in relatively temporary functional arrangements, Mies designs a universal space within which specific use may change with time. 15. Cullinan Hall exhibits Mies' infrequent use of a curved element. Two earlier projects have curving façades; a design of 1933 for the Reichsbank, and another of 1937 for an administration building for the silk industry. 16. While America offered Mies the opportunity to realize his conceptions and to build on a far larger scale than he had in his European career, until the Seagram building there were no American works which allowed his masterful handling of fine materials and skilled craftsmanship to come into play. Until Seagram there was no chance for the elegance of the Barcelona Pavilion or the Tugendhat house. The Seagram building embodies this and every other strength of Mies; in it each effort in a long career is fulfilled.

All statements by Philip Johnson are from his book *Mies van der Rohe*. The Museum of Modern Art, New York. Second edition, revised: copyright 1953. Arthur Drexler's statement was excerpted from *Ludwig Mies van der Rohe* by Arthur Drexler. George Braziller, Inc. New York, 1960



Redevelopment Program for Detroit

NAME: *Lafayette Park*

LOCATION: *Detroit, Michigan*

OWNER: *Estate of Herbert Greenwald and Samuel Katzin*

ARCHITECT: *Mies van der Rohe*

STRUCTURAL ENGINEER: *Frank Kornacker*

MECHANICAL ENGINEER: *William Goodman*

The finished twenty-story apartment building, called Pavilion Apartments, is the first of six high-rise buildings which are planned for a 78-acre site in metropolitan Detroit a few blocks from the Detroit River. This structure is actually a standard design planned to be repeated in the Detroit redevelopment, and already erected twice as part of a redevelopment program in Newark (see pages 174-177). The structural module is identical in both the Detroit and Newark buildings and basic structural computations served both; the only marked difference occurs in each curtain wall. At Detroit each bay is divided in two, at Newark in four. Since the Detroit building is centrally heated and cooled, unlike the Newark buildings which have unit air conditioners, it has no air intake grilles on the façades.

The site provides 4.16 acres for shopping facilities and 18.23 acres for a park and new school. The estimated total construction cost is \$35,000,000.

-Blessing



Twenty story apartment is the first of six to be completed. There will be twenty-five low-rise structures

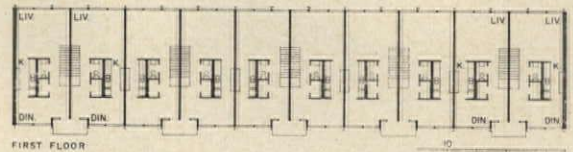
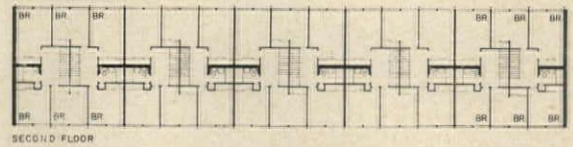




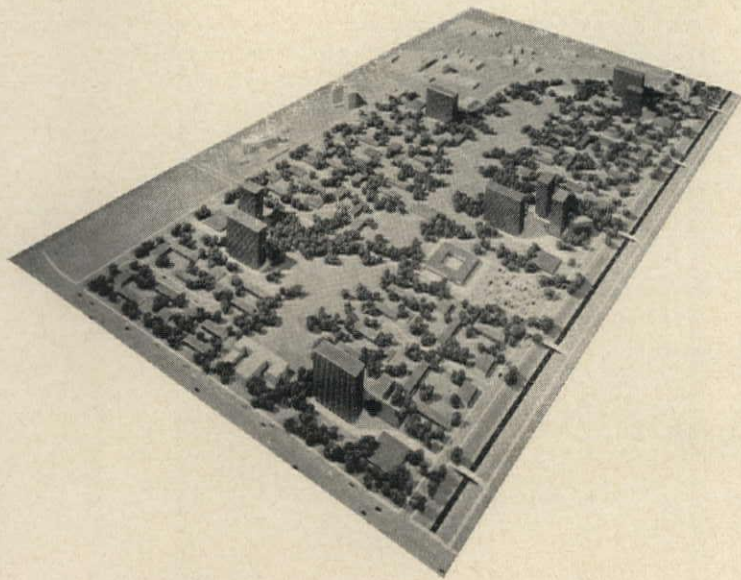
*"Today the factor of economy makes rationalization
and standardization imperative for rental housing."*
MIES VAN DER ROHE from *Bau and Wohnung*, 1927



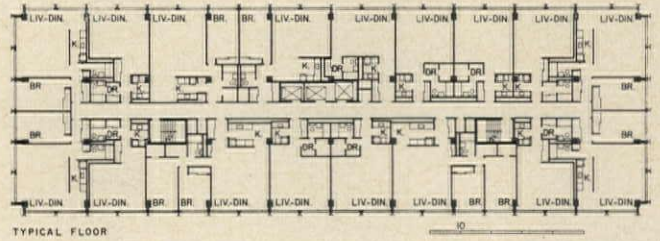
The low-rise structures are carefully related in space



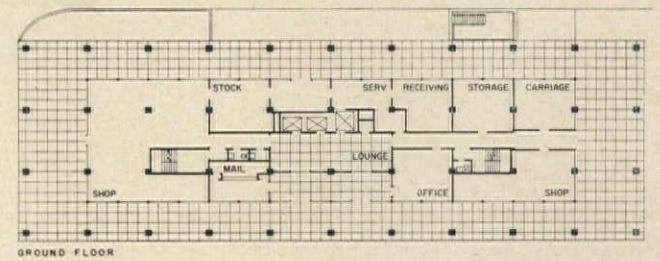
Two story low-rise plans



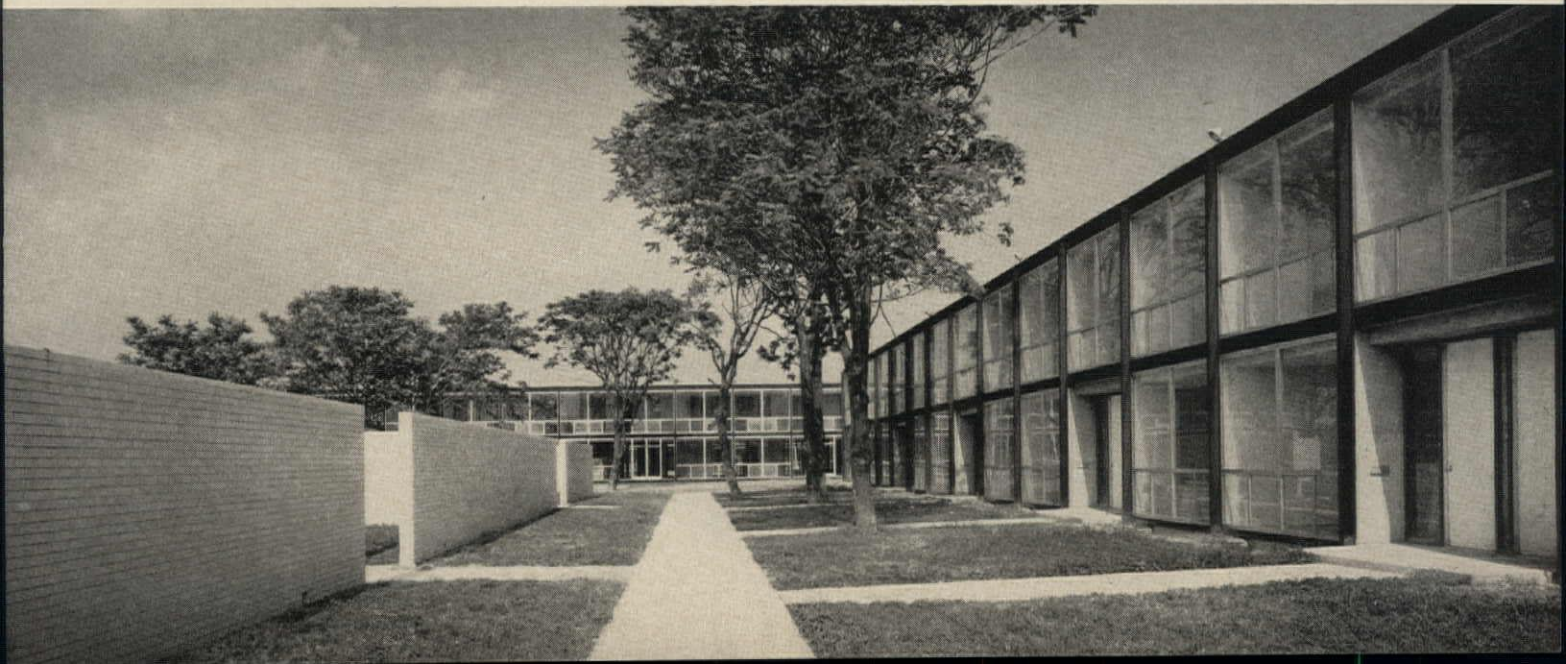
Model of complete redevelopment

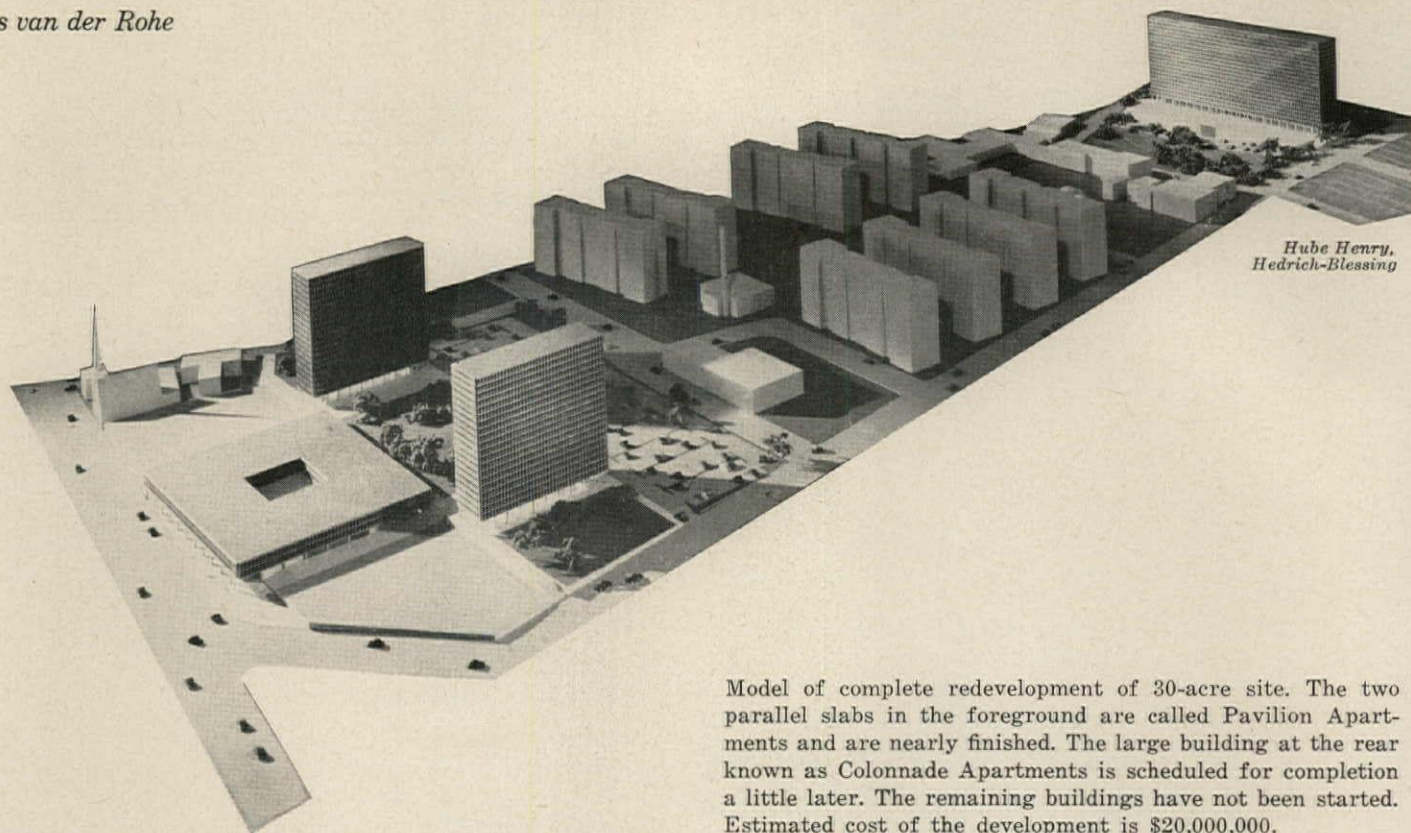


High-rise plans



Landscaping will improve front yards





Hube Henry,
Hedrich-Blesing

Model of complete redevelopment of 30-acre site. The two parallel slabs in the foreground are called Pavilion Apartments and are nearly finished. The large building at the rear known as Colonnade Apartments is scheduled for completion a little later. The remaining buildings have not been started. Estimated cost of the development is \$20,000,000.

Redevelopment Program for Newark

Apartments structurally identical to high-rise unit in Detroit redevelopment



NAME: *Colonnade Park*

LOCATION: *Newark, New Jersey*

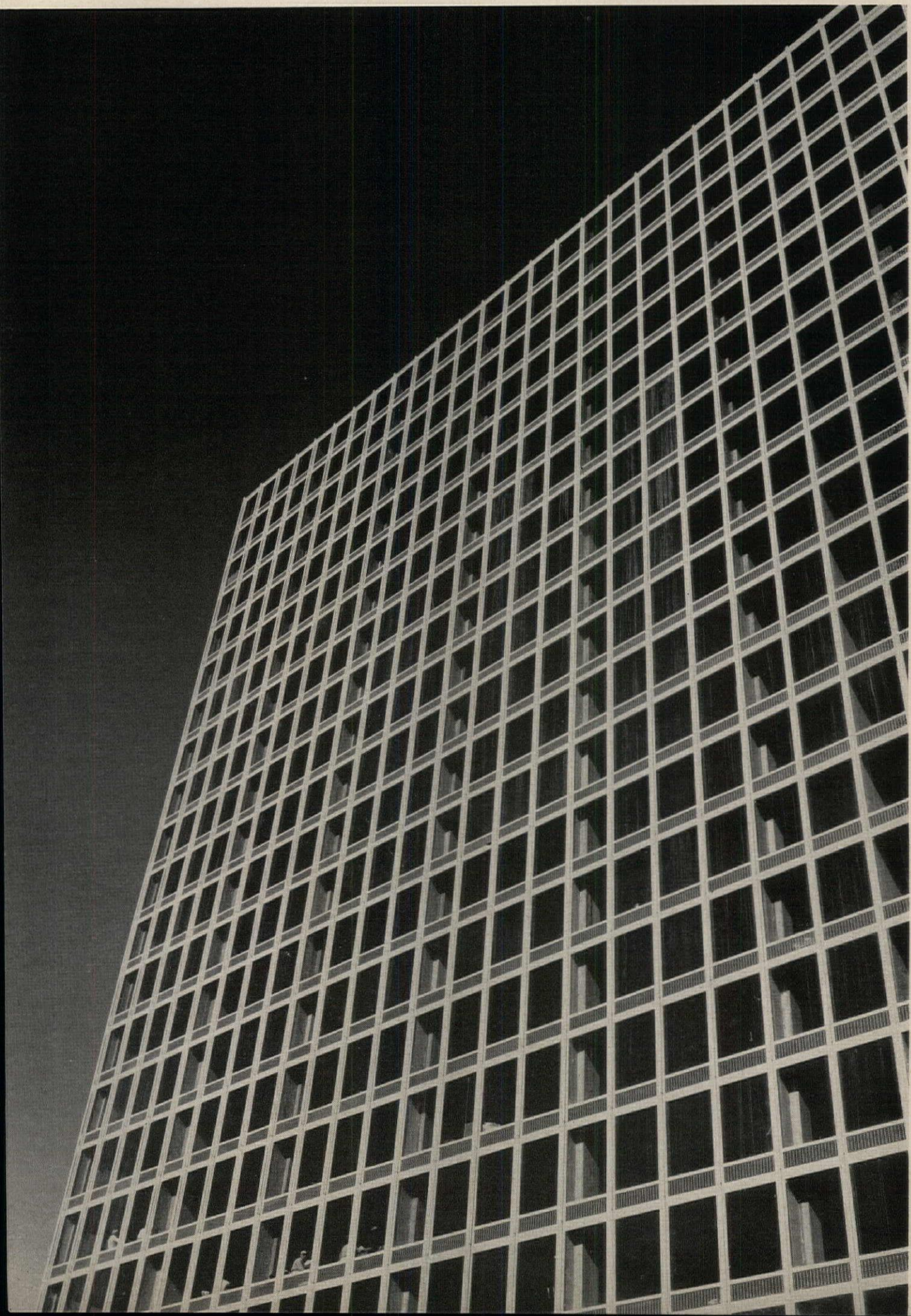
OWNER: *Estate of Herbert Greenwald
and Financial General Corporation*

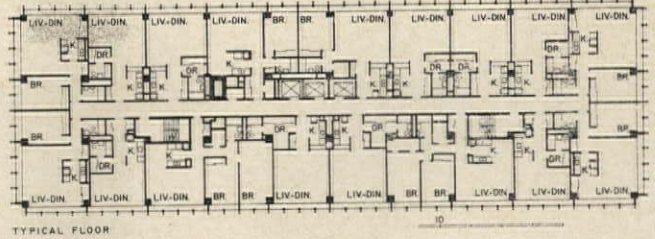
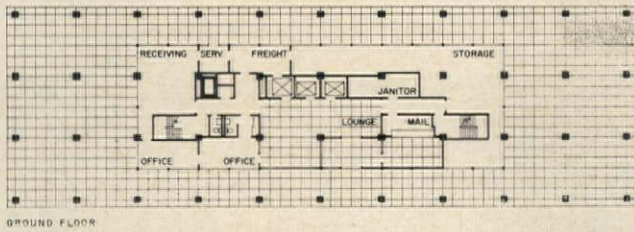
ARCHITECT: *Mies van der Rohe*

STRUCTURAL ENGINEERS: *Frank Kornacker
and Robert Rosenwasser*

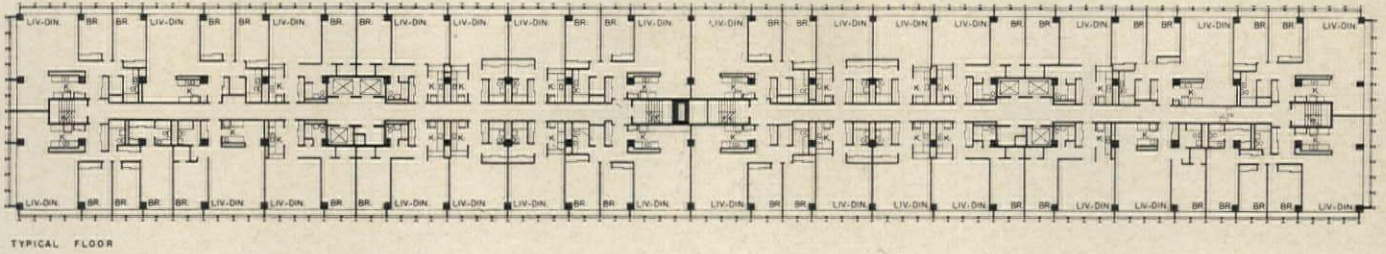
MECHANICAL ENGINEER: *William Goodman*







Plans for Pavilion Apartments. Compare with Detroit high-rise plans on page 173



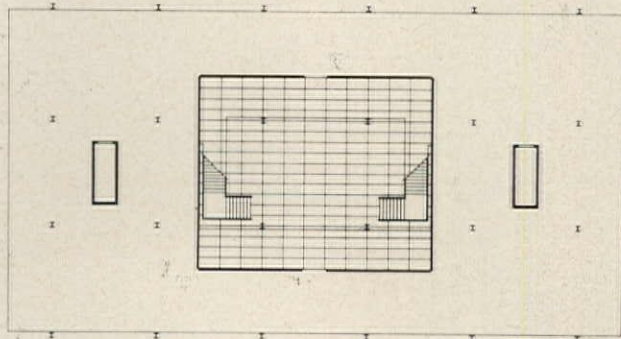
One of twenty floors in Colonnade Apartments

Colonnade Apartments will include three bedroom units renting for \$248 to \$267 per month

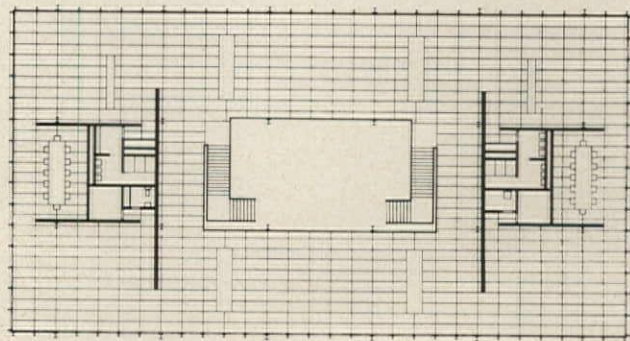




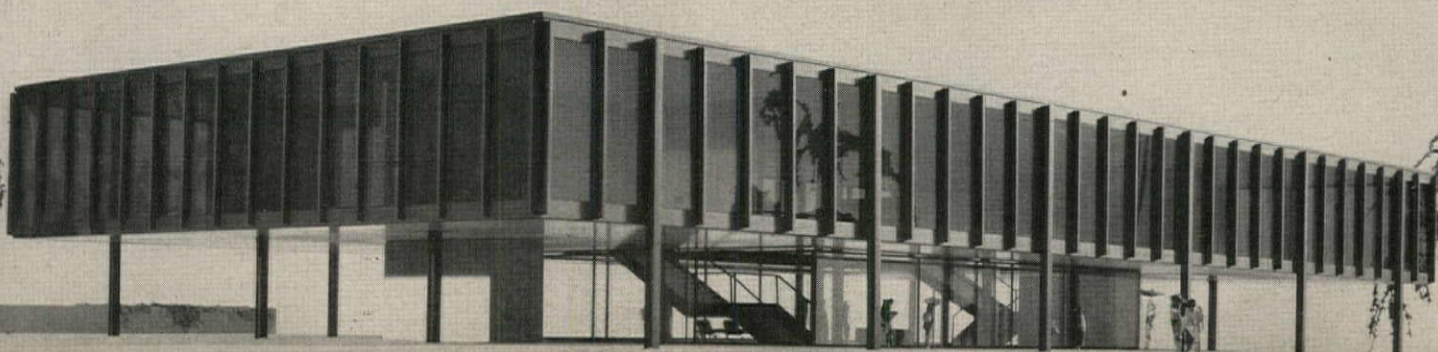
Mexican Headquarters for Bacardi Rum



Ground floor



Office floor





Bill Engdahl, Hedrich-Blessing

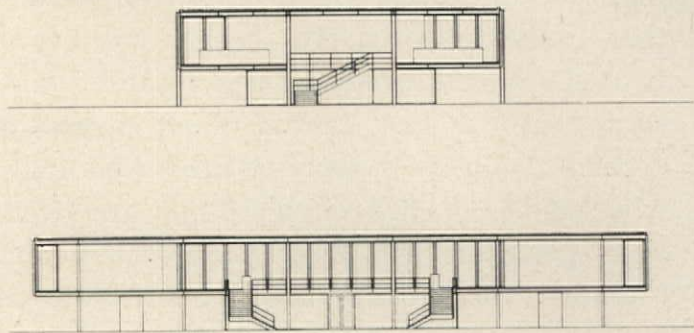
OWNER: *Bacardi Y Compañía, S.A.*

LOCATION: *Mexico D.F., Mexico*

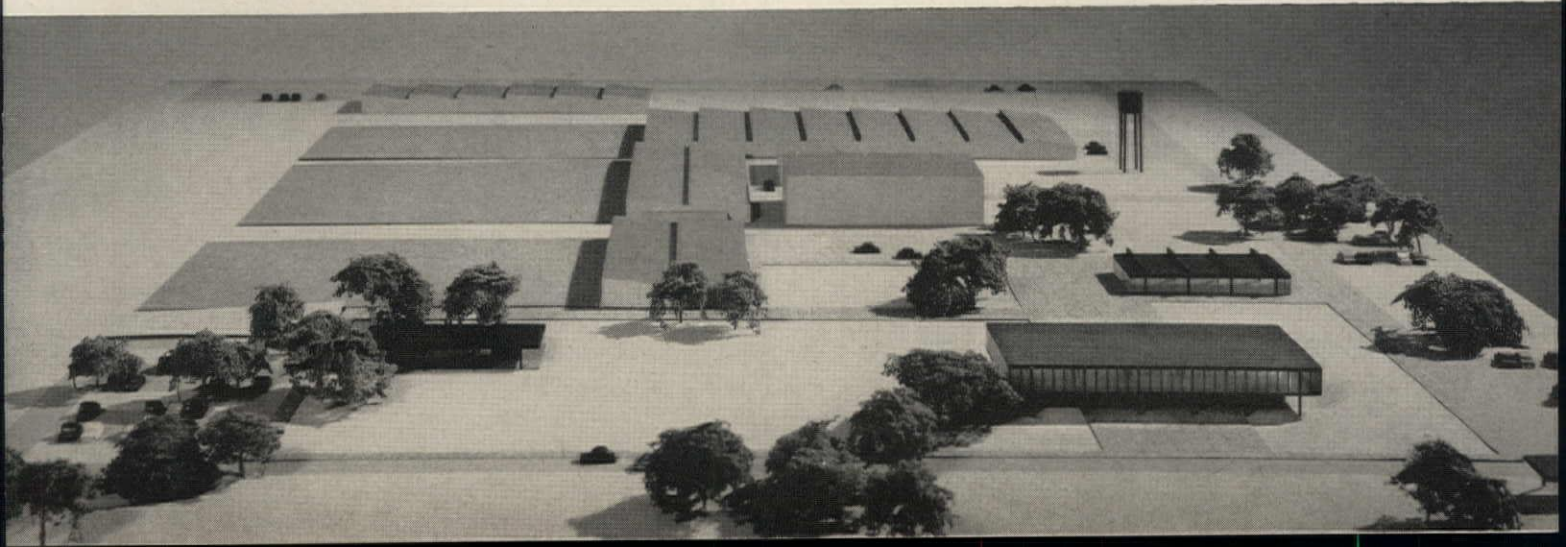
ARCHITECT: *Mies van der Rohe*

STRUCTURAL, MECHANICAL AND ELECTRICAL ENGINEERS: *Saenz-Cancio-Martin-Gutierrez*

Under construction in Mexico City, this is Mies' second commission for Bacardi. An administration building designed in 1958 to be built in Havana has not been started. Almost like a segment of the Seagram Building, this somber, restrained conception will be carried out in painted steel.



Model showing relation of office structure to plant



MIES VAN DER ROHE:

1950 address to Illinois Institute of Technology

Technology is rooted in the past. It dominates the present and tends into the future. It is a real historical movement—one of the great movements which shape and represent their epoch. It can be compared only with the classic discovery of man as a person, the Roman will to power, and the religious movement of the Middle Ages. Technology is far more than a method, it is a world in itself. As a method it is superior in almost every respect. But only where it is left to itself as in gigantic structures of engineering, there technology reveals its true nature. There it is evident that it is not only a useful means, that it is something, something in itself, something that has a meaning and a powerful form—so powerful in fact, that it is not easy to name it. Is that still technology or is it architecture? And that may be the reason why some people are convinced that architecture will be outmoded and replaced by technology. Such a conviction is not based on clear thinking. The opposite happens. Wherever technology reaches its real fulfillment, it transcends into architecture. It is true that architecture depends on facts, but its real field of activity is in the realm of significance. I hope you will understand that architecture has nothing to do with the inventions of forms. It is not a playground for children, young or old. Architecture is the real battleground of the spirit. Architecture wrote the history of the epochs and gave them their names. Architecture depends on its time. It is the crystallization of its inner structure, the slow unfolding of its form. That is the reason why technology and architecture are so closely related. Our real hope is that they grow together, that someday the one will be expression of the other. Only then will we have an architecture worthy of its name: Architecture as a true symbol of our time.

“Architects as artists
are essentially non-verbal. . .
as business men, as verbal
as Madison Avenue hucksters. . .”



Illustrations by Walker Cain

“THE WELLSPRINGS OF DESIGN”

by John A. Kouwenhoven*

As I began to work on this address, I remembered something which a very great teacher said to us many years ago when I was a graduate student. The teacher was Mark Van Doren—himself a distinguished poet—lecturing on epic poetry. He had the great teacher’s gift of saying things parenthetically, in the midst of something else he was saying, which did not interrupt the main thread of his discourse but which later grew and developed in fascinating profusion—as if the enclosing parentheses formed a sort of pot in which the planted idea could germinate while the lecture went on, and in which you could take it away afterwards, if you wanted to, and watch it grow.

The particular parenthetical remark I remembered in connection with this conference was this: “Of course poetry is not inspired by life, but by other poetry. It is not the girl you are in love with who inspires you to write a sonnet, but some sonnet which you have read about some other girl.”

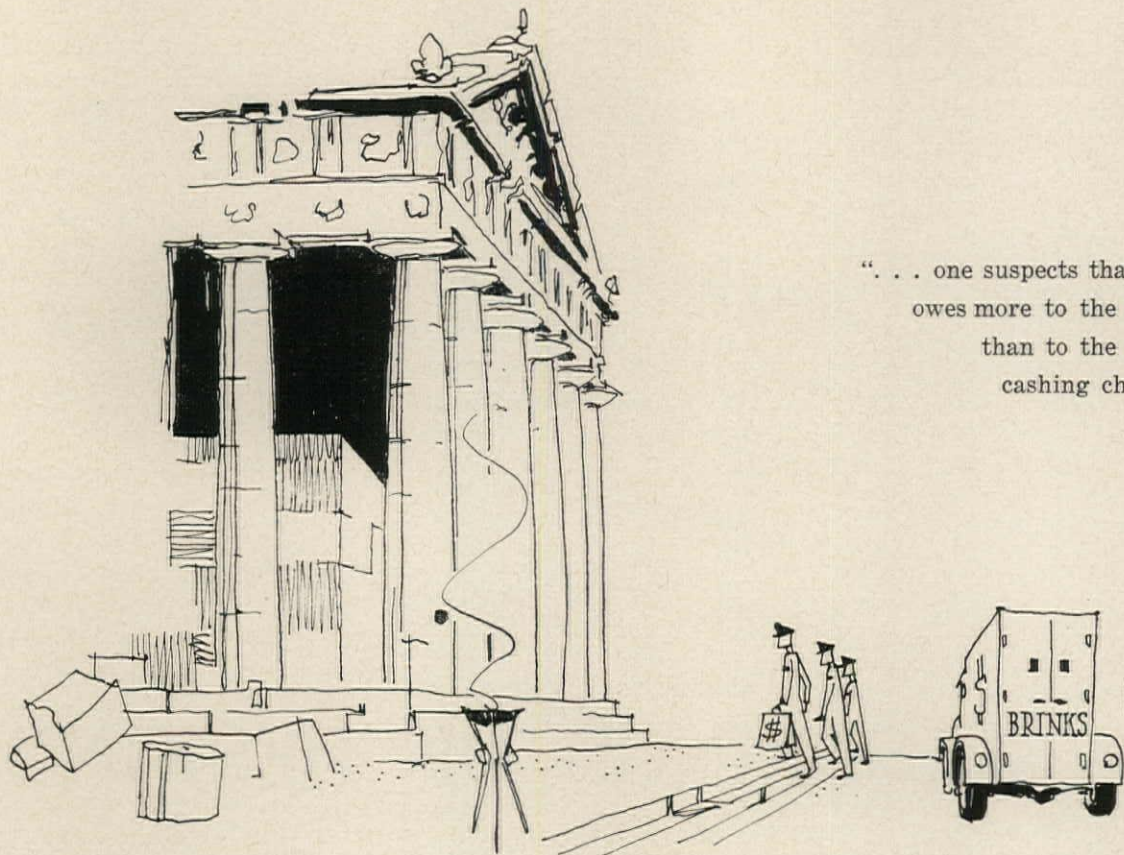
I remember being horrified by that remark, because I had just written a sonnet about a girl and

I wanted very much to believe that it was a direct response to her. Some years later, however, I ran across that sonnet among some discarded trophies of the past, and I ruefully discovered that there was no trace of the flesh and blood girl in it, though there were some painfully evident traces of one of the limper sonnets of John Keats.

The bearing of all this on “The Wellsprings of Design” is, I hope, obvious. To a considerable extent, what Mark Van Doren said is true not only of poetry but of all the arts. It is probably not a landscape, but a painting of a landscape, which drives the incipient painter to canvas and brush. And to an extent which each of you can judge better than I, it is architecture itself and not the emotional and physical realities of people’s work and play and worship which inspires the architect.

In a sense it is true, is it not, that the architect as creative artist (the architect, that is to say, as distinguished from the builder and engineer) finds the wellsprings of design less in the physical, social, and cultural realities of his environment than in the work of his fellow architects, the living and the dead? He may like to talk about the way his buildings grow organically out of the nature of his materials and the site, or out of the functions they

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“... one suspects that the bank
owes more to the Parthenon
than to the process of
cashing checks . . .”

accommodate; or he may become eloquent about the way they are designed to express democratic ideals or serve democratic ends. But those of us who make a habit of reading what architects and designers say about their own work have learned not to expect much correspondence between the things they assert in stone or steel or wood, and the things they assert in words. Architects as artists are essentially non-verbal; as business men or salesmen, they are frequently as verbal as Madison Avenue hucksters or college professors, but what they say as business men need not (and seldom does) have much to do with what they do as artists.

If he puts his mind to it, an architect can make an excellent verbal case for a pseudo-Greek temple as a functional structure to house a bank, or for a glass box as an honest, democratic solution to the problems of sheltering the intimacy of suburban family life. But one suspects that the bank owes more to the Parthenon than to the process of cashing checks and storing securities, and that the house owes more to Gropius than to the needs and aspirations of the family who will inhabit it.

I do not wish to be misunderstood. I am not employing the easy trick of ridiculing the disparity between avowed intention and actual achievement.

On the contrary, I am trying to interest you in the probability that in large measure the wellsprings of architectural design are in the buildings your predecessors (and you yourselves) have built in the past. To the extent that the architect combines in his own person the builder and the engineer, as well as the artist (to the extent, in other words, that he exemplifies Alberti's renaissance ideal of an architect, and has avoided the spurious contemporary illusion that the specialization so essential to science must also be a good thing for art)—to that extent he will of course respond directly to the life about him. But the architect as artist is responsive, I think, to architecture and not primarily to life.

Some of you will already have asked (as I did when I first heard Van Doren's remark) how, if artists are inspired by art rather than by life, art ever got started. Obviously someone must at some point have produced a painting in direct response to a human figure or a natural landscape, because at some point there can have been no other paintings to prompt him. There must have been a first house, a first temple, a first pyramid, designed (or improvised, if you prefer—though the terms are more nearly synonymous than we usually admit) as a direct response to physical factors, and to such basic

social needs as those for shelter, for worship, or for the assurance of immortality. The forms which have been developed and refined, echoed and re-echoed in our various architectural traditions, obviously had their origins in primordial responses to physical, social and cultural realities, unhelped and unhindered by earlier formal solutions.

Once a formal solution has been found, of course, it tends to be repeated; and the better the solution is, the more often it will recur in subsequent buildings. In architecture, as in the other arts, it is with forms which have been developed over a long period by many craftsmen that the creative artist works. It is these traditional forms which provide him with the vehicle for his perceptions. They serve him, as the conventions of ballet serve the dancer, and become in effect the conventional costume he puts on while dancing his own dance. A ballerina wearing the standard frilled *tutu* and moving in a traditional *pas de deux* is a good deal freer to express her unique vision than one wearing a polo coat.

I am sure there must be an architectural equivalent to what the poet Robert Frost said about the exigencies of traditional verse forms. As Frost put it, writing poetry without rhyme or meter is like playing tennis with the net down.

Frost's remark is especially useful in our context because it permits us to ask whether there are not other nets than traditional English rhyme and meter which may put zest into the game of poetry. And of course, a number of poets, including such diverse figures as Walt Whitman, greatest of American poets, and the Japanese haikku writers from Matsuo Basho to Masaoka Shiki, played the game with nets very unlike the traditional net of English verse and very unlike each other's.

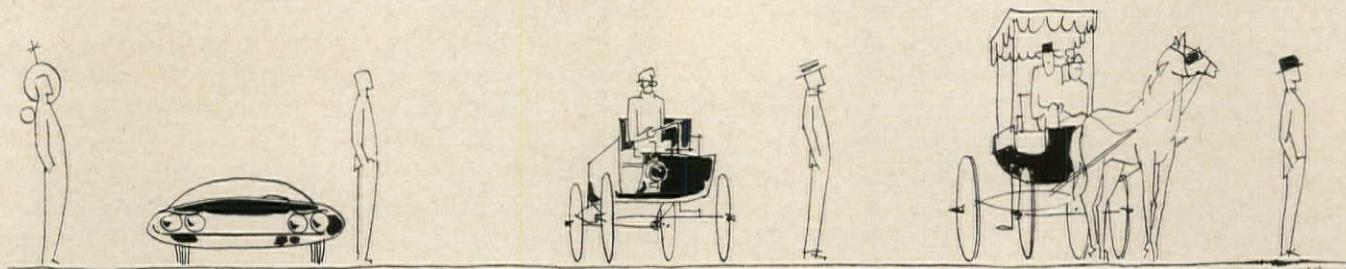
There are people who argue that it is one thing for a Japanese poet, who belongs after all to a different culture, to use a net unlike the one we are used to, but quite another thing for Whitman (and his successors) to do so. Whitman seems to them, as it were, a traitor to his class, willfully seeking a flatulent originality. The literary argument roughly parallels the architectural one which has been employed in a recent American book denouncing modern architecture in all its manifestations, on the ground that it has merely seceded from tradition in a fruitless effort to be original. The author passionately recommends instead a new courthouse for San Francisco in what is called "the high classical manner," with "rusticated arched entrances, marked keystones, gold lanterns, and statues in profusion," all designed by a man identified as (and I quote) "an interested amateur who resides in Berkeley, across the bay."

In a sense the argument is sound. If we assume that the American or Mexican or Australian or Japanese world we live in is the same world whose "life" originally inspired the forms which were refined and developed by the great artists of the past, there is indeed no excuse for an urgent search for new or significant forms. The artist will employ the forms indigenous to his culture, as Milton and Wordsworth employed the sonnet form, not fretting at their "narrow gloom" but rejoicing in the knowledge that he has at his command vehicles relevant to the experience of his fellow men, in which he can express his own personal vision of life's abiding charm, or horror, or wonder (for all three, I am afraid, abide). As long as there is a basic continuity in the culture, the traditional forms retain a valid relation to the vital forces in contemporary life. Modifications will, of course, be necessary as time brings gradual change. But there is no danger that artistic conservatism will resist them effectively. Society has plenty of built-in devices to induce even the most recalcitrant architect to adapt his work in some measure to contemporary reality—one of the most effective, the client's bank roll.

But what if the world we live in—in Japan, or New Zealand or California—is not a mere evolutionary modification of the cultures which dominated these worlds a thousand years ago? What if it is something new under the sun, so transfigured by unprecedented influences that it is in effect a new ethnical epoch? We frequently say that the society in which we now live is a society founded upon and shaped by technology and its handmaiden science. To the extent that it is so, it is a society which puts a premium upon adaptability, mobility, and a willingness to forego the security of fixed status and dogmatic absolutes. For technology and science always and everywhere make for change. They are not, as we sometimes think them, mere physical things like machines and test-tubes. They are modes of skilled behavior, processes by which we change our environment *and thereby change ourselves*. As such, they are the ineluctable enemies of all the static features of society as men knew it in the past—the enemies of all varieties of vested interest, of all the habitual and ceremonial aspects of institutions, of all fixed systems of dogma.

Just here, I would like to suggest that we make a distinction between an "urban-industrial" society and a society based upon technology and science. They are not quite the same thing. As an analytical, descriptive term in sociology, "urban-industrial" no doubt describes our kind of society very well. But it does not specify the basic forces, the driving energies which are shaping the society. Rather, it is a

“... implicit assumption that whatever is wrong about our new world can be cured by reviving values inherited from a reputedly happier time . . .”



broad, general term which includes not only those forces but also the vast remnants of social institutions we inherit from a period when technology and science had not begun to shape man's needs.

It is frequently said, for example, that ours is an acquisitive society, as well as a mechanized one—as if “acquisitive” and “mechanized” were merely different names for essentially the same thing, or as if a society which was mechanized was *ipso facto* acquisitive. But those of you who remember Veblen's classic distinction between the acquisitive motives and the motives of production and service will have already detected the irony of such verbal juggling. For mechanization and acquisitiveness have nothing in common, and the values of a society based upon technology and science are profoundly at odds with those of an acquisitive society. An urban-industrial society may be acquisitive. Indeed, it will be, if its social institutions perpetuate the acquisitive motives which dominated most earlier societies. But such a society is not a society shaped primarily by technology and science.

We would do well, I think, to hold in our minds, as we return to our various countries after this conference, the question of how much or how little the life of contemporary Japan or New Zealand or America, or wherever, is really shaped by science and technology, and how much it is merely the same old wine in a new bottle—a little flatter, with a little more sediment, but still something we can identify by means of the old labels.

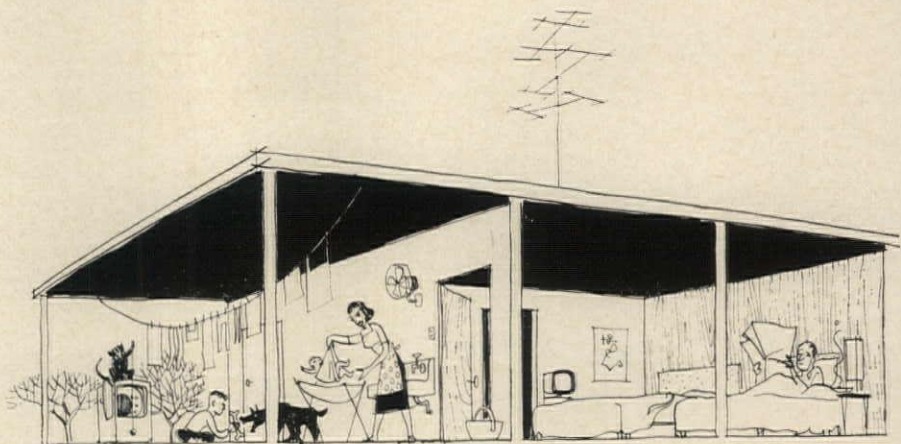
There have been times, during the past century or so, when many people, in England and America at least, talked as if they were convinced that technology and science really *had* made fundamental changes in man's relation to the natural world about him, to his fellow men, and to God. But it is characteristic of the persistence of our mental and emo-

tional habits that—even in the face of some fairly impressive evidence that the changes were indeed fundamental—people in general have not acted as if they believed it, and have more or less refused to listen when anybody made a strong argument to support it. In the United States, at the turn of the century, the great engineer and bridge builder, George S. Morison, wrote a moving and most impressive book arguing that the discovery of ways to manufacture power had brought mankind into a new ethnical epoch, and that the change would be far greater in its influence during the next two or three centuries than any brought about by earlier advances such as the use of fire, the domestication of animals, or the invention of written alphabets. Morison's book is the most plain-spoken, the most thoughtfully prophetic book I have read upon the subject; yet no historian of our culture, no study of the history of ideas, has reckoned with it so far as I am aware.

Morison, writing in 1898 (more than sixty years ago) foresaw that the manufacture of power made possible by science and technology, would bring almost inconceivable changes not only in material ways but also in man's social and intellectual life. Let me quote a brief passage:

The manufacture of power . . . has separated power from the mind which must manage it; it calls for intelligent design and direction of the multitude of works which it has rendered possible; it has equipped our generation with tools for study and investigation as well as for mechanical work. The new epoch will alter the relations between the professions, business, and trades; it will readjust the duties of government and the relations of one government to another; it will change our system of education.

"the house . . . owes more to Gropius than to the needs and aspirations of the family . . ."



. . . The new epoch differs from all preceding epochs, in that while they represented successive periods of progress, different races existed simultaneously in every period of advancement, whereas the new epoch must from its very nature soon become universal . . . It brings all races together, and must in time remove all differences in capacity.

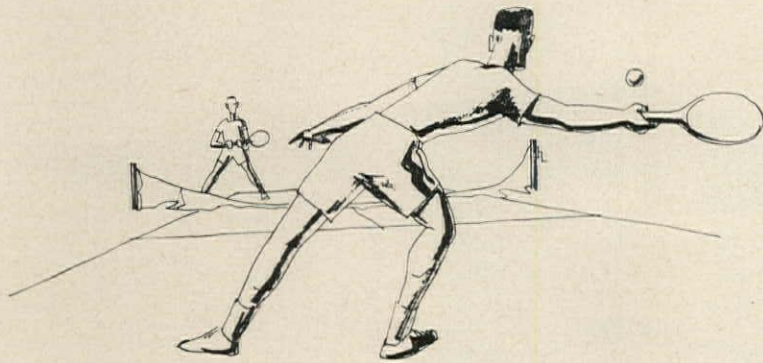
This quoted passage deals in generalizations; but Morison's book is specific. Referring to architecture, for example, he notes that the manufacture of power "has made the demands of the new epoch so different from those of the old that nearly everything which has to be used must be built anew." In the new epoch, he said, "architecture, which as a fine art would consign itself to the museum, and which sometimes, following the rapid changes of fashion, seems to differ from millinery chiefly in the want of a beautiful object on which to place its novelties, will find its highest development in correct construction."

One would have thought that in the days when the Bauhaus influence was in its ascendancy, architectural theorists would have rediscovered Morison's book, and perhaps even given some attention to the house he designed and built in Peterboro, New Hampshire. But they did not, and I suspect that the reason is that he was too blunt in his insistence that the new epoch is really new. We all talk wistfully at times about "a new heaven and a new earth," and to generations of men "the new world" has seemed, at moments at least, to be a social and cultural possibility as well as a geographical reality. But the new is unfamiliar, and unfamiliarity as well as familiarity breeds contempt. When we move into our new glass box we are likely to take grandmother's rocker and some-

body else's grandfather's cobbler's bench along with us, and the carport is likely to be inhabited by an imported car which at least looks as if it were hand-crafted in the old Locomobile tradition.

I suppose that our basic dislike and distrust of the new epoch and the emergent forms appropriate to it is the result of two facts: first, that as Morison foresaw, it has opened as an era of destruction. He understood that the new epoch would "from its very nature destroy many of the conditions which give most interest to the history of the past, and many of the traditions which people hold most dear." Looking back from our moment in time, we can see that he was right in prophesying that there would be, for perhaps a century or more, "great destruction of old buildings, old boundaries, and old monuments, and furthermore of customs and ideas, systems of thought and methods of education." And destruction is sad—so sad that, like death, it sometimes appears to us to be tragic.

The destruction has come, and will continue, not, Morison said, because the things which are destroyed are in themselves bad, but "because however good and useful they may have been in the past, they are not adapted to fulfill the requirements of the new epoch." The danger is that the destructive changes will come so fast that the new developments, appropriate to the new world, do not come fast enough to fill the gap between them. And of course such developments (in architecture, education, or whatever) will not come fast enough if, each time that we are frightened by some destructive change, we decide that change itself is bad and that we must therefore renounce all attempts at new solutions and go back, as the phrase is, to "the high classical manner," or the theology of Aquinas, or the politics of Aristotle, or whatever the "unchanging verity" in our neck of the woods may be.



“. . . writing poetry without rhyme or meter is like playing tennis with the net down . . .”

For people in general these days, in the western world at least, there is an implicit assumption that whatever is wrong or distressing about our new world of technology and science can be cured—or at least ameliorated—by reviving or adapting the values we inherit from a reputedly happier time (before the discovery of ways to manufacture power) when society was based upon agriculture and handicraft commerce. We speak of science and technology as either essentially inhuman and evil (witness Charlie Chaplin's version of the assembly line), or at best merely neutral (as when we say that atomic energy is neither good nor bad in itself; it's what the politicians, the generals, or the doctors do with it that matters). Either way, science and technology look pretty scary, and we therefore conclude that a society based upon them is a Bad Thing and we had better return to the time-tested values which architects like the amateur who resides in Berkeley across the bay, and professors of liberal arts like me, make it our business to preserve and cultivate.

We speak, despairingly, about the way life has been mechanized, and about the contrast between the “unnatural” life of the modern industrial megalopolis and the “natural” life of other times and places. But what does it mean to say that man's life in pre-industrial society was natural while ours is not? Is it not natural for man to make tools, and to power those tools with machines, and to use those tools to remake his environment? What is unnatural about being mobile? Were we not born with legs and endowed by nature with minds capable of conceiving the wheel—and a motor to drive it? Is mobility on wheels less “natural” than mobility on legs, or only less brutish and more human?

We are told, by a distinguished humanist, that our mechanized, urban way of life has made us

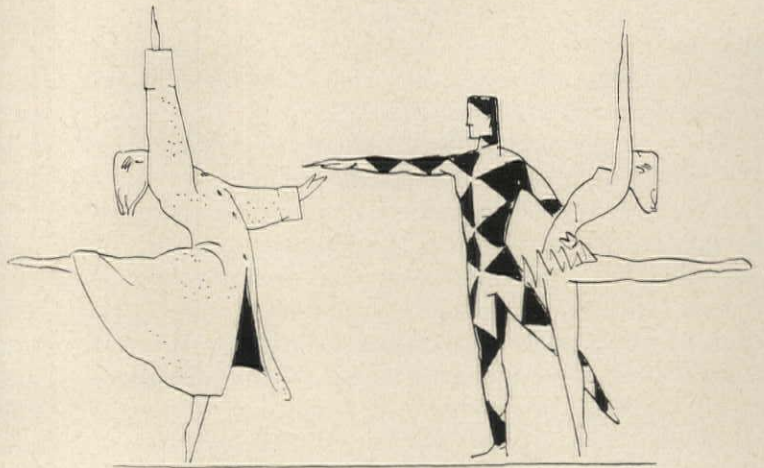
“isolated, rootless atoms.” But what is unnatural about rootless atoms.” Could there be anything more unnatural than a rooted one? Is it really true that a man and his family who have television, a car, and a telephone are more “isolated” than those who herded sheep in Palestine two thousand years ago, or those who lived in 18th century English country houses, or the villagers on remote Pacific islands?

Are “stable traditions” more natural than unstable ones? And are the processes of nature, to which we like to think of being close, really stable? I wonder how we can think so, when at the moment we gather here, small earthquakes are being recorded on a neighboring island at the rate of 500 a day and the threat of a volcanic eruption seems to be increasing daily. I would judge that Heisenberg's “uncertainty principle,” derived from his research in atomic physics, is a better guide to nature's ways than any romantic notions we may once have entertained about the “everlasting hills.” We live, the scientists tell us, in an exploding universe as well as in exploding metropolises.

In short, are not all the deprecatory comparisons of the “natural” life of other times with the “unnatural” life of our urban-industrial society either meaningless or—worse—a sentimental refuge from thinking about the challenge which our society really offers us?

That challenge, it seems to me, is the challenge to look about us, with minds and senses unclouded by stereotyped responses, and to think and speak and act in unhackneyed response to what we see. As artists, you architects have, I think, a primary obligation to accept the challenge, since no art can survive whose practitioners are unresponsive to the new elements in our environment.

It is my conviction that the society we live in marks—as Morison said it did—a really new epoch,



“A ballerina wearing the standard frilled *tutu* . . . is a good deal freer to express her unique vision than one wearing a polo coat.”

but that it is shaped not by technology and science alone but by a unique combination of forces, a compound of scientific technology and the spirit of democracy. Some years ago—more than a decade—I tried to suggest that these twin forces had been revolutionizing man’s conception of his relations to nature, his fellow man, and his gods, for more than a century. And that it is an emergent environment, shaped by these twin forces, whose elements the artists of our time must arrange (and have begun to arrange) in patterns and forms which will satisfactorily express the values and attitudes appropriate to the new epoch.

It was my contention that the early, unschooled attempts to create satisfying patterns out of these novel elements in our environment constituted a new kind of folk art. The folk arts we are familiar with are the product of groups cut off from the main stream of contemporary life, and they are the surviving remnants of traditional forms and patterns. These new “folk arts” are, on the contrary, the product of people directly involved with the dynamic forces of contemporary life, and their forms and patterns have no precedent, since the environmental elements to which they give shape are quite literally something new.

In order to distinguish them from the more familiar folk arts, I labeled these the vernacular arts—meaning by that the unschooled, empirical attempts of ordinary people to shape the elements of their everyday environment in a democratic, technological age into satisfying patterns of color, sound, texture, and idea. Specifically, I meant the books, buildings, and artifacts of all sorts whose forms have been shaped as a direct response to the new elements which democracy and technology have introduced into our environment within the past one hundred and fifty years.

The buildings produced in such a vernacular tradition (as, for example, the early balloon frame houses of the American midwest) were often ugly. So it is easy for the admirers of the “high classical” manner in Court Houses to dismiss them as “mere inventions in the construction industry,” and to accuse those of us who are interested in them of writing the kind of architectural discussion which would consider Venetian architecture solely in terms of pile-driving. But this misses the point.

The point about the balloon frame houses which came out of Chicago in the 1830’s and spread all across America in the following decades, is that their builders empirically discovered a form which took full advantage of machine-made lumber and machine-made nails and machine transportation (three elements of the technological environment which traditional architecture had no use for), and a form, furthermore, which also incorporated the elements of economy, speed of construction, mobility, flexibility, and universal availability which the spirit of democracy fostered. And, finally, the point is that out of this anonymous, unrefined, form, later architects evolved structures which, by any valid standards, are architecture of a very high order indeed, however unrelated they may be to the more massive and rigid architecture of hand-hewn beams and hand-hewn stone, incorporating the aristocratic and hierarchical values of order and stability.

We could illustrate the role of the vernacular in evolving new forms, appropriate to the new environment, by reference to other examples, including the steel frame and the concrete shell. But the point would be the same: that in a time of rapid and future-founding change, the architect who ignores the vernacular, with its unselfconscious and uninhibited response to the elements of a new environment, and who submits himself too devoutly to

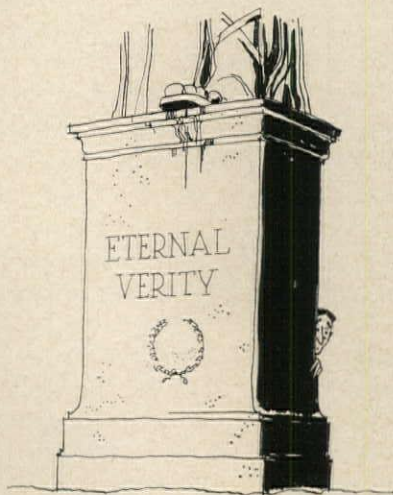
the inspiration of past architecture (his own, or that of others), runs a grave risk of losing fruitful contact with the life about him.

The risk is compounded, I think, in our time by the degree to which criticism of the arts is replacing the arts themselves as the source of artistic inspiration. I know that in the literary arts this is so, and I have the impression that just as there is a good deal of poetry which owes more to the critics than to other poetry (let alone to life), so there is a good deal of architecture these days which owes more to what the writers in architectural magazines say than it does to the esthetic realities of the great buildings you and your predecessors have built (let alone to life). It would be a pity, I think, if we were to have a plague of architects who are less excited by architecture than by writers who are excited about architecture. Not that I have any objection to writers who are excited about architecture; I am one of them. But I don't think you should pay much attention to what we say.

Architecture is what you should pay attention to, as Mark Van Doren's comment implied. I would only urge that, in these rapidly changing times, you include under that head not only the masterpieces of the past but, more especially, the humble vernacular which is springing up around you, wherever you live, in direct response to the new elements which democracy and technology are still introducing, and at an ever-increasing pace, into the lives of people everywhere. Remember that critics always want you to imitate the great artists of the present and the past, but that great artists never imitate their equals; they imitate (and plagiarize from) their inferiors. If you submit to the influence of the critics, they will hound you into the shadow

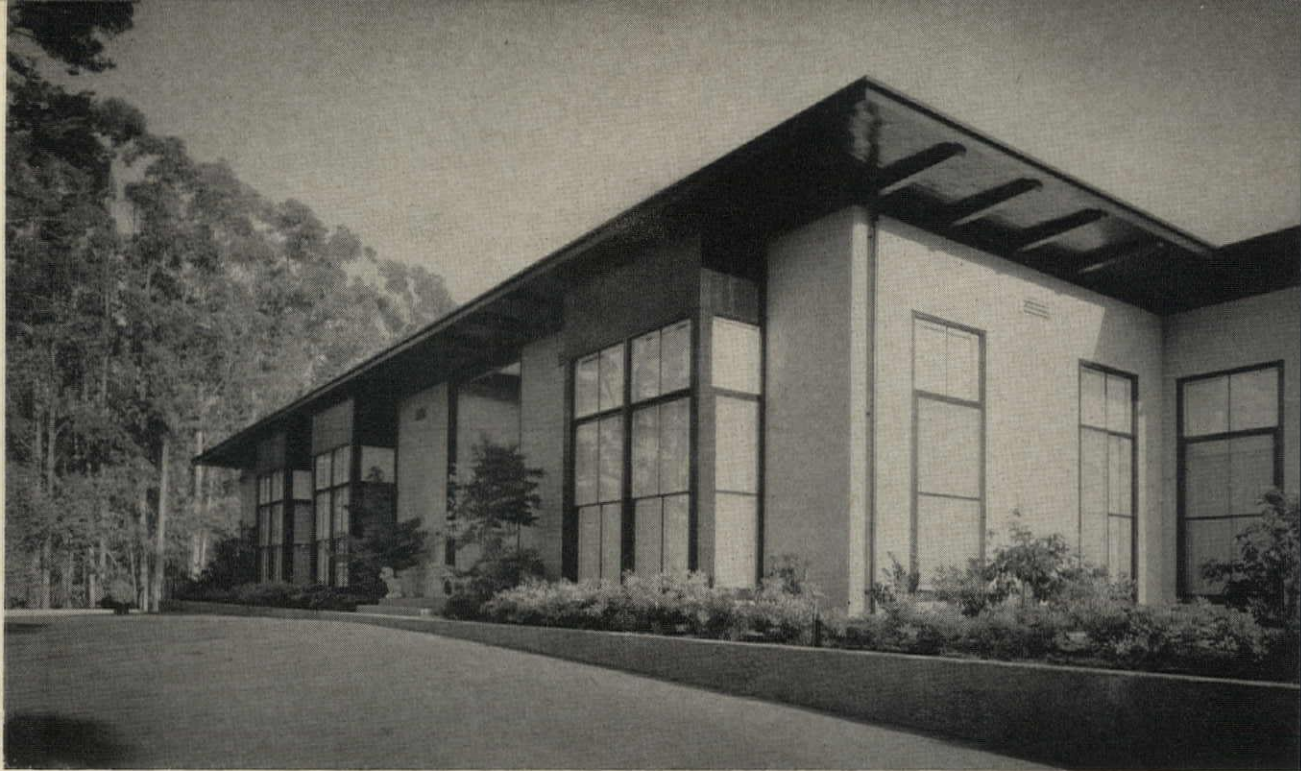
of some imperious, if dead, perfection. But the perfection embodied in the great architecture of the past, as in the great poetry and great music, is the culmination of a growth which began far back in the inexpert gropings of ordinary mortals. The forms which reached their loveliest and most moving expression in the Gothic cathedrals of the middle ages were evolved not from those of classical temples but from those of common barns and markets, just as Beethoven's symphonies were an elaboration of formal elements which originated in folk-music, and just as Shakespeare's plays were the culmination of a long development in the popular theater. We tend to forget that Shakespeare did not write *Hamlet* because he was steeped in Aeschylus and Sophocles, but because he found in the crude forms which had been evolved by generations of inferior predecessors a vehicle, relevant to his time, which he could adapt and refine so that it fitly conveyed a vision of life which his genius made relevant to all times.

Vernacular forms, whose elements are the materials and processes of technology and the attitudes and interests of democracy, will continue to be improvised wherever technology and democracy make themselves felt among the peoples of the earth. They will, of course, be modified in each region by physical and social actualities and by the local cultural heritage which goes deeply into the quality of what we build. But they will share the quality of immediate responsiveness to the driving energies of the new epoch. They will be crude, unrefined, and—if you will—ugly, more often than not. But the architect as artist will neglect them at his peril. For they are perhaps the most life-giving of all the wellsprings of design.



"frightened by change . . . we must go back to whatever the 'unchanging verity' in our neck of the woods may be . . ."

Morley Boer



1959 residence (*above*) for Mr. and Mrs. Wellington Henderson, Hillsborough, California. 1933 Henderson residence (*below*); William Wilson Wurster, Architect

Roger Startevant



Roger Startevant



1958 El Peco Ranch House (*below*) for George Pope, Madera, California. 1936 Pope residence (*above*); William Wilson Wurster, Architect. Thomas Church, Landscape Architect for both these early houses

TWO HOUSES

*Wurster, Bernardi and Emmons, Architects
Thomas Church, Landscape Architect*

These two houses, most recent of the distinguished residences designed by this firm, are strong statements, each in its own way, of the same directness, simplicity and boldness which guided the early work of the firm's founder, William Wilson Wurster, and have continued to be its hallmark. Totally different in concept (as in requirement and in site), these houses nevertheless have much in common: both are for clients of long standing; both are large, in volume and area; both are characterized by the mellow certainty of the architectural decisions which give them their particular, and individual, quality.

Roger Startevant





Morley Baer photos

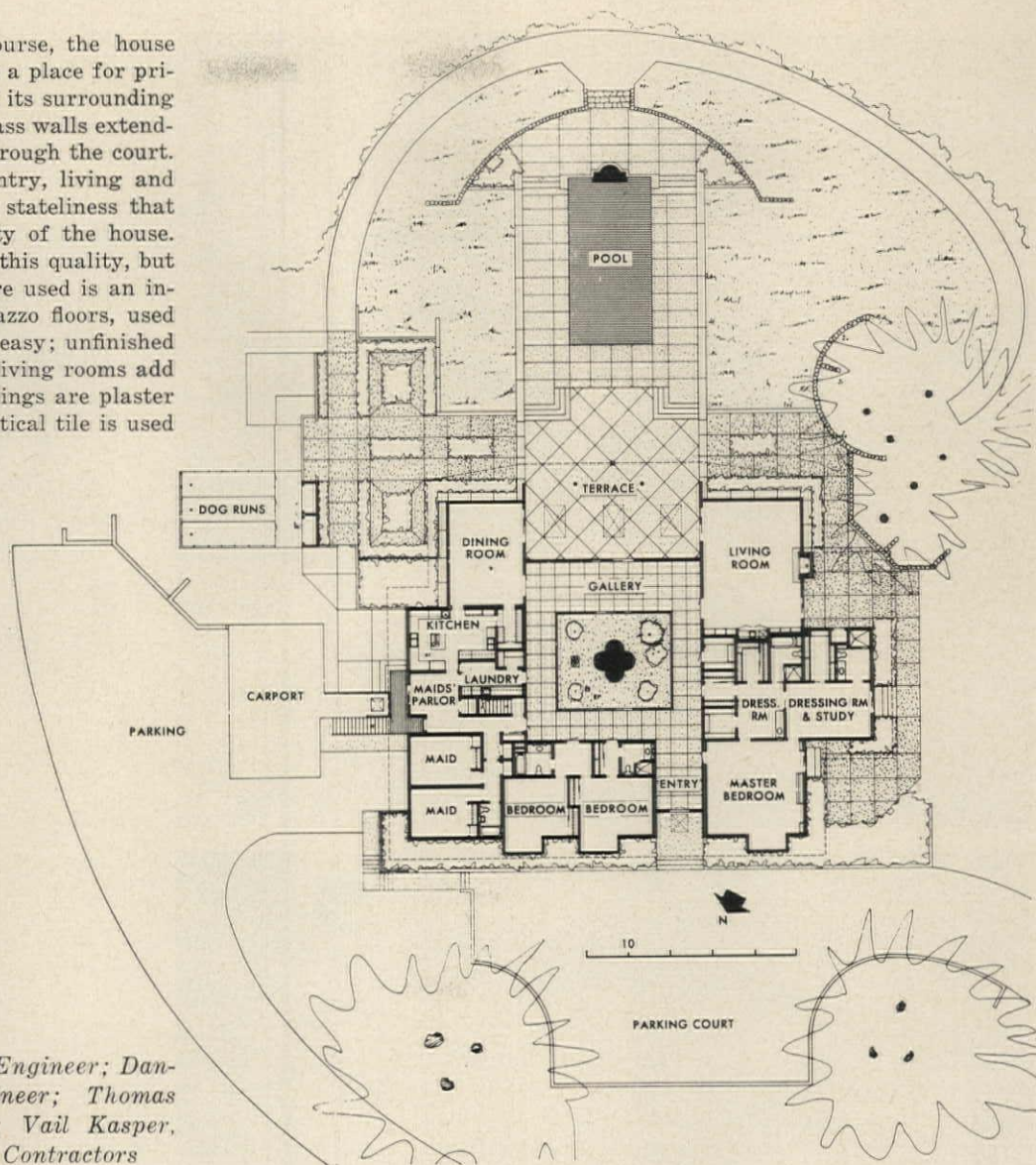
A FORMAL HOUSE IN AN INFORMAL SETTING

The elegant simplicity of this house is an eloquent statement of its purpose: to achieve the stateliness of a large and formal house in what is essentially a small house, containing only the number and kind of rooms suited to its owners' tastes and way of living. Set among the pines of an old estate on the San Francisco Peninsula, the house

knowingly balances the formal plan and amply proportioned principal rooms (where 14-ft ceilings are appropriate to the other dimensions) against an easy informality of indoor-outdoor relationships and the casual flow between the main rooms and the great gallery around the central glass-enclosed court with its quatre foil pool.

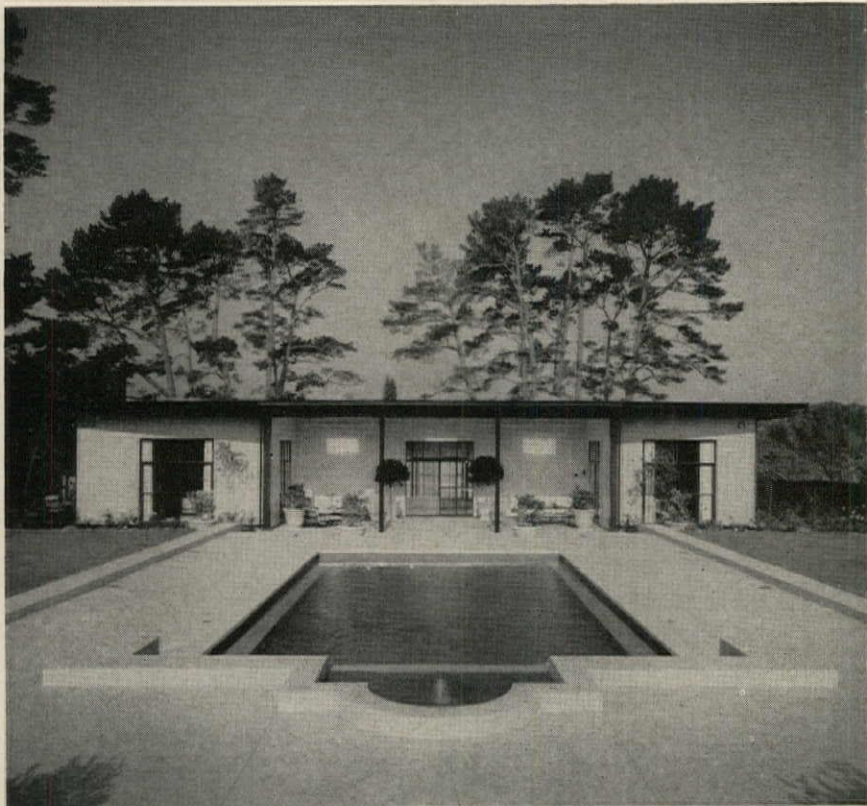


Exposed on one side to a golf course, the house needs an interior focus to provide a place for privacy and intimacy. The court and its surrounding gallery are this focus, the clear glass walls extending the sense of space into and through the court. The high ceiling—14 ft, as in entry, living and dining rooms—contributes to the stateliness that is so strong a part of the quality of the house. Fine materials also contribute to this quality, but the simplicity with which they are used is an influence toward informality. Terrazzo floors, used in the gallery, make maintenance easy; unfinished teak boards in entry, dining and living rooms add the warmth of natural wood; ceilings are plaster except in the gallery where acoustical tile is used



William B. Gilbert, Structural Engineer; Daniel Yanow, Mechanical Engineer; Thomas Church, Landscape Architect; Vail Kasper, Decorator; Aro and Okerman, Contractors





A Formal House In An Informal Setting

The exterior walls, of concrete and re-sawn redwood boards, are yellow; the trim and roof soffit are very dark green, almost black. Under the towering, dark pines, the color of the house comes as a surprise, like sudden sunshine. The flat roof permits the use of bubble skylights over halls and interior baths. The columns that support the roof over the terrace are steel, with a slightly flared wood cap inserted like a cork, painted dark green. Landscaping by Thomas Church is elegantly simple as the house

Two Houses: Wurster, Bernardi and Emmons

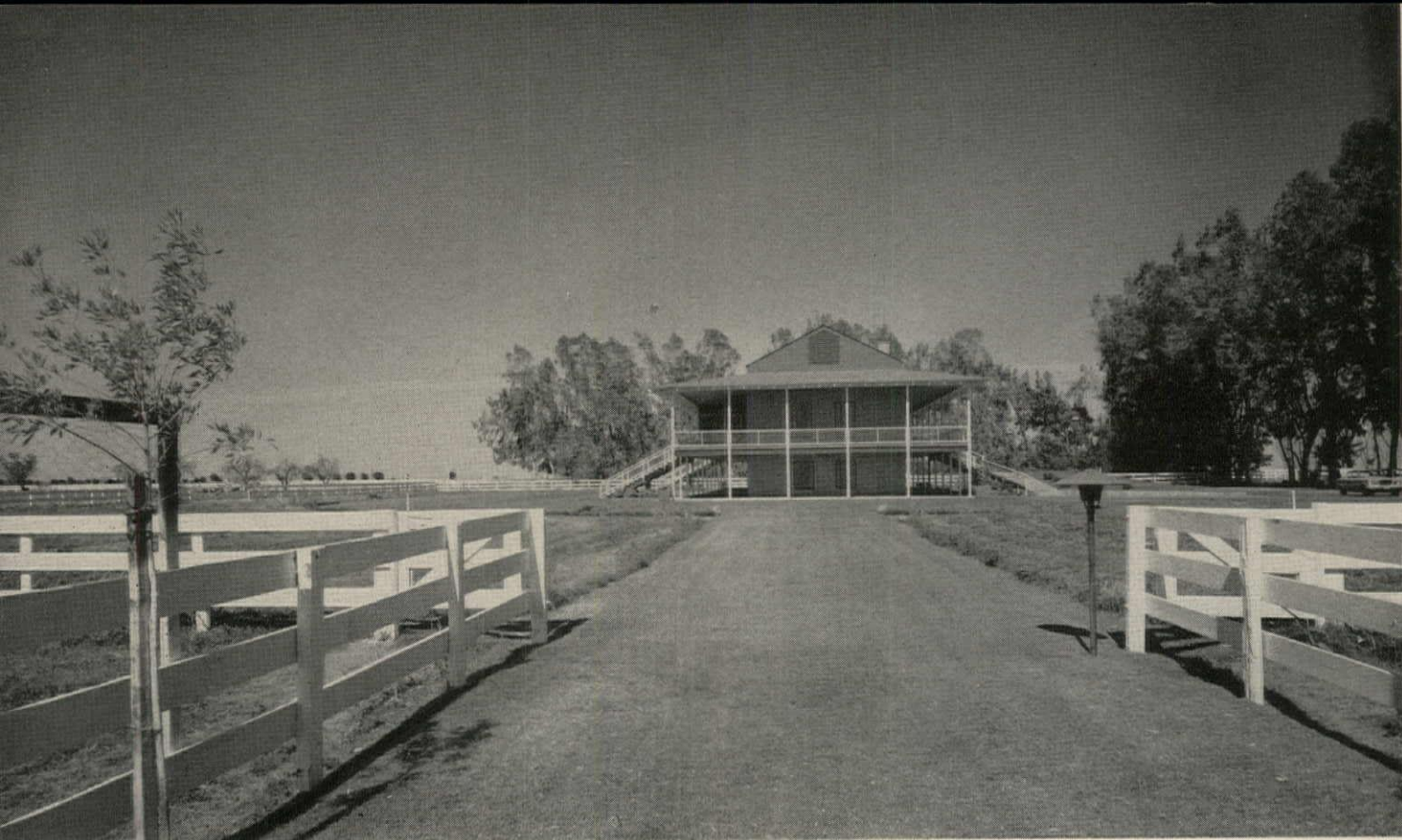
A RANCH HOUSE IN CALIFORNIA'S CENTRAL VALLEY

William B. Gilbert, Structural Engineer; Daniel Yanow, Mechanical Engineer; Thomas Church, Landscape Architect; Mary Norris, Decorator; Taylor-Wheeler Assoc., Contractors.

This is a true Valley house, designed for the Valley's hot climate and its flat land—a ranch house on the grand scale, providing for a luxurious sort of casual living. Its 2-ft-thick adobe walls and wide porches insulate against the intense heat; the second floor living areas are high enough above the ground to catch the view that extends almost without limit across the rich fields of the Valley; and the two handsome stairways—the double one on the south, the other rising from a mound—successfully tie the house to the land. Although it continues and frankly recognizes the tradition of the great house on the working farm, this house derives from the Wurster conviction, not from any style, period or region.

Roger Sturtevant photos

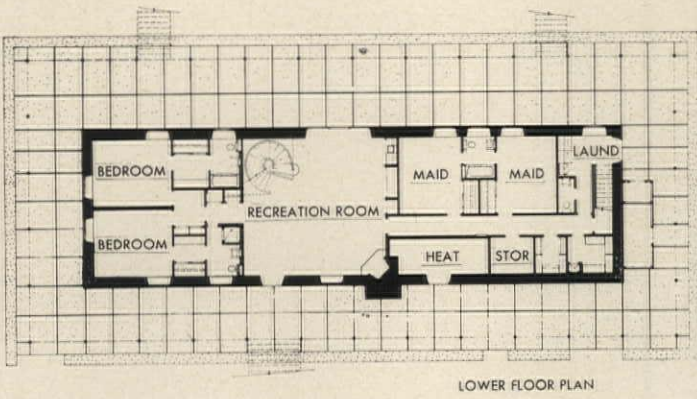
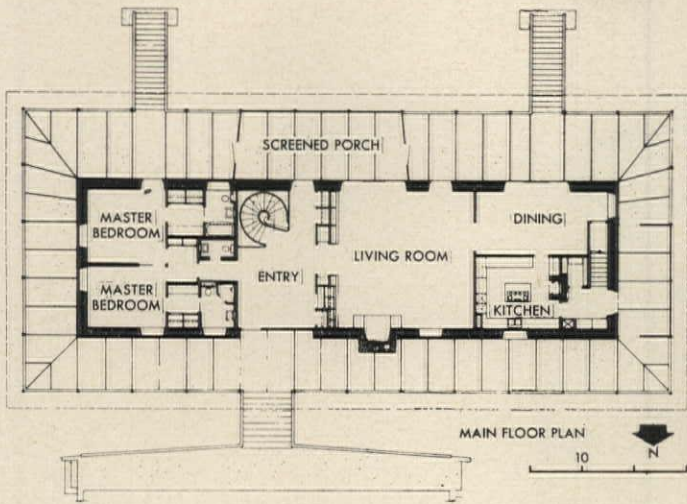




The house is set felicitously in the middle of its site, central to the ranch's operation which involves both agriculture and the raising of thoroughbred horses. The screened porch off the entry and the living room overlook the paddocks as well as the Valley. Openings in the adobe walls are few and small in area to afford minimum protection from the heat and to minimize the load on the air conditioning system, and double doors are used wherever there is a direct connection with the outdoors. Skylights set into the roof over the hearth in the living room and over the stairwell increase the daylight in otherwise dark areas. The roof is galvanized iron painted dark red, an effective use of a simple material. Since it is a working ranch, landscaping has been kept simple

A Ranch House in California's Central Valley







A Ranch House in
California's Central Valley

The dark and beautifully curved form of this great walnut stairway against the soft white adobe wall is the one feature of the large recreation room on the ground level. Walnut is also used for casework; elsewhere woodwork is resawn sugar pine, painted

*Two New
Office Buildings
in
San Francisco*

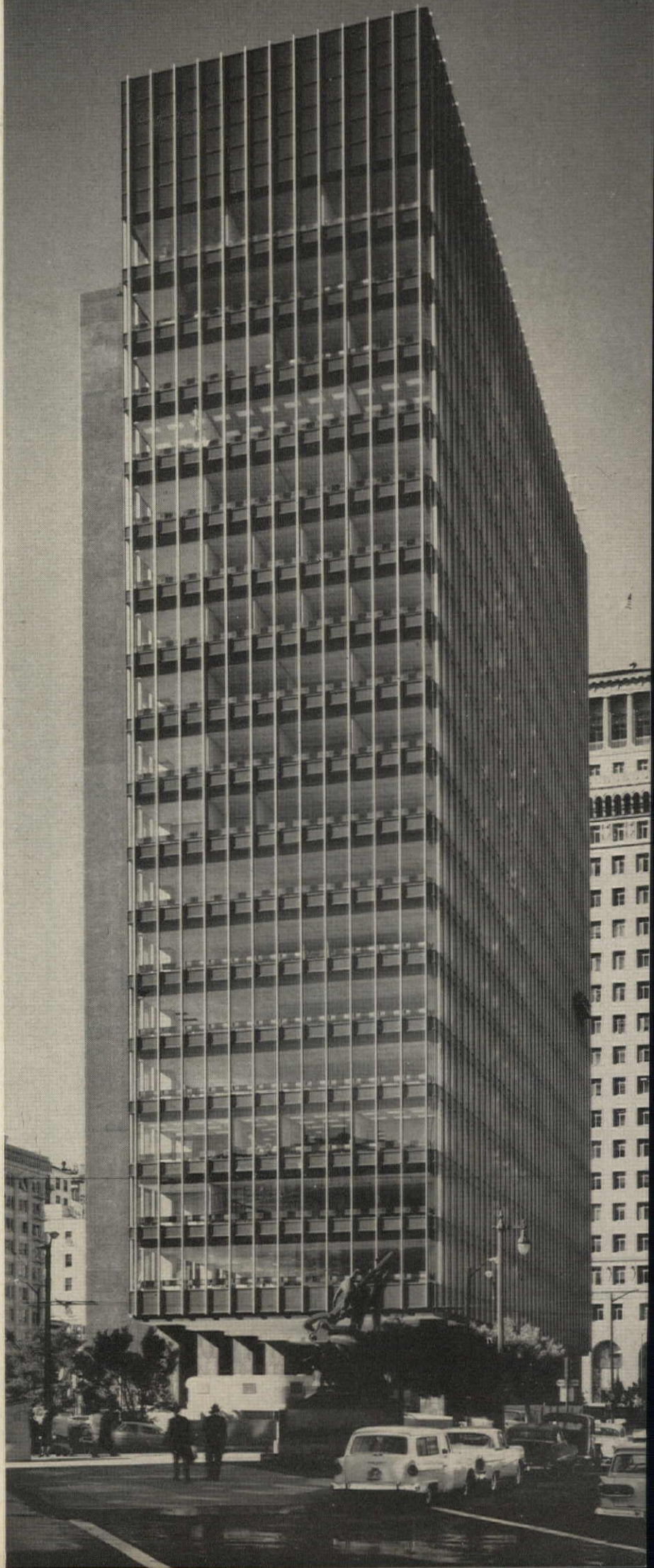
The
Crown
Zellerbach
Building

ASSOCIATED ARCHITECTS:
*Hertzka & Knowles
and Skidmore, Owings
& Merrill, San Francisco*

STRUCTURAL ENGINEER:
H. J. Brunnier

GENERAL CONTRACTOR:
Haas & Haynie

OWNER:
*New York Life
Insurance Company*





All Crown Zellerbach photos by Morley Baer, except as noted



CROWN ZELLERBACH

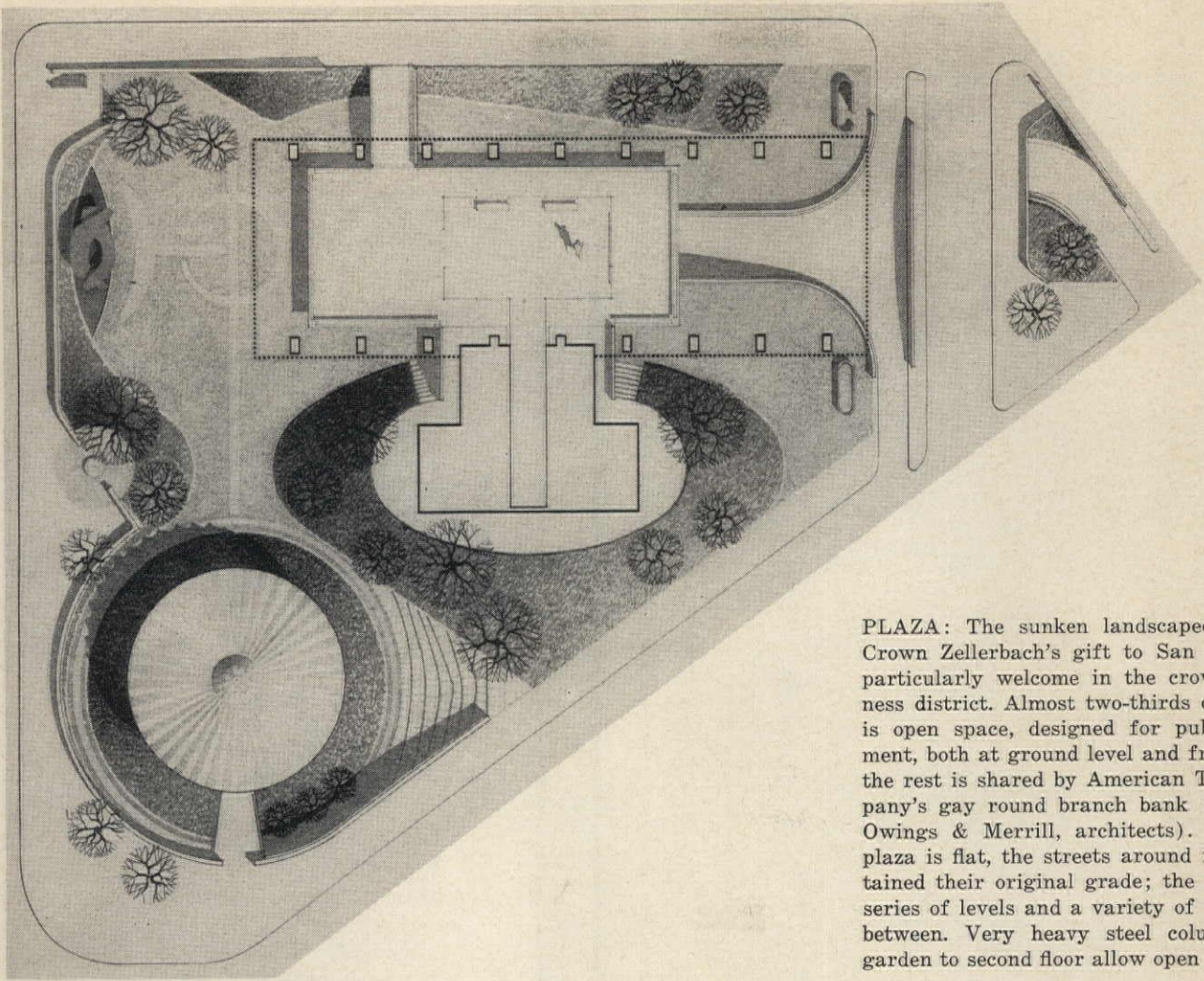
Crown Zellerbach Building

Late last year San Francisco's newest tall building, the 20-story Crown Zellerbach building, modestly took its place on the city's skyline. But this is its only modesty. At street level it is completely open, its glass-box lobby a great transparent, uncluttered jewel case, the serpentine-faced columns standing free of it. The green glass sheath, wrapped around the building's steel frame, is a mature—even, perhaps, the ultimate—expression of curtain wall technology. It could be a part of a building without end, vertically or horizontally; but it ends, vertically, with a two-story mechanical and storage floor, and horizontally with a cantilevered half-bay.* In refined detail, luxuriously provided office space, rich materials, emphasis on art, the building makes an unmistakable contribution. Some controversy over it is nevertheless inevitable. The vast expanse of the core building's umber-colored tile surface and the orientation are likely topics for discussion. For San Francisco, however, the perfection of detail, the unexpected setting in the plaza and the sophistication of the lobby floor are an exciting introduction to mid-twentieth century office building design. But questions on its design are inevitable. The walled garden, the core building, the orientation, are subjects for hindsight judgments. Meantime, the city can enjoy a new open space as it learns to know its first true curtain wall building.

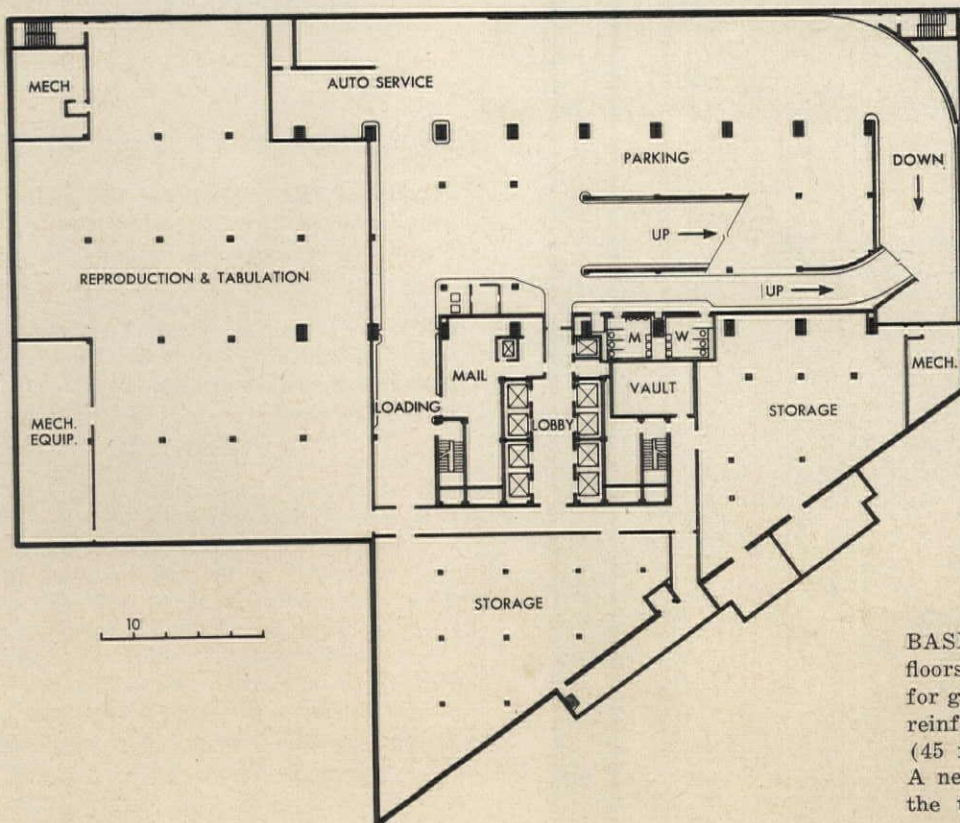


Jon Brenneis

*Technical details appear in ARCHITECTURAL RECORD, April 1959.



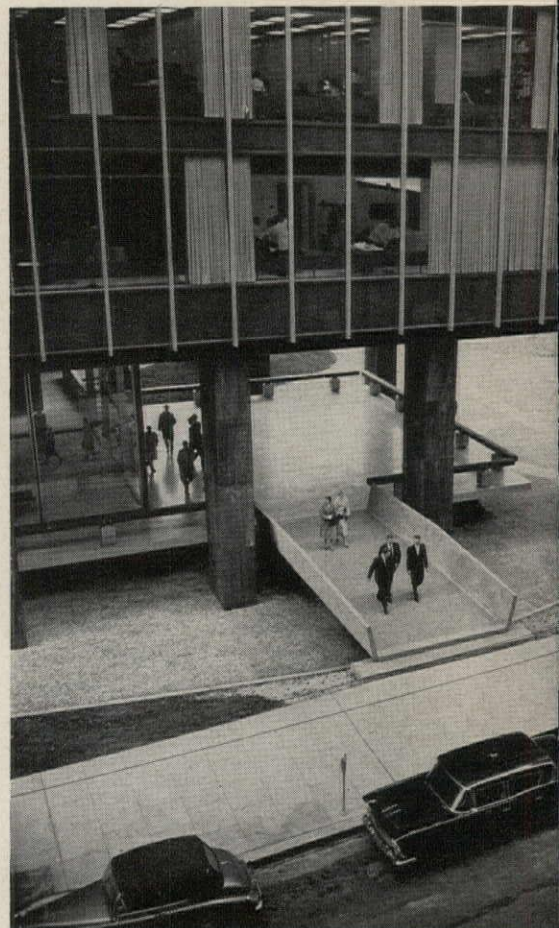
PLAZA: The sunken landscaped plaza is Crown Zellerbach's gift to San Francisco, particularly welcome in the crowded business district. Almost two-thirds of its area is open space, designed for public enjoyment, both at ground level and from above; the rest is shared by American Trust Company's gay round branch bank (Skidmore, Owings & Merrill, architects). While the plaza is flat, the streets around it have retained their original grade; the result is a series of levels and a variety of transitions between. Very heavy steel columns from garden to second floor allow open lobby level



BASEMENT: Below plaza level are two floors, almost as extensive as the site itself, for garage and service space. Use of an 8-ft reinforced concrete mat on bearing stratum (45 ft below grade) justified these floors. A new street was cut through the apex of the triangular site for access to garage



Jon Brennets

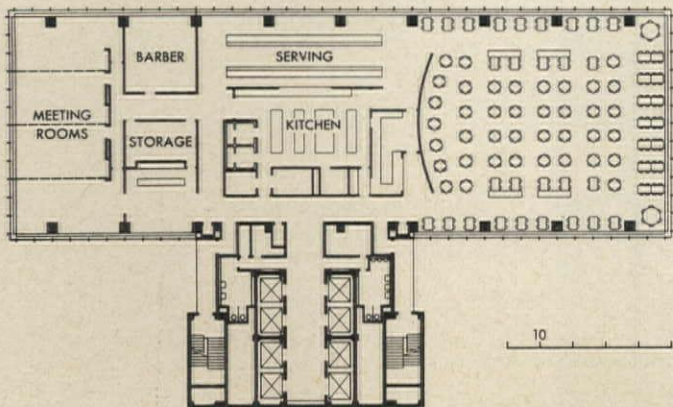
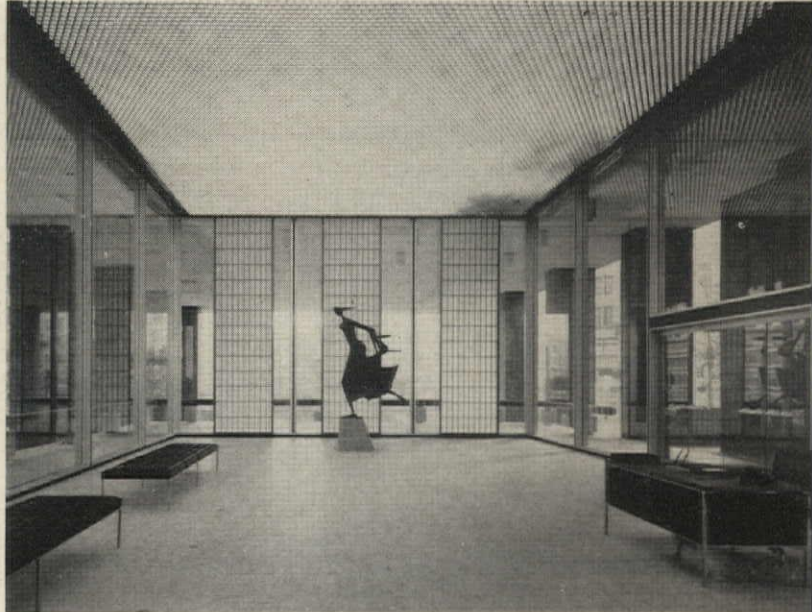
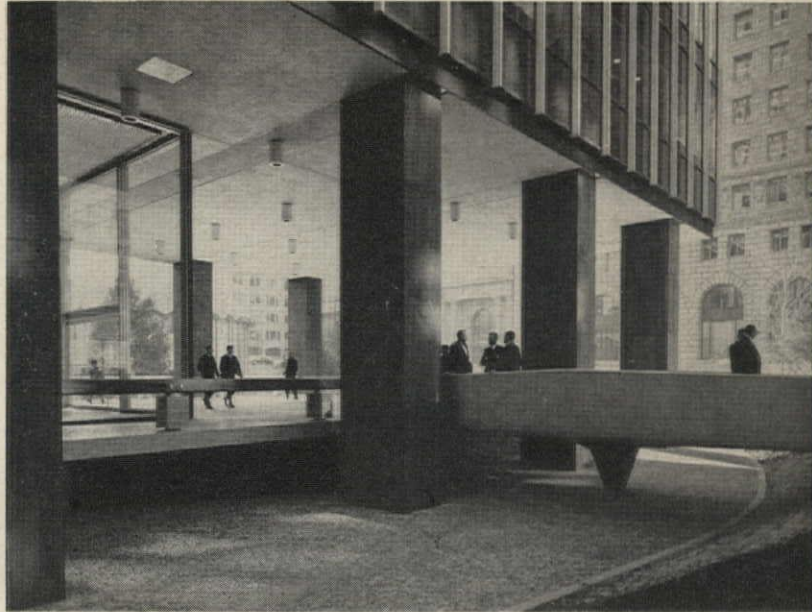
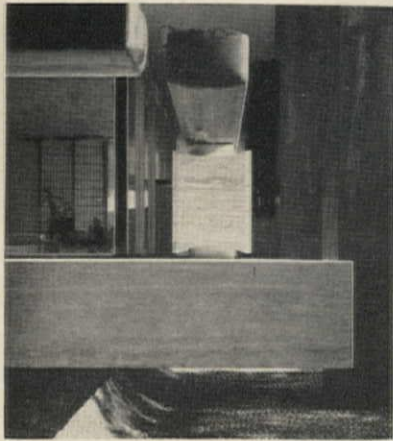


Crown Zellerbach Building

LOBBY LEVEL: The open lobby level, made possible by the massive steel columns which frame the building and the separate core which contains elevators and other services, is undoubtedly the building's most dramatic feature. The particular kind of sophistication which it brings to San Francisco is tempered, unexpectedly, by the warmth of certain details: the natural teak rail around the open deck and the modeling of the travertine balusters on which it rests; the travertine floor; the plastic form of the bridge from Bush Street to the deck; the rich but very simple luminescent ceiling of the lobby with its hundreds of plexiglass dowels protruding from a polished brass panel and acting as conductors of light from the fluorescent fixtures in the plenum above. Marcello Mascherini's "Woman in Bronze" is one of four works commissioned for the building; David Tolerton's fountain in the plaza and Mark Adams' mural in the cafeteria and Emil Nouman's horse are others

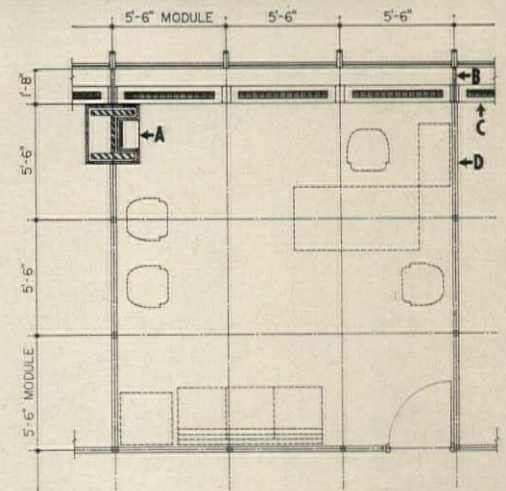
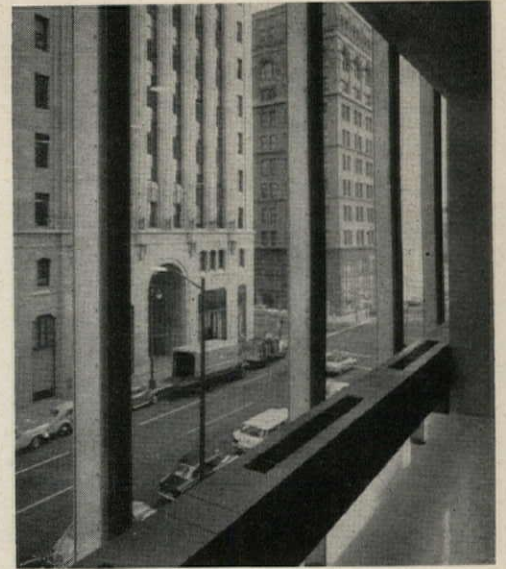
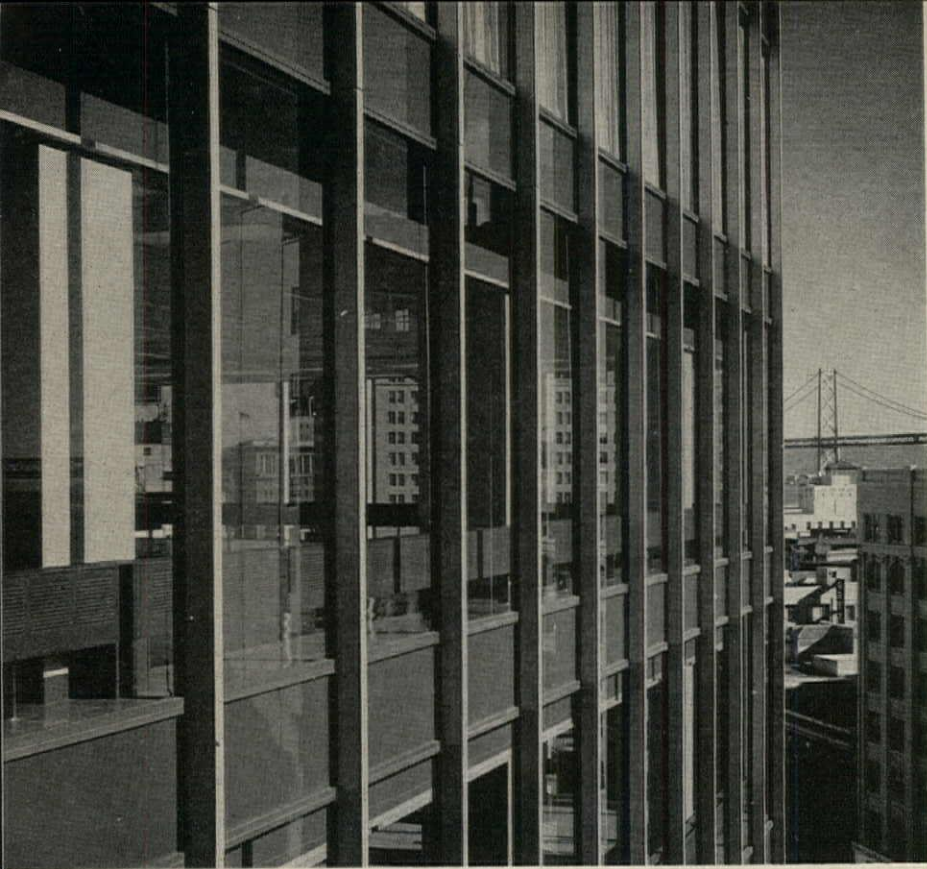


Jon Brenneis



SECOND FLOOR: Cafeteria and kitchen facilities take up most of the second floor; a large meeting room at the building's west end can be subdivided by folding doors for use by smaller groups. This is one of two floors on which modular services are not included; atypical, too, is its concrete floor required for utility lines





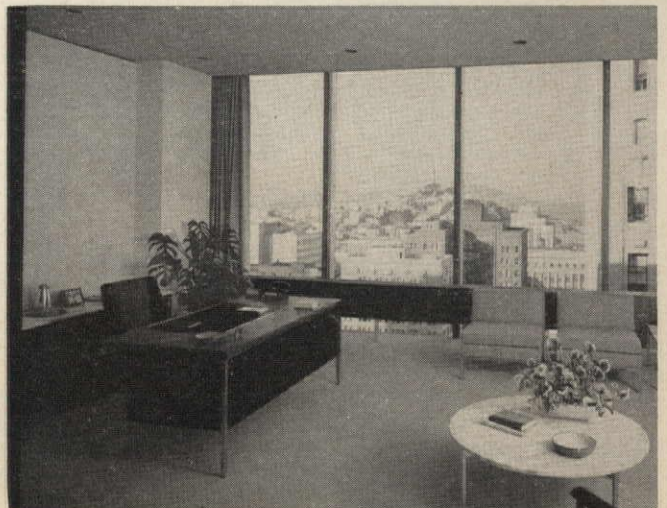
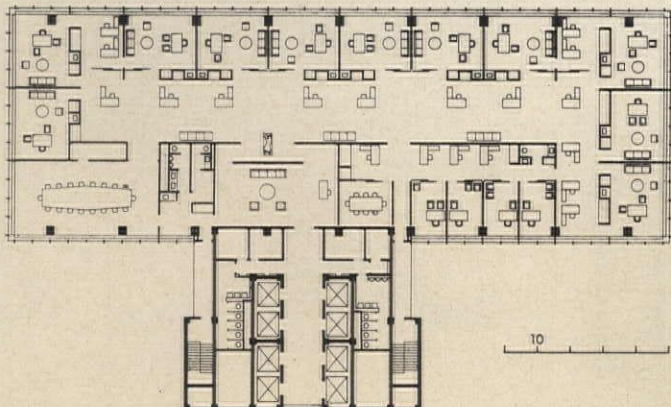
A: Telephone terminal cabinet. B: Filler panel to mullion. C: Convector. D: Standard modular demountable partition

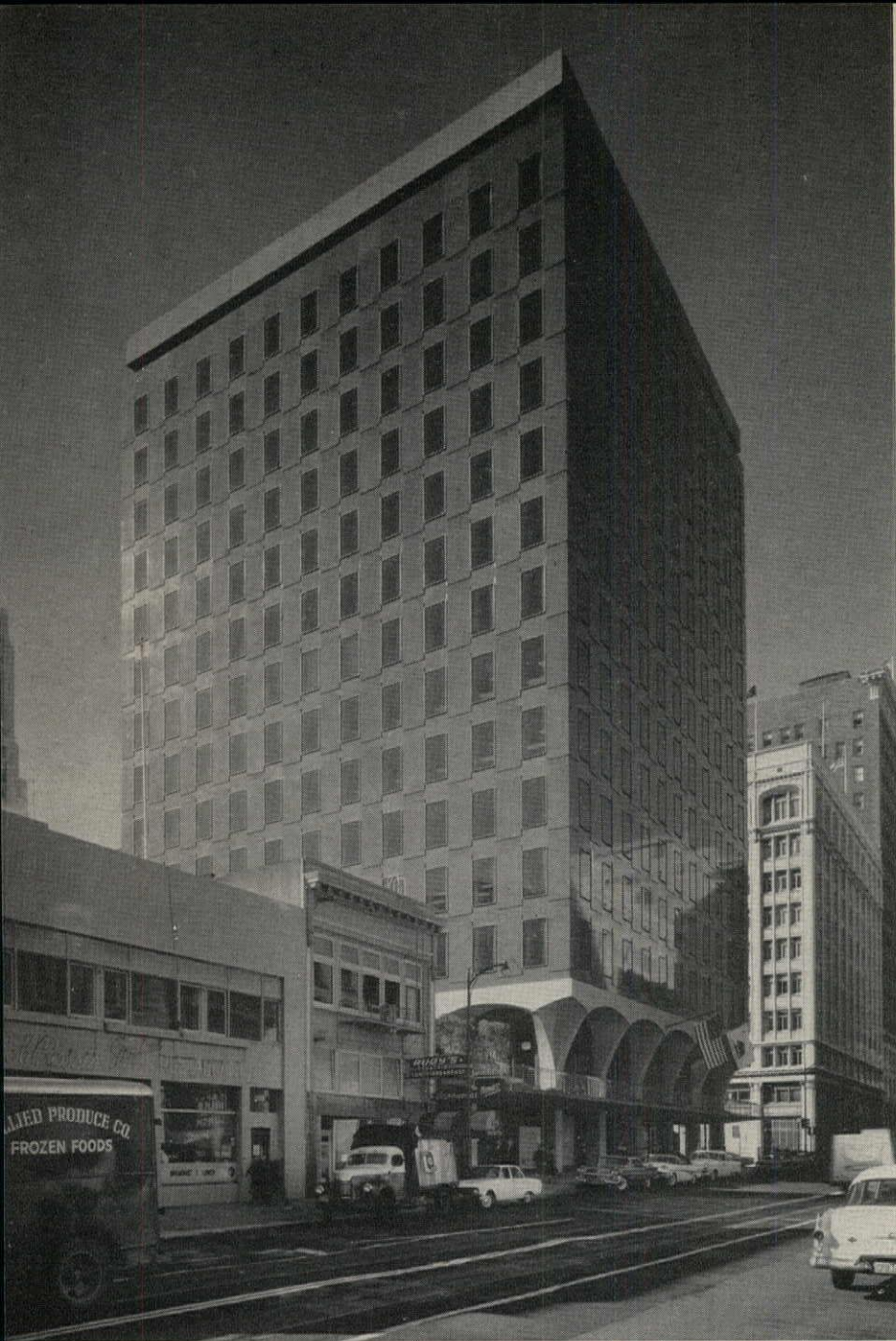


TYPICAL FLOOR: Crown Zellerbach's generous 5 ft 6 in. module, the most basic design factor in the building's concept, was chosen to satisfy the two primary space requirements, for partitioned executive office space and for completely open secretarial pool space. This is an elegant as well as a generous module, furnished with all services—light, telephone and air conditioning—so that partitioning can take place anywhere on the module lines or not at all. With all columns ranged along two sides of the building, interior space on all floors is clear. Heat absorbing green glass runs from ceiling to floor; the air conditioning unit, continuous on the perimeter, acts as a barrier to contact with the glass wall. On sunny days the south side offices need curtains because of sun glare. When curtains on all floors are drawn, the building has a completely different aspect—the dark green spandrels are set off by wide bands of white. Orientation of the core toward Market Street and the south cuts heat and glare from a part of the building. Although Crown Zellerbach now occupies about half the building's space, it will take over the rest eventually

Crown Zellerbach Building

EXECUTIVE OFFICES: The eighteenth floor is another atypical floor; the flexibility of the lower floors is not needed here because its uses are fixed and so are its office partitions. The executive offices for the company are located on this floor from which there are superb views of the Bay and the hills of the city. Offices all open onto a central reception area, a wide and handsome space which runs the length of the building and is the circulation for this floor. Secretaries' stations are located outside the various offices. The walls are of sand-finished plaster or of walnut veneer paneling. Ceilings are acoustical plaster with recessed down lights. Office files and other equipment are either in cupboards behind the wood paneling or set flush in the wall. Emil Norman's hollow wood horse stands on a travertine pedestal at the entrance to this reception area, backed by the travertine partition of the front reception room. Paintings on reception area walls and in offices are rented and change from time to time

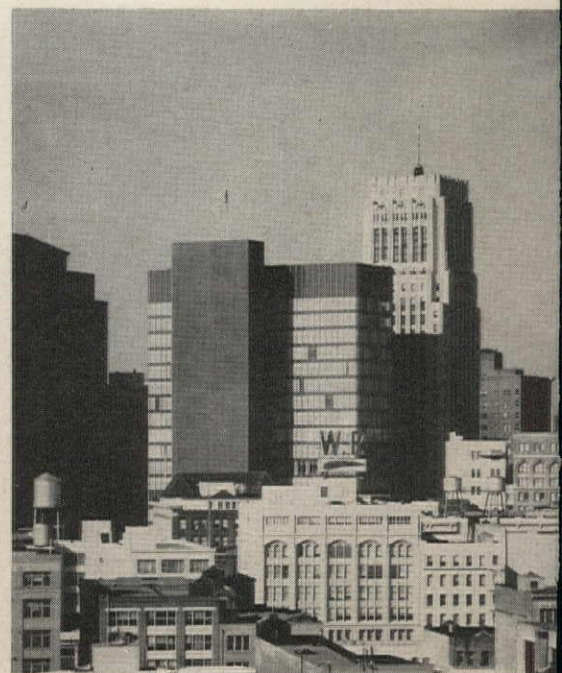




Although the arches at its base are the building's most striking street-level feature, the great gray solid rectangle, alike on all sides, that rises above the second floor is its most imposing aspect. The lightweight concrete bearing walls—half solid, half glass—are faced with dark gray polished granite, laid like cleats to make a subtle pattern on the surface and break the reflections of other buildings. The gray glass panels of the fixed windows, set in bronze frames, cover only half the wall area and rhythmically indicate the module—5 ft 1 in.—of this building's design. On the ground floor is commercial space for rent; on the second floor are the company's regional executive offices; the remaining floors (except for the fifteenth which has mechanical equipment) are for office rental



All John Hancock photos by Roger Sturtevant, except as noted



CROWN ZELLERBACH

John Hancock Western Home Office

ARCHITECTS:

Skidmore, Owings & Merrill, San Francisco

LANDSCAPE ARCHITECT:

Lawrence Halprin

CONTRACTORS:

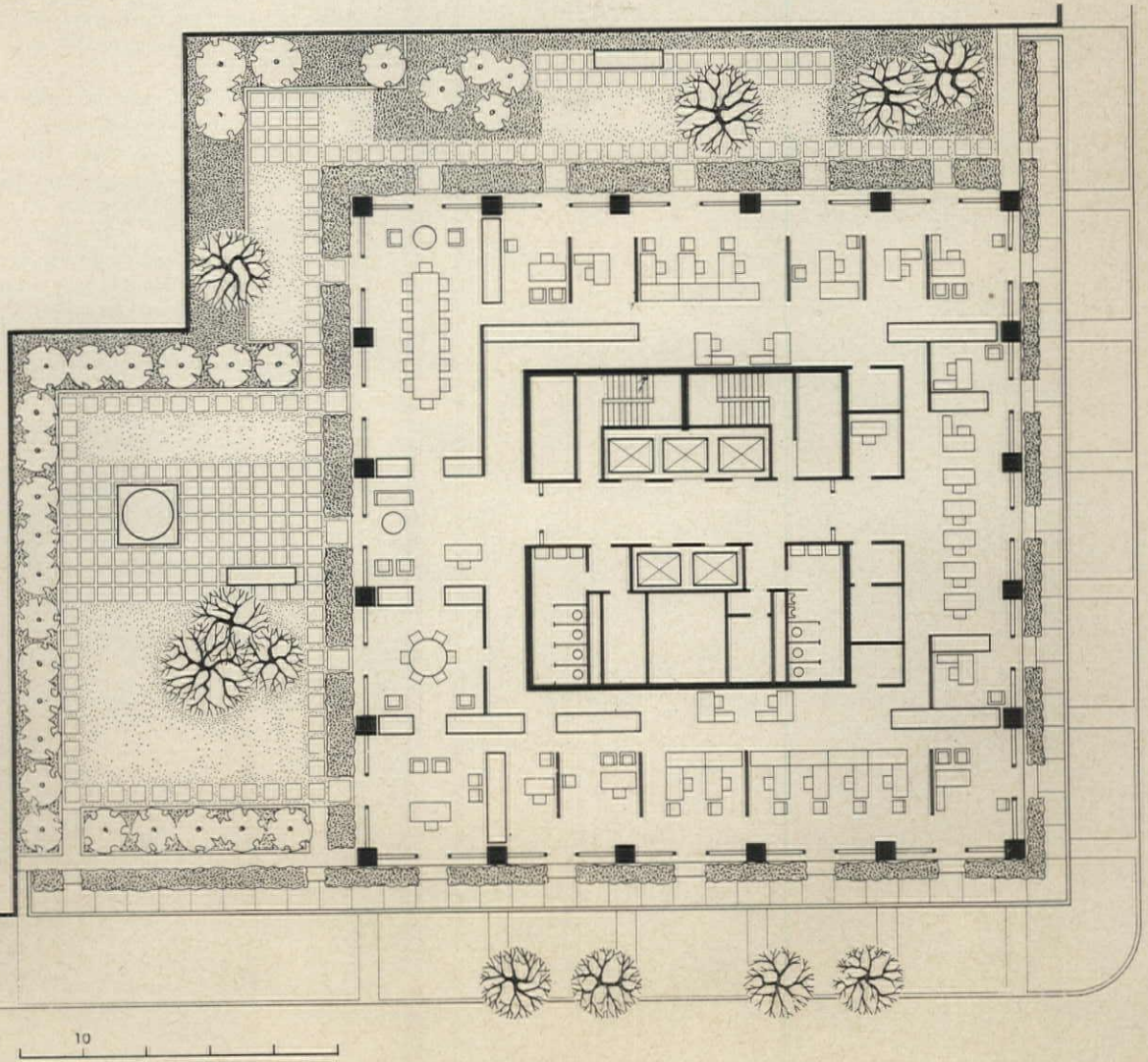
Cahill Brothers, Inc.

OWNERS:

John Hancock Mutual Life Insurance Company

The conservatism which the sober elegance of the new Hancock building implies has nothing to do with it as architecture. For although its concept is structurally traditional, this building is architecturally radical.* Within a known design approach—the bearing wall with holes punched in it is no twentieth century invention—it is a classic statement; its importance, however, is not that it achieves a notable effect within this approach but that it boldly proposes re-examination of this esthetic for forgotten or unsuspected principles. Whether consciously so designed or not, the Hancock building inevitably recalls the early skyscraper concept derived from the column; base, shaft, and cap. This building begins, continues and ends; its clear, precise architectural expression of these concepts is stated not only in the form given to each element but in the choice of materials for them: natural concrete for the haunched arches at the base and the flat plane of the parapet at the top, and highly polished dark gray granite for the 12 floors between. The arches at second floor level, through which are transferred to the columns below the loads from the exterior walls, make possible the openness of the company's executive offices. On this floor the 17-ft ceiling, formed by suspended vaults, echoes the arches outside. These vaulted forms, suspended from the flat structural surface above, do not deny their nature since they stop short of all main supports; but, like the balcony which runs around two sides of the building, cutting the line of the columns and the modest entrance, they will inevitably evoke discussion.

* Technical details of the design of the Hancock building appeared in ARCHITECTURAL RECORD, April 1959.



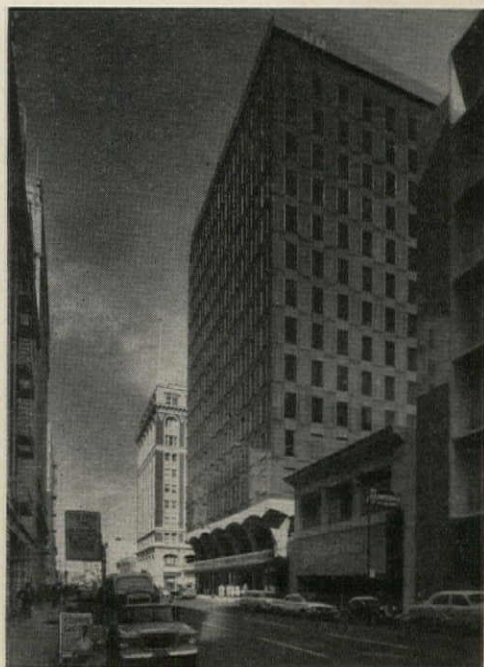
Morley Baer

JOHN HANCOCK



John Hancock Building

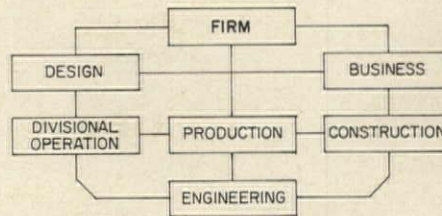
The haunched arches transfer the loads from the exterior bearing walls to the set-back columns at first-floor level. Their sculptural form, derived with strict honesty of purpose and means from the structural requirement, is responsible for the building's unique design expression. Along the building line, the recessed columns widen the sidewalk and set the building off even at that level; basically, however, this is a tightly conceived building on a restricted site. Setting the building back on the east and south sides at the second floor not only meets fire code requirements but surrounds it with light and air and makes possible the landscaped outdoor areas at the second floor level. Seen from either direction on California Street, the building's strong individuality is pleasantly assertive



ORGANIZATION FOR EFFICIENT PRACTICE

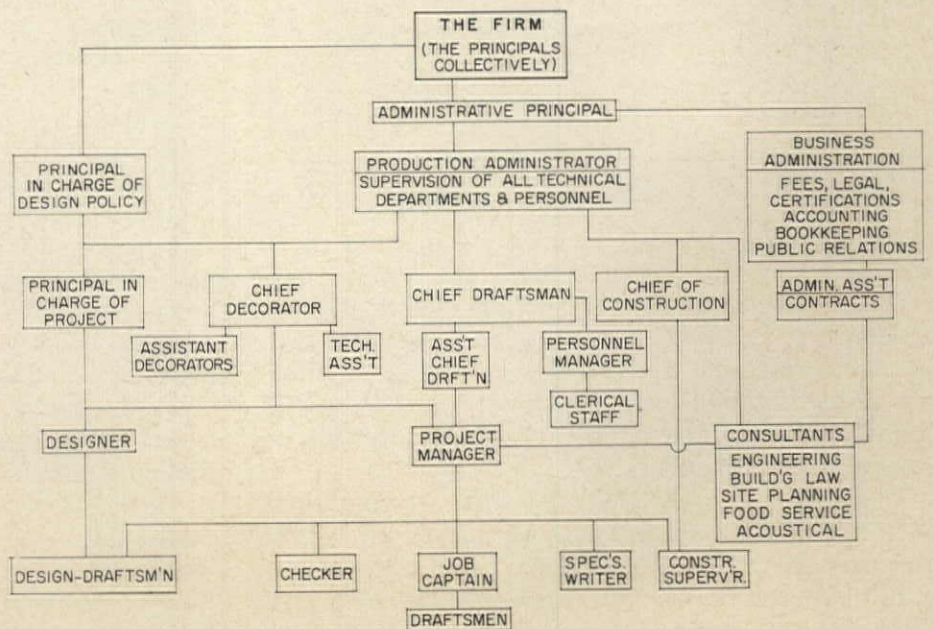
1. Eggers and Higgins Architects

For some months now, ARCHITECTURAL RECORD has been examining the role of the architect in our time. So far, the major concern has been with the Image of the Architect. In March, a new phase began with the publication of a number of letters from architects; in these, each told about his own approach to the realities of current practice. This month, the new phase continues by means of a study of the methods of organization now being used by one large firm to meet the demands of today. In succeeding months, methods of other firms will be presented.



ORGANIZATION CHART

Right, above: Early organization chart developed by the firm. Right, below: Chart in use during the years from 1951 until the current circular chart (page 209) has been developed



BASIC ORGANIZATION CHART

FOR LINE OF AUTHORITY READ CONNECTED POSITIONS FROM TOP DOWNWARD

Sunset Sr. High School
Poughkeepsie, N. Y.

November 30, 1959
B. N. Clark: ams

Sunset Sr. High School
Poughkeepsie, N. Y.

PROJECT NO. 59-1081

Partner-in-charge - R. Jackson Smith
Description of Project - Senior H.S. for 1200 students
Scope of Services - Complete

cc: Firm, Business Office, All Principals, Bulletin Boards (4),
Reception Desk, Production Administrator, Chief Draftsman,
File Dept.

Immediately after commissioning, a form similar to that above is prepared for each project and circulated within the firm. As may be noted, only the most important information is included. Posting on the bulletin boards assures that every employe, regardless of his position, is kept informed. The form below is typical of the continuing index maintained on all projects

February 15, 1960

ALPHABETICAL INDEX OF PROJECTS

	JOB. NO.
A	
American Office Building, NYC	58-922
American Elementary School, Washington, D.C.	58-965
Athletic Field, Raritan High School	56-755
B	
Baptist Church, Larchmont, N.Y.	56-865
Bayley School, NYC	57-935
Bay Shore Museum, Bay Shore, L.I., N.Y.	58-927
Bright Hospital, NYC	59-1035
Brooksville University Law Bldg.	58-906
Burnside Laboratory, Ithaca, N.Y.	59-1102
C	
Cathedral, Stamford, Conn.	58-983
Cook School, Greenwich, Conn.	60-1282

"The architect must be an astute businessman as well as a sensitive artist." This is the opening sentence on the first page of the Eggers and Higgins brochure. In order to accomplish these goals, the firm has set up methods for efficiently handling its internal affairs. Through organization for the business of architecture, the firm is able to devote more time to its art and science.

In a small office, the principal often assumes all of the responsibility for all jobs. He may retain all of the authority. In a larger office, for example one with two partners, each partner may assume a part of the overall responsibility and authority, yet each may be able to keep himself informed about most of the details of all projects. Decisions are relatively

easy since only the two principals are directly concerned in them. This is the position the firm of Eggers and Higgins was in at the end of World War II.

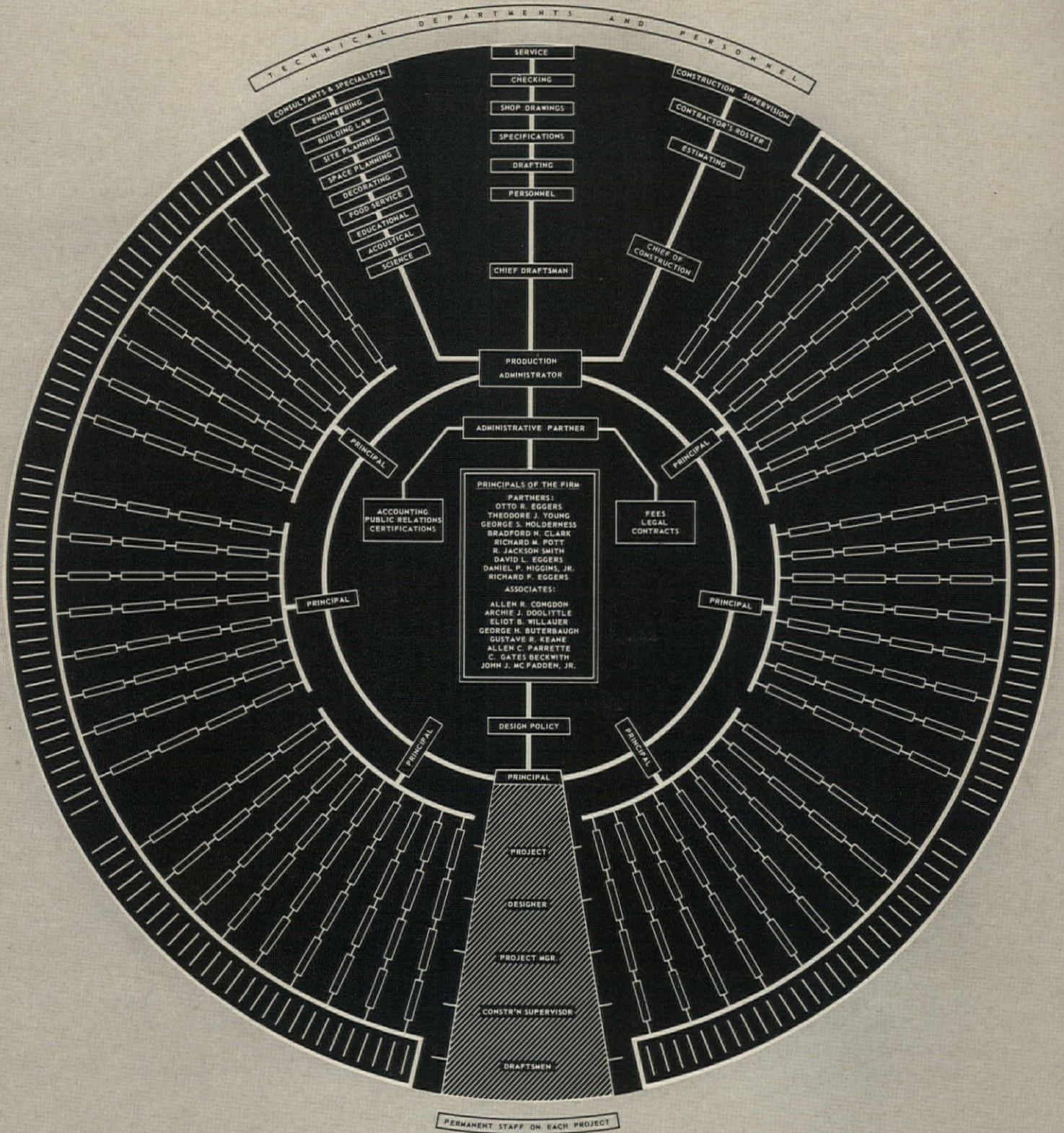
After the war, the firm experienced a period of rapid growth. In 1953, the principals decided that further growth without lowering the standard of their services was impossible, unless the firm had a sufficient number of principals to offer every client personal attention by a firm member. In order to accomplish this, Eggers and Higgins changed in that year from a dual to a multiple partnership. Today, the firm has nine partners and eight associates. It has more than 250 employes and has executed over 1000 commissions.

The growth of the firm was inevitably accompanied by organizational and production problems. The solution to these problems has been the development of production methods based on workable controls. The status of the firm's organizational thinking before 1951 is indicated in the smaller chart on the preceding page. David L. Eggers, then chief of production developed the larger chart in 1951. After 11 years with the firm as draftsman, designer, project manager, and construction supervisor, Gustave R. Keane was given the job, in 1956, of further developing the production system. He was given authority equal to his responsibility. From study at that time and through continuing re-examination and revision the present system has evolved.

The foundation of the production system is the policy formulated by the principals. Authority is delegated by the principals to individuals for particular jobs. To supplement the general policy, job descriptions have been prepared. These designate the duties, responsibilities, and authority of all positions in the firm. The key to all of this is the Circular Wall Chart.

In the Circular Wall Chart, the major lines of responsibility and authority are indicated. Relationships between various functions are defined. As may be seen, one principal, Bradford N. Clark, acts as the administrative partner. He has direct charge of the business affairs of the firm. Through him, policy matters are channeled to the production administrator. Another principal acts as chief of construction. Other principals act as administrative officers for projects. To them are assigned the permanent personnel required for the work. This team is supplemented, as necessary, by specialists on the staff or from outside the firm as circumstances warrant.

By the use of the production system, the Circular Chart and other forms, the firm has been able to virtually eliminate overlapping of responsibility and authority between individual jobs. There are fewer misunderstandings. The firm's capacity for new work, the availability of personnel and their capabilities, and projected future requirements may now be accurately determined. Continuing project responsibility is centered within small work groups, yet specialists are available when needed.



This chart is the heart of the system. In actual use, it is in the form of a large wall chart, equipped with metal card holders. Into these, the names and numbers of projects and of the people working on each, are inserted. The chart is kept current. In general, it works this way: the principals (center) determine policy. Design policy is translated through individual principals (inner ring) in charge of particular projects. These are indicated in the next ring. A designer, project manager, and construction supervisor (their names are on cards in the appropriate rings) are assigned to each job. The outer ring is symbolical only; draftsmen are listed in other records. Production policy, initiated by the principals, is translated through production administrator

EGGERS AND HIGGINS PRODUCTION REPORT							SHEET 25 OF 30		DATE		Jan. 1 - 1960			
PERS.	DWG.	COMPLETE	PCT.	BID DATE	G.C.	ABC - constr. co.	FIRM	T. J. Y.						
DFTSM HAVE	3	PRLM.	4-15-58	100	2-1-59	P.L.	---	P.M.	DICKENS					
NEED	---	WKG.	12-1-58	100	GRND. BRKG.	3-1-59	H.V.	---	ASST.	Land				
SPEC.	---	---	---	---	DEDICATION	5-1-60?	EL.	---	CONST.	Ehrlich				
CHK.	---	CONST.	4-15-60	85	---	---	---	---	STR.	W. & P.				
REMARKS							JOB N ^o		57		932			
Constr. approx. 3 weeks behind schedule due to lathers strike.							CONST. COST		\$10,235,800-		AWARD DATE			
											2-15-59			
PERS.	DWG.	COMPLETE	PCT.	BID DATE	G.C.	CBA CONSTR.	FIRM	R. J. S.						
DFTSM HAVE	---	PRLM.	1-12-58	100	7-15-58	P.L.	---	P.M.	ROMANO					
NEED	---	WKG.	6-1-58	100	GRND. BRKG.	---	H.V.	---	ASST.	PETRAGLIA				
SPEC.	---	---	---	---	DEDICATION	10-15-59	EL.	---	CONST.	O'HARE				
CHK.	---	CONST.	9-4-59	99	---	---	---	---	STR.	H. E.				
REMARKS							SITE: DARLING ASSOCIATES		JOB N ^o		57 933			
School fully in operation. Complete except for punch list, terms and guaranties, etc.							CONST. COST		\$4,172,400		AWARD DATE			
											8-3-58			
PERS.	DWG.	COMPLETE	PCT.	BID DATE	G.C.	---	FIRM	D. L. E.						
DFTSM HAVE	10	PRLM.	8-1-59	100	5-1-60	P.L.	---	P.M.	FRANZ					
NEED	2	WKG.	3-15-60	82	GRND. BRKG.	---	H.V.	---	ASST.	SATER				
SPEC.	2-1-60	---	---	---	DEDICATION	---	EL.	---	CONST.	---				
CHK.	1-1-60	CONST.	5-1-61	---	---	---	---	---	STR.	T. & F.				
REMARKS							JOB N ^o		58		982			
ON SCHEDULE ESTIMATOR'S CHECK OF 11-30-59 SHOWED ESTIMATER COSTS 4% BELOW BUDGET. OWNER DECIDING ON ADDING 2 STORY PARKING GARAGE							CONST. COST		\$2,500,000		AWARD DATE			

THE PRODUCTION ADMINISTRATOR

The roles of the production administrator are many and diverse. He is directly responsible for the coordination of all of the technical or production operations of the firm. In practice, this means that he is the person who schedules production and is responsible for maintaining the schedules. He assigns project managers and other personnel to individual projects.

The production administrator works with department heads to insure smooth communications between various departments. He prepares the production reports on the status of projects and makes estimates of production costs for unusual projects. When a question of the efficiency of production of a particular project arises, the production administrator makes a project analysis and has the responsibility for following through on his recommendations for correction.

Hiring and discharge of technical personnel is the responsibility of the production administrator. He also reviews the performance of personnel semi-annually and makes recommendations for raises and bonuses ordinarily granted at these times.

In addition to his administrative responsibilities directly related to the daily problems of production,

the production administrator has important technical duties to perform. He initiates research on new materials, methods, and systems. Information on the latest developments in building technology are assembled and distributed to key personnel by his office. Investigation of material or system failures are made and information distributed on methods of avoiding recurrences. The production administrator initiates the writing of guide specifications and approves them for office use.

Several miscellaneous functions are performed by the production administrator. Among these are negotiations with labor unions, consulting engineers, and other consultants. Other duties include serving on A.I.A., B.R.I., and Building Congress technical committees.

The production administrator is charged with the development of new ideas and revision of older procedures to meet changing demands. These include a cost control system, methods for sub-contractors approvals, a system for obtaining approval of public agencies for hospital projects, an office manual, and the like. There is even a file on languages; at last count, present employes speak some 30 foreign languages.

DATE: Jan 1, 1959

PROJECT MANAGERS & THEIR ASSIGNED PROJECTS

SK - SKETCH PHASE
 W - WORKING PHASE
 C - CONSTR. PHASE
 SH - SHELVED OR NOT STARTED
 OF TIME TO BE SPENT IN NEXT 2 WEEKS

PROJ. MGR.	PROJ. NO.	PROJECT NAME	PHASE	DATE OF COMPL. OF PHASE	REMARKS
Dickens	TJY 56-861	Natl. Trust Off. Bldg	C 10	10-31-60	
"	" 57-932	Mul. Insur. Home Offs.	C 30	4-15-60	
"	RJS 59-1081	Sunset H.S.	SK 10	3-1-60	
Doutney	KHF 58-983	New Cathedral	W 100	3-160	
Franz	BLE 58-982	New Research Bldg for General Phat.	W 10	3-15-60	
"	SH 59-1097	XYZ General Hosp	W 10	4-21-60	

DATE: 8-1-59

PROJECT NO. 58-982
 EST. CONSTR. COST \$,500,000
 CUBIC CONTENT _____

PROJECT General Pharmaceutical Co., New Research Center, Morristown N.J.
 FIRM MEMBER David L. Eggers

PROJ. MGR. Karl Franz CONSTR. SUPER. _____
 DESIGNER Paul Compt RENDERER Jimenez

GENERAL DESCRIPTION OF PROJECT New Research Center (4 buildings on new site controlling 22.5% facilities at various locations.) 2 story concrete, S.S. & Stone window walls, paneled conference rooms, separate power house

WORK SCHEDULE

EXTERIOR DESIGN DWGS., START	<u>2-1-59</u>	<u>2-16-59</u>	COMPLETE	<u>6-15-59</u>	<u>8-1-59</u>
RENDERING, START	<u>5-1-59</u>	<u>7-1-59</u>	COMPLETE	<u>8-22-59</u>	<u>7-20-59</u>
ARCH. INTERIORS, START	<u>10-1-59</u>	<u>9-15-59</u>	COMPLETE	<u>3-1-60</u>	

WORKING DWGS., START	<u>8-1-59</u>	<u>8-1-59</u>	COMPLETE	<u>3-15-60</u>	
SPECIFICATIONS, START	<u>2-1-60</u>		COMPLETE	<u>3-1-60</u>	
CHECKER STARTS	<u>1-1-60</u>		COMPLETE	<u>3-15-60</u>	
ADV. FOR BIDS	<u>3-15-60</u>		REC. BIDS	<u>5-1-60</u>	

NUMBER DRAFTSMEN REQ.	<u>8</u>	<u>5</u>	<u>8</u>	<u>12</u>	<u>12</u>	<u>12</u>
(PER MONTH)	<u>Aug-59</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan. 60</u>

DRAFTSMEN TO BE ASSIGNED

1. <u>Salfer</u>	<u>8-1-59</u>	2. <u>Jones, L.</u>	<u>8-1</u>	3. <u>Whitman</u>	<u>8-1</u>
4. <u>Pierce</u>	<u>9-1</u>	5. <u>Peters</u>	<u>9-8</u>	6. <u>D'Amadio</u>	<u>1-0-1</u>
7. <u>Heimke</u>	<u>10-1</u>	8. <u>Dural</u>	<u>10-1</u>	9. <u>Jausco</u>	<u>11-1</u>

CHECKER Allgier 1-2-60 SPEC. WRITER Fuller 2-1-60

SIGN CONTRACT	SCHEDULED	ACTUAL		
CONSTRUCTION STARTS	SCHEDULED	ACTUAL	COMPLETE	<u>5-1-61</u>
PUNCH LIST STARTS	SCHEDULED	ACTUAL	COMPLETE	
OCCUPY BLDG.	SCHEDULED	ACTUAL		
JOB COMPL. CONTROL SHEET STARTS	SCHEDULED	ACTUAL	COMPLETE	
FINAL PAYMENT MADE	SCHEDULED	ACTUAL		

The Production Report (left) indicates the status of all current projects. Each principal receives a copy of the entire report listing all of the firm's jobs. At monthly intervals, the principals note on their copies the changes in status of their own jobs and return the forms to the production administrator. Changes are then transferred to the master and revised copies are returned to the principals. Current lists of the jobs assigned to project managers (above), designers and supervisors are maintained. A report (right) on schedules, estimates of personnel required, and the like is prepared for each job, soon after it is received, by the principal in charge, and sent to the production administrator

THE PRODUCTION SYSTEM

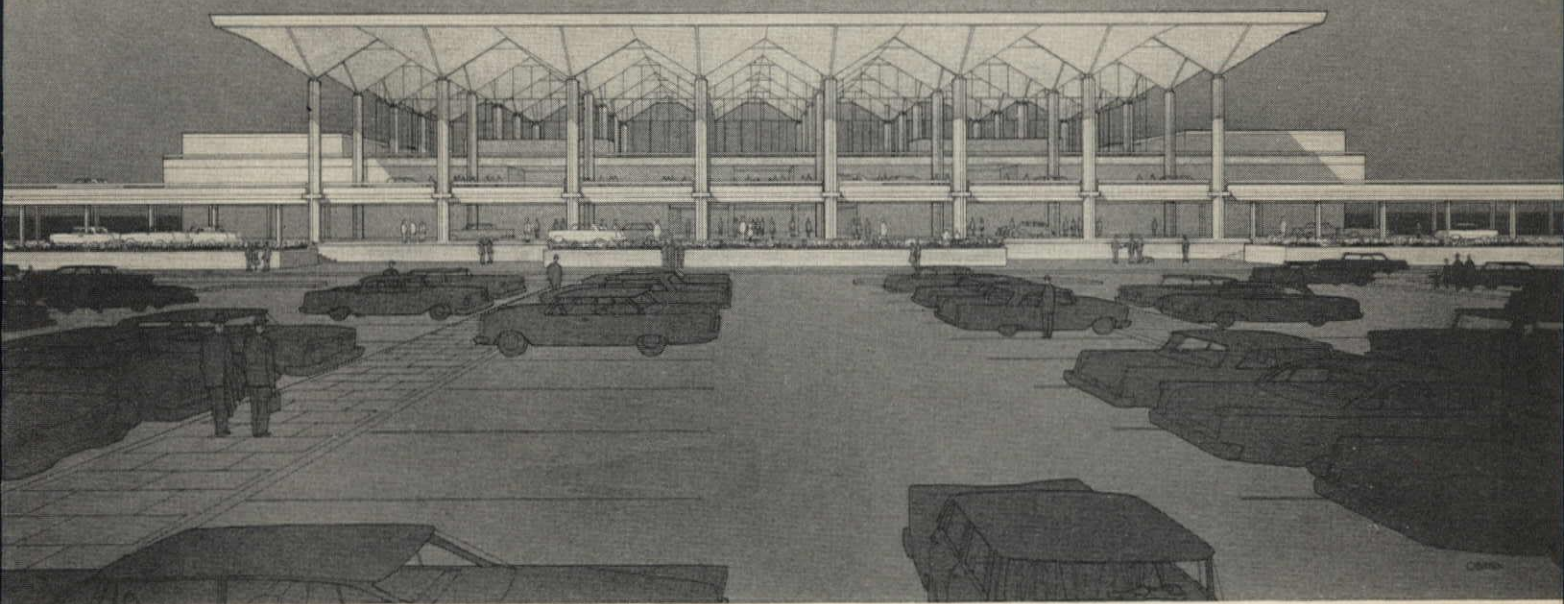
When an individual commission has been received, the first step in putting the production system into operation is the appointment of a principal as overall administrator for the project. He is chosen by the firm on the basis of his knowledge of the building type and availability. Soon after this, the administrative partner issues form no. 1 (top, page 208) giving the broad particulars of the project and its number. Project is entered in Alphabetical Index (page 208), on Production Report (across page), and on the Circular Wall Chart (page 209). At this stage, little more is known about the project than its name, location, and job number, the general building type, the scope of the services to be performed, and the principal in charge.

After analysis of the project and necessary conferences with the client and others, the principal in charge of the project completes an estimate of the production schedule and manpower requirements for the work (above, right). This form contains considerable data on the timing of the project, estimated dates for the completion of various phases and of construction, and personnel information. The form is submitted to the production administrator. The information is then transferred to the Production

Report and to the Wall Chart. If circumstances require, this form may be revised later to reflect extreme changes.

The Production Report is kept up to date at monthly intervals. Each principal notes on his copy of the form current information on his own jobs. A space is provided for this purpose under each percentage complete block and to the right of the remarks block. Corrected forms are submitted to the production administrator, who then has all information transferred to the master. This is duplicated and a current copy is distributed to all principals and other key personnel. Each of the principal's jobs are color coded to expedite easy identification.

A number of auxiliary forms and charts are used for various specialized purposes. One of these is the project manager work load list (above, left). By means of this list, the production administrator readily keeps track of the assignments of the project managers. Thus, he has a quick and efficient means of determining the appointment of these people to new projects. Similarly, lists are maintained of designers, construction supervisors, and other key personnel.



*Problem: an airport meeting the needs of
growing numbers of passengers, flying
increased air-miles, in jets.*

*Memphis Airport: a bold concept, designed
for passenger convenience and
operational efficiency*

ARCHITECTS: *Mann and Harrover*

AIRPORT CONSULTANTS: *Landrum and Brown*

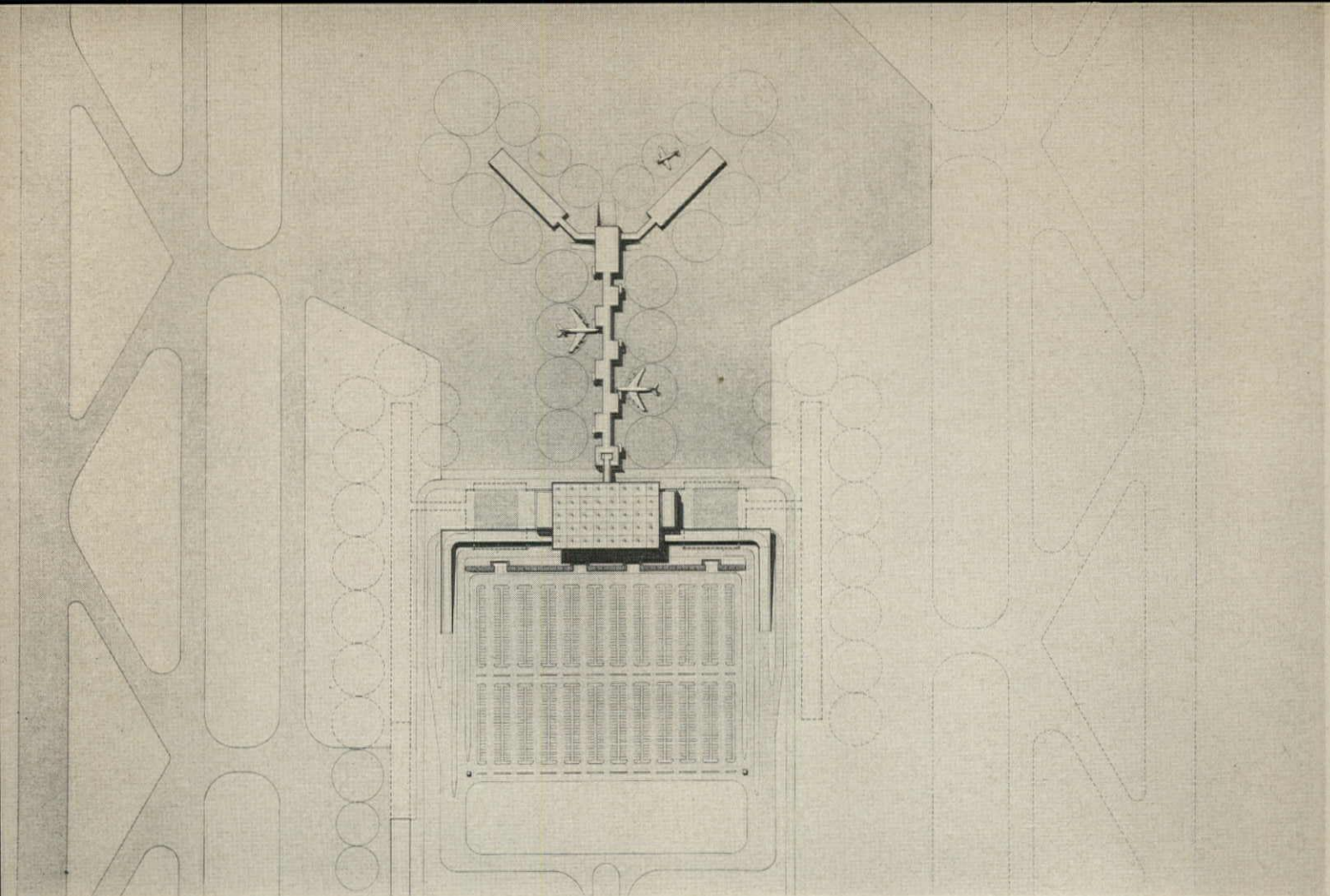
STRUCTURAL ENGINEERS: *S. S. Jenworthy & Assoc.*

MECHANICAL & ELECTRICAL ENGINEERS:
Allen and Hoshall

SIGNS AND GRAPHICS:
Architectural Graphics Associates



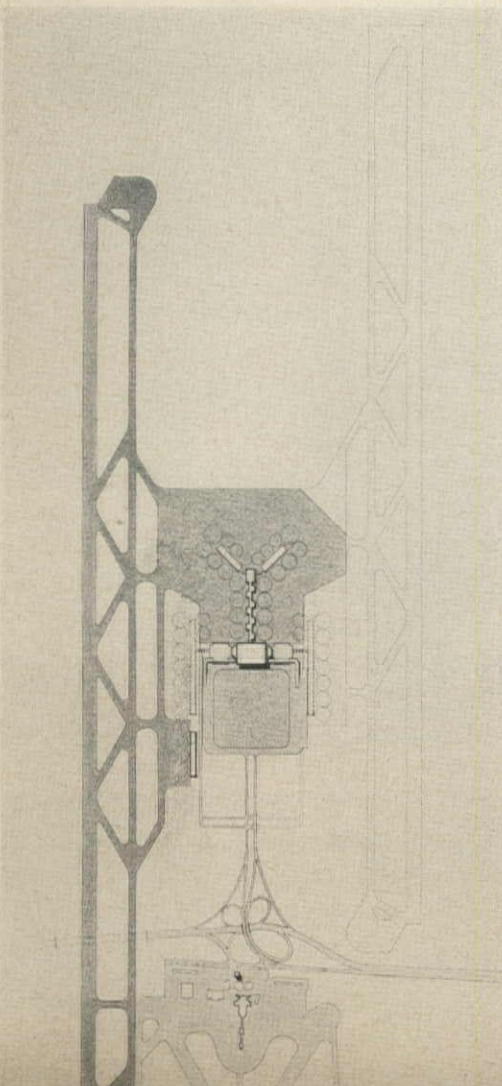
MEMPHIS AIRPORT

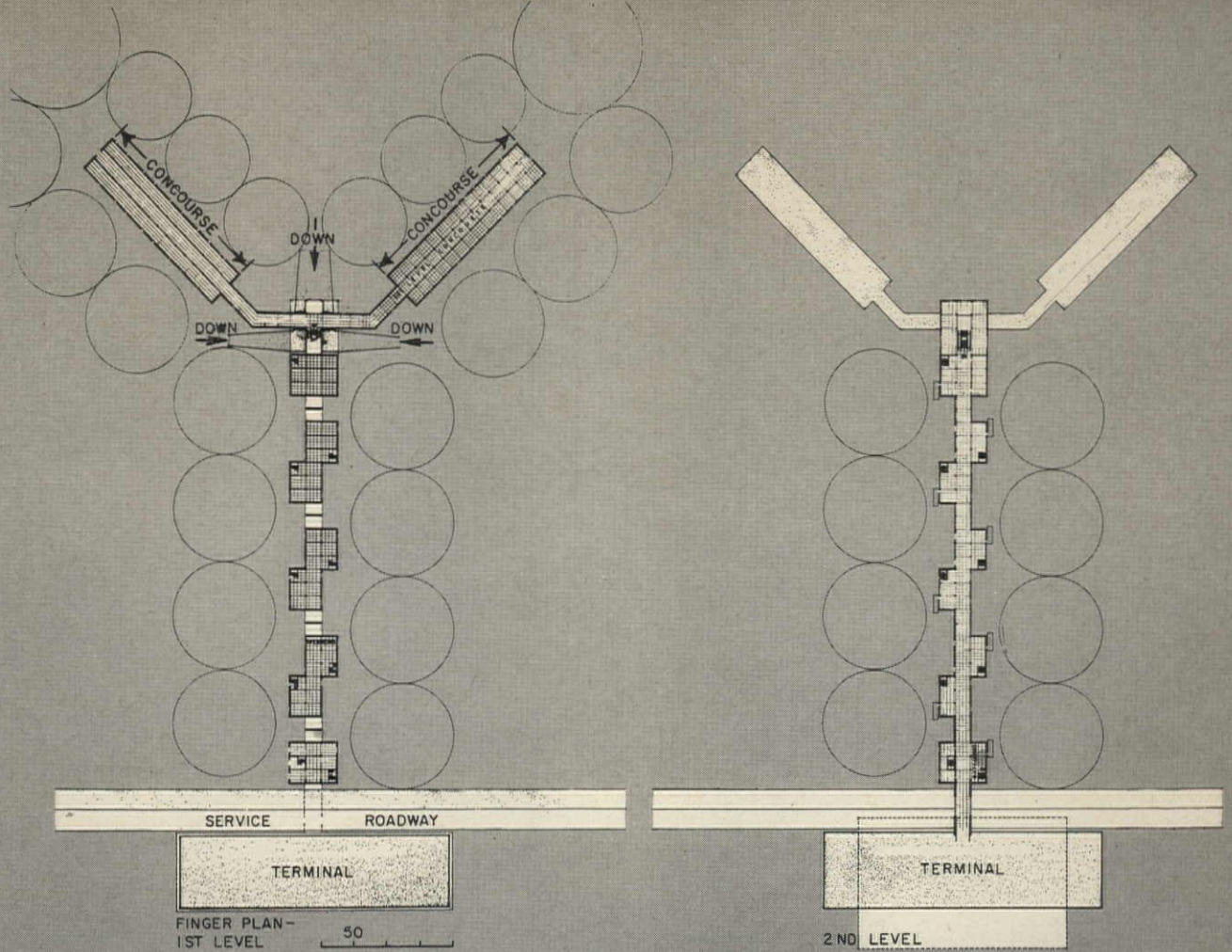


AIRPORT SITE PLAN (left): the design of the Memphis airport complex is based on projected requirements for 1970. It will serve Memphis and the approximately 2.75 million people in its market area. Projections indicate that this means an enplaning passenger volume of about 768,000 people per year. Types of aircraft using the facility will include small and medium-sized jets and conventional airplanes. Traffic will include major airlines, feeder airlines, and non-scheduled flights. In the initial stage, 22 to 24 gate positions will be provided

PASSENGER TERMINAL SITE PLAN (above): in the front of the terminal building is shown the 1100 car parking lot. Split into sections, it provides for short-term public parking near the building, longer-term and employe parking further from the building. On the air side of the terminal are the two-level finger and the apron, with aircraft positions indicated by circles. To the right and left of the main building, future sub-terminal structures are indicated by dash lines. Addition of these would approximately double the gate positions

FINGER PLANS (opposite page): the upper level is directly connected with the main passenger level of the terminal building. On either side of the concourse, 24- by 60-ft. gate lounges are shown. These will be shared by the major jet airlines serving Memphis. Directly below these, on the first level, are located the operations areas for these airlines. Stairs lead from the second level to the apron for use of airlines or for passenger loading if required. The one-level concourse at the end of the finger will be used for loading of smaller aircraft





Memphis Airport

This airport was planned for the future. Rapid change and growth are the outstanding characteristics of aviation. In order to have validity and to function efficiently, airports and airport buildings must reflect these attitudes. The new problems brought by jets—fumes, blast, noise—must be solved. Passenger walking distances are increasingly important as the volume of traffic increases. Passenger comfort and convenience have been markedly improved in the air, while seemingly becoming ever worse on the ground.

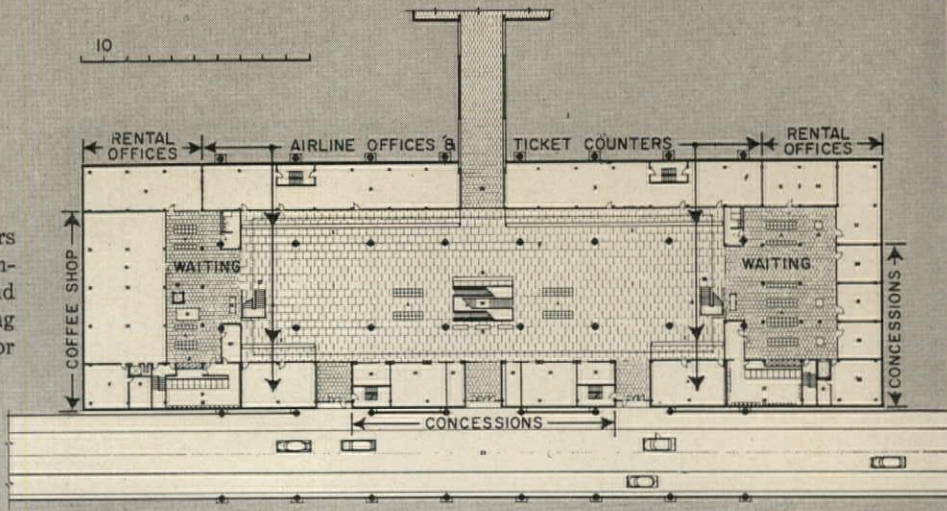
The Memphis passenger terminal design is based on a projection of the requirements of the city and its surrounding area in 1970. The scheme allows for doubling the airport capacity in the years following 1970. Basically, the terminal scheme is two-level. To begin with, all passenger traffic will probably be handled through a Y-shaped finger, loading directly to the aircraft. If growth in volume dictates, buses or mobile lounges may be added, in the future, to augment the initial facilities. Thus, it will be possible to segregate various types of traffic for greater efficiency, when the volume becomes large enough to justify it.

Each city and each airport has its own specialized problems. Aviation is rapidly changing. These facts were immediately evident to the architects when they began their studies for Memphis. Work-

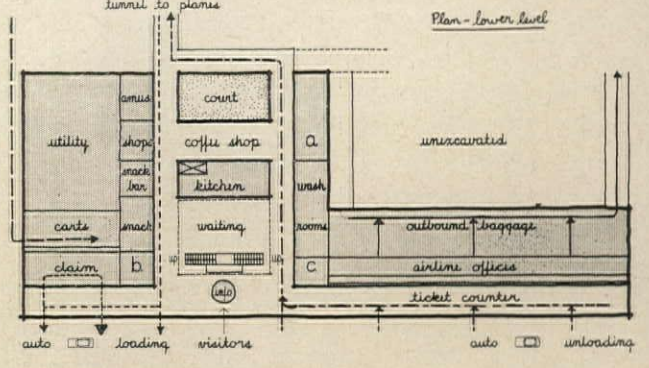
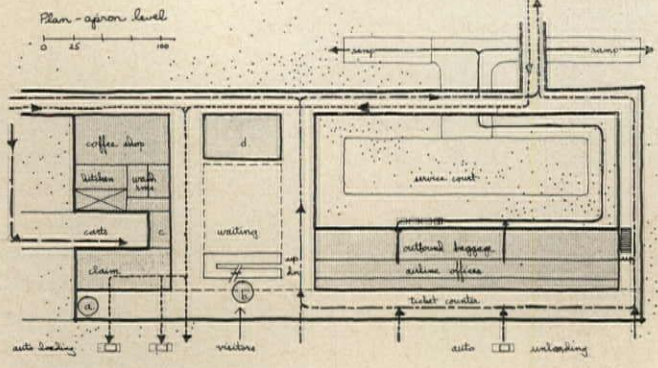
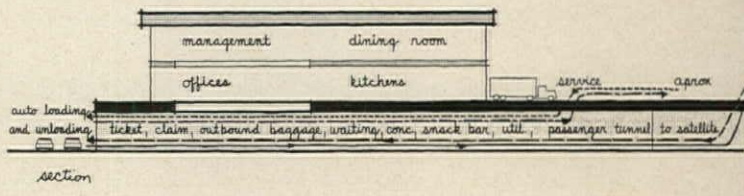
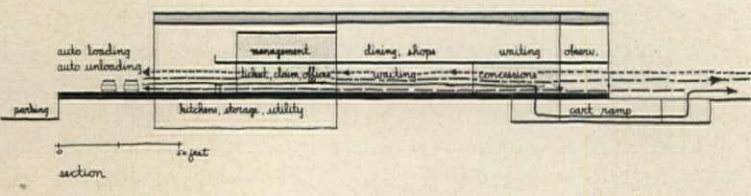
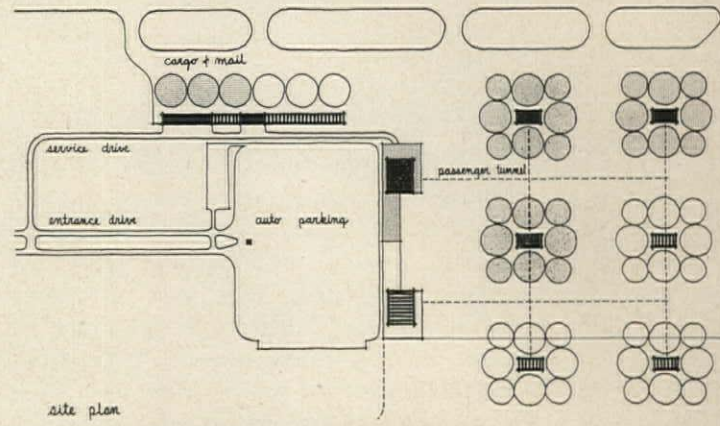
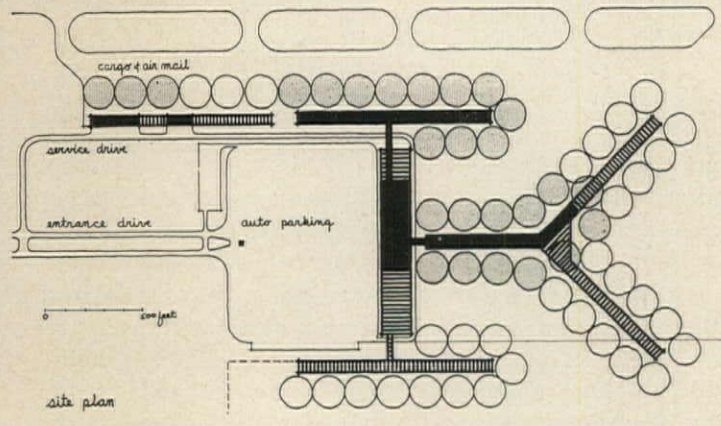
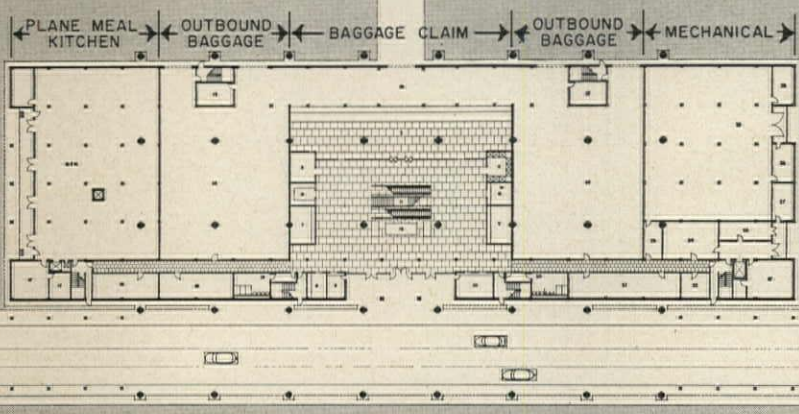
ing closely with the airlines that will use the terminal, the city Airport Commission, and the airport consultants, the architects went through an extended, and unusually complete, period of data-gathering and research. They assembled a library of information and visited most of the recent airport buildings in this country. Discussions were held with airport managers, pilots, airport architects and engineers, aircraft manufacturers, and any other individuals they could find who might have information of value. Careful analysis of the collected information led to schematics of five general types; a single-level terminal and fingers, a bus or mobile lounge scheme, satellite buildings with tunnels, a two-level scheme with single-level auto traffic, and a two-level type with auto traffic on both levels.

After comparative study, the last scheme—a two-level terminal, with auto and pedestrian traffic on two levels—was chosen. It was felt by the architects, their consultants, and the other organizations concerned that this scheme best suited the particular problems at Memphis, the traffic volume expected, and the budget available. In addition, the scheme has quite a bit of flexibility. In the future, additional fingers might be added; buses or mobile lounges may be used; satellites may be constructed; or some combination of these may be employed.

MAIN FLOOR: Enplaning passengers enter lobby on this level. Ticket counters, entrance to plane concourse, and concessions of importance to enplaning passengers are included on this floor

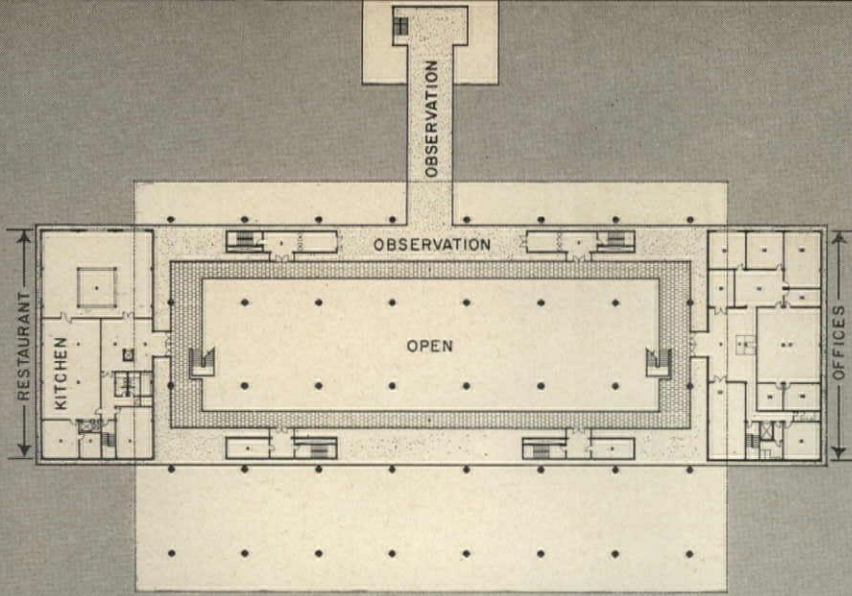


GROUND (APRON LEVEL) FLOOR: Facilities important to deplaning passengers and operational spaces are located on this floor. Escalators and stairs are provided for access to main floor above



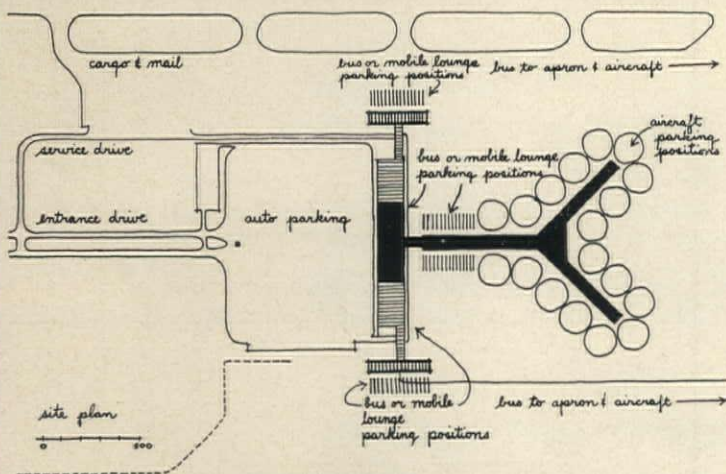
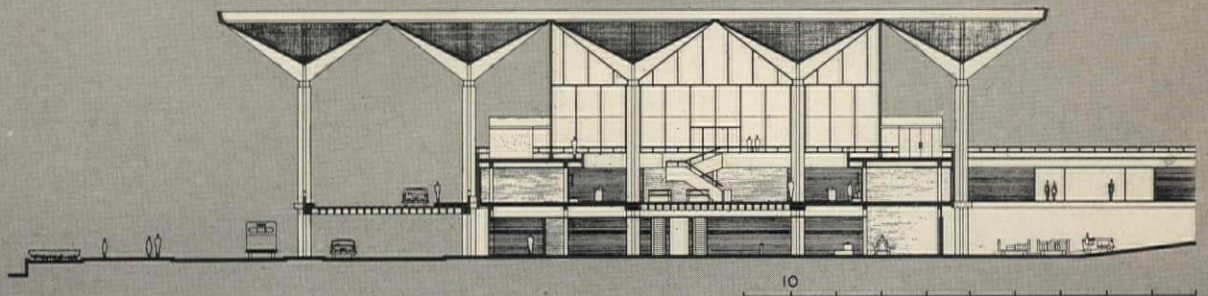
ONE-LEVEL FINGER SCHEME

SATELLITE AND TUNNEL SCHEME



MEZZANINE FLOOR: Areas of lesser importance to passengers are located on this floor. These include airport offices, restaurant and kitchen, private dining, conference rooms and observation area

TRANSVERSE SECTION



Memphis Airport

The basic concept of the terminal building is that of a great hall, two stories high with a mezzanine at the second level. Below this is the ground floor, on a level with the apron. Major facilities for enplaning passengers are concentrated on the main floor of the great hall. Around its perimeter are located the various auxiliary facilities required for the convenience of the passengers. Ticket counters are, for the most part, located directly in front of the passengers as they enter the space, along one wall. Moving stairs are available in the center of the space for ease in reaching the ground level. The entrance to the finger is centrally located between the ticket counters on the air side of the lobby. Passenger traffic flow is direct, unimpeded, and logical. On the mezzanine are located such spaces as the restaurant and spectator gallery. Thus, functions not directly related to the needs of the passengers are separated but easily available.

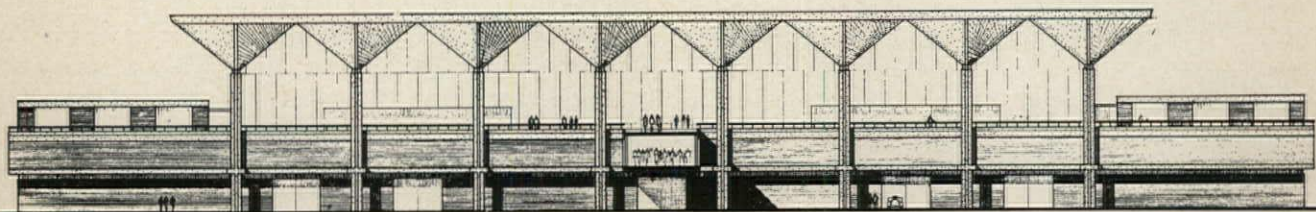
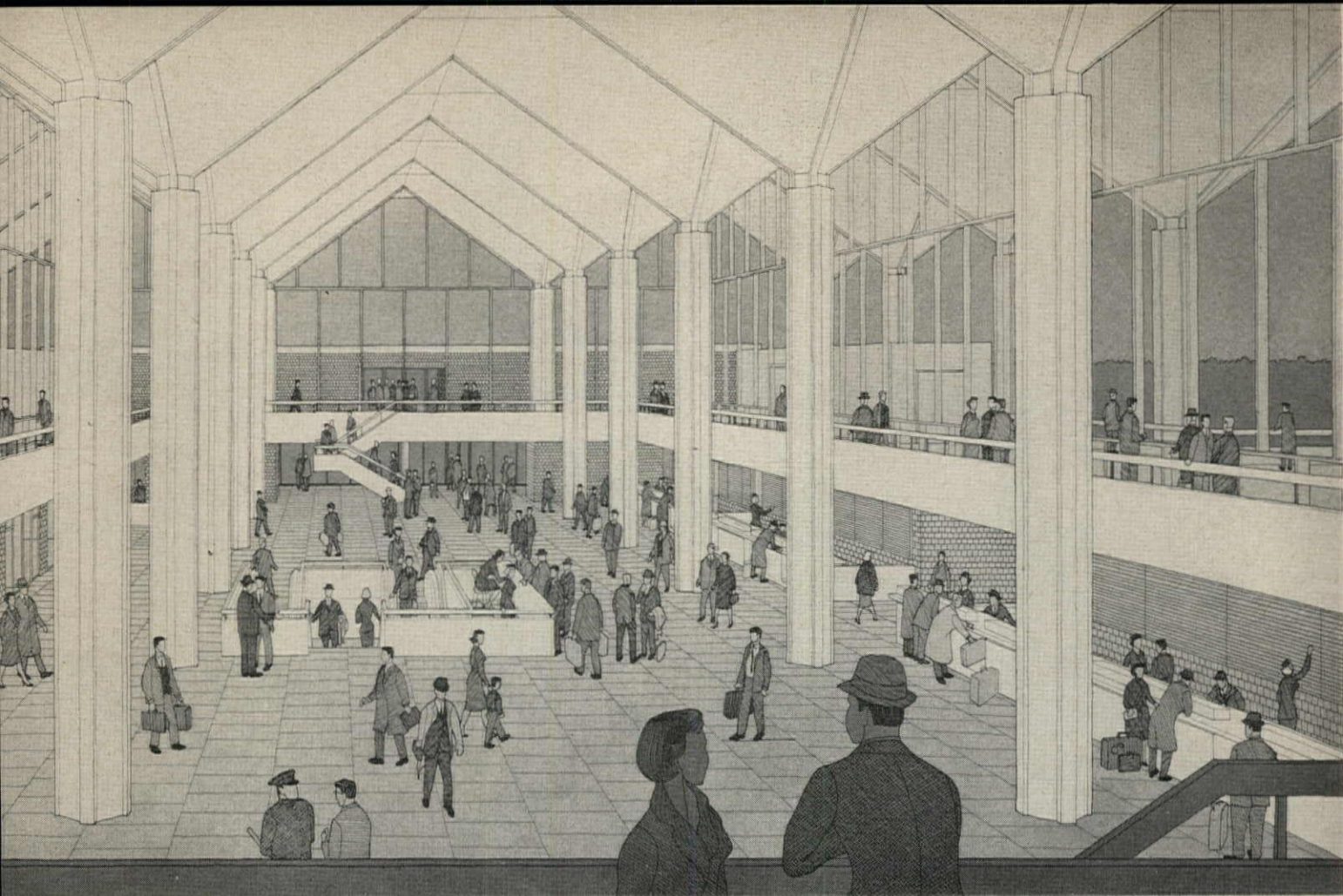
On the first level are located facilities required by the deplaning passengers. These passengers enter the building, on this level, from the finger concourse and may proceed directly to the baggage claim area. This is centrally located and easily identifiable. They may then go straight to the front of the building to board ground transportation. Vehicles for enplaning passengers approach the building via the ramp on the main level; those for deplaning passengers are handled on the ground level.



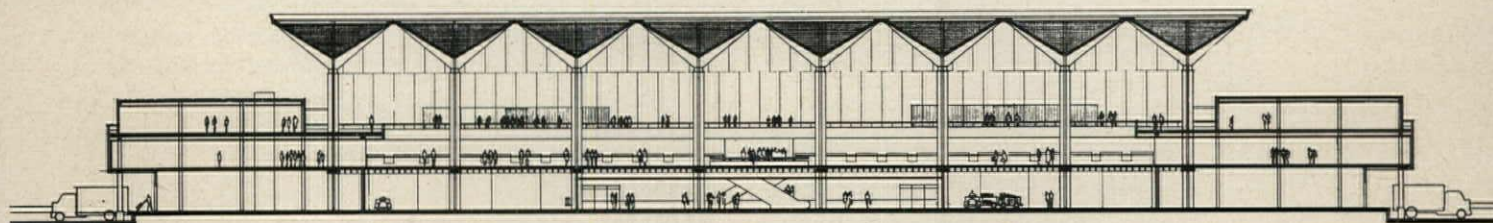
FINGER AND BUS/MOBILE LOUNGE SCHEME

Legend: — ENPLANING PASSENGERS — ENPLANING BAGGAGE
 - - - DEPLANING PASSENGERS - - - DEPLANING BAGGAGE

A large number of overall schemes for the airport were studied by the architects. On the opposite page are shown two of the schematics developed. Variations also studied include a two-level finger, bus or mobile lounge, and a number of combination schemes. The one chosen is the two-level finger. However, as shown above, considerable study has been given to the possibility of adding to this buses or mobile lounges, if experience and growth of the airport indicate the need. The system chosen has been kept extremely flexible, to allow combinations of buses or mobile lounges with the finger scheme as the various future stages of the terminal are built



SOUTH ELEVATION



LONGITUDINAL SECTION

Top: view of the great hall of the terminal building. Shown are the second floor (the main passenger level) and the mezzanine. In the center may be seen the moving stairs leading to the ground level. On the right, the airline ticket counters are located running along the entire length of the wall. In the center of the hall, on the left is one of the entrances from the ground side of the terminal; directly opposite this, on the right is the entrance to the main concourse or finger. On the mezzanine, to the right, is shown the spectator gallery. This continues out onto the top of the finger. Elevation shows terminal as seen from apron on air side of building. Opposite page: aerial view shows service road in front of terminal at ground level, passenger road at second level.

Note: Allen and Hoshall are project engineers for the entire airport, as well as mechanical and electrical engineers for the terminal building. Important contributions to the building design were made by the following members of the staff of the architectural firm: Robert Ernest, Mel O'Brien, Jack St. Martin, Donald Winklemann



Memphis Airport

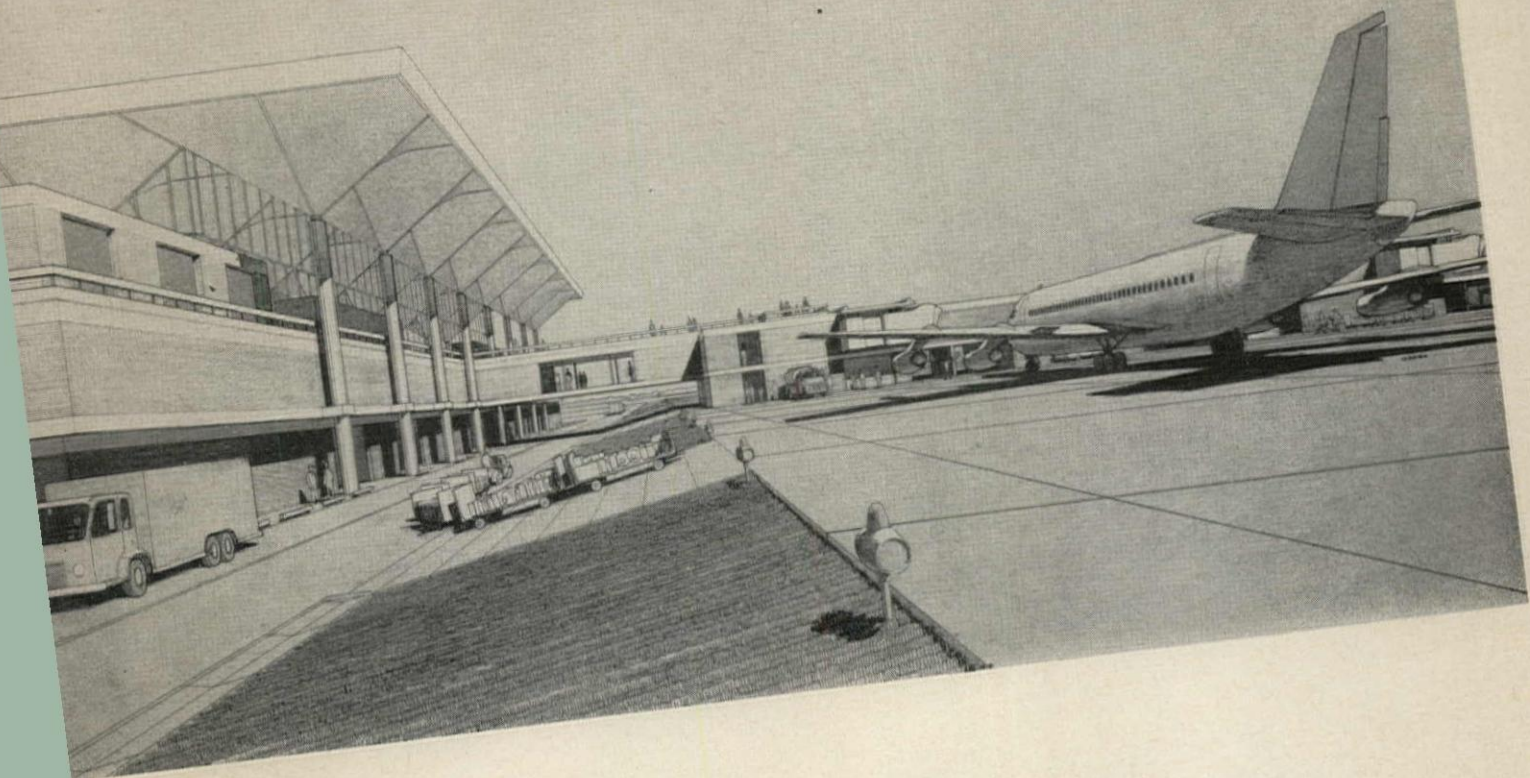
After the selection, by the Memphis Airport Commission, of the two-level scheme from among those studied, the terminal building was designed. Study indicated that the main floor (second level) should contain the airline ticket counters and offices, a coffee and snack bar, major waiting rooms, and other public facilities needed primarily for the convenience of enplaning passengers. The ground floor would contain the facilities for deplaning passengers, including airline baggage rooms, baggage claim areas, the airplane meal catering kitchen, utility rooms, and the like. The next step was the decision to include a mezzanine floor. In this way, functions not directly related to the requirements of passengers could be provided for in a convenient place, without disrupting the smooth flow of passenger and airline operation traffic patterns. The architects placed on the mezzanine the main dining room (most customers were found to be other than passengers), spectator gallery, management offices, and various secondary concessions.

The architects first studied islands placed within the building, each containing one or more of the functions of the terminal. In this concept, circulation patterns moved around and between the various islands. Further inquiry indicated that a preferable treatment would be a large open space in the center of the building, with the various functions

placed around it against outside walls. Thus, the decision was made to base the overall planning of the terminal on the concept of a great hall. In this scheme, the mezzanine becomes a gallery or balcony surrounding and overlooking the interior space.

A major problem was the organization of ground transportation to and from the building. Three general solutions to this problem were studied—driveways as separate elements of the design, incorporation of the driveways into the building as a solid element related strongly to the building and to the ground, and the incorporation of the driveways into the mass of the building proper. The last-named was chosen because the architects felt the solution was practical, functional, and unified the entire building concept.

Another important problem solved in the design was the relationship of the main building to the finger. Analyses of the problems of jet blast and the like led the architects to design a straight-forward and logical finger, which directly expresses its function. The hyperbolic paraboloid roof on the main building was chosen because engineering studies indicated that it would be economical and functional, architectural studies that it would express the design requirements and concentrate visual interest on the main element of the design—the terminal—rather than of the finger.



Memphis Airport



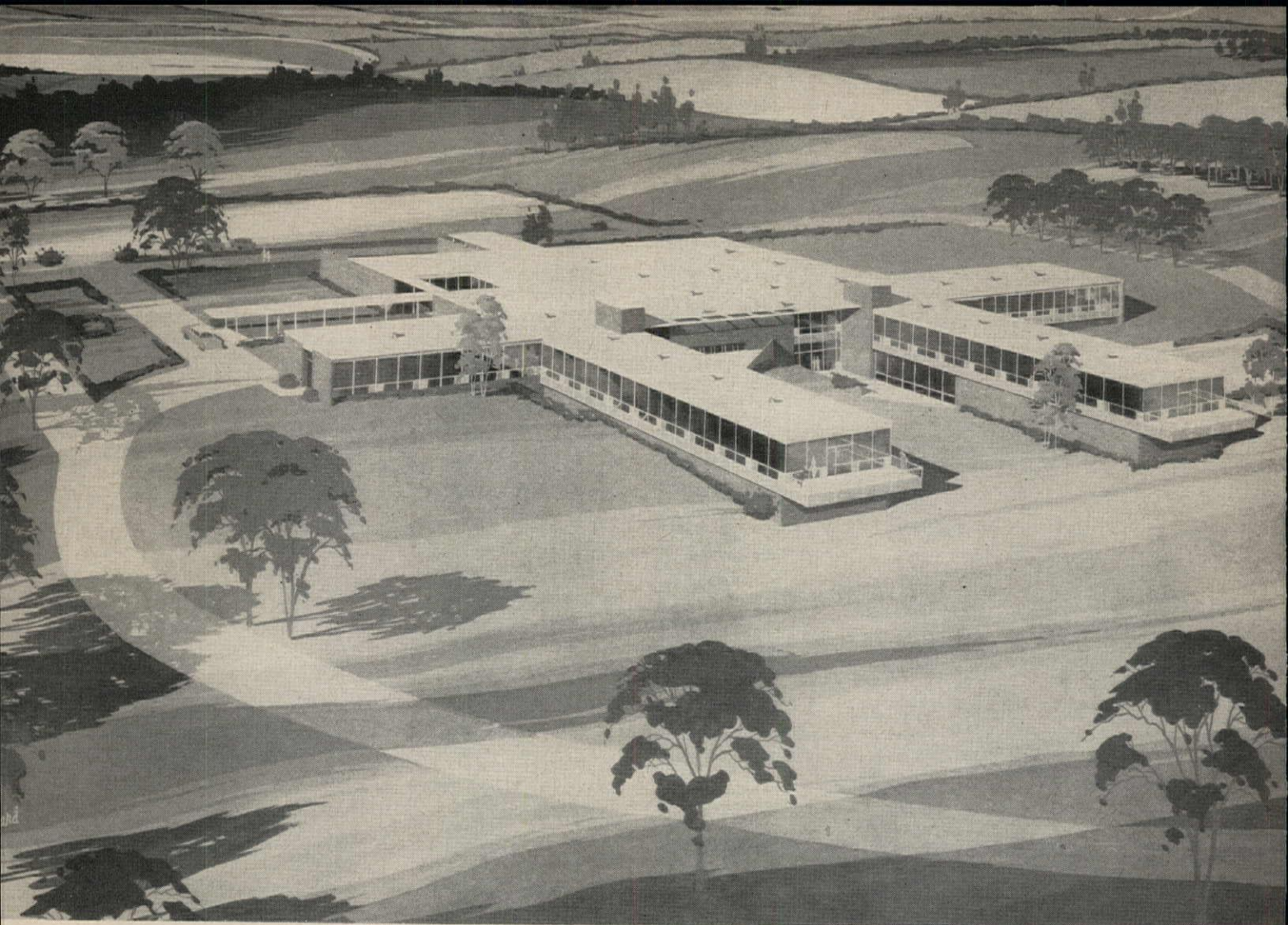
Above: view of the terminal and finger, from the aircraft parking apron, showing activities which will take place on various levels of the building and apron. The airport signs shown on this page and on page 213 give some indication of the attention paid by the architects to the analysis and planning of the airport and to all of its details. At an early stage, consultants were engaged to make a thorough study of the signs and other graphics. The results are signs that express their messages directly and simply. Most of them could be used in any airport, or for that matter, in other commercial buildings or building groups. The signs are unified through the use of a 3-ft square, divided as required into thirds or combinations of thirds. Colors will be standard in all signs. The letter faces (German Standard bold caps and Clarendon bold numerals) will be the same for all signs. The graphics system should go a long way toward reducing circulation problems in the airport. In addition, it should help in the overall unification of the entire airport scheme. Signs and Graphics: Jane Davis Doggett, Architectural Graphics Assoc., Dorothy Jackson and Michael Rolston

BUILDING TYPES STUDY 281

®

HOSPITALS

The hospitals in this study are, in principle, based on the planning criteria developed by the U.S. Public Health Service or (in the case of the Canadian example) its counterpart in Canada, the Ministry of Health. Yet none of the architects for the hospitals have slavishly followed the criteria. Each of the examples exceeds the criteria minimums in most respects. Each hospital is an individual solution to the particular problems faced by its architects. Thus, one of the hospitals is a high-rise building and contains unusually complete research facilities. Another, of approximately the same size, is essentially a one-story hospital. A third example was planned around a highly organized supply system. Another is particularly noted for its large and complete emergency suite. The last is an out-of-the-ordinary combination of a general hospital and a rehabilitation center. All of the hospitals make assets out of site characteristics which might otherwise have been liabilities. Though all of the hospitals are based on common criteria, the design of each is highly specialized and derived from its own location, site, functions, and the purpose of its architects.



Hospital Planned For Unusual Emergency Requirements in Industrial Area

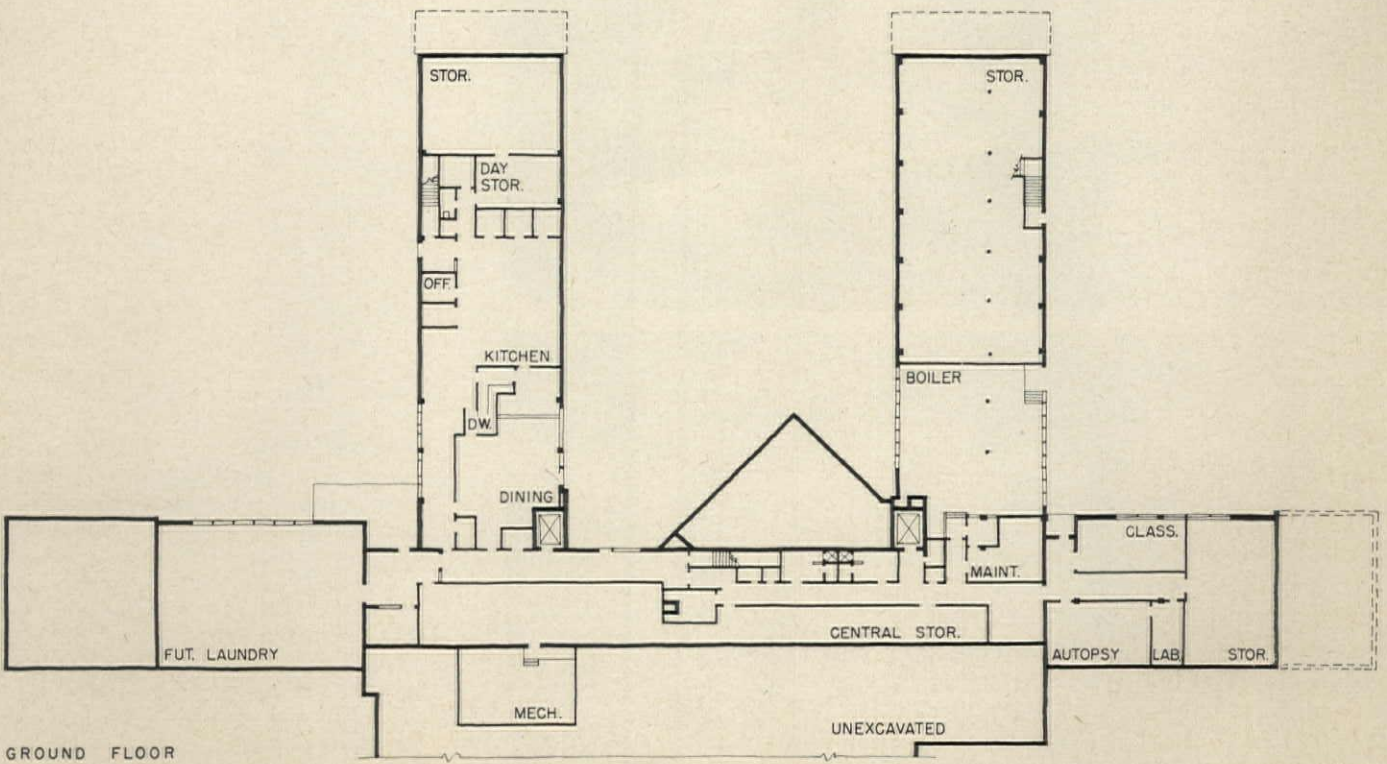
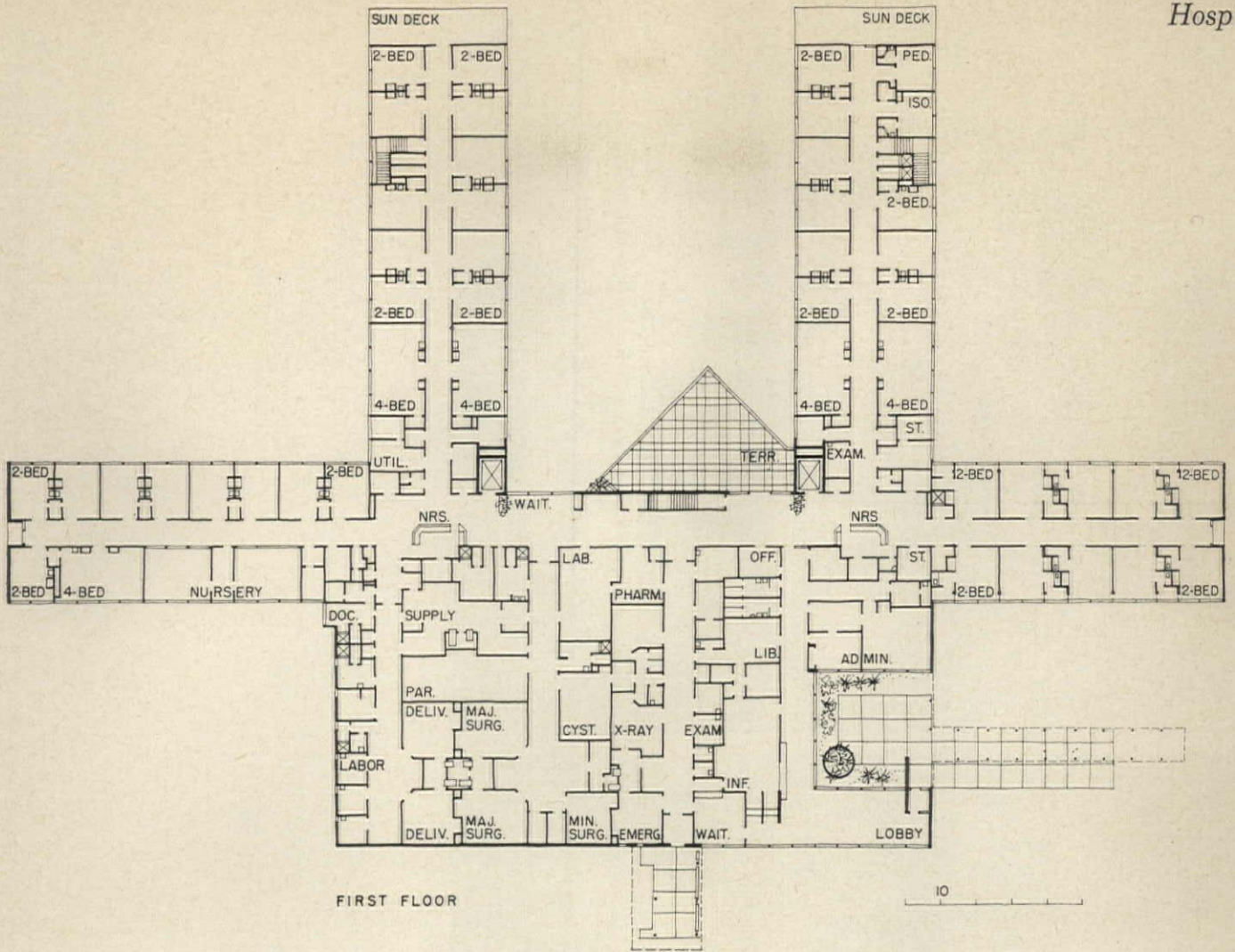
NORTH KANSAS CITY
MEMORIAL HOSPITAL,
NORTH KANSAS CITY,
MISSOURI

ARCHITECTS & ENGINEERS:
Hewitt and Royer;
Harry L. Wagner, Associate;
F. Wm. Shuler,
Supervising Architect

CONTRACTOR:
Bennett Construction Company

A major problem which was solved in the design of this 100-bed general hospital was the abnormally large number of accident cases to be treated. The number of emergency cases of this type is due largely to the industrial nature of the surrounding area and the frequency of auto accidents occurring on the nearby highways. To facilitate the efficient handling of accident cases, the emergency entrance is prominently located, and easily identified. The area allotted to this section is larger than might otherwise have been provided. For purposes of control, it is located in a position adjacent to the central business office. Although the number of outpatients is relatively small, facilities for them were also located near the business office, thus facilitating treatment. Double-loaded corridors are used throughout the surgery, delivery, and outpatient areas in order to minimize patient circulation between these and other areas in the hospital. Plans include provisions for eventual expansion to 250 beds if required.

A steel frame structure, with concrete floor and steel roof deck, is used in the building. Exterior walls are brick with a curtain wall of porcelain enamel panels and glass in aluminum frames. Ceilings throughout are finished with acoustical plaster. Interior partitions throughout the entire building are metal studs with plaster.



As may be seen in the plans, the scheme for this hospital involves a one-story building with a basement, part of which is unexcavated. All patient facilities are located on the main floor. Nursing wings are arranged for segregation of different types of patients. The two nurses' stations are placed so that each has control over two of the four nursing areas. In this way,

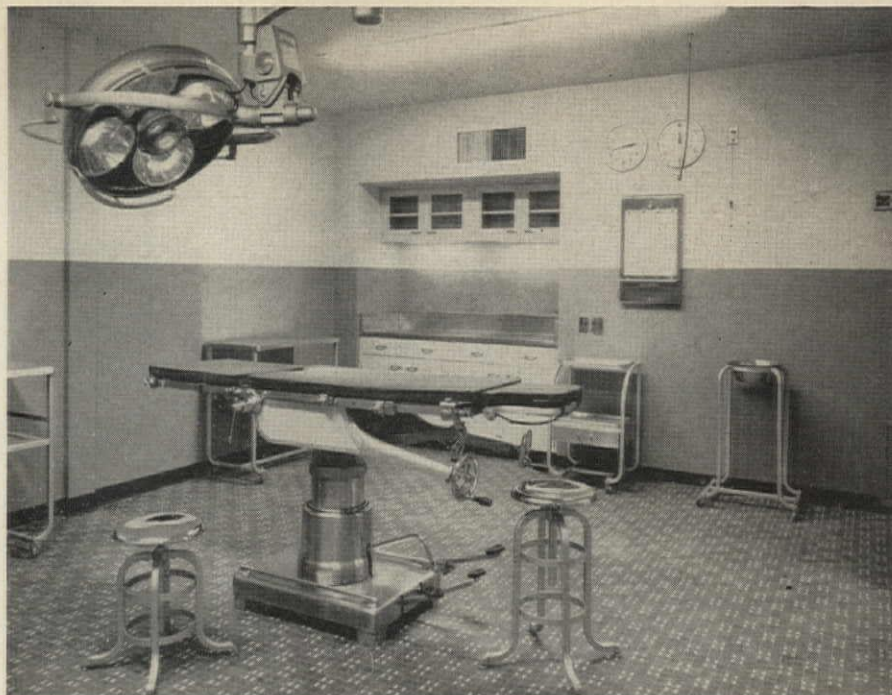
approximately one-half (50) of the patients are handled from each station. Four-bed wards and semi-private rooms only are provided. The only private accommodations are the isolation and psychiatric rooms required under the Hill-Burton program. Because of the slope of the site, the basement is partially above grade. In it are located various service areas



Larry E. Nicholson, Jr. photos

North Kansas City Hospital

Left, top: view of waiting room toward the entrance vestibule. Left, center: each nurses' station is located at the intersection of two nursing wings. Stations are larger than normal, because of greater than usual number of nurses needed for handling of 50 patients from each station. Left, bottom: typical rooms have two patient beds. The large glass area permits unrestricted view of the river and provides patients with maximum amount of light and sun. Heavy glass fiber curtains are used for sun control. Space economy was achieved in the patient rooms by the decision not to build any private rooms. However, all rooms are air conditioned and have individual controls. Each room is equipped with radio and television with individual pillow speakers, nurse call, telephone, and piped oxygen

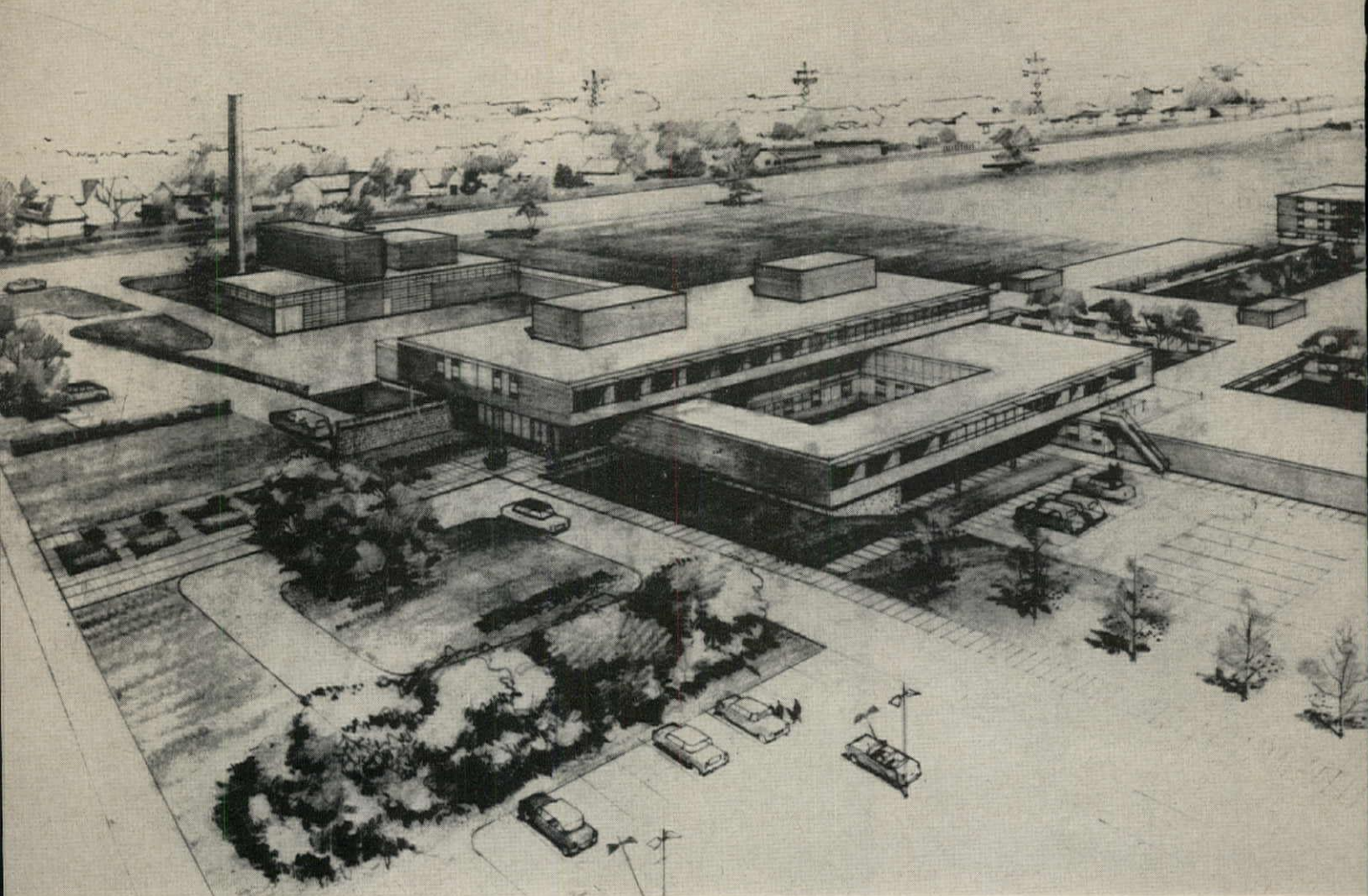


Right, top: view of one of two major surgeries. The surgeries are connected to each other by a scrub-up room (right, center). Right bottom: view of a nursery toward the workroom which connects it with the second nursery. Double-loaded corridors are provided for these areas and throughout other hospital areas in order to minimize patient and staff travel between various facilities.

COST TABULATION:

Total Area (sq ft)	50,480
Total Usable Beds	100
Basic Construction Cost	\$1,116,731
Group I, II, III Equip., Fees, other equipment	253,269
TOTAL PROJECT COST	\$1,370,000
TOTAL COST PER BED	\$13,700

Hospital constructed with assistance of Hill-Burton funds, administered by Division of Health, State of Missouri



High Efficiency, Lowered Costs Achieved in Low-Rise Hospital

THE GREATER NIAGARA
GENERAL HOSPITAL
NIAGARA FALLS,
ONTARIO

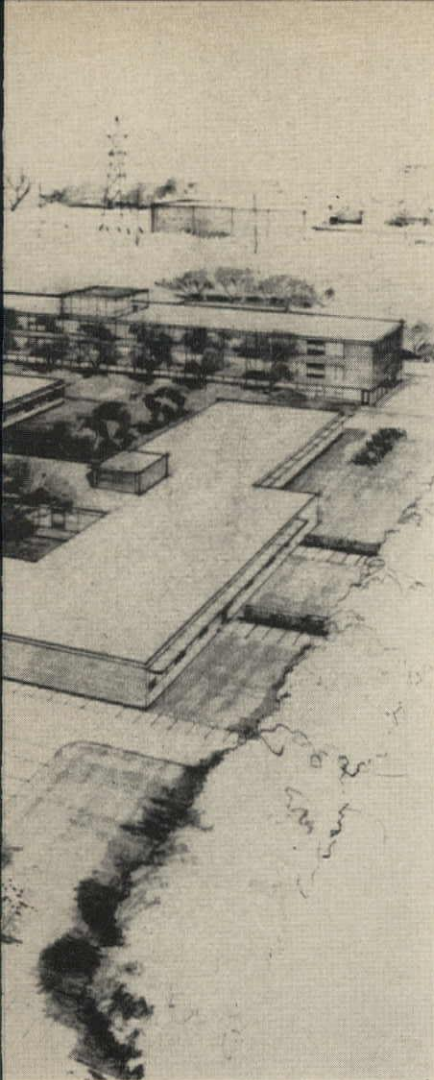
ARCHITECTS & ENGINEERS:
John B. Parkin Associates

HOSPITAL CONSULTANTS:
Agnew, Peckham & Associates

CONTRACTORS:
Smith Brothers Construction, Ltd.

The scheme for this hospital was based on studies made by Dr. MacKinnon Phillips, former Provincial Minister of Health. These studies showed that a large percentage of the beds in a general hospital are occupied by non-acute cases. These patients require a minimum of care. Using this information, the architects placed nursing units for intensive care patients near the core of the building where diagnostic and treatment facilities are located; patients requiring a minimum of care are housed in a series of one-story nursing wings connected to the central core. The three-story central core contains all diagnostic and active treatment facilities on the main floor. Below this are the service departments. The natural slope of the site allowed both floors to have grade level entrances. On the third floor, over the center of the core, the acute medical and surgical unit is located.

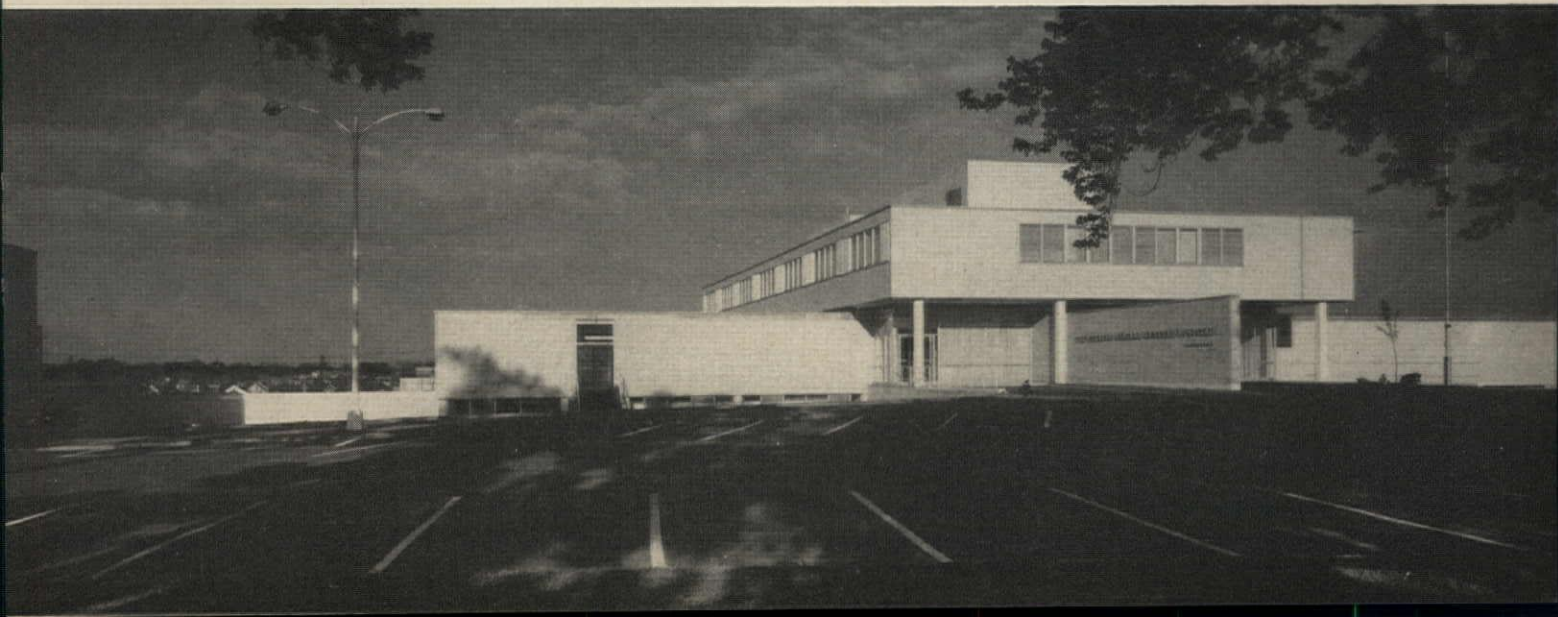
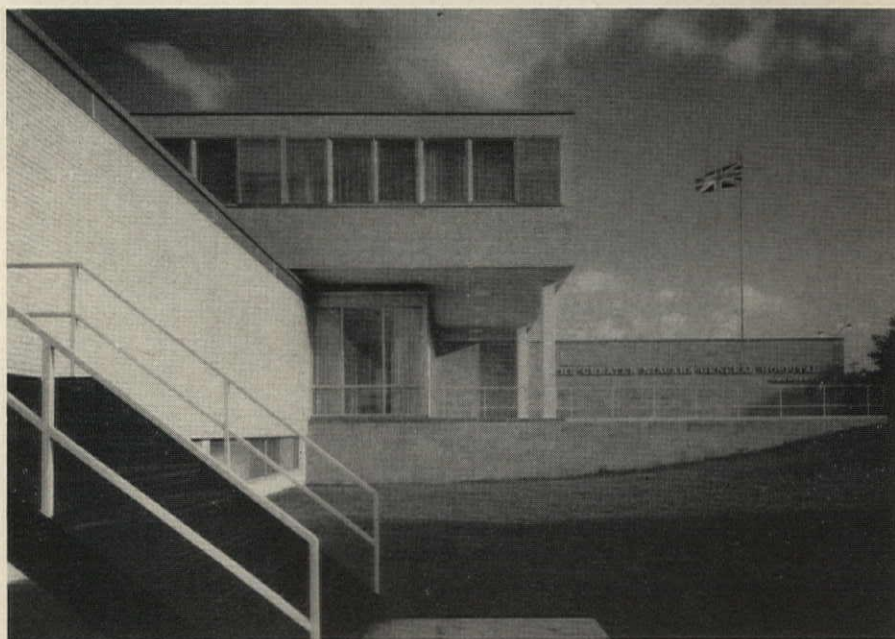
The structure of the main (core) building consists of fire-proofed steel columns supporting reinforced concrete flat slab floors. For the wings, structural clay tile bearing walls are used with poured-on-grade floor slab and a precast concrete roof. Exterior walls are brick with double glazed aluminum sash. Interior partitions are structural clay tile glazed in halls, operating and delivery rooms, pantries, and utility rooms, plastered elsewhere.

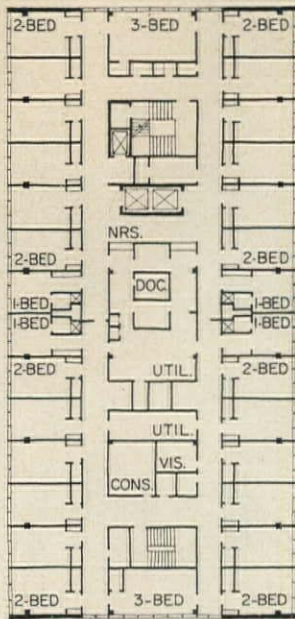


Panda photos

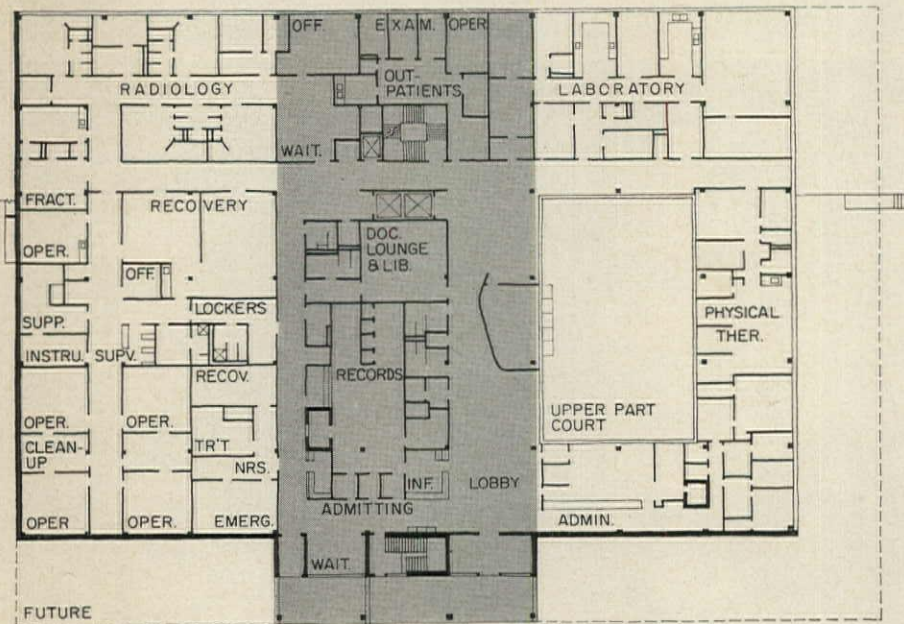


Above: in the rendering may be seen the three-story central core, with the boiler and laundry room at the extreme left, the sub-acute nursing wings to the right, and the nurses' residence in the background. Right and below: views of the core building. The projecting wall separates the emergency entrance from the main entrance. The grade slopes from this side down to the rear, permitting a grade level entrance to the basement on the rear

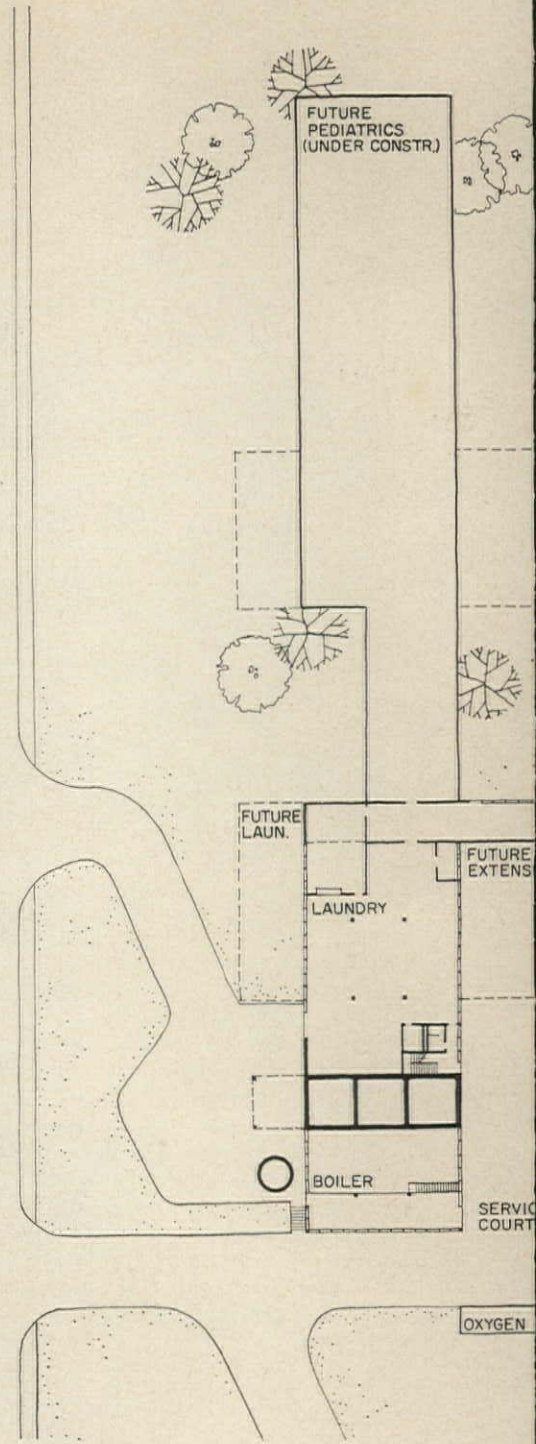




THIRD FLOOR

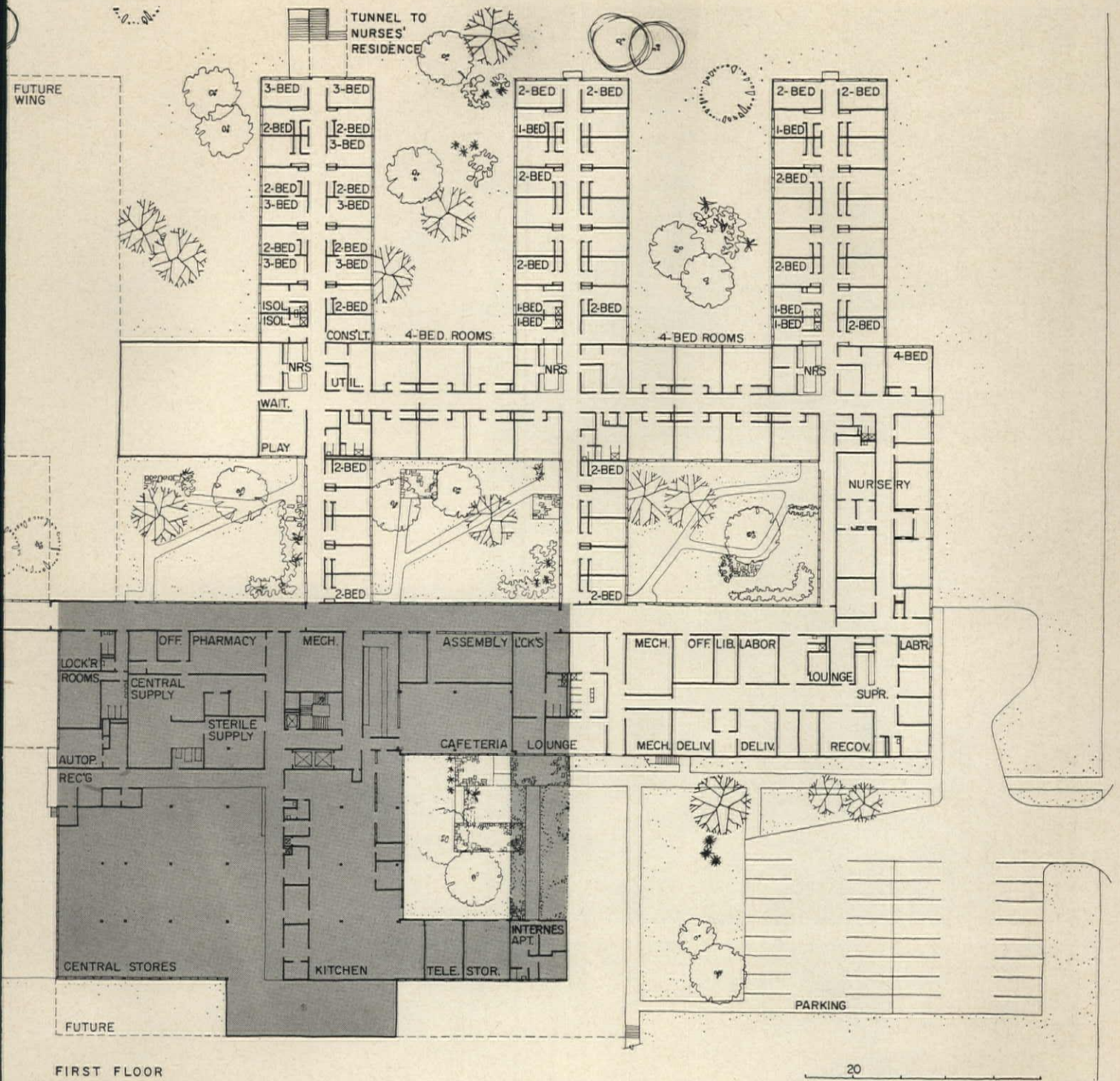


SECOND FLOOR



Greater Niagara Hospital

The ground level of the central core (shaded in main floor plan) contains areas for supply, kitchen and cafeteria, storage, and related facilities. On the same level, the delivery suite is connected to the maternity nursing wing by the nursery. Wings are provided for medical, surgical, and pediatric patients. As indicated, future wings have been planned and a separate pediatric nursing unit is now under construction. In the view of the hospital (opposite page, bottom), the various levels of the buildings and their relationships with finished grades may be seen. A separate entrance for maternity patients is provided, located on the extreme right side of the building. The second floor of the core is located over the shaded area of the large plan. This floor (immediately above) contains zoned areas for administration, physical therapy, laboratories, out-patients, radiology, surgery, and emergency. The third floor contains a nursing unit for intensive care

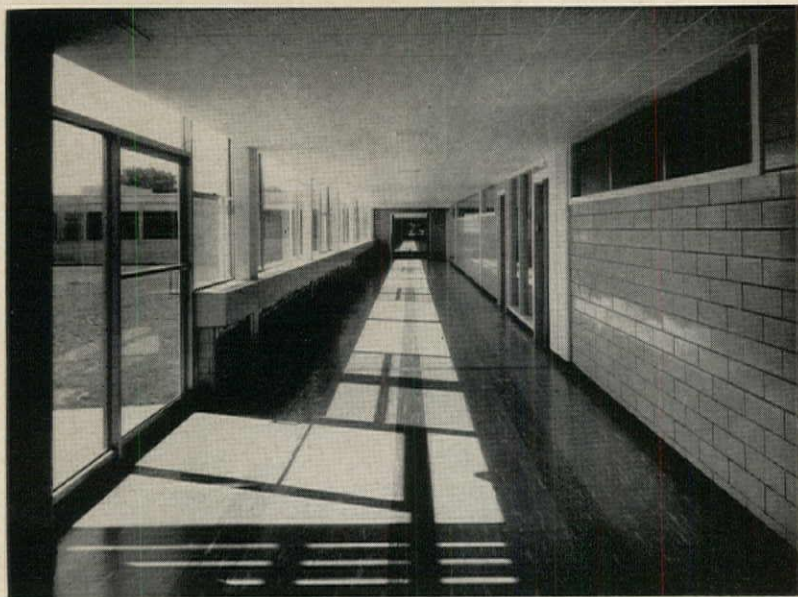


FIRST FLOOR

20

Panda



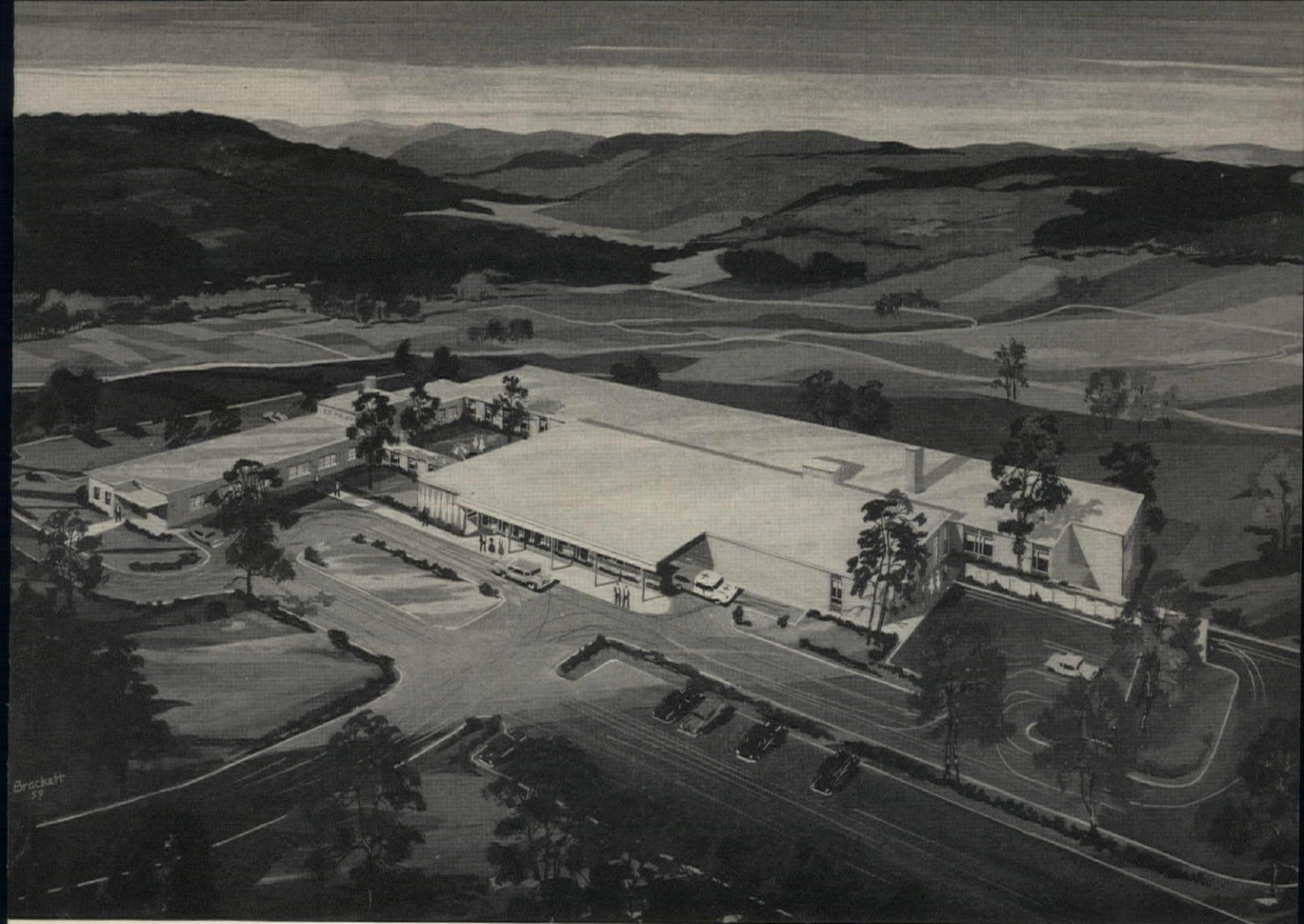


Greater Niagara Hospital

Left, top: view of a typical corridor. Nursing unit corridors are no longer than is usual in hospitals of this size. Less frequently used corridors are quite long, but are pleasant and open. Left, center: view of one of the four major operating rooms. In addition, there is a surgery for minor operations. All are closely related. Below: view of the lobby, toward the reception desk. In the background may be seen the meditation room. To the left are located the information desk, administrative offices, the medical records room

Panda photos





Hospital Plan Development Based On Supply System Organization

CARROLL COUNTY
GENERAL HOSPITAL,
WESTMINSTER,
MARYLAND

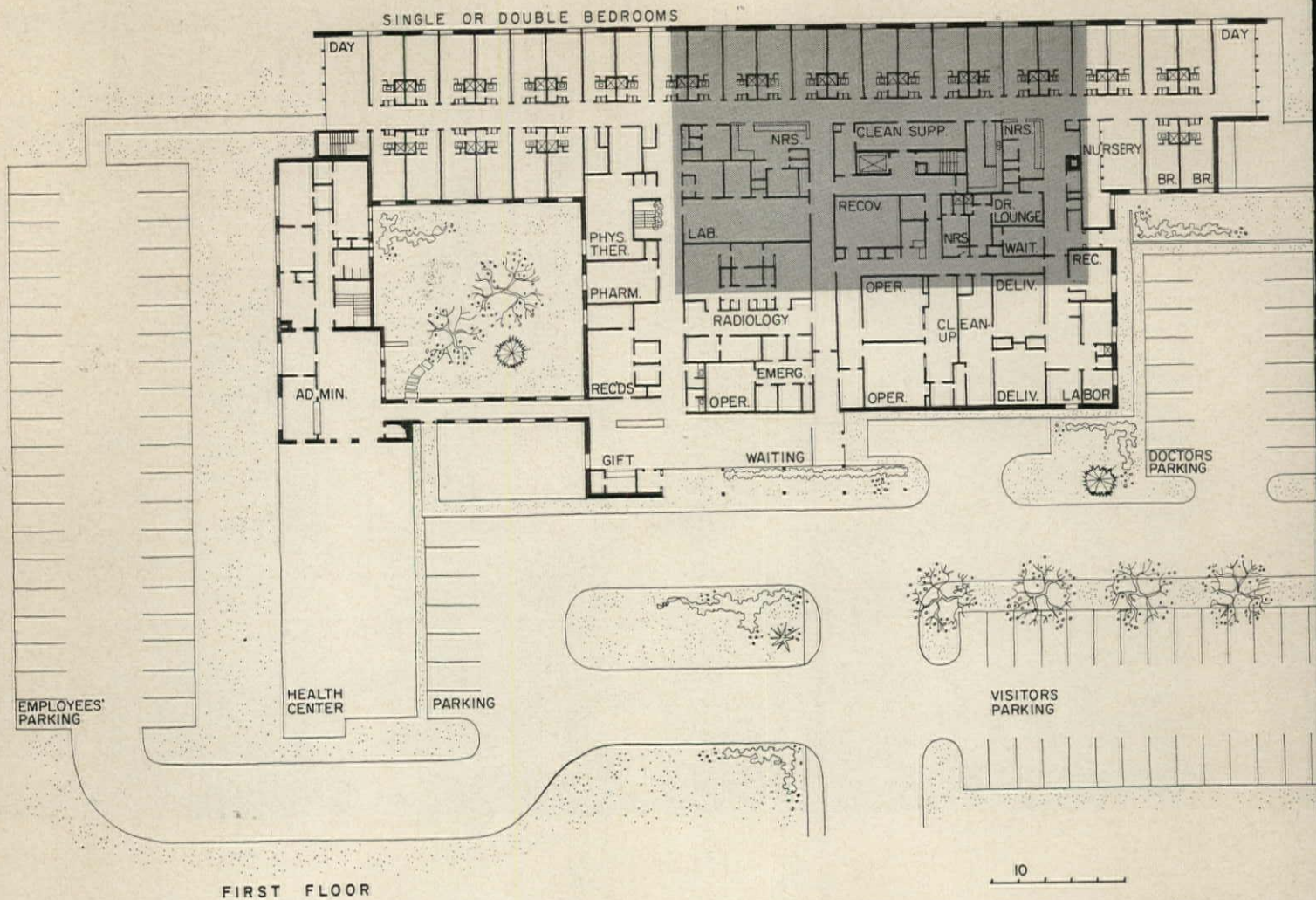
ARCHITECT:
(Working Drawings, Specifications)
B. E. Starr

ASSOCIATE ARCHITECTS:
(Design, Supervision)
Edward H. Noakes & Associates

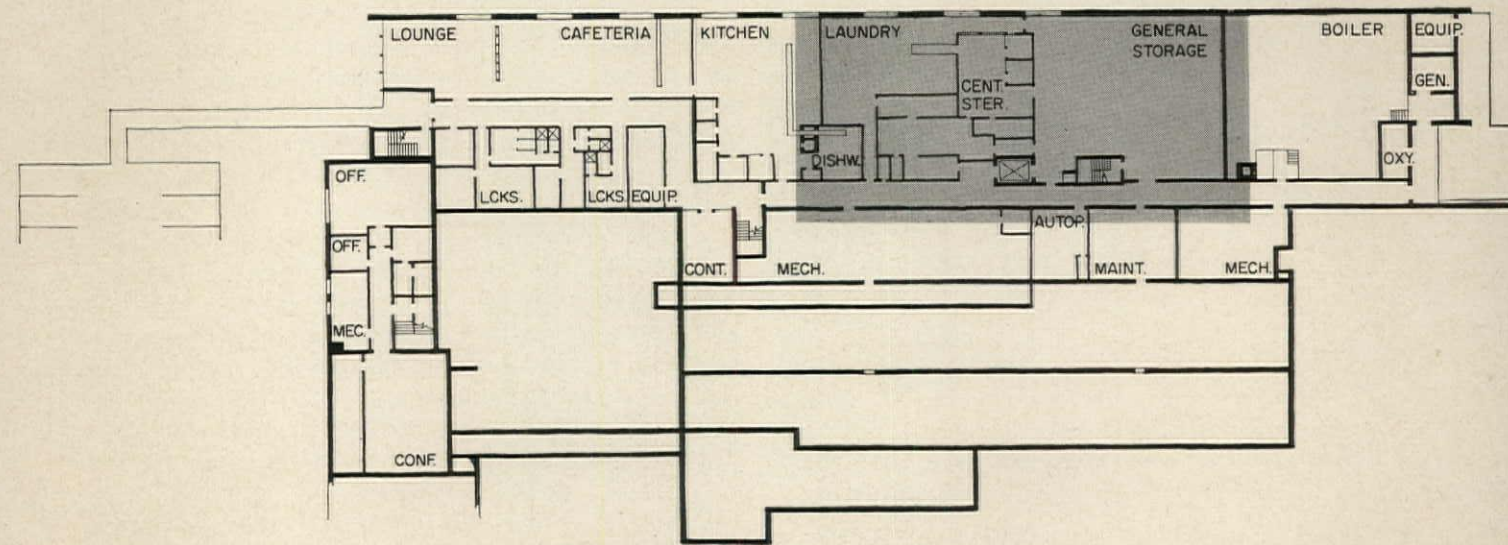
HOSPITAL CONSULTANTS:
Gordon A. Friesen Assoc.

The basic guiding principle behind the planning of this 64-bed general hospital was the idea that better nursing care is possible in a hospital if the nurses are freed from responsibility for supplies. In order to achieve this, the architects and hospital consultants worked out a design based on a highly organized and efficient supply system. In the hospital, clean supplies will be handled and distributed and soiled supplies collected and processed, by the supply crew. Control will be the responsibility of a dispatcher. Routine supply handling will be done automatically by the crew. An intercom station in each patient room will permit nurses to call for extra or special supplies, without leaving the room. These will be delivered by the supply crew.

All of the 32 patient rooms in the hospital are planned for double occupancy. Facilities were sized for eventual expansion of capacity to approximately 110 beds. The emergency entrance is controlled from the switchboard location and connects directly with the emergency suite, radiology, laboratory, and other patient facilities. A separate entrance is provided for maternity patients and doctors. This leads directly to the delivery suite and maternity nursing unit. Administrative elements are located in (and shared with) an existing health center adjoining the hospital.



FIRST FLOOR

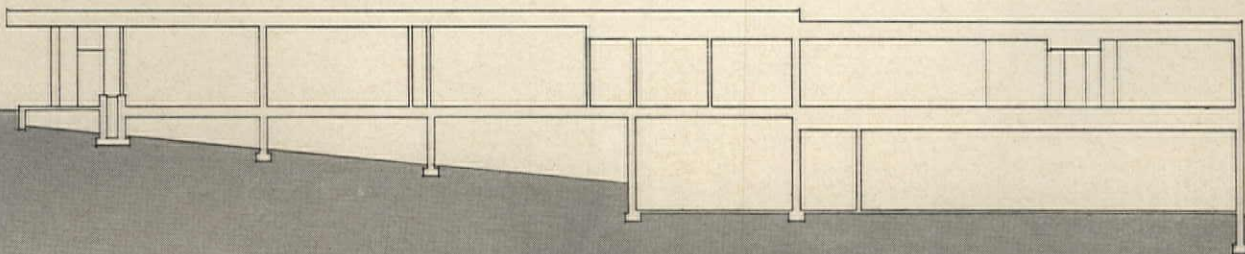
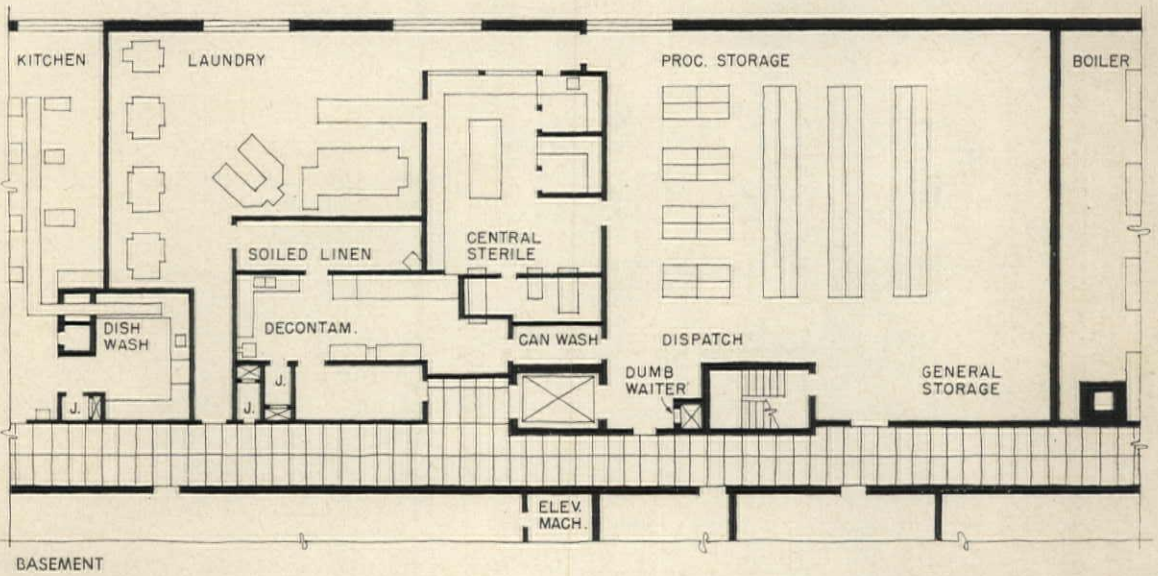
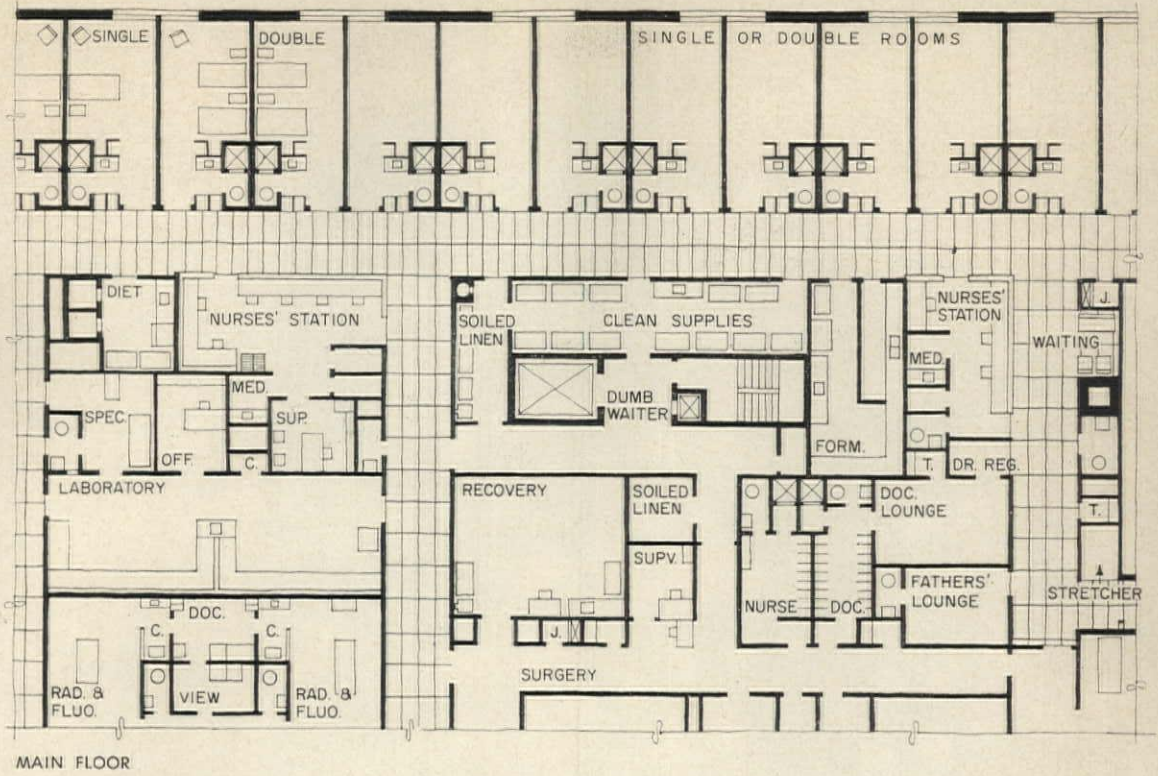


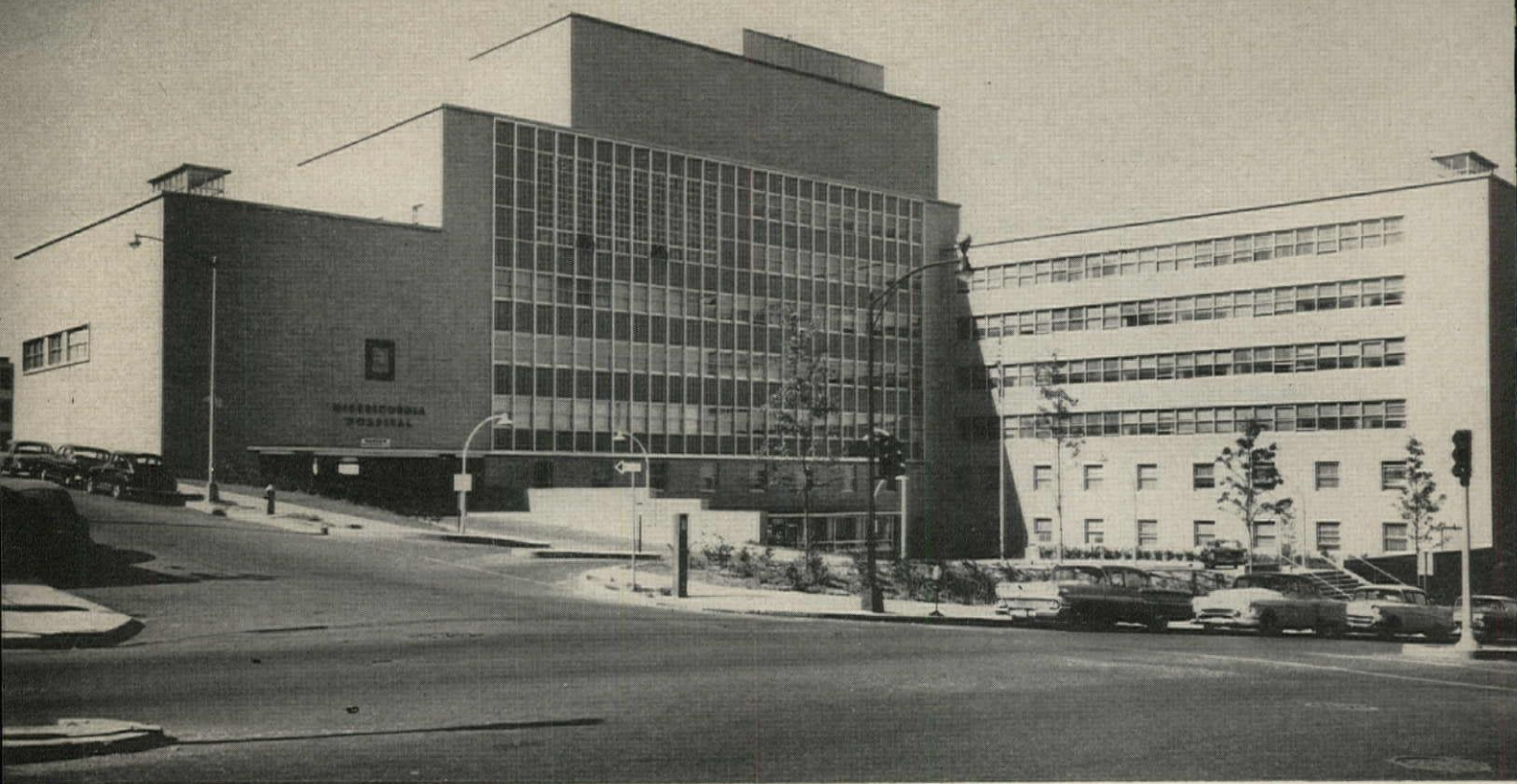
GROUND FLOOR

Carroll County General Hospital

Utilizing the 10 per cent grade of the site, the architects placed all service elements in the basement, all patient facilities on the main floor. The core of the main floor plan is the central supply area. New supplies are received at special entrance on ground level. These and soiled supplies are processed on this level and distributed on special carts. Clean patient supplies are delivered to patient supply cabinets located near the

entrance to each room where they are available to nurses within the rooms. Soiled supplies are placed by nurses in the soiled compartments of the cabinets. From here, they are picked up in the corridor and returned to central supply on carts. Total Area: 52,550 sq ft, total beds: 64, estimated cost including site work and Group I equipment: \$1,156,000, estimated cost Group II and III equipment \$150,000, cost per bed: \$20,400





Sigurd Fischer

Limited Site Size, Extreme Grade Helped Determine Hospital Plan

MISERICORDIA HOSPITAL,
BRONX, NEW YORK

ARCHITECTS:

*Kiff, Colean, Voss & Souder,
The Office of York & Sawyer*

STRUCTURAL ENGINEERS:

Di Stasio & Van Buren

MECHANICAL &

ELECTRICAL ENGINEERS:

Meyer, Strong & Jones

FOOD SERVICE CONSULTANT:

Howard L. Post

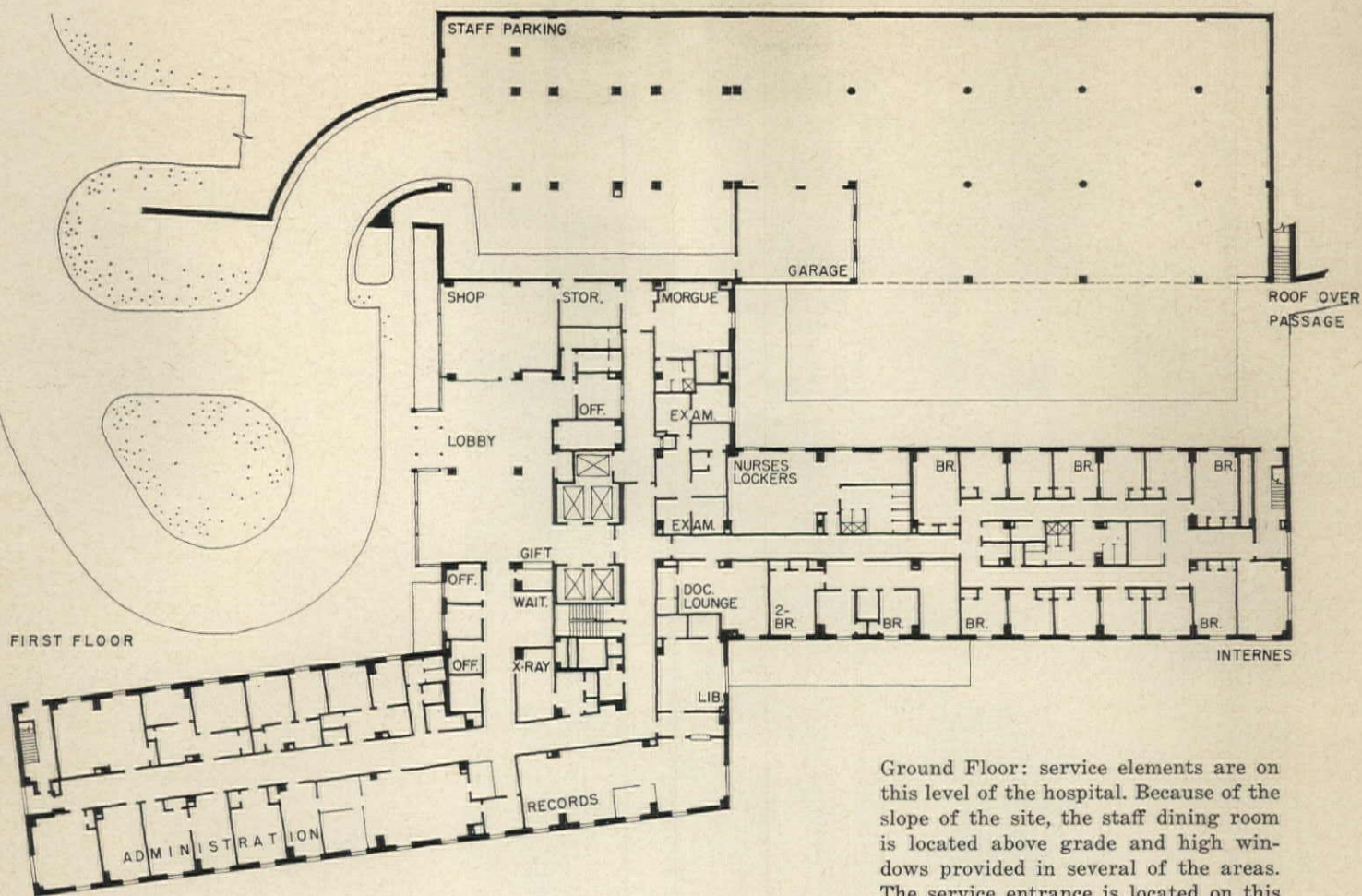
CONTRACTOR:

Vermilya-Brown Company, Inc.

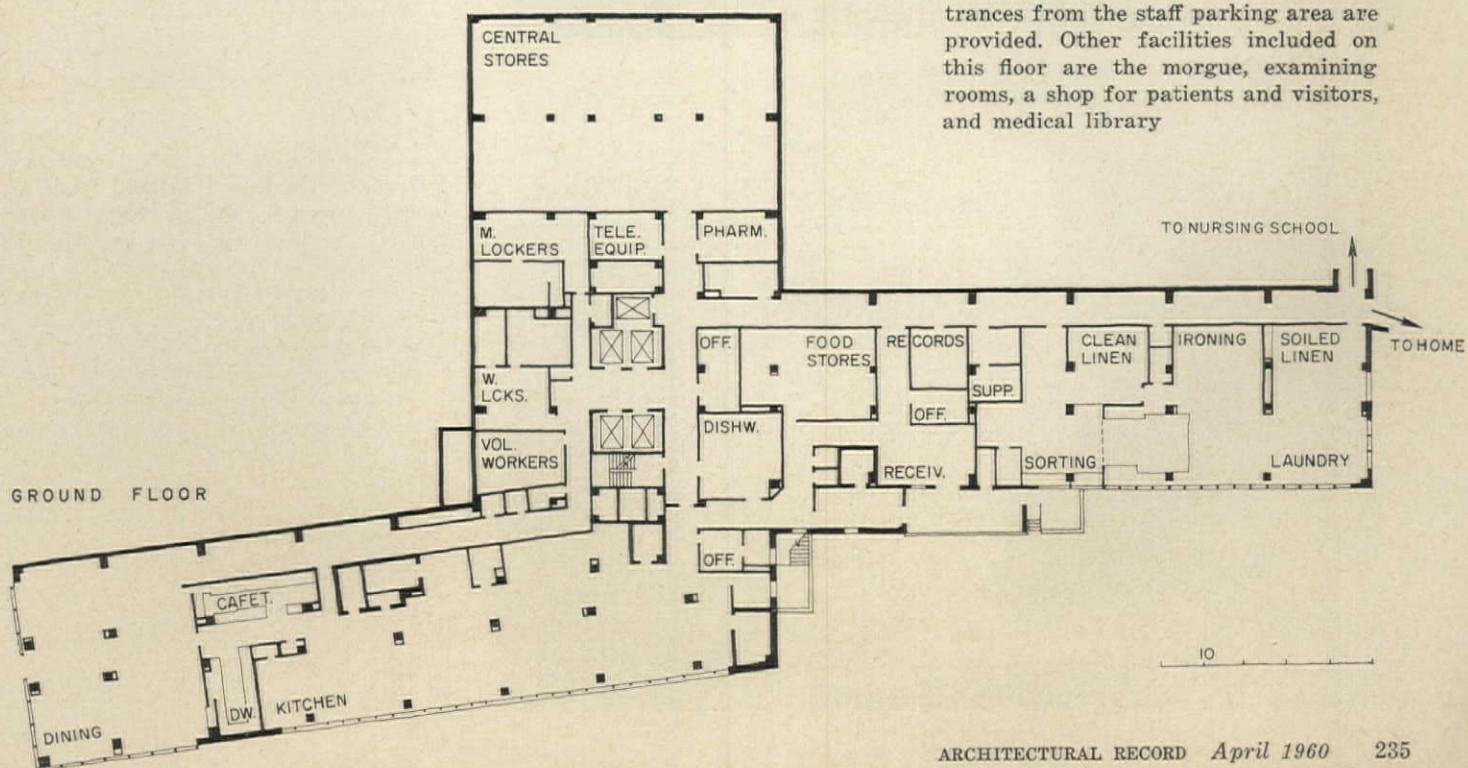
This is a complicated hospital. In addition to the usual medical and surgical requirements for a 210-bed general hospital, there is a nursing school with 150 student nurses, a home for 32 unwed mothers, and a convent for the Sisters of Misericorde who operate the hospital. An extensive research program is carried on; a large number of emergency cases is cared for.

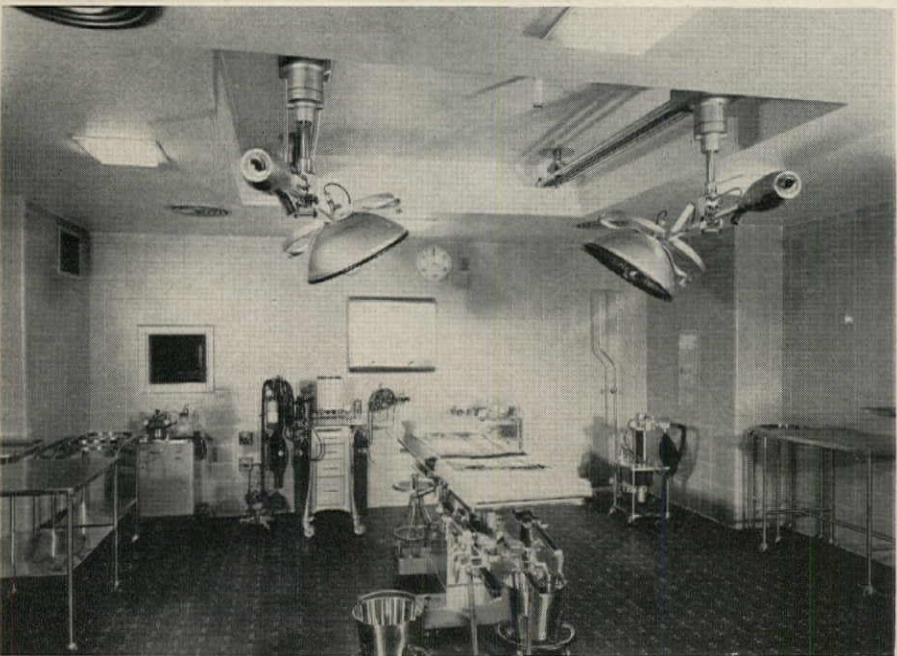
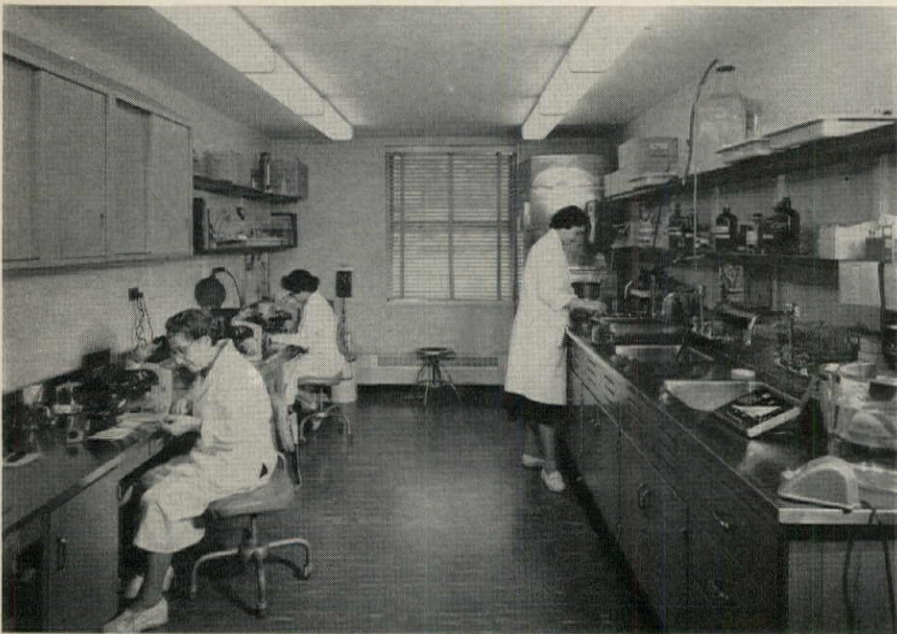
In order to achieve the best solutions to the many intricate and interrelated problems inherent in the functions of the hospital, in the limited size of the 4-acre site, and in the steep grade, the architects designed a scheme with three buildings: main hospital (seven floors and basement), nursing school, and unwed mothers home. These are interconnected with covered walkways. The extremely steep grade made it possible to provide major entrances on three floors: service entrances on the ground floor, main hospital entrance on the first, outpatient and emergency entrances on the second floor. Because of the grade, the two-level parking system was feasible. Thus, various types of circulation to and from the hospital have been separated, making increased efficiency possible.

Building structure is concrete frame with flat plate floor arches. Exterior walls are aluminum framed porcelain enamel curtain walls and brick with limestone trim. Interior walls are plastered concrete block; ceilings are plastered.



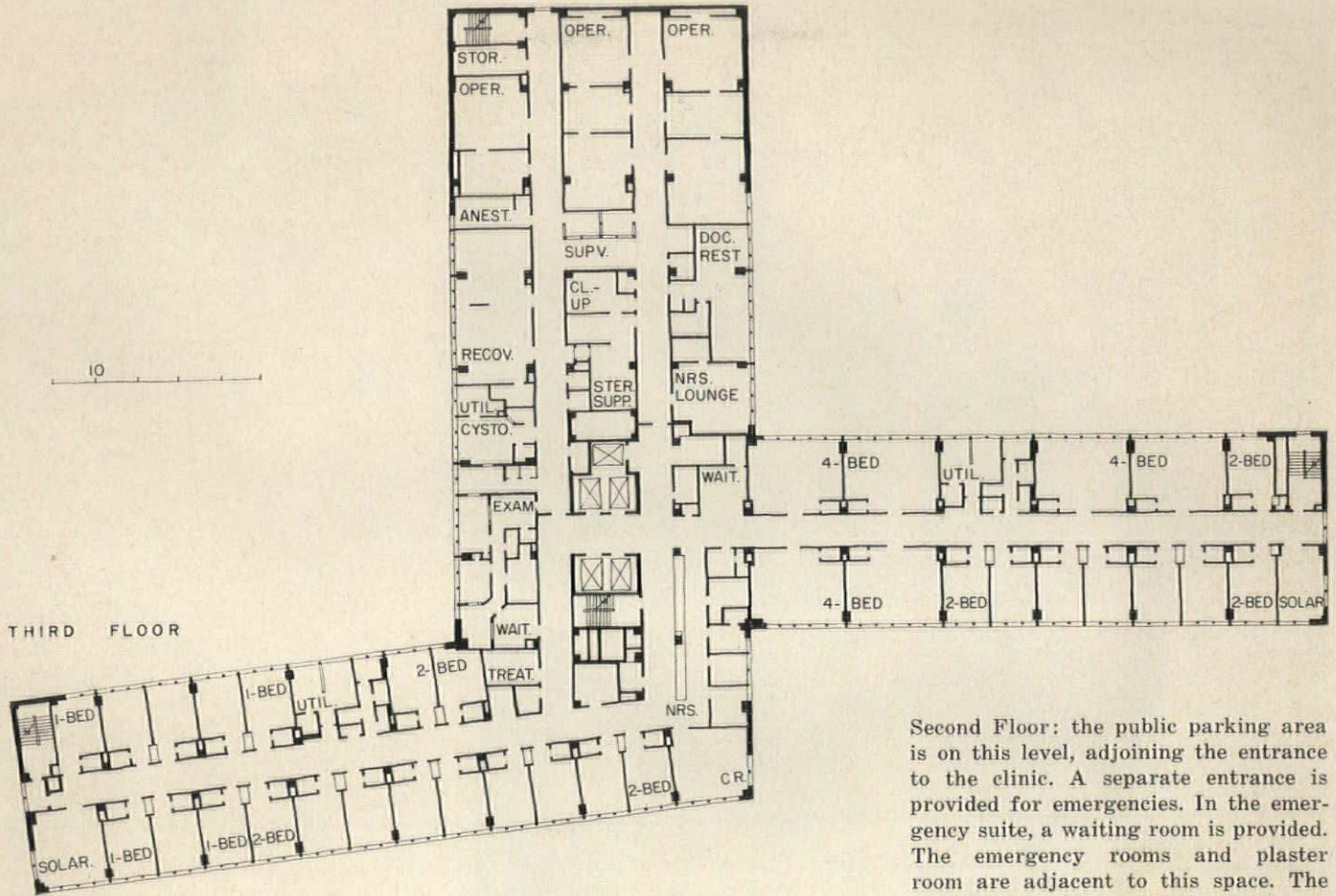
Ground Floor: service elements are on this level of the hospital. Because of the slope of the site, the staff dining room is located above grade and high windows provided in several of the areas. The service entrance is located on this level, as are the enclosed passages to the nursing school and unwed mothers home. First Floor: the main entrance and lobby are located on this floor. One wing is used mainly for admission of patients, medical records, and administration. The other large wing contains quarters for internes, doctors lounge, and nurses' locker room. Entrances from the staff parking area are provided. Other facilities included on this floor are the morgue, examining rooms, a shop for patients and visitors, and medical library



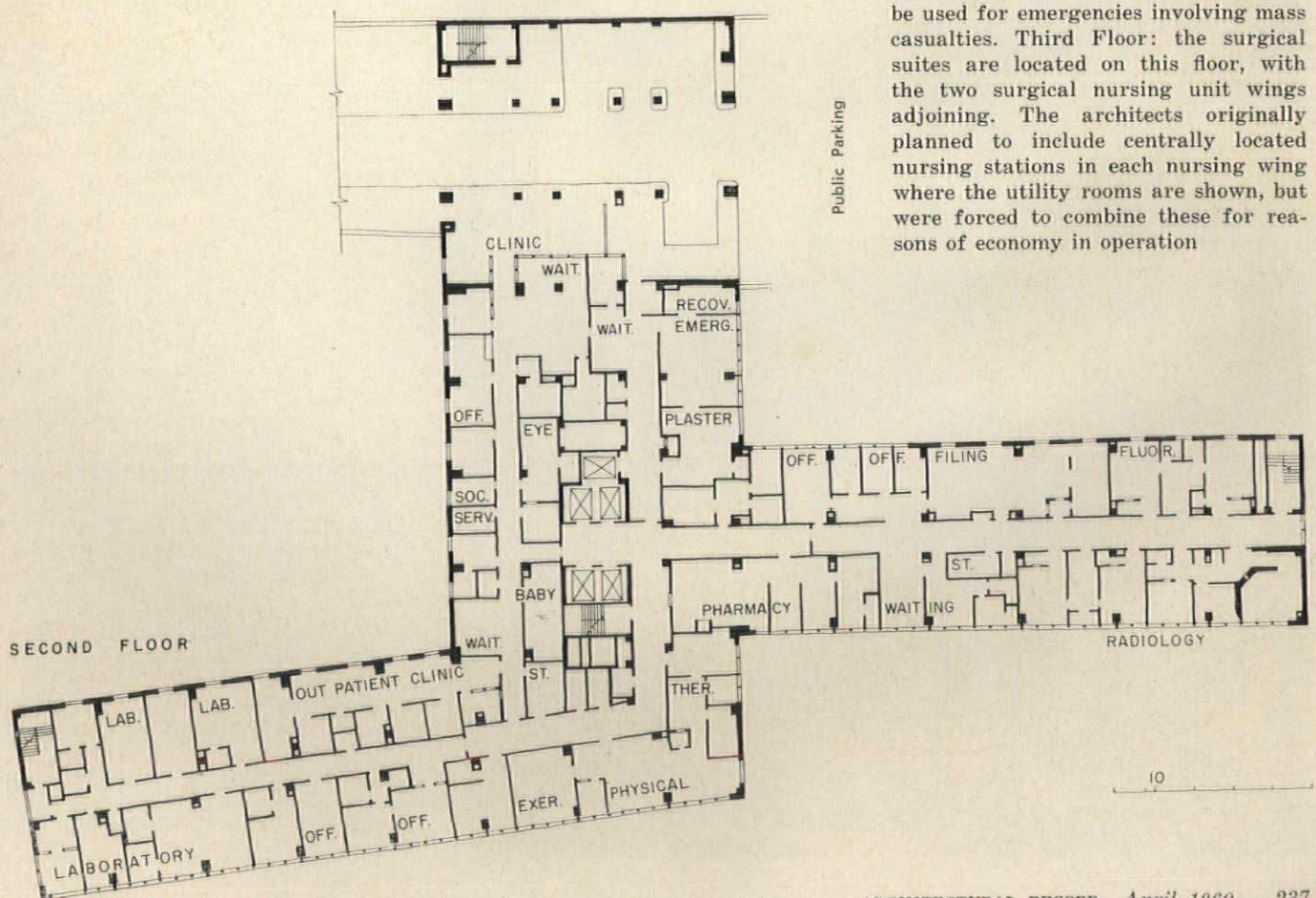


Misericordia Hospital

Left, top: view of medical records room which is located on the first floor. Adjoining this area are a small room for dictation and the medical library. Left, center: view of a laboratory. All labs are located on the second floor, as are the pharmacy, radiographic and fluoroscopy suite and similar facilities. Thus all facilities required for examination and treatment of outpatients are on the floor where the outpatient clinic is located. Efficiency is improved and the load on elevators is decreased. Left, bottom: view of a typical operating room. There are five of these rooms, located on the third floor. All are quite similar in design. They are arranged in surgical suites, each having two operating rooms connected by a shared scrub-up room. One operating room is separated from the others and is used for special operations



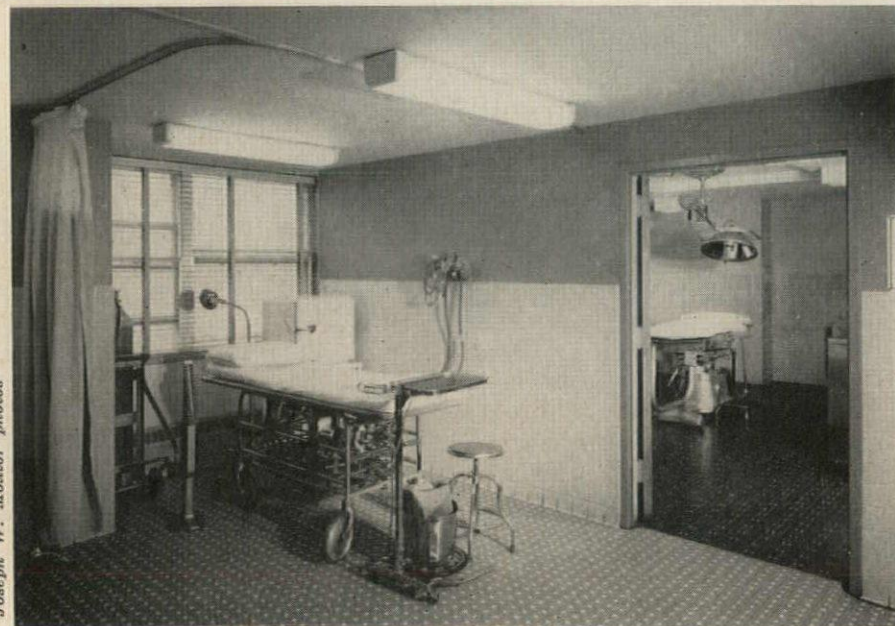
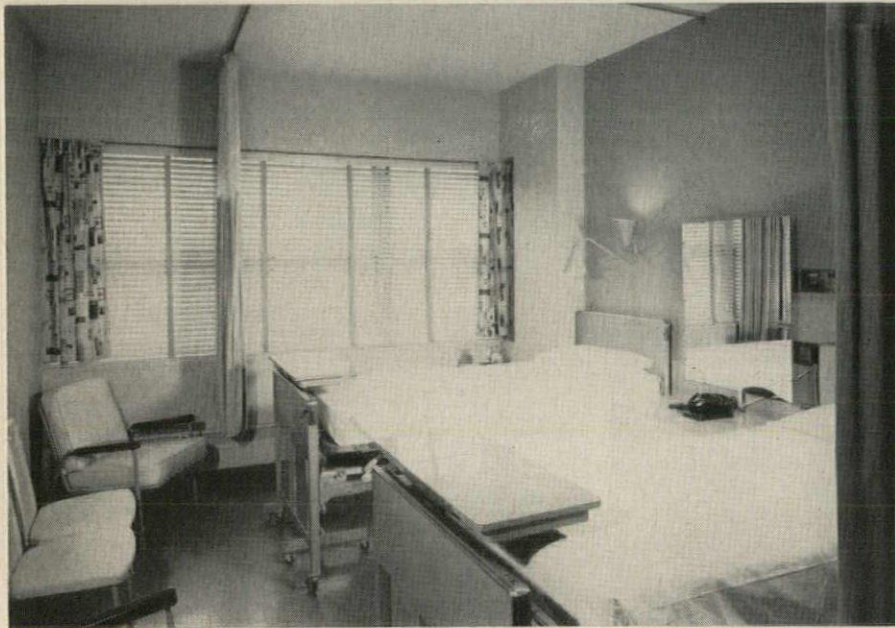
THIRD FLOOR



SECOND FLOOR

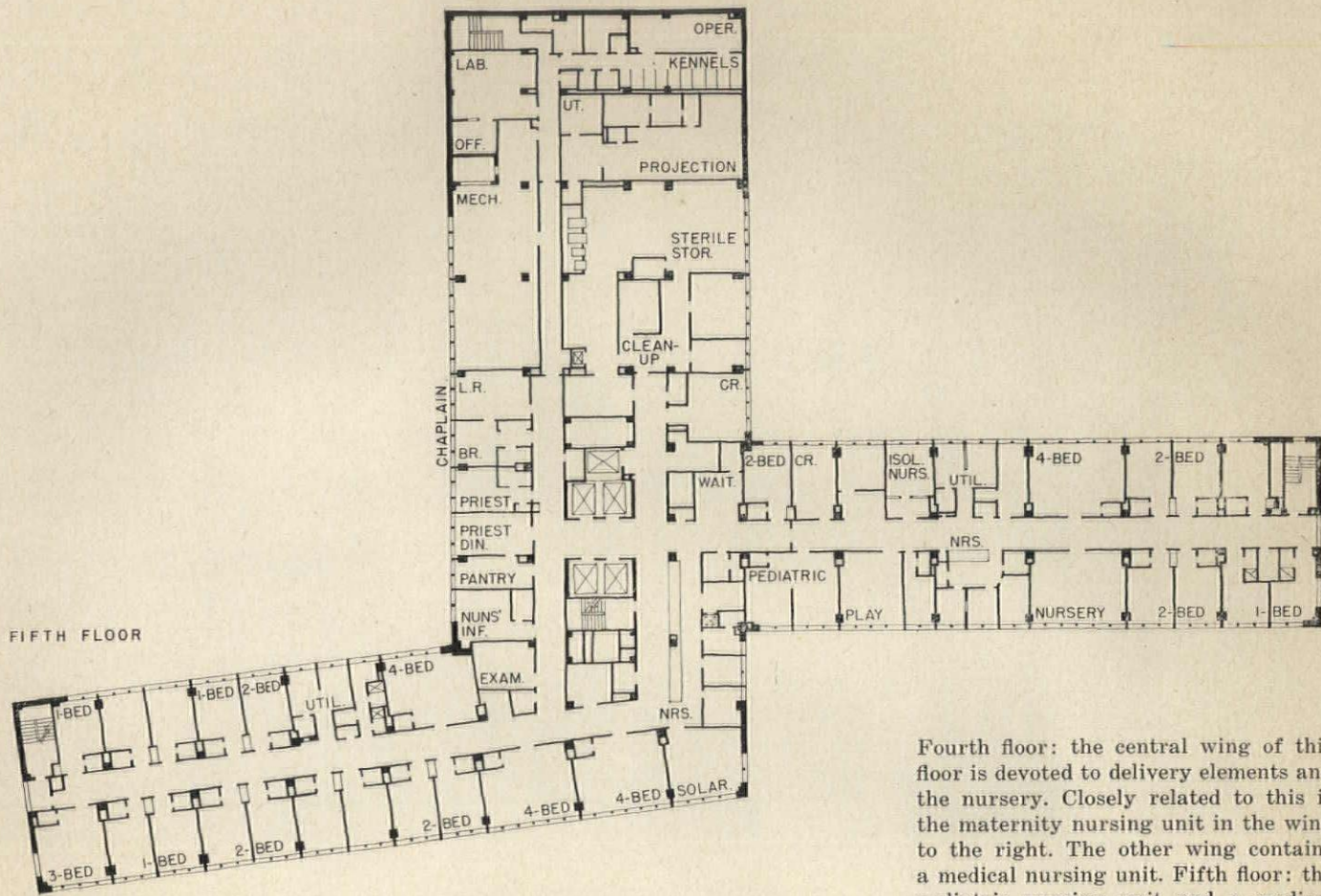
Public Parking

Second Floor: the public parking area is on this level, adjoining the entrance to the clinic. A separate entrance is provided for emergencies. In the emergency suite, a waiting room is provided. The emergency rooms and plaster room are adjacent to this space. The emergency waiting room is closely related to the elements of the clinic; this relationship allows the clinic areas to be used for emergencies involving mass casualties. Third Floor: the surgical suites are located on this floor, with the two surgical nursing unit wings adjoining. The architects originally planned to include centrally located nursing stations in each nursing wing where the utility rooms are shown, but were forced to combine these for reasons of economy in operation



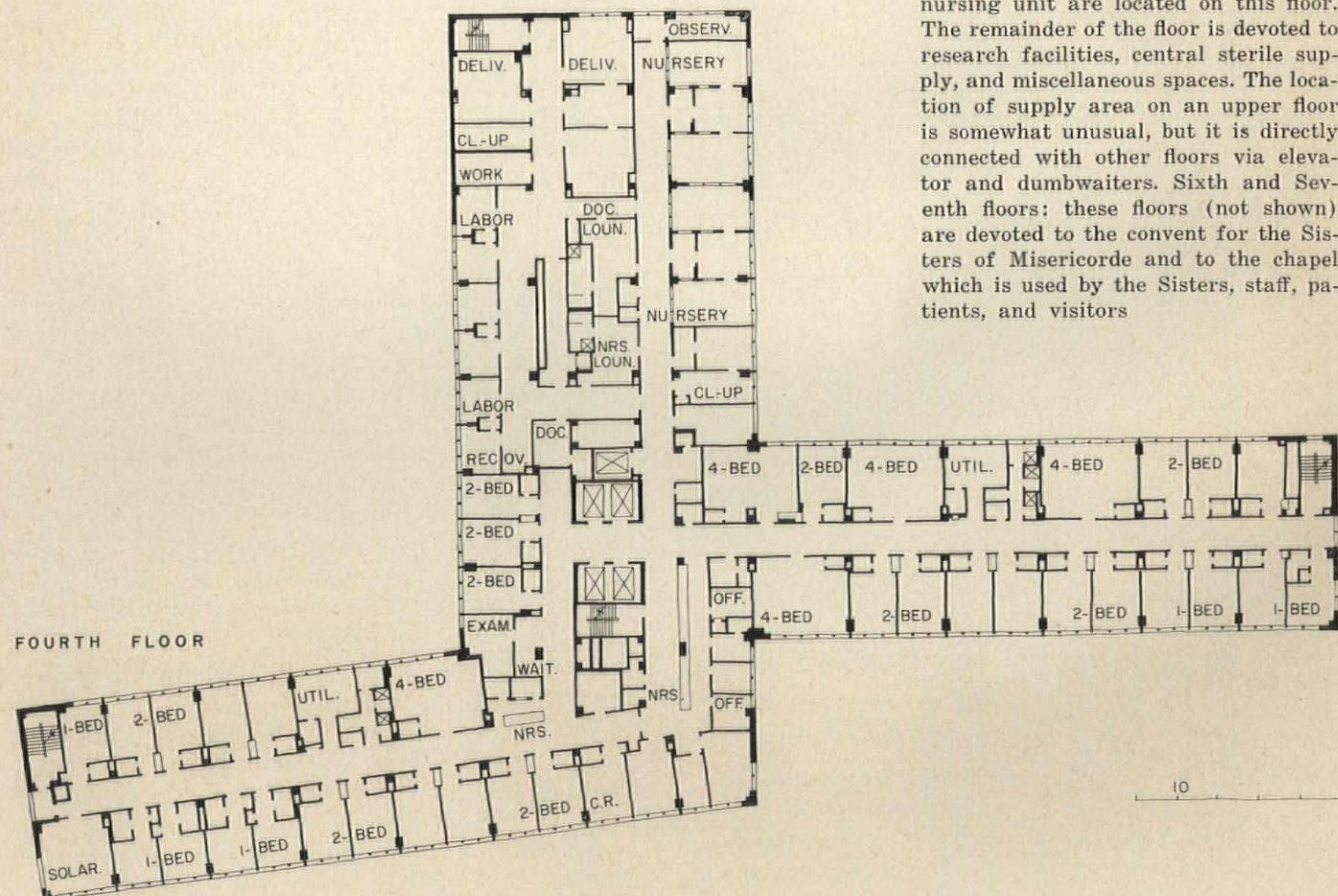
Misericordia Hospital

Left, top: view of a typical private patient room. Nearly all of these rooms are exactly the same size as semi-private rooms. They were planned for use as either private or semi-private rooms as required. All patient rooms have at least two large windows; most have three, but a few corner rooms have more as shown. Left, center: view of a typical semi-private room showing the interior arrangements, curtains hung from the ceiling, and furnishings. In addition to rooms of this size, several four-bed wards are provided in the hospital nursing wings. Left, bottom: view of the emergency suite, located on the second floor. As shown, the emergency room is directly connected with the plaster room. Ceiling-hung curtains are provided for division of the rooms into several areas when required



FIFTH FLOOR

Fourth floor: the central wing of this floor is devoted to delivery elements and the nursery. Closely related to this is the maternity nursing unit in the wing to the right. The other wing contains a medical nursing unit and a medical nursing unit are located on this floor. The remainder of the floor is devoted to research facilities, central sterile supply, and miscellaneous spaces. The location of supply area on an upper floor is somewhat unusual, but it is directly connected with other floors via elevator and dumbwaiters. Sixth and Seventh floors: these floors (not shown) are devoted to the convent for the Sisters of Misericorde and to the chapel which is used by the Sisters, staff, patients, and visitors



FOURTH FLOOR



General Hospital Combined with Rehabilitation Center

GOTTSCHÉ
REHABILITATION CENTER
AND HOT SPRINGS
MEMORIAL HOSPITAL,
THERMOPOLIS, WYOMING

ARCHITECTS:
Fisher and Davis

STRUCTURAL ENGINEERS:
Ken R. White Engineers

MECHANICAL ENGINEERS:
Marshall and Johnson

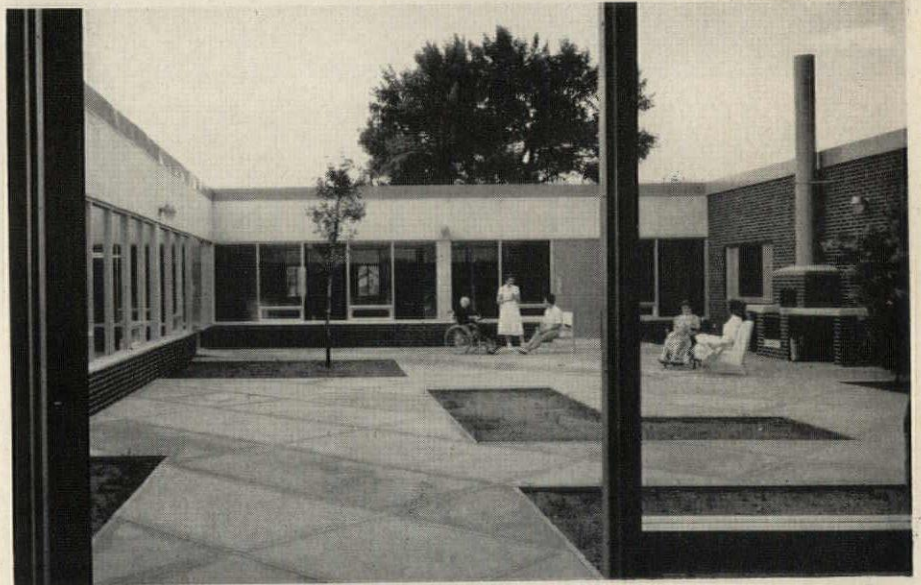
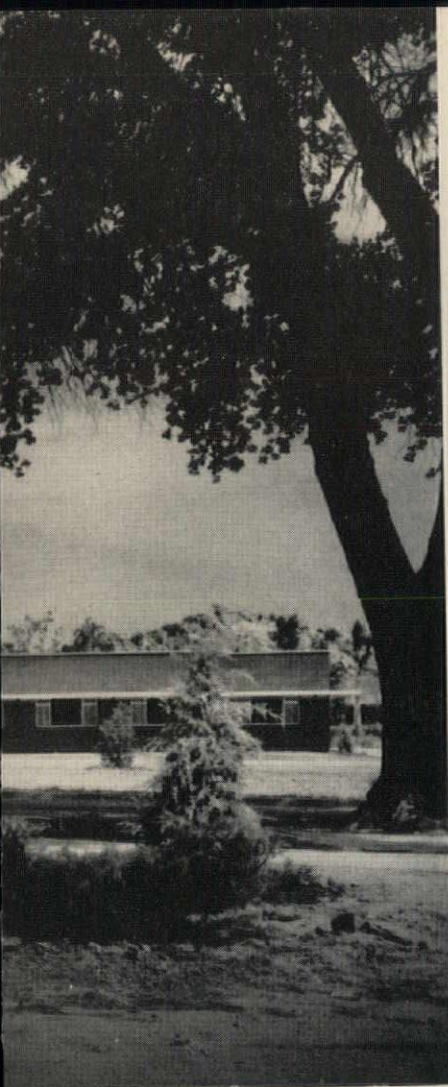
ELECTRICAL ENGINEERS:
Swanson and Rink

CONTRACTOR:
J. C. Boespflug

In this unusual building, a 51-bed general hospital is combined with rehabilitation facilities for children and adults. Officially, there are two institutions here—the county hospital (built with the aid of Hill-Burton funds) and the rehabilitation center (built by a private foundation). By combining their efforts and sharing certain facilities, the two institutions have been able to achieve improved services and economies not possible if each had been built separately.

The new buildings are near an existing home for the aged. The rehabilitation center is equipped for the treatment of patients with polio, multiple sclerosis, cerebral palsy and other crippling diseases. The hospital beds are subdivided as follows: general acute—27 beds, maternity—8 beds, and rehabilitation—16 beds. The rehabilitation beds are in addition to those for children in the cottages and are intended primarily for occupancy by adult patients from outside the county. They are supported by the rehabilitation foundation.

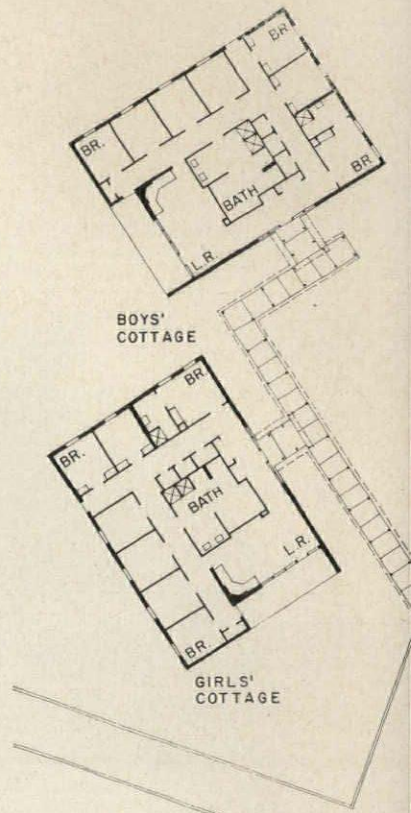
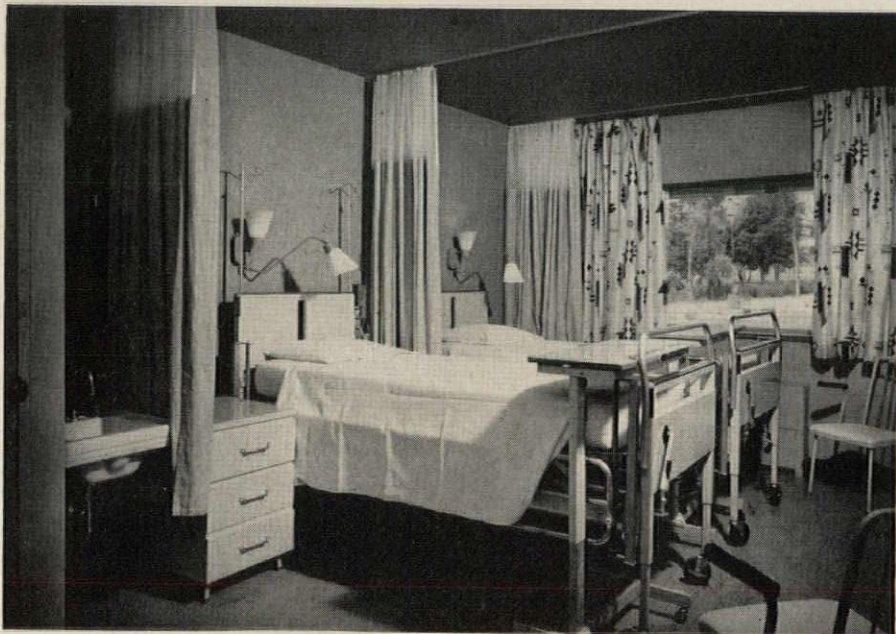
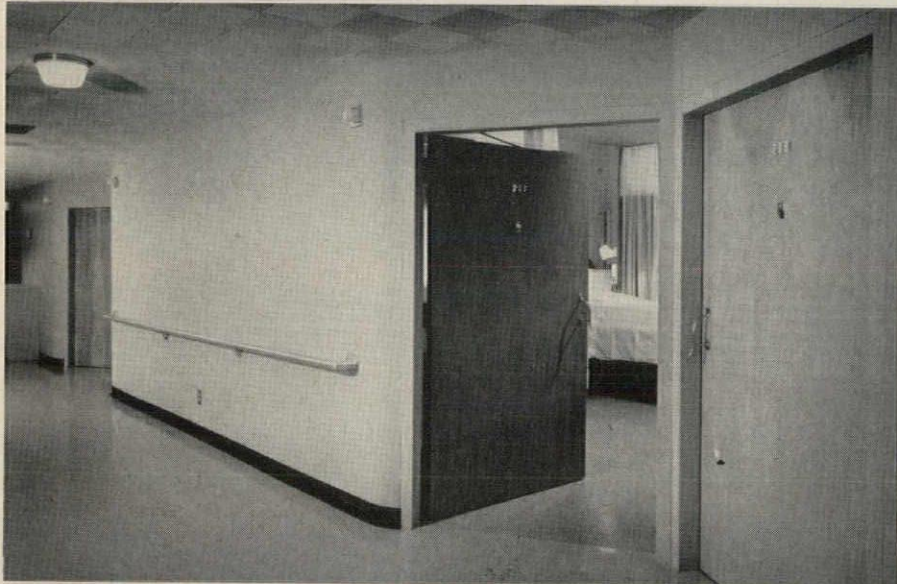
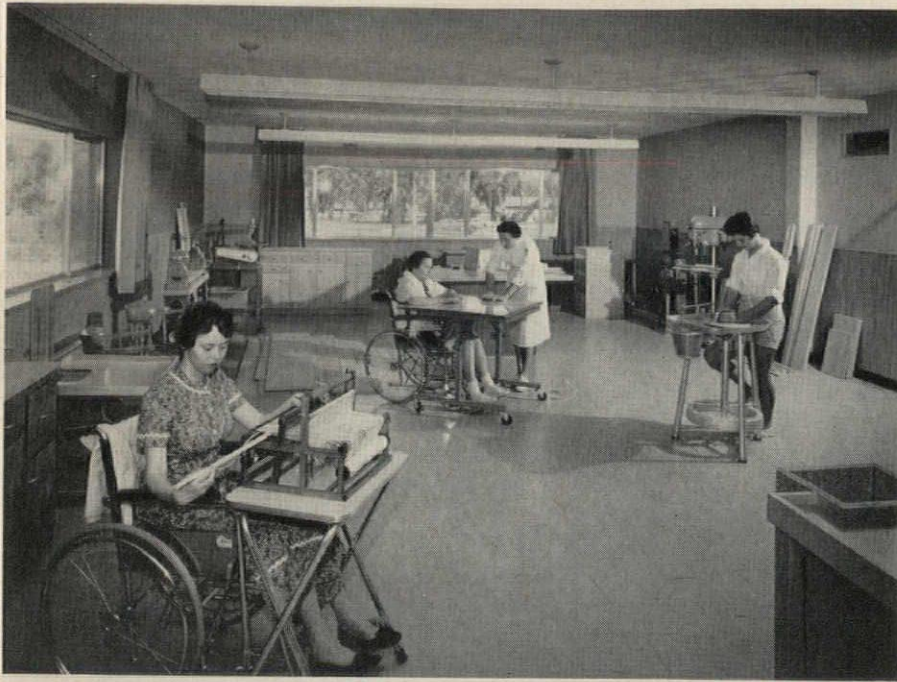
The foundations of the buildings are concrete on wood piling. The frame is steel with a concrete slab floor and gypsum roof deck. Exterior walls are brick and native sandstone with aluminum sliding windows. Interior partitions are plaster on steel studs; plaster or acoustical suspended ceilings are used.



Above: the facility is located in a valley near the Big Horn River of Wyoming. The site is essentially flat and surrounded by low foot-hills. To the left of the entrance canopy is the rehabilitation center; to the right, the general acute patient wing. Right, top: the main entrance with the rehabilitation center in the background. The emergency entrance is located on the right side of the building. Right, center: view of the central court of the rehabilitation center. This area is used for recreational activities for the patients. On the right is the barbecue pit, in the background, the cafeteria. Right, bottom: the main lobby, between the hospital and the rehab center, serves both areas. The rehabilitation center also has a public entrance

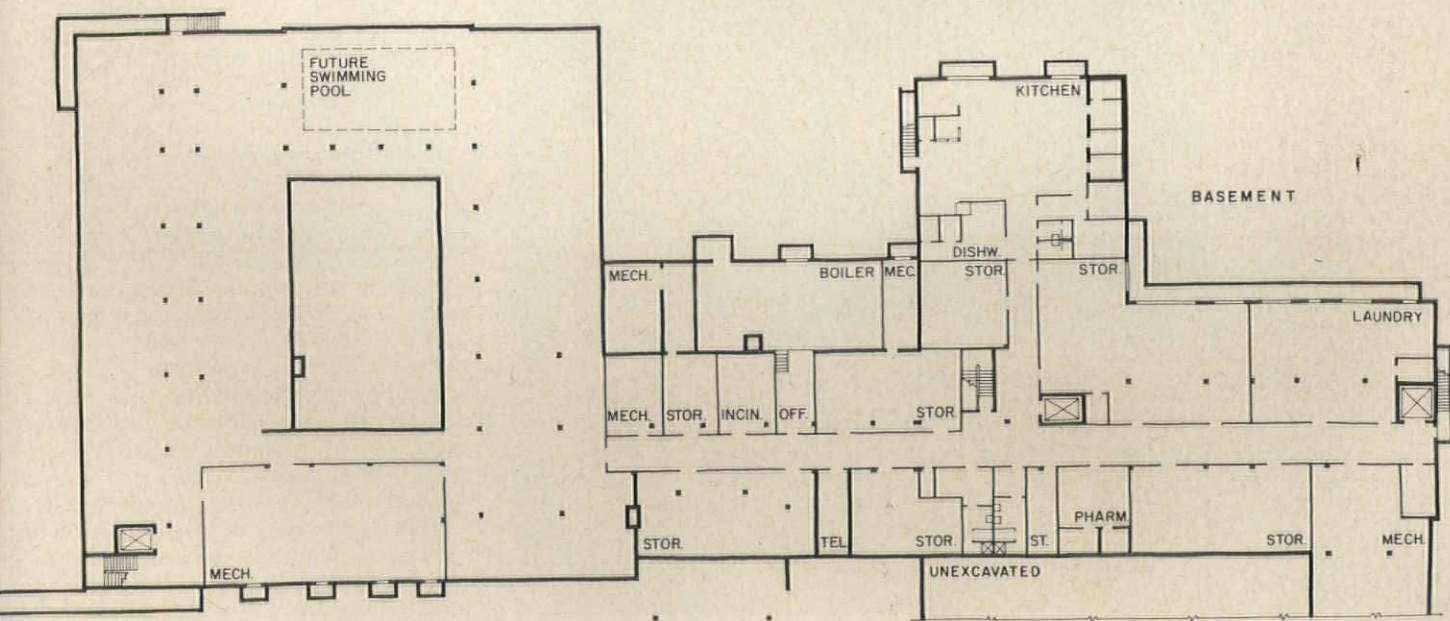
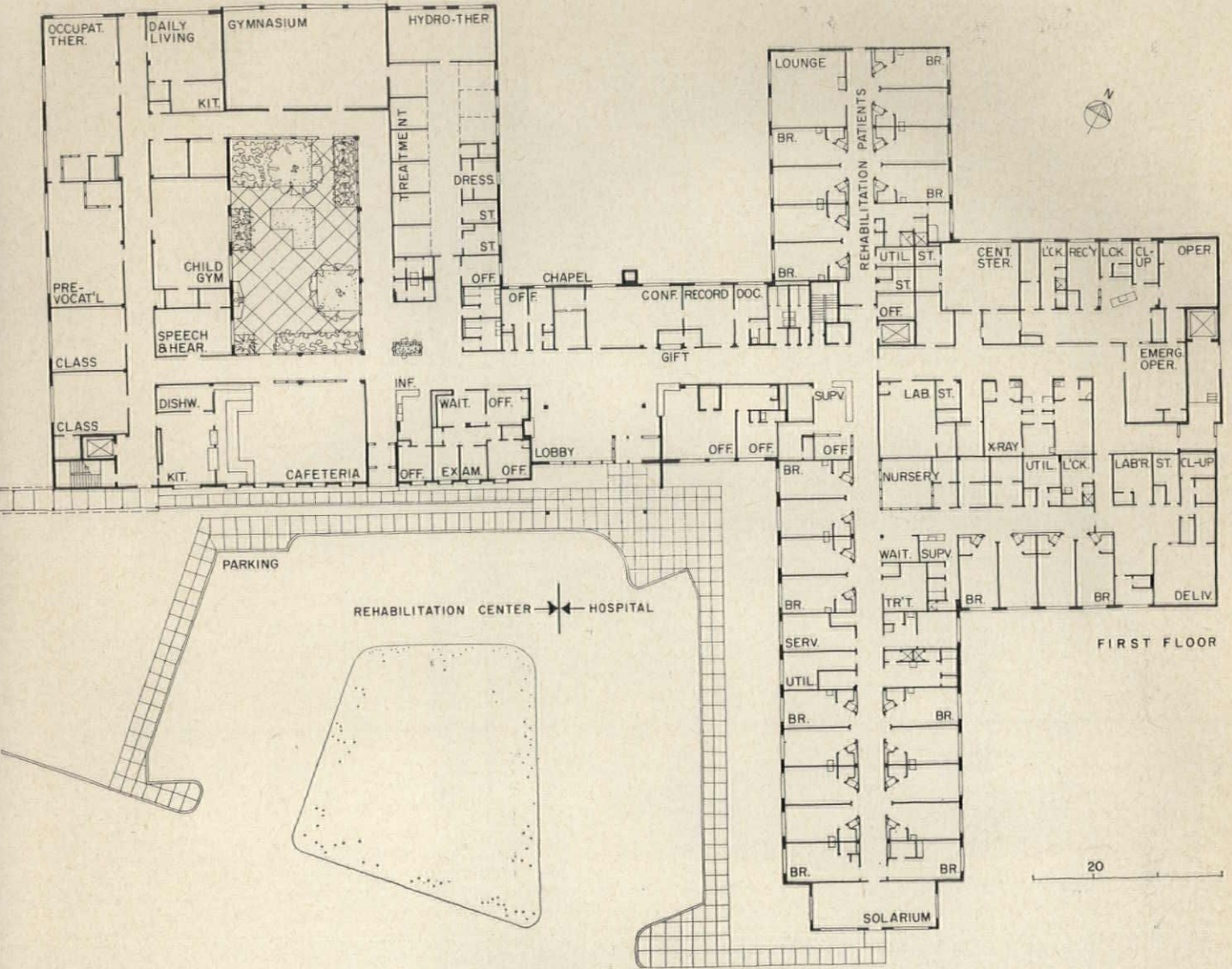


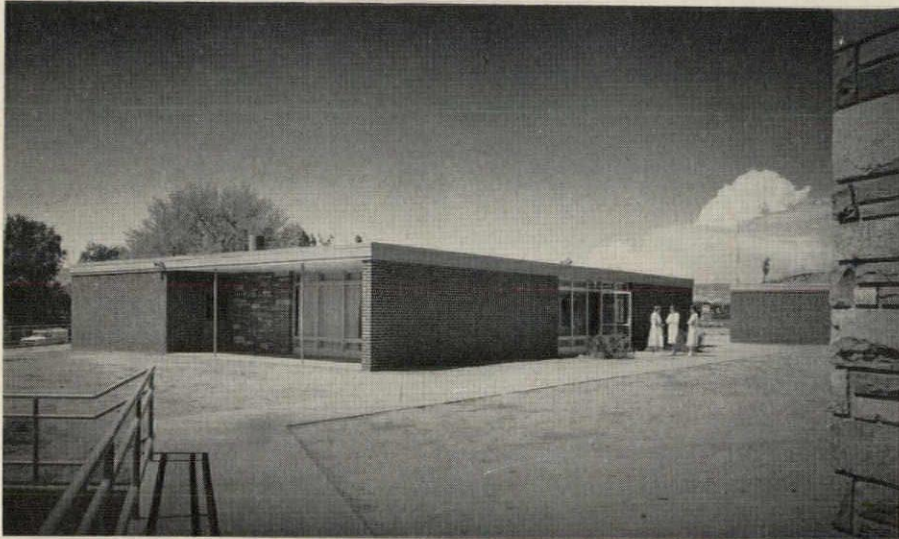
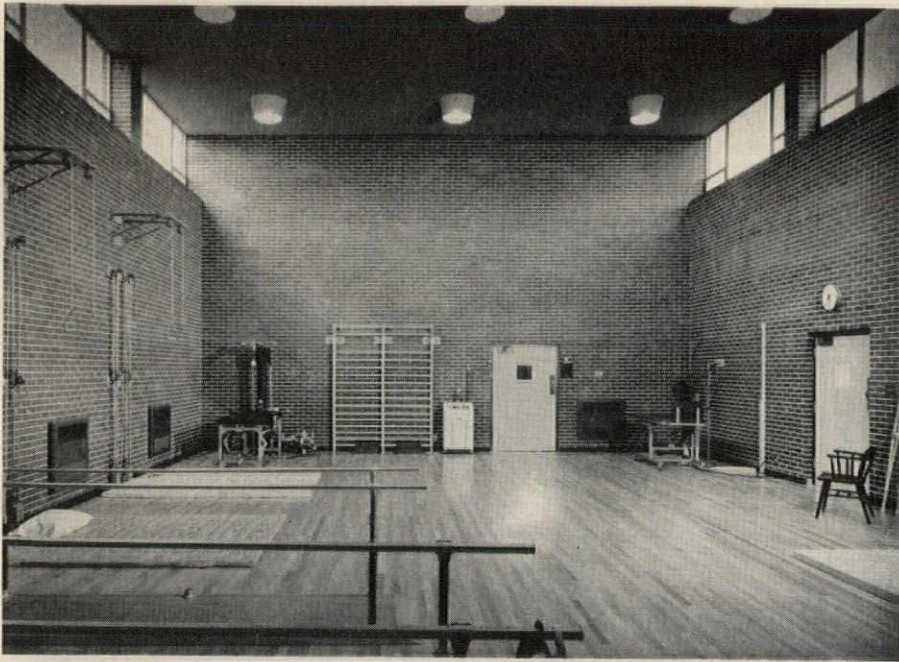
Warren Bebbins, Infinity, Inc. photos



Rehabilitation Center and Hospital

General-acute beds are located in the hospital wing projecting toward the front; the rear wing contains beds for adult rehabilitation patients; maternity and obstetrics are located in the front portion of the main hospital and are segregated from other facilities. The kitchen, laundry, and other service areas are located in the basement. The rehabilitation center facilities are grouped around a central court. In each of the two detached children's cottages six two-patient bedrooms, a living room, bath, and supervisor's room are provided. The unfinished basement area will eventually be used for a swimming pool and expanded therapy areas. Left, top: view of the occupational therapy area. Left, center: the rehab section of the main hospital was planned for specialized needs of these patients. Left, bottom: each of the patient rooms in the hospital is planned for two beds





Rehabilitation Center and Hospital

If the need should arise, a portion of the basement of the rehab center may be used for a kitchen for the center, separate from that of the hospital. Also, the storage area of the hospital, adjacent to the present kitchen, was designed for possible use as a future hospital cafeteria. At present, a single dietary service is used for both facilities. However, separate dish storage and washing areas for the two facilities are now provided. Left, above: view of the adult gymnasium. A separate gym is provided for children. Left, center: view of one of the children's cottages of the rehabilitation center. Left, bottom: view of a living room in one of the children's cottages

Warren Reynolds, Infinity, Inc. photos

Architectural Engineering

Progress for Engineered Wood

"Wood, the most traditional material for house construction, is being neglected by today's designers in favor of carefully manufactured materials with engineered design"—from an article in the AE section, October 1954 by Albert G. H. Dietz and William J. LeMessurier. While design procedures—and fabricating methods—for engineered constructions such as stressed skin plywood panels had been available for a number of years, the design methods generally were too tedious and time-consuming for the designers of houses and buildings of light construction. As a matter of fact the Time-Saver Standards accompanying the article mentioned above gave for the first time, to our knowledge, tabular solutions for floor and roof stressed skin panels. Now, in an effort to promote wider use of plywood building components, the Douglas Fir Plywood Association has (1) simplified the design of existing components, (2) developed structural design methods for new components, and (3) tied the bow on the package by establishing a service for inspection and quality control of factory-produced components. Plywood Fabricator Service, Inc., an affiliated, non-profit organization, is licensing fabricators across the country, with plant operations and products subject to inspection by the Service's regional offices. Thus the designer will have a guarantee that plywood components will meet the specifications, and he can use them with the same sense of confidence he does rolled steel beams or standard roof decking.

Air Conditioning: Up-grading Design

It's no secret that air conditioning design is not an exact science, but rather the application of technical data together with engineering judgment. While this always may be true to a certain extent, a recent study by the Federal Construction Council (a voluntary group of Federal agencies active in building construction) suggests that it ought to be possible to tie down some of the design variables more precisely. FCC, with the assistance of the Building Research Advisory Board, surveyed 10 Federal agencies, four building owners and 13 consulting engineers to find out what design values have been used by government and industry and to evaluate these values and resolve as many variables as possible—all with an eye to making air conditioning design practices more consistent. In its report, FCC makes a number of observations and recommendations. Samples: (1) arbitrary use of multiple safety factors should be eliminated since this leads to overdesign and thus excessive costs; (2) a universal complaint of design engineers is the lack of understanding that architects have of the air-conditioning engineers' problems. In many cases, the equipment is located according to the demand of the architectural design, rather than for the best results obtainable. "Air Conditioning Design," Federal Construction Council Technical Report No. 35, is available from: National Academy of Sciences—National Research Council, Printing and Publishing Office, 2101 Constitution Ave., Washington 25, D. C., \$1.50.

Prefabbing with BX

The electrical industry ought to come up with a speedier, less-complicated method of installing home wiring, Norman Raab, Union Electric Company, St. Louis, said recently at the annual University of Illinois Small Homes Council-Building Research Council's 15th annual Short Course in Residential Construction. The wiring of the future may come already "built-in" in prefabricated walls, so that wall panels placed next to one another will form a continuous wiring system to connect to the power line. While this is in the dream stage, a plan in some use provides pre-assembly of residential wiring. Each circuit is wired on a bench under ideal shop conditions—rather than at the job site—with all internal devices (convenience outlets, switches) completely installed.

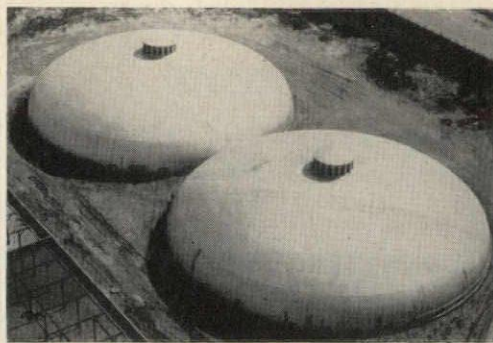
This Month's AE Section

THIN SHELLS: Engineering Fitness and Architectural Form, (Part 2), p. 246.
A New Approach to AIR DISTRIBUTION FOR OPERATING ROOMS, p. 251.
THE LONG AND SHORT OF COLOR DISTANCE, p. 254.
PRODUCTS REPORT, p. 257. LITERATURE, p. 258.
TIME-SAVER STANDARDS, Residential Warm Air Heating and Air Conditioning, pp. 261, 263, 265.

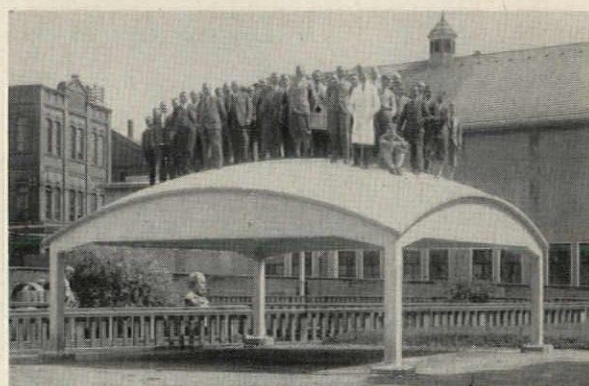
THIN SHELLS: Engineering Fitness and Architectural Form

by Gunhard-AEestius Oravas
Assistant Professor Engineering Mechanics
McMaster University, Hamilton, Ontario

Part 2



1



2

The critical review of thin shell structure begun last month is concluded here with an examination of doubly-curved shells and folded plates, focussing again on the role of the boundary disturbances in determining their performance as "true" shells. Dr. Oravas points out that while some of the criticism contained in these articles may seem harsh, "it does not pay to be meek when driving home an idea." Thin shells are here to stay, but it is his hope—and that of the editors—that this discussion may furnish a new perspective from which to examine them, and that it may stimulate a heightened awareness of the critical relationship between the thin shell as structure and the thin shell as architecture.

Positively Curved Shells

Shells of double curvature whose two principal radii lie on the same side of the shell are said to be positively curved: that is, in terms of differential geometry, their Gaussian curvature is represented by

$$\frac{1}{R_1} \cdot \frac{1}{R_2} > 0$$

Spheroidal domes, for instance, belong to this class of shells. Many beautiful spheroidal thin shell structures have been built, among them the striking domes shown in Figure 1. In these, the boundaries of the shells coincide with their geometry in a way that results in nearly ideal shell behavior.

Another type of spheroidal shell, the calotte shell, is set on a polygonal rather than a circular base. The grand-daddy of such shells is the square-based calotte (Figure 2) designed by Germany's Dr. Franz Dischinger, who pioneered their analysis and construction.

The boundary disturbance generated in the thin calotte shell is of very limited extent when the edge members are stiff enough to prevent any appreciable vertical deflection in their own plane, but are quite flexible horizontally. It is most prominent at the corners formed by the intersecting sides. The more

acute the corners, the more pronounced is the local peak of boundary disturbance in their vicinity. Thus the local boundary disturbance of calotte shells is less for shells over a square base than for shells over a triangular base, since the sides of the quadrangular shell subtend a more obtuse angle.

Sometimes a calotte shell is supported vertically only at the corners of its polygonal base, as is the case with the octagonal calotte shell roof of Eduardo Torroja's market hall in Algeciras, Spain (Figure 3). Because the edges of the roof are not fully restrained from vertical deflections, there is considerable boundary disturbance around the columns. The resultant horizontal boundary thrust around the octagonal base is absorbed by a tension member which was prestressed so that the tensile stress system was kept to a minimum. There is still considerable boundary disturbance present, but the prestressing has alleviated the more critical peaks of



4
Monitor

1. Tricking Filter Domes for Sewage Plant, Hibbing, Minnesota, Roberts & Schaefer Co., Engineers. 2. Test Dome, Wiesbaden-Biebrich, Germany. Dr. Franz Dischinger with Dyckerhoff and Widmann, Engineers. 3. Market Hall, Algeciras, Spain. Eduardo Torroja, Engineer; R. Barredo, Contractor. 4. Kresge Auditorium, Massachusetts Institute of Technology, Cambridge, Mass. Eero Saarinen & Associates, Architects; Anderson & Beckwith, Associate Architects; Ammann & Whitney, Structural Engineers



3

M. Garcia Moya



tensile stress within the thin shell.

The secondary shell segments arching between the columns are primarily designed to maintain the geometry of the shell's edge, which is highly stressed and would otherwise have a tendency to buckle out of shape. This phenomenon must be guarded against in all shell problems where concentrated forces occur along the perimeter of the shell.

A recent spherical calotte shell structure, which has a triangular horizontal base, is shown in Figure 4. Since this structure has aroused some controversy, it may be instructive to examine it in detail.

Since the rate of increase in the boundary disturbance of a calotte shell is largest going from a square base to a triangular base, the triangular shell is not the best solution from the structural point of view.

On the other hand, if the principles of architectural design are considered, it would be just as unnatural to force any other form of base plan upon this project.

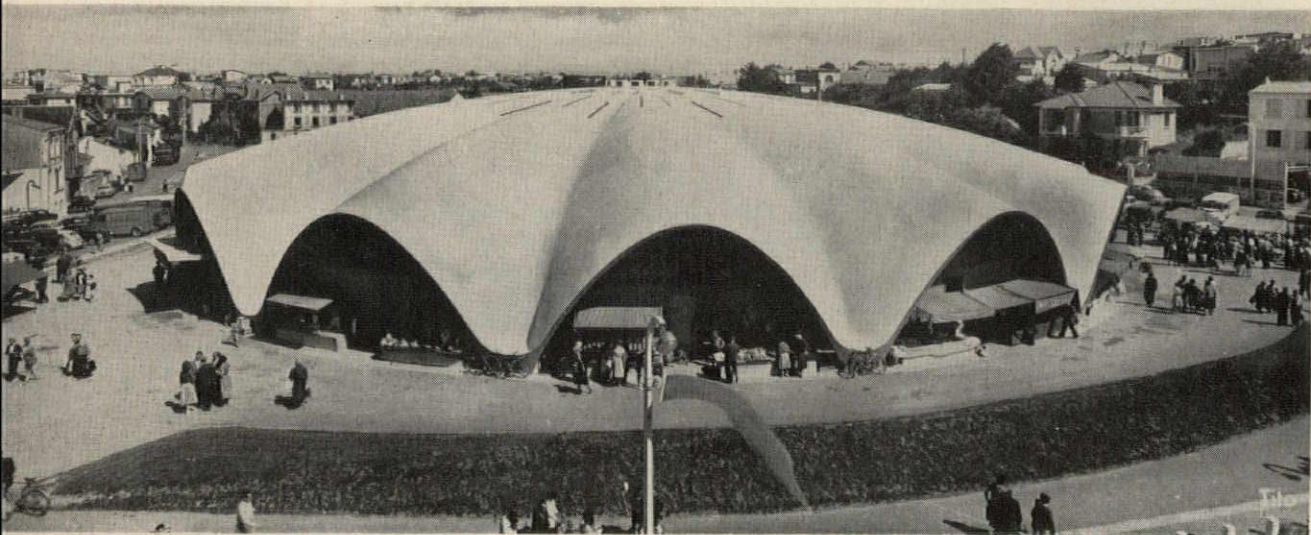
In weighing these factors against each other, one may conclude that, in this case, the architecture was justified in forcing the pace of the structure, especially since the peak boundary disturbance was alleviated by the curved edges of the shell, which formed right angles at their intersection measured on the surface of the shell.

Additionally, the architect's design has been severely criticized because a series of baffles suspended to produce acceptable acoustical qualities for the auditorium partially hide the structure of the shell from view within its interior. The writer's contention is that hardly ever can shell structures be devised that are mechanically and architecturally perfect and fully fit for immediate human occupancy.

In order to realize its full value as a showpiece, a shell structure should "read" from at least one of its sides, and preferably from the outside since it is always harder to appreciate thin shell structures

from the inside. This thin shell obviously has its character fully expressed from the exterior, and therefore its adoption would seem to be entirely justified.

Some questions have also been raised with respect to the advisability of supporting concentrated loads, in this case the reactions of the suspended baffles, from the skin of the thin shell. It is true that a thin shell is most capable of transferring loads that are reasonably uniform, but if the concentrated loads are small and densely distributed over the shell's surface as here, their effect is in any case very similar to that of a continuously distributed load, which can easily be carried by the shell. A few widely scattered concentrated loads are also admissible if the localized transverse bending disturbance propagated from the point of application of the load is equal to or smaller than the unavoidable outside boundary disturbance. It is hardly reasonable to reject a thin



M. Berjoud



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John Maltby, courtesy London County Council

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shell structure simply because a few concentrated loads have to be suspended from its skin.

However, the outside boundary members in this project should have been supported at more frequent intervals in order to diminish the heavy edge arches. This would have brought with it a less pronounced boundary disturbance, a lighter shell, and consequently a structure more in tune with the architect's stimulating concept.

Compound and Translational Shells

Figure 5 shows a compound shell structure by France's René Sarger, which was engineered for repetitive use of the formwork. In this case, the characteristic shell unit has a double curvature that helps to confine the boundary disturbance of the shell within reasonable limits.

In comparison, the segmental shell structure shown in Figure 6 does not seem to accomplish its structural purpose. The leading motive behind the dissection of this

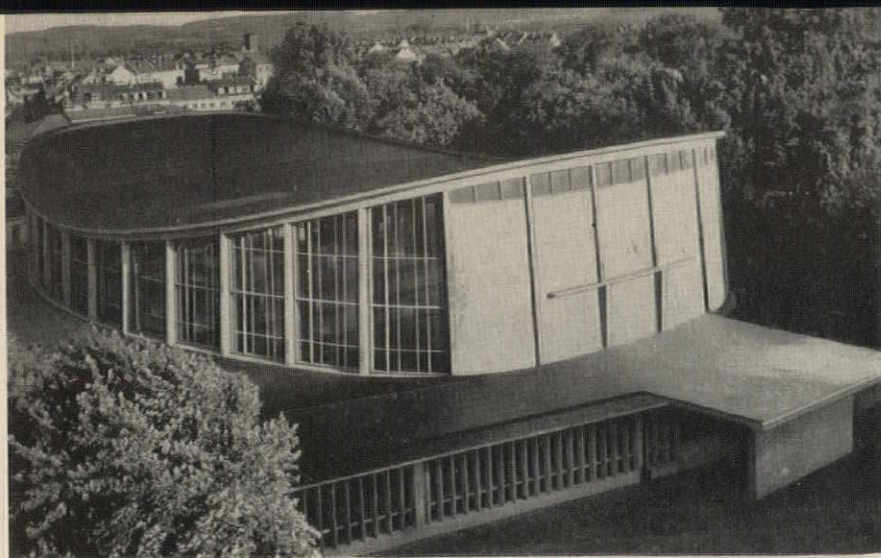
spherical dome into a large number of narrow pie-shaped segments was also an expected economy resulting from the re-use of forms. But unfortunately the proportions and boundary conditions of the segmental shells were chosen to be such that a significant shell action of the structure was entirely lost. The spherical segments are so narrow that a state of transverse bending exists practically everywhere.

Another important type of shell structure is the translational shell whose surface is generated by sliding one curve along another. Such shells are quite efficient in transferring their loads primarily by membrane forces. If their boundaries are supported at reasonable intervals so that the edge members can be of moderate size, the boundary disturbance induced in the shell's skin is quite small and an effective shell structure is possible. Translational shells can develop resultant diagonal tensile membrane forces of considerable magnitude in the

vicinity of the corners, but these can ordinarily be absorbed by reinforcement or prestressing.

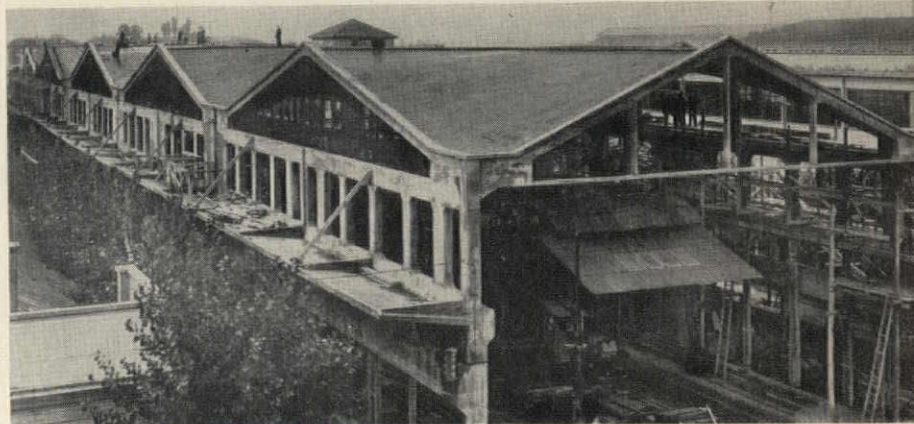
It is important, however, to note that concrete deforms with time when subjected to constant stress. This phenomenon is called plastic flow or creep. If a shell's boundary members support long spans, then they are subjected to high bending stresses which produce appreciable deflections of the members due to the plastic flow of the concrete. Since these changes in the geometry of the boundary members impose an additional boundary disturbance on the shell, it is evident that every effort should be made by the designer to prevent appreciable deflections of the edge members.

The plastic and statical displacements of boundary members can be reduced considerably by supporting them at moderate spans, and can be practically eliminated by an appropriate prestressing. Figure 7, for example, shows a translational shell structure with diaphragm type



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5. Covered Market, Royan, France. Simon & Morisseau, Architects; René Sarger, Engineer. 6. Dallas Convention Center, Dallas, Texas. George L. Dahl, Architect; Ammann & Whitney, Consulting Engineers. 7. Assembly Hall, Kidbrooke School, Kings Lynn, England. Ove Arup and Partners, Consulting Engineers. 8. Officine Alfa Romeo, Milan, Italy. Guido Baroni, Structural Engineer. 9. Black Forest Hall, Karlsruhe, Germany. Prof. Schelling, Architect; Dyckerhoff & Widmann, Structural Engineers



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edge beams which were prestressed in order to mitigate their deflections. The resulting supporting condition of the shell reduced its boundary disturbance to such an extent that the shell started to behave essentially as a membrane.

In connection with translational shells, it is worthwhile to present an incident which demonstrates a common pitfall for shell engineers. The architect of a thin translational shell structure very much like the one shown in Figure 7 once proposed to me to build this shell without any edge members at all. The tempting challenge posed by such a thin shell blinded my judgment to such an extent that a complete structural analysis of considerable complexity was actually carried out.

Finally, when I recovered my sense of reality, I was able to draw the following conclusions, which could have been put forth without actually carrying out the painfully elaborate theoretical analysis:

A thin shell without any edge

members is no doubt a visual ecstasy, but structurally it is a total loss. All major benefits of thin shell behavior are lost because the shell persists in a predominant state of transverse bending all across the skin of the shell, thus obviously undermining its requisite exility.

A reintroduction of the appropriate edge members of course restored the chaste structural behavior to the thin shell and re-established its true structural nature.

Negatively Curved Shells

Doubly curved shells whose two principal radii lie on opposite sides of the shell are said to be negatively curved:

$$\text{Gaussian curvature} = \frac{1}{R_1} \cdot \frac{1}{R_2} < 0$$

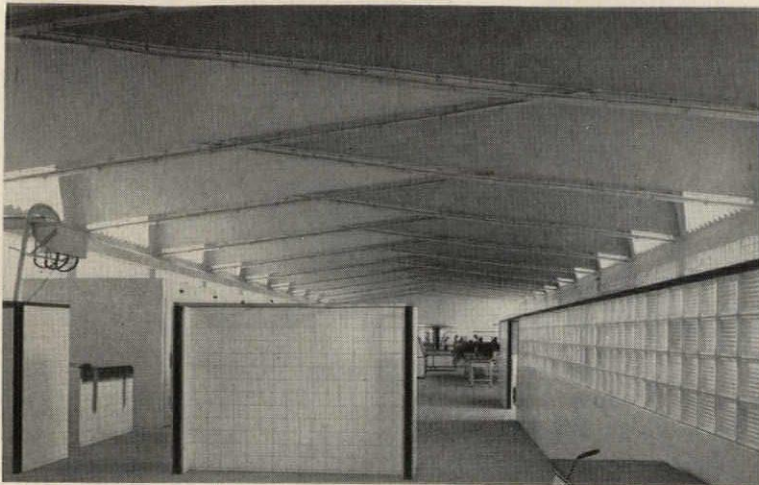
Such shells have excellent properties against buckling, but their greatest disadvantage lies in the fact that they usually develop considerable tensile membrane stresses which can be a nuisance in rein-

forced concrete thin shell structures.

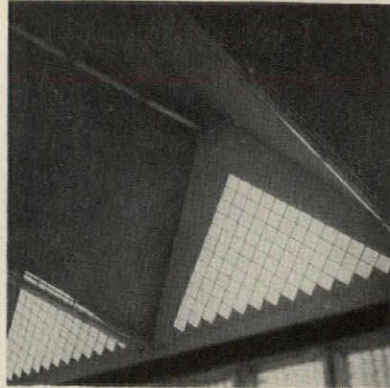
Hyperbolic paraboloidal shells, which are developed by the translation of a straight generator, are one of the most widely used among such types of shells. The late Bernard Laffaille of France, and Guido Baroni of Italy, were the pioneers in the development of this type of thin shell structure. (Figure 8 shows a factory roof by Baroni which is an arrangement of four hyperbolic paraboloids.)

It is important to point out that the structural design of hyperbolic paraboloidal shells of unusual proportions should be entrusted only to experts. These shells are so temperamental in their behavior that many dangerous boundary conditions can occur for uncommon shell proportions. Very often an examination of their statical equilibrium is not sufficient for reasonable safety of the structure and an analysis of deformations becomes mandatory.

There have been several rather misleading articles written on such

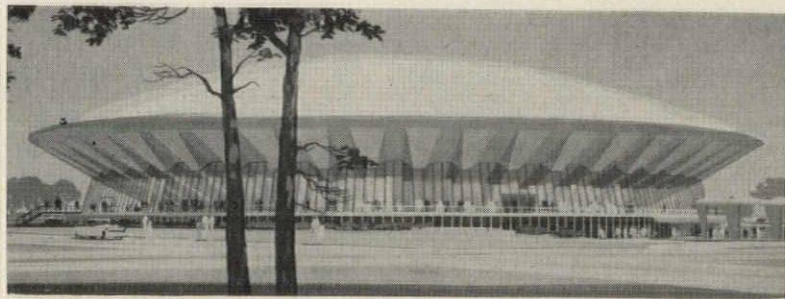


10



M. Garcia Moya

10. Technical Institute of Tarragona, Spain. Eduardo Torroja, Engineer. 11. Arena, University of Illinois, Urbana, Ill. Harrison & Abramovitz, Architects; Ammann & Whitney, Structural Engineers



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shells in various journals which convey the impression to the reader that the membrane solution of hyperbolic paraboloidal shells is a structurally safe solution. Nothing could be farther from the truth.

These shells have not as yet been fully investigated for all aspects of their structural characteristics, but there is already sufficient evidence available to indicate that critical discontinuities in membrane stresses and strains are possible. The boundaries of such shells are very often in a precarious state of equilibrium with an omnipresent threat of some lateral kickout.

Usually such fine points of structural behavior remain undetected by designers with inadequate training in structural mechanics, who are liable to draw broad and erroneous conclusions based on their rather primitive understanding of the whole problem. Consequently a few negatively curved thin shells have been constructed that seem to be able to stand up rather by the grace

of Nature than by the prowess of their designers.

On the other hand there are quite a number of negatively curved shells in existence which have been skillfully proportioned or ingeniously prestressed in order to avoid the structural shortcomings of the genre. Figure 9, for example, shows a negatively curved shell of reinforced concrete designed by Dr. Finsterwalder who prestressed it in such a way that all membrane tensile stresses within its skin were effectively erased.

Folded Plates

Modern folded plate structures were pioneered by Dr. Hermann Craemer and Dr. Georg Ehlers of Germany in the late twenties. They are not really shells and their structural behavior compares unfavorably to that of a pure shell. They are, however, much superior to flat plate structures because the folded plate supports the greater part of its load by bending action which takes

place within its own plane.

In general, the folded plate's structural behavior includes wasteful transverse bending everywhere, but the magnitude of the bending can be made, in most cases, moderate enough to make the folded plate design more economical than a conventional structure.

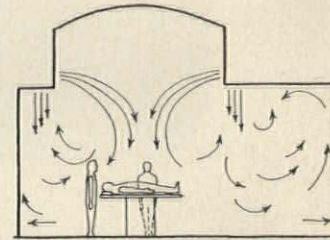
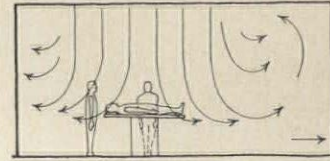
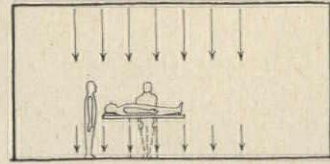
The advent of prestressing has enhanced the economic appeal of these hybrid structures considerably, as in the early prestressed folded plate structure shown in Figure 10. The information provided by the model test in this case confirmed conclusively the correctness of Torroja's original theoretical analysis for this unusual folded plate structure.

The folded plate dome for the arena shown in Figure 11 also seems to possess a good margin of originality, although it remains to be seen whether the final design of this novel structure is carried out to the limit of the structural efficiency it deserves.

Theoretically, an ideal form of air flow (top) would be from the ceiling as a supply to the floor as an exhaust. Since this is impractical, the engineers have used portions of the ceiling for supply outlets, and registers on sidewalls for exhaust. The center sketch shows how a portion of the ceiling is used for air supply in the neurological operating rooms. The bottom sketch shows air supply from the periphery of the observation dome for cardiac operating rooms

A New Approach to Air Distribution In Operating Rooms

by Edward A. DeVan
Krey & Hunt, Consulting Engineers



Operating Facilities for Cardiovascular and Neurological Surgery, Clinical Center, National Institutes of Health, Bethesda, Md., Jack Masur, M.D., Director; D. L. Snow, Chief, Sanitary Engineering Branch

Kiff Colean, Voss & Souder, The Office of York & Sawyer, Architects; Krey & Hunt, Consulting Mechanical and Electrical Engineers; Bolt Beranek and Newman Inc. (Instrumentation)

A novel approach to the distribution of conditioned air has been developed for new operating facilities at the National Institutes of Health in an effort to improve the sterility of the air, especially in the vicinity of the operating table. This is particularly significant in light of the medical profession and hospital authorities' taking a new look at aseptic techniques to minimize infection.

Essentially, the idea is to bathe the patient in a current of fresh supply air so that this clean air provides a protective curtain about the operating field. The thinking behind this is that outdoor air generally is free of pathogenic organisms, so if proper precautions are taken in the design of the air supply system, the conditioned air that enters the room will have a very low bacteria count.

But actual studies indicate that if supply air is introduced into the

operating room in such a way that a turbulent pattern is created, this air can wipe the room surfaces, equipment and clothing, and pick up sufficient pathogens to create an unsatisfactory condition, particularly for cardiovascular and neurological surgery.

Based on this premise, the ideal air distribution would be one in which the entire ceiling is an air supply and the entire floor is an exhaust, resulting in a complete and constant purge of the room, with minimum local recirculation. But obviously this is impractical. The operating facilities at NIH will have instead a modified version in which the air supply is directly over the operating table and an exhaust opening is provided near the floor on all four walls.

In the new operating rooms at the National Institutes of Health, 65 F air will be directed at the operating field, but the ceiling air supply covers a larger area than the operating table itself.

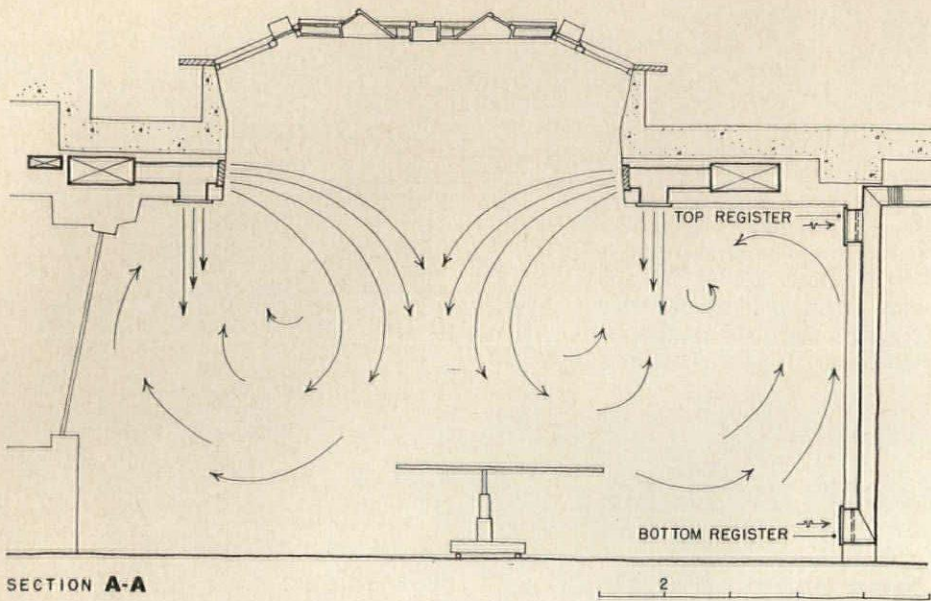
In the case of the cardiac operating room, the placement of supply outlets was dictated by the perimeter of the dome required in the ceiling for observation, for television and camera ports, and for the mounting of a circle of 24 recessed incandescent fixtures. These lights are di-

rected at the operating field, and can be individually controlled at a console by the surgeon.

In the neurological operating room, no dome was required, since observation will be from the recording room. The air supply issues from perforated metal pans with air valves, set in a dropped ceiling. Recessed fixtures for general illumination are interspersed with the pans. Suspended surgical lights also will be provided in both types of operating rooms.

While the supply air is the cleanest air in the room, its temperature, at 65 F, makes it also the coldest and a normally clothed person might feel drafts. However, there are mitigating circumstances in this case. The designers and the NIH staff are hoping that the heavy gowning of the surgeon and his team will offset any discomfort associated with the direct air stream.

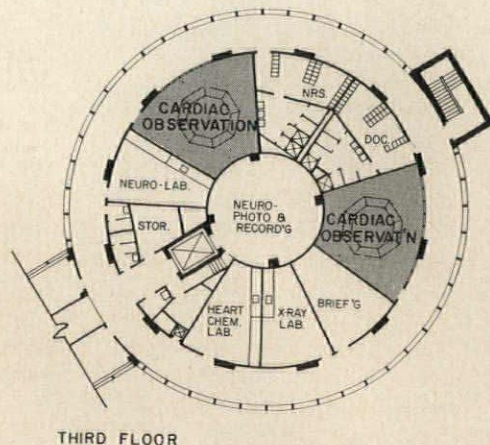
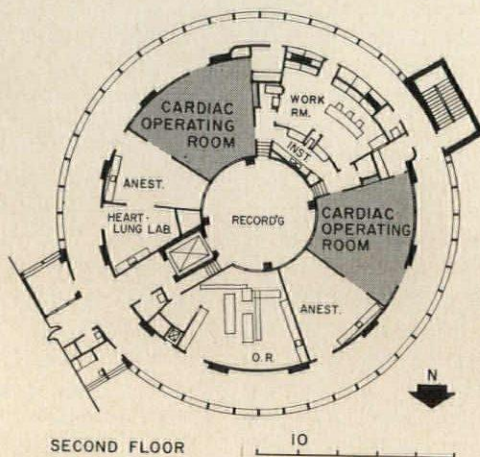
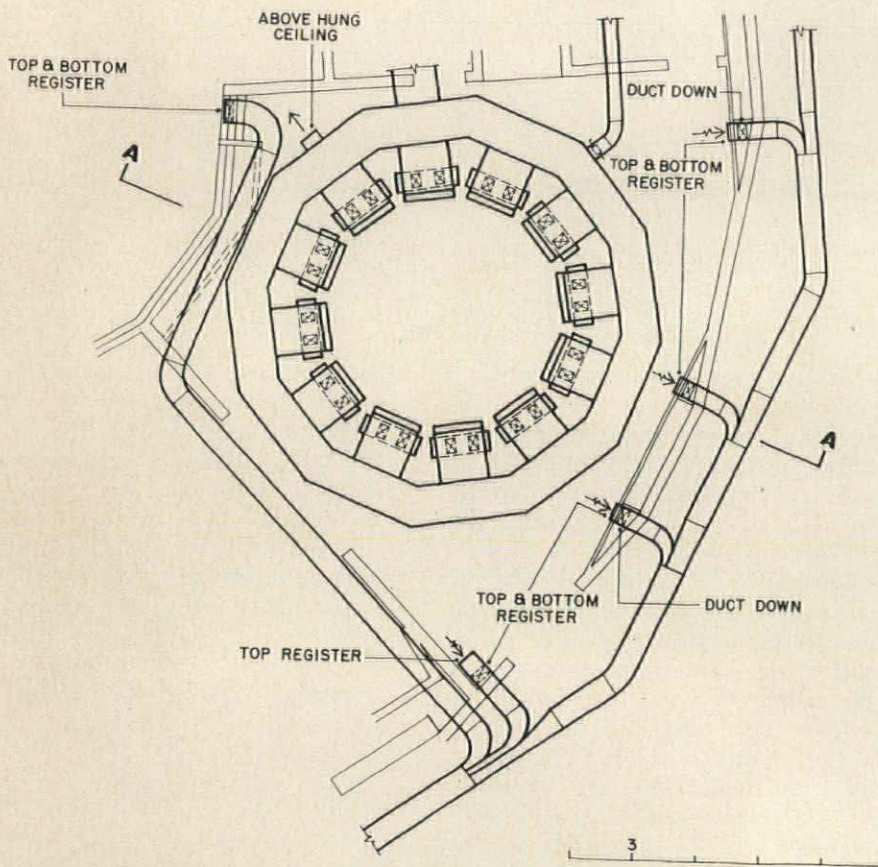
Supply outlets are designed so that air quantities can be varied to achieve an optimum combination of cleanest air and least objectionable drafts. Layout of the rooms made it impossible to have four-wall exhaust; instead, two walls are used. The system is designed to permit all bottom exhaust if tests should prove this desirable. Top exhaust also is



available to modify the air distribution pattern, if necessary.

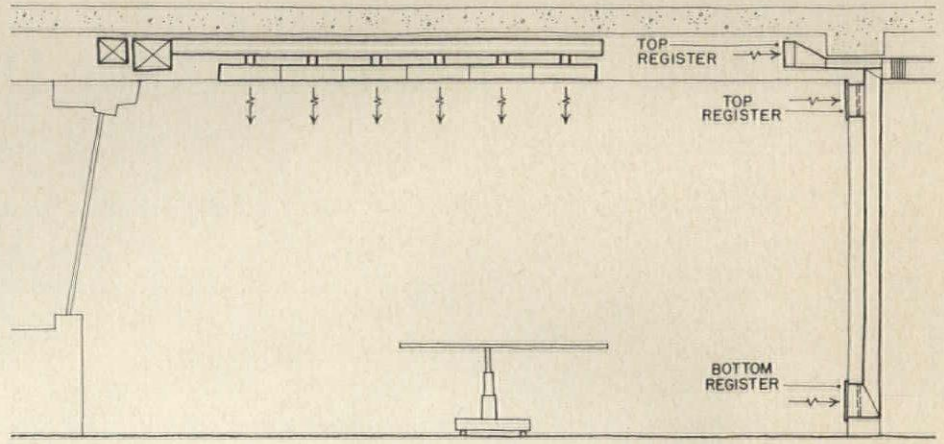
The maintenance of a sterile atmosphere is not a function of any one item, but several: (1) cleanliness of air supply, (2) method of air distribution and air change rate, (3) operating room cleaning, (4) operating procedures and techniques. 1. *Cleanliness of Air Supply.* It was mentioned that outdoor air is generally free of pathogens, which is the prime reason 100 per cent outdoor air is used for operating suites. If, however, fresh air intakes are too close to exhaust outlets, the fresh air can become contaminated.

Studies have shown that air also can become contaminated in the air handling system due to build-up and accumulation of bacteria on cooling and/or heating coils, and air leakage from fan room into the casing (which cannot be made air-tight) due to negative pressure. These studies indicate the need of filters immediately before the air outlets to operating room suites, regardless of the type of air conditioning system used. 2. *Method of Air Distribution and Air Change Rate.* Air distribution has been discussed earlier. Air change rates for operating suites published in the literature vary from 10 to 20 changes per hour, even though in many cases a rate of 6 to 7 a.c. will handle the heat gain. While the higher air change rate will produce the greatest dilution of bacteria, at the same time it can create excess air motion and pick up bacteria clusters on linen, equipment, etc. For the present, until further studies are made, 10 to 12 a.c. are recommended as a compromise.

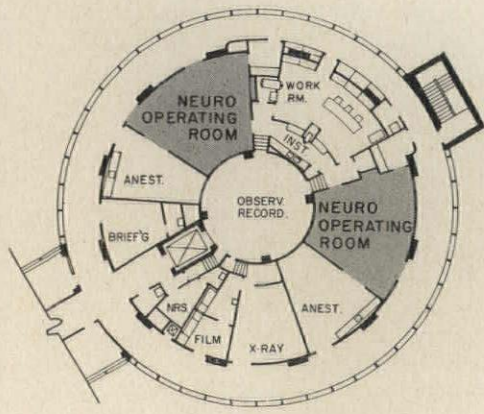
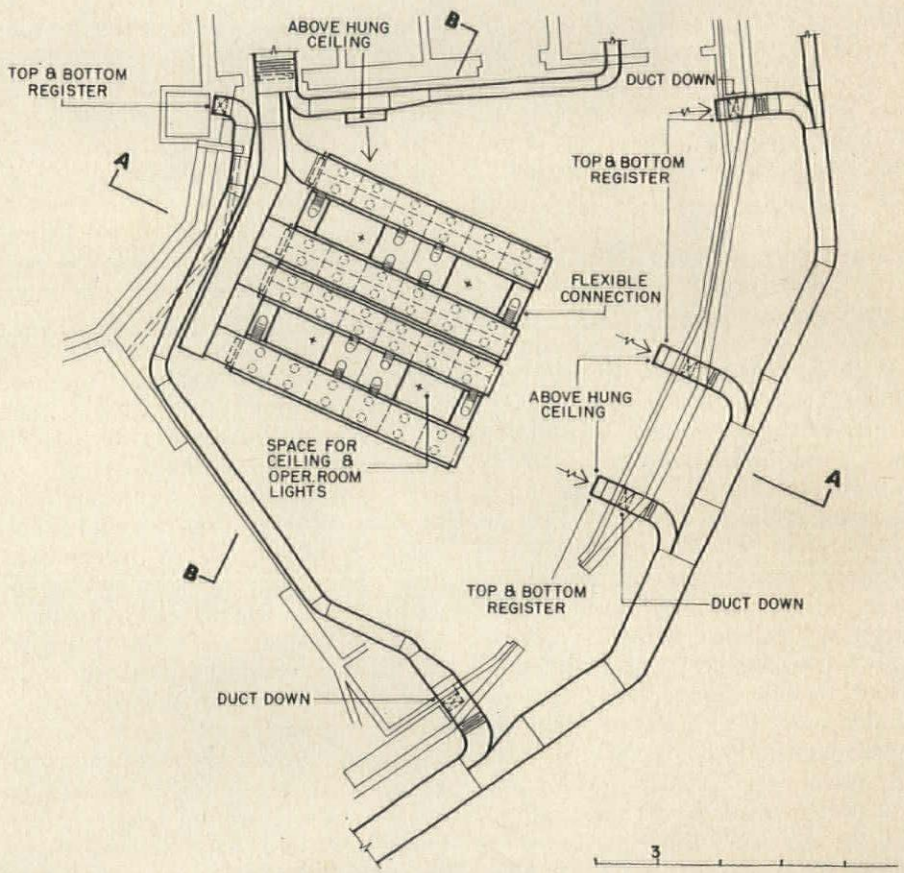


3. *Operating Room Cleaning.* It is common practice in operating suites to wash the floors, part of the walls and furniture after every operation, or at least once a day. In some hospitals, however, scant attention is paid to the higher parts of the walls and ceilings, and in particular to the air conditioning outlets. Air conditioning outlets, both supply and exhaust, can be focuses of dust collection.

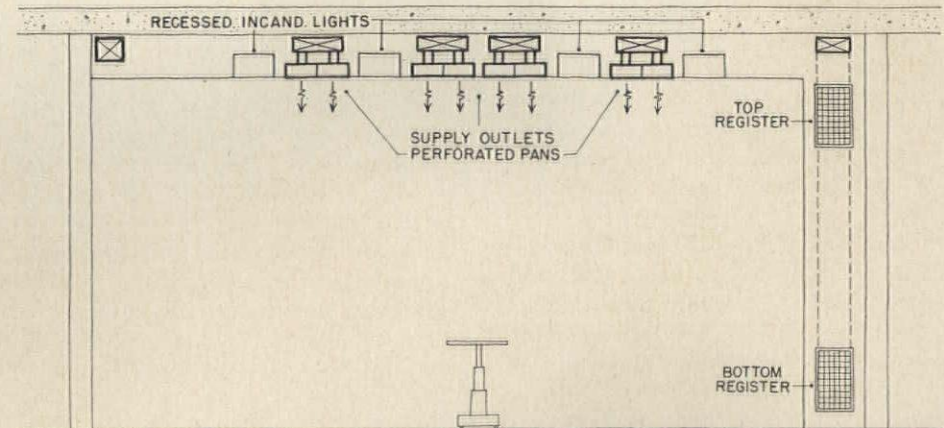
4. *Operating Room Procedures and Techniques.* Recent tests in a neurosurgical suite showed that the supply air contributed only 18 per cent of the bacteria count during surgery and only 10 per cent during draping. It was deduced that contamination of air was due to partially sterilized linen and equipment, carelessness on the part of personnel and inadequate cleaning of rooms. Historically, all physiological data collecting in cardiovascular and neurological surgery has been done in the operating room. However, this will be done in a separate room, the recording center, at the new operating facilities at the National Institutes of Health. This remote location of instruments and centralization of gases, vacuum and hypothermia lines achieves an operating room requiring a minimum of personnel and machines. This is accomplished by the use of a console unit to which the patient (anesthesia and instrumentation lines) is attached.



SECTION A-A



FOURTH FLOOR



SECTION B-B

The Long and Short of Color Distance

by R. M. HANES, Applied Physics Laboratory, Johns Hopkins University

In this report on a recent color study, a scientist raises some pointed questions about the effect of color on apparent room size, and contradicts some architectural rules of thumb. For example, persons participating in the experiments found that a black panel seemed farther away than a white panel at the same actual distance. Is a black room, then, "larger" than a white one?

"Warm colors advance; cool colors recede." How often have you heard or read this statement? Or perhaps even used it yourself? It provides one very convenient rule of thumb for color selection—if it is valid. It is the validity of this statement, as well as other relationships between color and apparent distance, that we shall examine in this article.

Let's start with a hypothetical, but not unusual, decorating problem: a room with a high ceiling—too high to satisfy one's sense of proportion. We decide first to "drop" the ceiling color to a convenient point on the side walls. This practice is fairly standard and is said to be effective. Let's assume that it is. Now we wish to select the color to be used. How shall we select it? Shall we be concerned with the exposure of the room, whether it faces north, south, east, or west? Assume that our room faces south and that we should like to use a so-called cool color. But "cool colors recede!" Suppose that we want to use blue, a hue always called cool. Will the blue recede so much that it will offset the effect of the "dropped" ceiling color? Will different blues have different effects, or will they all recede about the same amount? It is unlikely that all blues will seem equally cool. It therefore seems unlikely that all blues will appear to advance or recede to the same degree. Our rule of thumb appears

*See bibliography page 348

to be inadequate, even if valid. We must seek further information.

We turn to one of the sources on color application¹ and quickly find some promising information to the effect that shades "advance" and tints "recede." It appears, then, that a shade of blue would be both cool and advancing. It would satisfy both the exposure requirement and the distance requirement. This is exactly what we are seeking, so we pause only momentarily to ponder the apparent contradiction to our rule.

We should next like to determine something about the degree of effect to be expected, for we do not want to have the ceiling appear too low, nor do we want it darker than necessary. The books on color application* do not supply the desired information, so we turn to the experimental literature. Katz² reports an interesting little laboratory demonstration in which broad-headed nails, which projected equal distances from a board, were covered alternately with red and blue paper squares. At a viewing distance of approximately thirty-one inches, the reds appeared nearer than the blues by about one per cent of the viewing distance. This is the sort of quantitative information we are seeking, but the degree of effect is disappointingly small. Further searching is necessary.

We find a disconcerting report by Pillsbury and Schaeffer⁷ to the effect that, with red and blue lights, eleven out of fifteen observers reported that the blue light appeared nearer! Now we are confused. We forget quantitative matters for the moment and seek reassurance that red does really appear nearer than blue. Freund² gives us some help, for he reported that red, yellow, and green were advancing colors as compared to blue. We have now got red and blue back into the "right" relationship. Perhaps we should stop while we are

ahead but, inveterate seekers after truth that we are, we push on. We find that Taylor and Sumner⁸ reported brightness to be more important than hue in distance judgments and that Johns and Sumner⁵ found that brighter colors, as compared with darker ones, appeared closer when both were objectively equidistant from the observer. Now we are really confused. Our authority on applications stated that shades (or darker colors) advance relative to tints (or lighter colors), but we find an experimental study reporting that lighter colors appear relatively closer.

At this point we might decide on one of two courses of action: (a) the whole subject is trivial and we shall forget it, or (b) there is sufficient evidence to suggest important practical effects, but we need more and better information. The present writer chose the latter alternative some years ago and conducted several experiments in an attempt to obtain more useful practical information. This effort will be described later, but first a few words about why the evidence is so confusing.

First of all, the subject of perceptual and affective reactions to color is a very complex one. It is scarcely surprising, therefore, that we find contradictory evidence even in laboratory studies. It is not at all surprising to find contradictions and confusions between experimental evidence and anecdotal evidence, for the latter is rarely objective and may even, in some cases, be exaggerated or contrived for commercial purposes. Also, such evidence will frequently be based on individual experience and judgment, which are not necessarily indicative of groups or average effects. Shall we then accept only evidence from controlled laboratory experiments? The answer must be no, for such experiments, while suggestive, do not ordinarily

duplicate with sufficient accuracy the practical situation. Both kinds of evidence are therefore inadequate; much additional information is needed before the effects of color can be assessed.

In an attempt to obtain some of the needed data, the present writer performed two experiments. The first was conducted in a standard laboratory setting for the purpose of measuring independently the effects of each of the three color dimensions (hue, lightness, and saturation). The second was carried out in a full-scale room in order to obtain some better indications of the degree of effect to be expected in a more realistic setting.

In the first experiment a special depth-perception apparatus was used with painted test materials. Results indicated that lightness alone could cause differences in apparent distance of as much as five to seventeen per cent, depending upon the hue. Hue effects varied between nine and nineteen per cent for saturated (strong) colors, and between two and three per cent for relatively unsaturated colors, with red and yellow appearing to "advance" relative to green and blue. The results for saturation were not as clear-cut. While a saturated red did appear about fifteen per cent closer, on the average, than an unsaturated red, no reliable or consistent differences were found for the other hues.

With this further evidence that color can cause considerable changes in the apparent distance of surfaces under laboratory conditions, the next logical step was to test for such effects in a more realistic applied situation. This second experiment will be described in some detail so that you will have enough information to evaluate its implications. A room shell (12 feet long, 22 feet wide, and 8 feet high) was constructed with movable end walls and a luminous ceiling to give uniform illumination throughout the room. All surfaces were made as smooth and continuous as possible to eliminate extraneous clues. The end walls consisted of removable panels mounted on rolling carriages at each end of the room. A storage rack was provided at one end of the room for the end-wall panels, and provision was made for easy transfer of the panels to the electrically-driven carriage at that end.

Eight colors were used in the ex-

periment. The side walls and one end-wall panel were painted a medium gray. This medium gray panel served as the standard at one end of the room in all comparisons. The other seven colors were used on the remaining seven panels. The approximate Munsell notations for the colors were as shown in Table 1.

The average room illumination at eye level (sitting position) was about forty foot candles. The amount of illumination on the end walls did not change noticeably as the walls were moved from the end toward the center of the room. Observers were seated in a fixed position ten feet from the standard gray wall. This location allowed for a maximum adjustment of two feet for the variable end-wall beyond the physical equality point when the standard end-wall was set at the end of the room. Observers were tested for color deficiency, instructed in the use of the control lever for the power-driven carriage, and given practice until they were able to manipulate the carriage satisfactorily. After such instruction and practice, the experimental trials were started, with each observer making two settings for each of the seven colors. The various colors were presented in random order, and other necessary experimental precautions were observed. At the end of his test, each observer was asked to do three things:

1. Tell how he had made the settings, i.e., what he had used as cues or criteria for his settings.

2. List all eight colors of the experiment in the order of his own preference for them.

3. List all eight colors in order from most to least "advancing" as they had appeared during the experiment.

One hundred and twenty-eight persons served as observers—sixty-four male and sixty-four female. The males ranged in age from 18 to 57 years, with a mean of 38. The female range was from 16 to 58 years, with a mean of 32.5. Of the male group, all had at least a high school education and thirty-eight of the group were college graduates. Twelve of the females had not completed high school and only seven were college graduates. Most of the females were small town housewives, but the rest of the females and nearly all of the males were office and research laboratory employees.

These observers were divided into four different groups, each group being given somewhat different instructions. One group was told that

TABLE 1

Color Name	Approximate Munsell Notation
Red	7.5R 5/14
Yellow	3.5Y 9.2/12
Green	2.5G 5.5/10
Blue	2.5PB 5/10
Black	N 2.5
Light Gray	N 8.0
White	N 9.4
Medium Gray	N 6.0

TABLE 2: MEAN SETTING (IN INCHES) FOR EACH COLOR

Red	Yellow	Green	Blue	Black	Light Gray	White
+2.8	+3.8	+2.9	+0.9	-0.1	+1.6	+2.4

TABLE 3

Most to least advancing from experimental settings	Most to least advancing from questionnaire	Most to least preferred
Yellow	Red	Yellow
Green	Black	Green
Red	Yellow	Blue
White	Blue	Light Gray
Light Gray	Green	Medium Gray
Blue	Medium Gray	White
Medium Gray	Light Gray	Red
Black	White	Black

red, yellow, and black were "advancing" colors, while green, blue, and white were "receding" colors. Another group was told that these colors had just the opposite effects. The third group was told that no satisfactory information was available on such color effects. All three of these groups were given detailed instructions about avoiding the use of any cues other than the end walls. The fourth group was not told anything about extraneous cues; they were left to their own devices. The instructions were varied for two purposes: (a) to determine whether or not the color effect could be influenced by positive statements about the way in which color affected apparent distance, and (b) to provide some degree of check on the use of extraneous cues by the subjects.

The results produced by this rather elaborate experiment were both pleasing and disappointing. While statistically significant effects due to color were found, the average magnitude of such was small. The mean settings of the movable end wall for all observers for each color are listed in Table 2. A positive value indicates that the variable panel was set farther away from the subject than the standard gray panel when the two appeared equidistant to the subject. In other words, the positive sign indicates that the color or, more properly, the wall, appeared to advance or seemed closer. Since all the signs are positive except for black, all colors except black, on the average, appeared to advance compared to the gray standard. Since all the colors contrasted strongly with the side walls, it was expected that they would all "advance" in greater or lesser degree.

Examination of the effects of the different colors relative to each other indicates that yellow was the most "advancing," with red and green next, white third, then light gray, blue, and black. Red and green are listed together because their means are essentially equal. While this is the order without consideration of the three color dimensions, we need to examine each dimension separately in order to arrive at a reasonable explanation and understanding of the effects. With this limited number of different colors, we cannot evaluate each color dimension as thoroughly as we would like, but we can draw some conclusions.

So far as hue effects are concerned, the colors fall in spectral order from most to least "advancing," if we allow for effects due to lightness differences. While yellow appeared to advance most, it had a much higher reflectance than the other hues. According to theory, red might have been expected to appear closer than green, but since these hues were highly saturated, it seems likely that the obtained result is due partly, at least, to the strong contrast.

When the lightness dimension alone is considered, it is apparent that the greater the lightness the more a color advances in this situation. The order from most to least "advancing" is white, light gray, and black. Note that this result for lightness is exactly opposite to what has customarily been said on the basis of practical observation about the distance effects of black and white.

So far as saturation is concerned, all the highly saturated colors appeared closer than the medium gray standard, as indicated earlier. While this result could be attributed partly to a position effect, since the variable was always on the right, it seems more likely that saturation was the determining factor.

Before we consider the implications of this study, a few words are necessary concerning the other variables in the experiment. There was no statistically significant effect due to groups, trials, trial orders, or sex. While there were differences in the mean settings for these factors, none of the differences were large enough to provide a statistically significant difference. There were, on the other hand, some significant interactions, but none of these involved the color factor and were probably due to differences in age and educational level among the subjects in various subgroupings.

The questionnaire results, when compared with the experimental settings, provide very interesting data. To allow for convenient comparison, Table 3 is provided to show:

1. The rank order of the colors from most to least "advancing" as determined from the experimental settings.
2. The rank order of the colors from most to least advancing as determined from the subjects' judgments as reported on the questionnaires.
3. The rank order of the colors so far as the subjects' preferences were

concerned, as reported on the questionnaire.

Calculations show practically zero correlation between the order for apparent distance due to experimental settings and that reported on the questionnaire, but there was an appreciable correlation between experimental settings and color preference. Apparently color preference had some influence on the experimental settings, but there was essentially no relationship between the actual experimental performance and the subjects' feelings about the way the various colors appeared to "advance" or "recede."

What can we conclude from this experiment? Have we demonstrated anything important? The answer is a qualified "Yes." Color distance effects have been obtained for the first time, so far as the writer knows, in an objective, controlled situation of practical significance to architects, decorators, and others concerned with architectural appearance. The average size of effect, on the other hand, is disappointingly small—a matter of no more than about three per cent at most. These average results do not reveal, of course, some much greater effects for some individuals. There were numerous differences, for example, of 12 to 24 inches among the different colors for some subjects. Nevertheless, since we must generally be interested in group reactions, we cannot consider the demonstrated effects, even though they are statistically significant, to be of much practical importance.

Furthermore, again from the purely practical standpoint, since the experimental evidence for the effects of black and white is exactly opposite to the effects commonly attributed to these colors, we must conclude either that the effect of brightness varies with the situation or that the effect is so small that it is unimportant. Or perhaps we might even conclude that the effects attributed to black and white have generally been in error. The conclusion that one reaches depends largely upon how much importance one attaches to the critical, analytical attitude in the experimental situation as contrasted with ordinary observation. This problem becomes especially sticky when we consider the questionnaire results, in which black and white assumed the roles commonly attributed to them.

continued on page 348

New Anodizing Process Guarantees Uniform, Fadeproof Colors

A new anodizing process developed by Kaiser Aluminum with all the secrecy that surrounds the designs for next year's automobile promises to end many of the bugaboos that have plagued manufacturers—and users—of color-anodized aluminum.

Its end result is aluminum extrusions, sheet and castings anodized in a series of restrained tones that have earned from those privy to the till-now secret the description of "ivy-league" colors: gold, amber, tan, brown, olive, gray and black, in either matte or gloss finishes.

Handsome though the colors are, no small part of their appeal lies in the fact that the new process assures near-perfect color uniformity from one batch to the next. Designers and specifiers will also be interested to note that the long (7-year) period of development and testing has made it possible for Kaiser to offer a five-year guarantee of color fastness, corrosion resistance and abrasion resistance of the *Kalcolor* anodic coatings. Moreover the cost will be immediately competitive with that of other commercial color-anodized coatings despite the heavy capital investment of the anodizers licensed for the new process, and Kaiser expects to eventually bring costs down to the level of clear anodizing.

The new process itself differs from standard anodizing techniques in that the colors are produced, not by organic dyes, but by the conversion of alloying elements within the metal. Ordinarily the oxide film produced by anodizing is porous and so can absorb water-soluble dye-stuffs and pigments until the pores are sealed by dipping the coated metal in boiling water. In the *Kalcolor* process, the oxide itself is colored, and, because it is "burned on" during the electrolytic process, non-porous. (This is due to the electrolyte used, about which Kaiser says noncommittally "It is not sulfuric acid.")

The alloys which produce this colored oxide film are said to be comparable to common alloys in their other physical properties, and, indeed, in some instances superior.

The proof of the pudding lies in tests conducted over the past five years, during which every color-alloy was tested in at least 50 batches and some in 100. The *Kalcolor* process results in a coating 20 to 40 per

cent denser than standard anodic coatings, and hence more resistant to abrasion and corrosion. There was no perceptible fading or corrosion during accelerated tests under salt spray, water fog and high intensity ultraviolet rays, and outdoor exposure tests gave similar results.

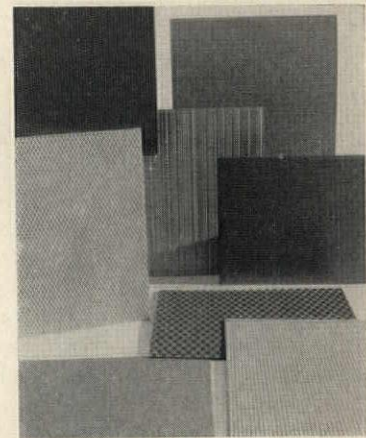
The *Kalcolored* aluminums are available nationally through licensed

anodizers and fabricators, and have already been specified on several major projects. Immediate uses are expected to be primarily architectural, but plans are afoot to apply the new finish to such fabricated items as hardware and stock window frames. *Kaiser Aluminum & Chemical Sales, Inc., 300 Park Ave., New York 22, N. Y.*

Vinyl Finish Spray — Applied to Fabrication Metal

The development of a new system for the spray-application of decorative vinyl finishes makes it possible to apply textured or smooth vinyl dispersion coatings to plain or textured metal—steel or aluminum—after it has been fabricated, resulting in significant savings over previously used methods which start with pre-laminated or pre-coated metal sheet.

Because of their resiliency, toughness, unlimited color range, and resistance to corrosion and chemicals, vinyl-metal combinations have already found wide acceptance in spite of their premium cost. By largely eliminating the problems inherent in their fabrication and production, the new spray technique is expected to bring finishing costs down enough to encourage the use of vinyl-coated



metals for architectural applications as well as for consumer and industrial products. *Metal & Thermit Corp., 100 Park Ave., New York, N. Y.*

Dry Wall System Cuts Installation Time, Costs

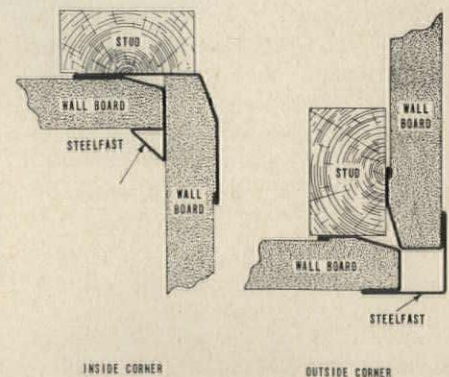
The *Steelfast* system for installing dry wall, now in the final stages of development by the Research Institute of the National Association of Home Builders, in collaboration with U. S. Steel's Research Center, is expected to cut at least two days from the construction schedule for a 1200-sq-ft home. It will also offer small, but significant, savings in actual installation costs.

The system employs formed steel strips that receive dry wall sheets at all 90 degree intersections, as shown right. Level ceilings and plumb corners are assured because the panels are held in place by the steel members instead of following the contours of the framing. The strips themselves are aligned by clips that join them at the corners.

In field tests, use of the *Steelfast* system has eliminated the backing lumber normally used to provide

nailing surfaces at the ceiling line and most corners, and precluded the use of metal strapping plates across frame openings for plumbing and ductwork. It also eliminated taping and spackling at the joints. *Research Institute, National Assn. of Home Builders, National Housing Center, 1625 L St., N.W., Washington 6, D. C.*

more products on page 268



Fir Plywood

. . . for *Today's Construction* (A.I.A. 19-F) contains basic information on fir plywood standard grades and specialty products. Form S-60, 16 pp. Also available: two booklets on the technical properties and recommended uses of western softwood plywood sheathing. *Douglas Fir Plywood Assn., Tacoma 2, Wash.**

Basic Design Measurements

. . . for *Sitting* gives such measurements as heights, depths, widths, angles and curves of seats and backs of sitting devices; discusses the basic types of sitting positions; and recommends sizes and shapes of chairs which best fit the basic measurements and the preferred sitting positions of men and women. Bulletin 616, 94 pp. *Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark.*

Toilet Compartments

(A.I.A. 35-H-6) Shows Sanymetal line of toilet compartments, shower stalls and hospital cubicles; and gives architectural specifications, information on new types of urinal screens and new colors available, a description of the new *Sanyvinyl-Metal* finish, and details of engineering developments. 32 pp. *Sanymetal Products Co., Inc., 1689-C Urbana Rd., Cleveland 12, Ohio **

Refrigerant Coils

(A.I.A. 30-C-4) Contains complete information on water and direct expansion refrigerant coils, with physical and dimensional data charts, piping diagrams, and architectural and engineering specifications. Catalog 5559, 27 pp. *Young Radiator Co., Racine, Wis.**

Wasco Skydomes

(A.I.A. 12-J) Features Skydome Selector Tables which chart the information needed for quickly estimating the number and type of daylighting units required for various levels of daylighting in each of three geographical "brightness zones." *Wasco Products, Inc., 5 Bay State Rd., Cambridge 38, Mass.*

Foamed Plastic Insulation

Eight-page brochure outlines physical properties of *Genaf foam* expanded polystyrene, and discusses its use as perimeter insulation, plaster

base, backer board, roof insulation and cold room insulation. *General Foam Plastics Corp., Portsmouth, Va.**

Doric Office Furniture

Describes and illustrates the *Doric* line of office furniture, including desks, modular storage units, secretarial units and accessories. 16 pp. *Corry Jamestown Corp., Corry, Pa.**

Strength of Concrete

. . . *Under Combined Stresses*, by B. Bresler and K. S. Pister, presents a criterion for failure of plain concrete subjected to combined stresses, and a procedure for determining the shearing strength of a special class of rectangular reinforced concrete beams without web reinforcement. Bulletin No. 12, 60¢. Published by the Reinforced Concrete Research Council of the Engineering Foundation. Copies available from *The Portland Cement Assn., 33 West Grand Ave., Chicago 10, Ill.**

Post-Tensioning

. . . for *Prestressed Concrete* describes force development calculations, detailing and placement plans, tendons and anchorage assemblies, stressing and grouting equipment, and field labor procedures for cast-in-place and precast post-tensioned concrete construction. Bulletin 70-6, 16 pp. *Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.**

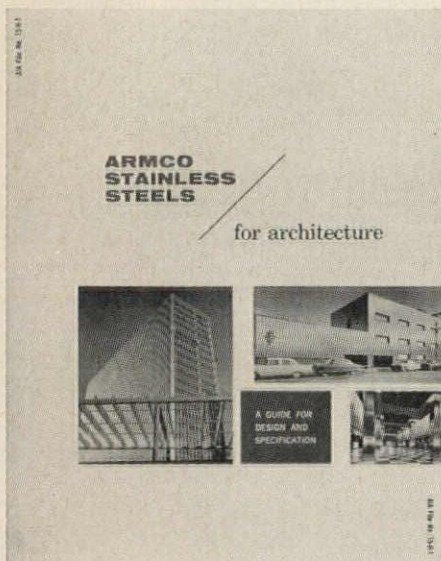
Engineering and Testing Services

Describes complete range of soils and foundation testing services, with typical procedures and sample reports. Such special engineering services as the design of natural earth structures, compaction control, construction inspection and concrete testing are also described in detail. 8 pp. *American Testing and Engineering Corp., 5204 East 25th St., Indianapolis, Ind.*

Dual Duct Air Mixing Units

(A.I.A. 30-F) Contains detailed performance data, specifications, dimensions and arrangements of high and low velocity dual-duct systems for different types of buildings and zoning arrangements. Bulletin DD-6, 16 pp. *Buensod-Stacy, Inc., 45 West 18th St., New York 11, N. Y.* *Additional product information in *Sweet's Architectural File*

more literature on page 318



ARMCO STAINLESS STEELS for Architecture (A.I.A. 15-H-1) is designed to provide the designer and specification writer with basic current data that will assist them in using architectural stainless steels at minimum cost. In presenting the information, the authors have avoided the inclusion of gratuitous data on properties and fabrication and have limited themselves to data directly pertinent to architecture, with the result that the manual is both complete and concise. It includes sections on the types of stainless steels recommended for architectural use, on the selection of optimum forms, sizes and thicknesses, on finishes, and on fabrication, and concludes with a summary specification guide and check list, 28 pp. *Armco Div., Armco Steel Corp., Middletown, Ohio*

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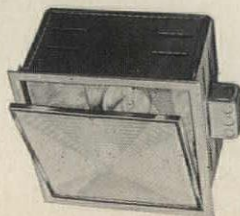
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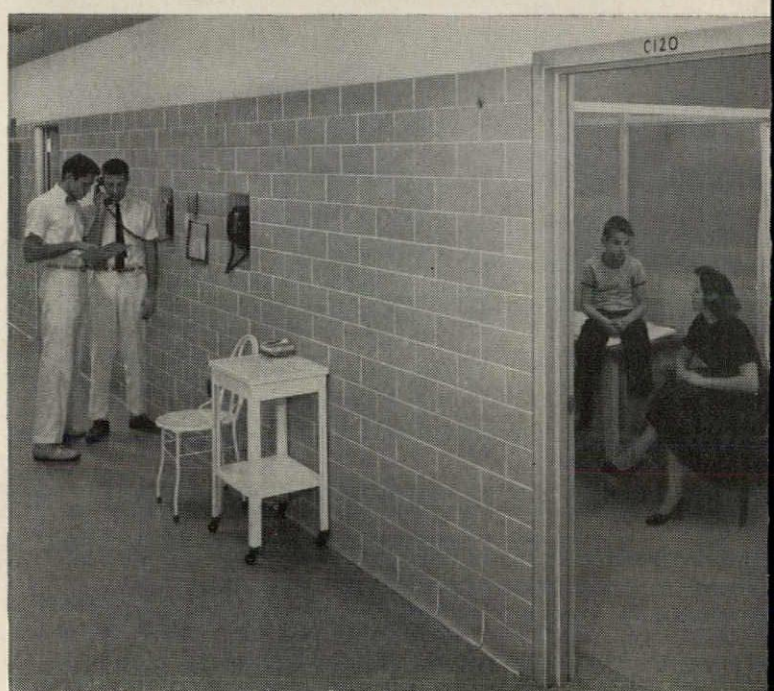
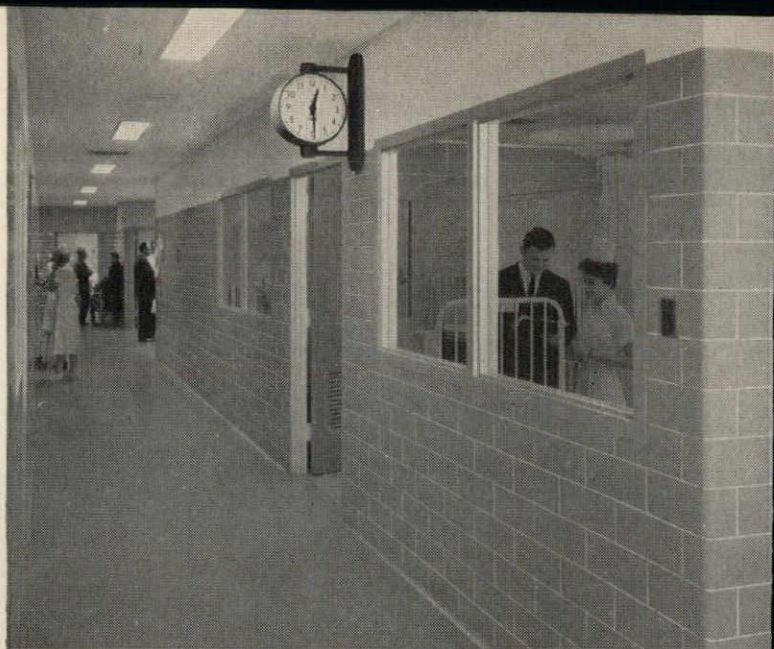


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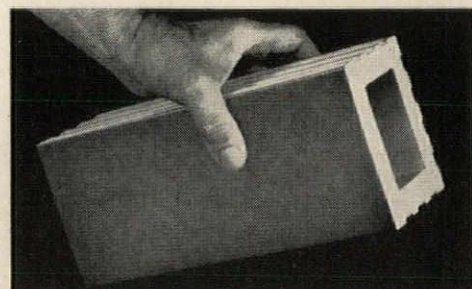
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RESIDENTIAL WARM AIR HEATING AND AIR CONDITIONING: 4-DUCT SYSTEMS

by S. Konzo, Professor of Mechanical Engineering, University of Illinois; E. J. Brown, Research Associate in Mechanical Engineering

Design of Air-Distribution Systems

Flexibility of the forced warm-air system has resulted in dozens of different design methods for special buildings and special cases. Detailed information for these is available in the Manuals of the National Warm Air Heating and Air Conditioning Association, 640 Engineers' Building, Cleveland, Ohio. In the following pages we will outline the design steps for two common forced warm-air systems, to indicate design procedures and the extensive tables and data available in the literature. For illustration of these systems see Sheet 3.

The first step in the design of any warm-air heating system is to determine the design heat loss of the individual rooms to be heated. The furnace capacity at the bonnet should be equal to, or slightly greater than, the total design heat loss of the house. Procedures are given in Manual No. 3 of the National Warm Air Heating & Air Conditioning Association.

Perimeter-Loop System

(For Concrete Floor Slab)

Following are the steps to be taken in the design of a perimeter-loop system for small houses in which the design heat loss does not exceed 100,000 Btuh (Btu per hr), where the perimeter of the house is less than 210 ft, and where the maximum length of feeder duct is less than 30 ft. Detailed design procedure is given in Manual No. 4 of the National Warm Air Heating & Air Conditioning Association:

- 1) Locate the perimeter-loop duct on floor plan, avoiding kitchen cabinets and plumbing.
- 2) Locate diffusers below or near windows, allowing one diffuser for each 6000 to 8000 Btuh design heat loss. For rooms with two or more exposed walls, place diffusers on each of the exposed walls if possible.
- 3) Locate the feeder-ducts from the sub-floor plenum to the perimeter duct so that the feeders supply the perimeter loop at the areas of greatest heat loss. Allow one feeder duct for each 15,000 Btuh heat loss. In general, no more than 35 ft of perimeter loop duct should exist between any two feeders, and no more than three diffusers between two feeders. The feeders should connect at right angles to the perimeter loop and at least 18 in. from a diffuser. If the distance between diffusers is more than 20 ft, that section of perimeter loop should be served by its own feeder.
- 4) Determine the diameter of the feeder duct from Table 1. Assume that each diffuser will be supplied by the nearest feeder. The Btuh delivered to the feeder, together with the length of the feeder, determines the diameter of the feeder duct.

5) The perimeter loop duct should be constant in diameter and should be equal to that of the largest feeder duct.

6) Determine the total free area of all the diffusers required for each room by means of Tables 2a, 2b, or 2c. The particular table to be used depends upon the "length of the feeder duct under room plus 1/2 length of perimeter duct under room." Obviously, if this length is great, a large heat input to the room occurs through the floor slab. The total free area for the diffusers in the room is divided by the number of diffusers to obtain the average free area of individual diffusers. Actual diffuser sizes can be determined from manufacturers' catalogues.

Perimeter-Radial System

(For Crawl Space or Basement)

Essentially, the procedure is as follows:

- 1) Locate the diffusers on the floor plan, allowing at least one diffuser for each room. The diffusers should be located under windows if possible and the maximum delivery should be limited to about 7000 Btuh.
- 2) Make a line drawing of the perimeter-radial duct system, in which the ducts extend from the plenum to the individual registers through individual ducts.
- 3) Measure the length of each radial duct and note the number of elbows in the duct.
- 4) With the information at hand, and with the aid of Table 3, the heat delivery to the room through a 6-in. diameter duct can be determined. The table refers to sidewall and floor diffusers only. Additional data are provided in the manuals for other sizes of ducts and for other types of register outlets.
- 5) If the total Btu which all radial ducts will actually deliver to a room is less than the design heat loss of the room, more ducts and diffusers are required.
- 6) Use the "cfm values" in the table to determine the size of diffuser required, as listed in the manufacturers' tables.

A complete design procedure for the use of 4-in. diameter pipes, referred to as the small-pipe perimeter system, is available in Manual No. 10 of the National Warm Air Heating and Air Conditioning Association.

Extended Plenum Systems

(Use with Perimeter Register Systems)

It is possible, of course, to use a trunk duct system in which all the branch ducts are taken off from a central large duct, in the same manner that tree branches are taken off from a tree trunk. (See Sheet 3). The extended plenum duct differs from the conventional trunk-and-branch arrangement since the main trunk is constant in size from the plenum to the end of the trunk. At first glance the arrangement appears to be a wasteful use of metal. A careful scrutiny will show, however, that savings in cost can be made because of the absence of special transitions for reducing the size of the trunk duct every few feet, and the use of standardized take-off fittings for branch ducts. The pressure characteristics of the extended plenum system have also been found to be most favorable, since the use of a constant sized duct tends to provide for a more nearly constant pressure along the entire duct.

Detailed design procedures for the extended plenum system are presented in Manual No. 4 of the National Warm Air Heating and Air Conditioning Association. Several tables are presented for top take-off fittings, side take-off fittings, and for various register outlet types. These many tables are necessary because of the diversity of systems used in the field. For the purposes of this article, however, the many tables would be confusing and hence have not been included.

Return-Air Duct Systems

The return-air duct system in a house installation is a relatively simple arrangement,

TABLE 1: Diameter of Feeder Ducts for Perimeter-Loop System

Btuh Per Feeder	Length of Feeder in Feet	
	0-15 Feet	16-30 Feet
up to 7,999	6"	6"
8,000 to 8,999	6"	7"
9,000 to 10,999	7"	7"
11,000 to 11,999	7"	8"
12,000 to 12,999	7"	8"
13,000 to 17,000	8"	8"

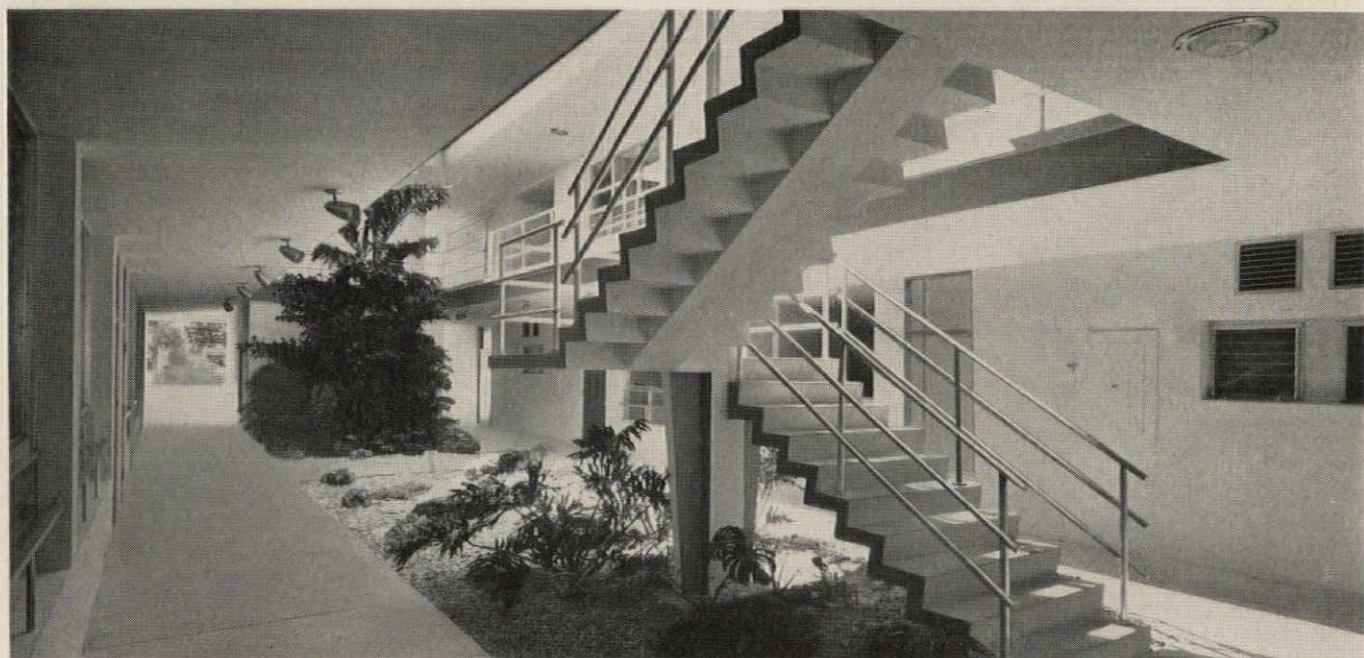
Tables on Sheets 4, 5, and 6 have been adapted from Manual 4, National Warm Air Heating and Air Conditioning Association

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RESIDENTIAL WARM AIR HEATING AND AIR CONDITIONING: 5-DUCT SYSTEMS

by S. Konzo, Professor of Mechanical Engineering, University of Illinois; E. J. Brown, Research Associate in Mechanical Engineering

TABLES 2a, 2b, 2c: TOTAL FREE AREA OF ROOM DIFFUSERS

2a: Length of Feeder—2 to 10 ft

Heat Loss of Room Btuh per Hr.	Lgt. of feeder duct under rm. plus ½ lgt. of perimeter duct under rm., ft.						
	0-9 Ft.	10-19 Ft.	20-29 Ft.	30-39 Ft.	40-49 Ft.	50-59 Ft.	60-69 Ft.
	Total Diffuser Free Area Required for Room, Square Inches						
0 to 3,999	20						
4,000 to 5,999	32	27	23	18			
6,000 to 7,999	43	39	34	29	25	20	
8,000 to 9,999	55	50	45	41	36	32	27
10,000 to 11,999	66	61	57	52	48	43	38
12,000 to 13,999	77	72	68	63	59	54	50
14,000 to 15,999	88	84	79	75	70	66	61
16,000 to 17,999	100	95	91	86	82	77	72
18,000 to 19,999	111	106	102	97	93	88	84
20,000 to 21,999	122	118	113	109	104	100	95
22,000 to 23,999	134	129	125	120	116	111	106
24,000 to 25,999	145	140	136	131	127	122	118
26,000 to 27,999	156	151	147	142	138	133	129
28,000 to 29,999	168	163	159	154	150	145	141
30,000 to 31,999	179	174	170	165	161	156	152
32,000 to 34,000	190	185	182	176	173	167	164

2b: Length of Feeder—10 to 20 ft

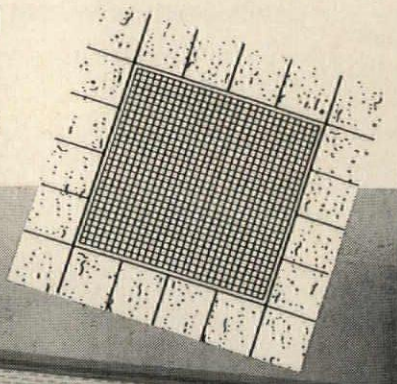
Heat Loss of Room Btuh per Hr.	Lgt. of feeder duct under rm. plus ½ lgt. of perimeter duct under rm., ft.						
	0-9 Ft.	10-19 Ft.	20-29 Ft.	30-39 Ft.	40-49 Ft.	50-59 Ft.	60-69 Ft.
	Total Diffuser Free Area Required for Room, Square Inches						
0 to 3,999	23	18	18				
4,000 to 5,999	36	31	26	21	16	16	
6,000 to 7,999	49	44	39	34	29	24	19
8,000 to 9,999	61	56	51	46	41	36	31
10,000 to 11,999	73	68	63	58	53	48	43
12,000 to 13,999	86	81	76	71	66	61	56
14,000 to 15,999	99	94	89	84	79	74	69
16,000 to 17,999	111	106	101	96	91	86	81
18,000 to 19,999	123	118	113	108	103	98	93
20,000 to 21,999	135	130	125	120	115	110	105
22,000 to 23,999	148	143	138	133	128	123	118
24,000 to 25,999	161	156	151	146	141	136	131
26,000 to 27,999	174	168	164	158	154	148	144
28,000 to 29,999	186	181	176	171	166	161	156
30,000 to 31,999	198	194	188	184	178	174	168
32,000 to 34,000	211	206	201	196	191	186	181

2c: Length of Feeder—20 to 30 ft

Heat Loss of Room Btuh per Hr.	Lgt. of feeder duct under rm. plus ½ lgt. of perimeter duct under rm., ft.						
	0-9 Ft.	10-19 Ft.	20-29 Ft.	30-39 Ft.	40-49 Ft.	50-59 Ft.	60-69 Ft.
	Total Diffuser Free Area Required for Room, Square Inches						
0 to 3,999	27	21	21				
4,000 to 5,999	42	36	30	24	18		
6,000 to 7,999	57	51	45	39	33	27	21
8,000 to 9,999	72	66	60	54	48	42	36
10,000 to 11,999	86	80	74	68	62	56	50
12,000 to 13,999	101	95	89	83	77	71	65
14,000 to 15,999	116	110	104	98	92	86	80
16,000 to 17,999	131	125	119	113	107	101	95
18,000 to 19,999	145	139	133	127	121	115	109
20,000 to 21,999	160	154	148	142	136	130	124
22,000 to 23,999	175	169	163	157	151	145	139
24,000 to 25,999	190	184	178	172	166	160	154
26,000 to 27,999	205	199	193	187	181	175	169
28,000 to 29,999	220	214	208	202	196	190	184
30,000 to 31,999	234	228	222	216	210	204	198
32,000 to 34,000	249	243	237	231	225	219	213

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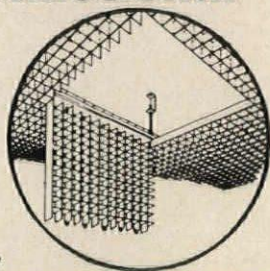
Restaurant, Edward Malley Dept. Store, New Haven, Conn.
Designer: Edward T. Wassell, Wilkes Barre, Penn.

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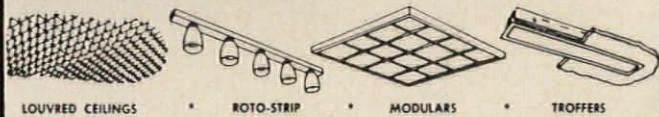
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RESIDENTIAL WARM AIR HEATING AND AIR CONDITIONING: 6-DUCT SYSTEMS

by S. Konzo, Professor of Mechanical Engineering, University of Illinois; E. J. Brown, Research Associate in Mechanical Engineering

consisting of a return plenum at the furnace, a simple duct, and one or more return-air grilles in the rooms. The sizing table for return-air ducts is presented in Table 4, from which it may be observed that the length of duct, the number of 90-degree turns in the duct, and the design Btuh heat loss that will be served by the duct are required. The design procedure can be stated as follows:

- 1) Locate the return-air grille in the floor plan. The grille can be placed low in the sidewall, high in the sidewall, or in the ceiling.
- 2) Make a line drawing of the duct system.
- 3) Determine the Btu design heat loss to be served by the return-air grille. For example, a grille in a central hallway may serve a

large number of rooms adjacent to the hall.

4) Measure the length of the return-air duct, and determine the number of elbows in the duct. This information, together with Table 4, enables one to determine the free area of the duct. The free area of the grille is shown also in Table 4 (Column 1), and a manufacturer's catalogue will give the required commercial size.

Heat Losses, Insulation, Vapor Barriers
Heat losses may be substantially reduced by: (1) the addition of insulation to the walls and ceilings, (2) the use of storm sash and storm doors, (3) the application of weatherstripping to doors and windows, and (4) the caulking of the joint between the sill and the foundation.

In new construction, full-thickness insula-

tion in the sidewalls and as much as 6 in. in the ceiling are recommended. The insulation must have a vapor barrier which should be applied on the room side of the insulation.

The best vapor barriers are often punctured by electrical wiring and plumbing, reducing the effectiveness of the barrier. Any water vapor that does pass through the insulation should have an unimpeded path towards a vented attic space. In tightly enclosed attic spaces, especially with flat-deck roofs, any water vapor that passes through the sidewall and ceiling insulation will be trapped in the space and will condense on the cold underside of the roof sheathing. Ventilation of such attic spaces is essential, even when vapor barriers have been specified for the insulation.

Table 3: Heat Delivery Through 6-in. Diameter Duct

No. of Elbows	Capacity	Actual Length of Pipe in Feet From Bonnet to Diffuser															
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
0	Btuh										8700	8060	7460	6920	6430	5960	5550
	CFM										127.7	124.8	122.3	119.7	117.4	115.0	113.0
1	Btuh										8620	8000	7430	6900	6400	5930	5500
	CFM										122.8	120.0	117.6	115.3	113.0	111.0	109.0
2	Btuh									8600	7960	7390	6860	6380	5940	5530	5150
	CFM									118.5	116.2	114.0	112.0	110.0	107.8	106.0	104.5
3	Btuh								8640	8020	7450	6950	6460	6020	5600	5200	4850
	CFM								114.0	112.0	110.0	108.2	106.5	104.7	103.0	101.4	99.6
4	Btuh							8760	8160	7580	7050	6540	6080	5640	5250	4880	4550
	CFM							110.2	108.4	106.6	105.0	103.0	101.5	100.2	99.0	97.5	96.0
5	Btuh					8850	8250	7670	7140	6640	6170	5740	5340	4960	4620	4290	3990
	CFM					106.8	105.0	103.5	102.0	100.5	99.0	97.5	96.0	94.6	93.4	92.0	91.0
6	Btuh				9050	8420	7840	7280	6750	6300	5850	5440	5060	4700	4370	4060	3760
	CFM				104.0	102.5	100.7	99.2	97.8	96.5	95.2	94.0	92.6	91.4	90.0	88.7	87.5

Table 4: Return Air Duct and Grille Sizes

Grill Free Area	ACTUAL FT.	UP TO 10 FT.						11 TO 20 FT.						21 TO 30 FT.						31 TO 40 FT.							
		No. of 90° Turns		1		2		3		4		5		6		1		2		3		4		5		6	
		Btuh.																									
	16	5,000	14	17	20	23	26	28	15	19	22	25	27	28	17	20	23	25	27	29	18	21	24	27	28	30	
	32	10,000	27	32	37	42	46	49	29	34	39	43	47	49	31	36	41	45	48	51	33	38	43	47	49	51	
	47	15,000	37	44	50	55	60	64	40	46	52	57	61	65	43	49	54	58	63	67	45	51	56	61	64	67	
	63	20,000	46	54	61	66	73	78	49	57	63	69	75	79	53	60	65	71	77	82	55	62	68	74	78	83	
	79	25,000	54	64	72	79	86	92	58	68	75	82	88	94	62	71	78	84	91	96	66	74	80	87	92	98	
	95	30,000	62	73	82	89	97	104	67	76	85	93	100	106	71	80	88	95	102	108	75	84	91	99	104	110	
	111	35,000	69	82	92	101	111	119	74	85	95	106	114	121	79	91	99	108	117	124	84	94	103	113	119	126	
	126	40,000	77	90	100	110	121	130	82	94	105	116	124	132	87	99	109	118	128	137	92	103	113	123	130	140	
	158	50,000	89	105	119	132	146	158	95	111	124	138	150	161	102	117	129	142	155	166	108	123	135	148	158	170	
	190	60,000	100	122	139	154	170	181	111	129	145	161	174	184	119	137	151	165	178	189	126	143	158	172	181	193	
	221	70,000	117	139	158	174	191	203	127	147	164	182	195	206	135	155	171	186	200	213	144	162	178	193	203	216	
	252	80,000	128	155	175	191	208	222	140	164	182	198	214	225	151	172	188	203	219	231	160	179	195	211	222	235	
	284	90,000	141	168	188	205	225	244	153	177	195	213	232	248	164	186	201	218	240	256	173	193	209	229	244	262	
	316	100,000	154	180	200	221	247	265	166	189	209	233	252	270	176	198	217	239	258	277	185	206	227	250	265	285	

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Your fabricator will deliver the fabricated structural steel—on the spot, on time. He'll schedule every production aspect of your job, ship finished parts in the right sequence.

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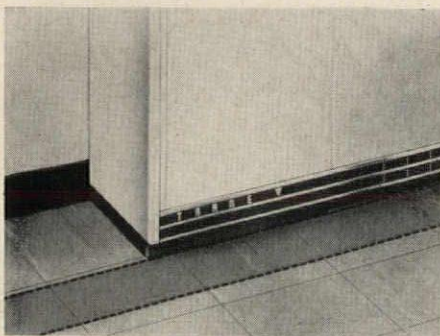
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

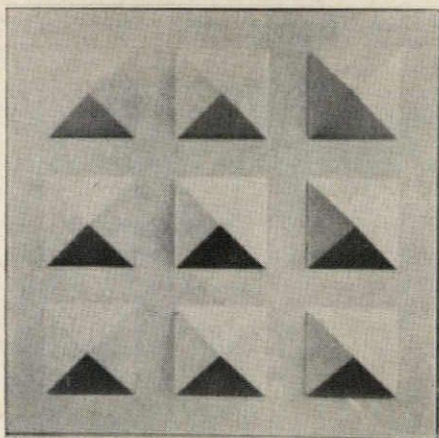


continued from page 257



Space-Saving Unit Ventilators

Even when installed free-standing, a new line of classroom unit ventilators project $2\frac{3}{4}$ in. less than previous recessed units, thus saving as much as 14 sq ft of floor space in the average classroom when placed in a continuous unit with equally slim ($11\frac{5}{8}$ -in.-deep) matching shelving. Since the units are available for steam, hot water and electric heating, and chilled water cooling, and in five possible arrangements of fans, coils and other internal components, they can be used to meet most classroom heating requirements. Both heating and cooling units come in 28- and 32-in. heights for installation under high or low sills. *The Trane Co., La Crosse, Wis.*



Custom-Patterned Curtain Wall

Available in 22 architectural colors, the new *Syntek* contour sandwich panel for exterior curtain walls can be custom-formed with designs to meet the architect's specifications. Because the panel face is formed of Rohm & Haas's *Plexiglas*, tooling costs are low enough to make custom panels practical even for small projects. The *Plexiglas* face also has excellent weathering characteristics and is extremely light—43 per cent as heavy as aluminum, 50 per cent as

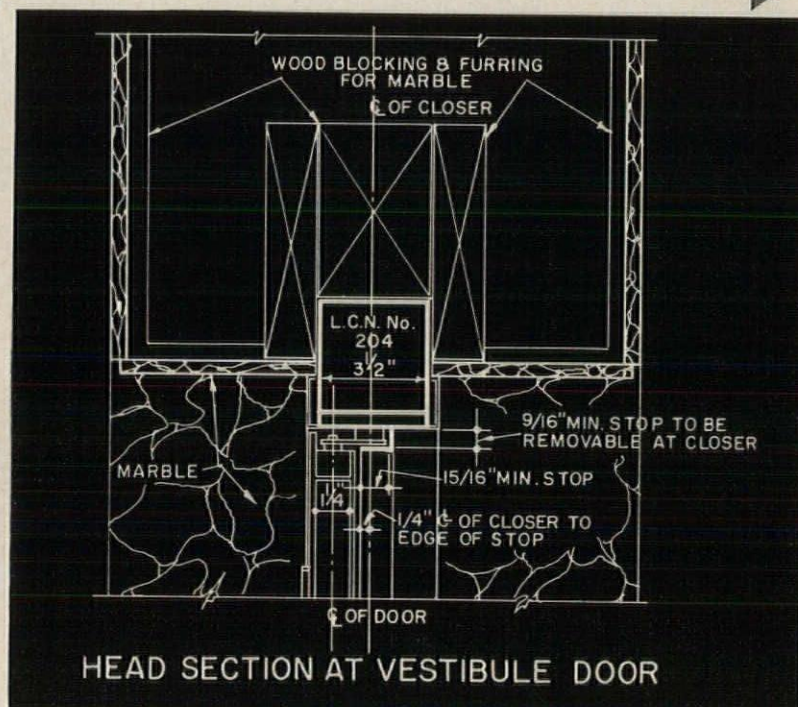
heavy as glass. *Syntek* panels will be sold in conjunction with Alumiline 969 curtain wall, shop glazed where required, so that the modules arrive at the job site with the panels pre-installed. *Alumiline Corp., Pawtucket, R. I.*

Thinner Insulating Glass

The development of a new *GlasSeal Thermopane* unit made of single strength glass, which is 25 per cent lighter than double strength *Thermopane*, is making it possible for

window manufacturers to use insulating glass in double-hung sash on a mass-production basis. The advantages cited for double-glazed, double-hung sash include elimination of storm windows, heating and cooling economy, and free air circulation at top and bottom. Six millwork companies are already producing the new double-hung windows, and others are expected to go into production in the near future. *Libbey-Owens-Ford Glass Co., 608 Madison Ave., Toledo 3, Ohio*

more products on page 272



HEAD SECTION AT VESTIBULE DOOR

CONSTRUCTION DETAILS

for LCN Overhead Concealed Door Closer Shown on Opposite Page

The LCN Series 200 Closer's Main Points:

1. Efficient, full rack-and-pinion, two-speed control of the door
2. Mechanism entirely concealed; arm disappears into door stop on closing
3. Hydraulic back-check prevents door's being thrown open violently to damage walls, furniture, door, hinges, etc. Door may open 180°, jamb permitting
4. Hold-open (optional) set at any one of following points: 85°, 90°, 100° or 110°
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6. Used with either wood or metal doors and frames

Complete Catalog on Request—No Obligation
or See *Sweet's 1960, Sec. 18e/La*

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario

MODERN DOOR CONTROL BY *LCN* • CLOSERS CONCEALED IN HEAD FRAME

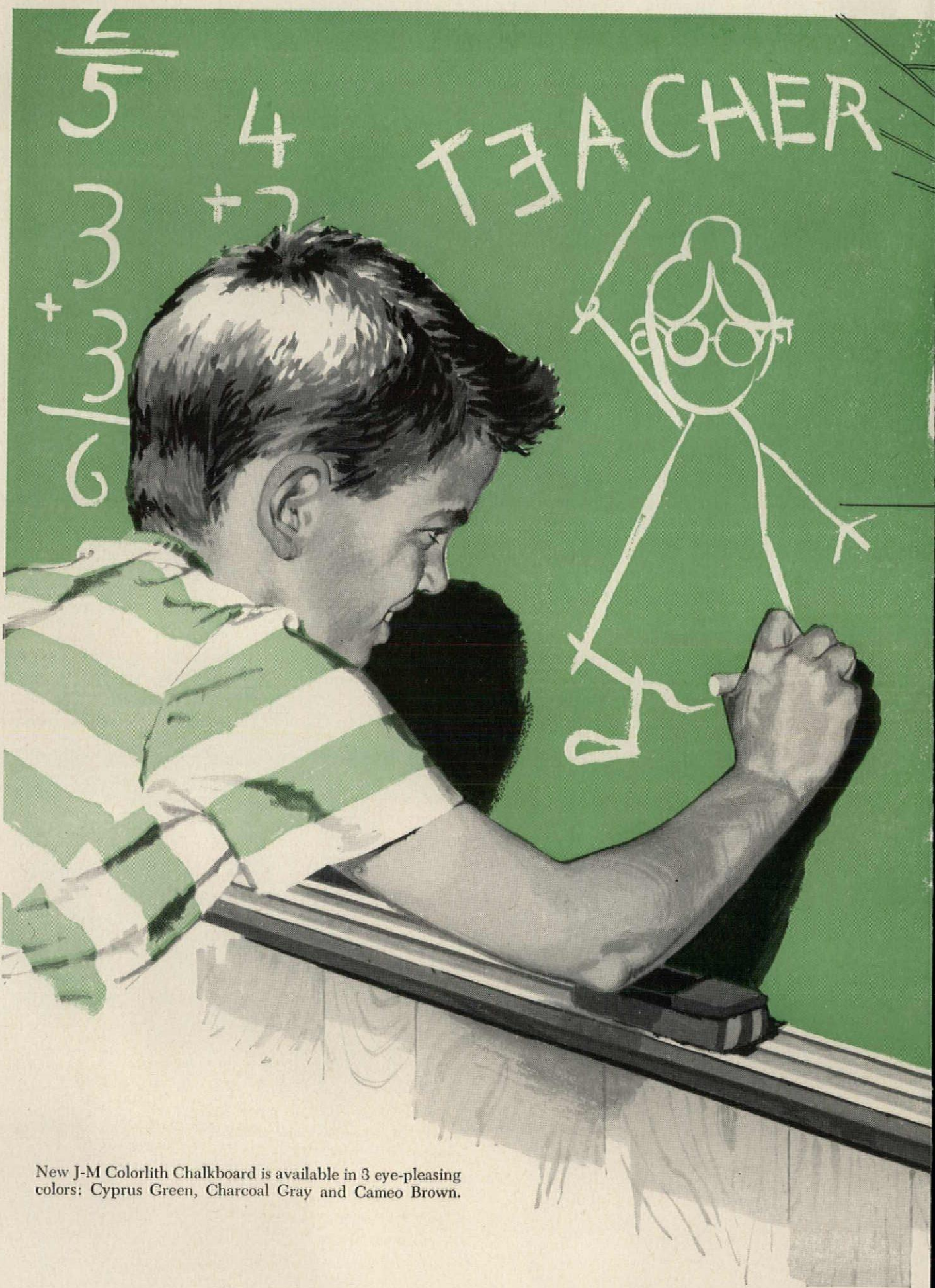
COMMUNITY HOSPITAL, INDIANAPOLIS, INDIANA

LCN CLOSERS, INC., PRINCETON, ILLINOIS

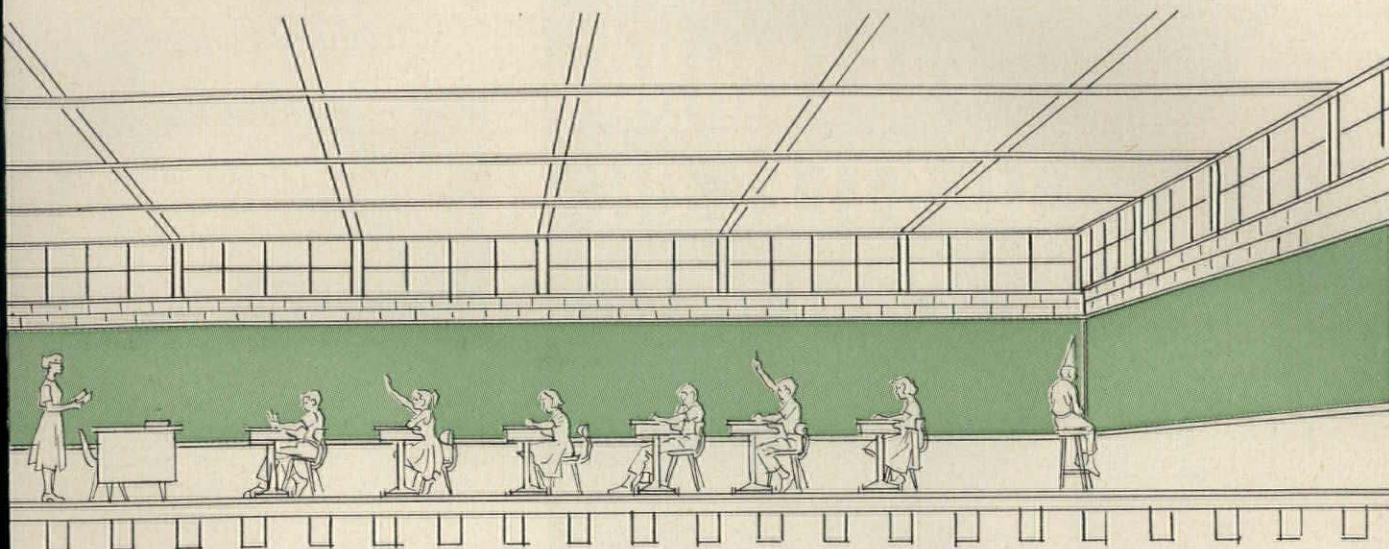
Construction Details on Opposite Page

Daggett, Naegele & Daggett, Inc., Architects





New J-M Colorlith Chalkboard is available in 3 eye-pleasing colors: Cyprus Green, Charcoal Gray and Cameo Brown.



New Johns-Manville *Colorlith*[®] Chalkboard

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Architects say—Handsome color and texture run all the way through this homogeneous sheet . . . can't wear off.

Teachers say—Colorlith makes an ideal smooth, hard writing surface—erases easily—reduces writing fatigue.

Pupils say—We like the color . . . it's easy on the eyes . . . and we can always see what's written on it.

Maintenance Superintendents say—Colorlith is easy to maintain. Wash occasionally with clear water. Remove stains with household cleansing agents.

School Supervisors say—Colorlith chalkboards have the strength and durability to withstand daily classroom usage and give many years of service.

Taxpayers say—Meets the requirements of premium quality boards at low prices . . . and it's strong enough not to need any expensive backing.

Everyone connected with today's school problems of cost vs. quality finds an answer in new J-M Colorlith Chalkboard. Here is a dense, new homogeneous sheet developed to provide the same smooth, hard writing surface and light reflectance values as premium chalkboards—but at lower cost.

Colorlith gets great strength from integral mixing of Portland cement, carefully selected asbestos fibers, and selected pigments. It can be used in 1/4" thicknesses without expensive backing to make it rigid. Accurately butted joints need no divider strips which could hinder writing. Comes fully finished and ready to use as a self-supporting wall member. Its natural finish is durable—colors and pattern cannot be scratched off. Withstands heat, flame, moisture (fully washable) . . . acids and solvents in working concentrations.

Write for Colorlith specification sheet IN-230A and brochure EL-62A. Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

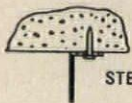
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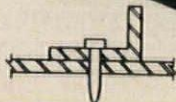
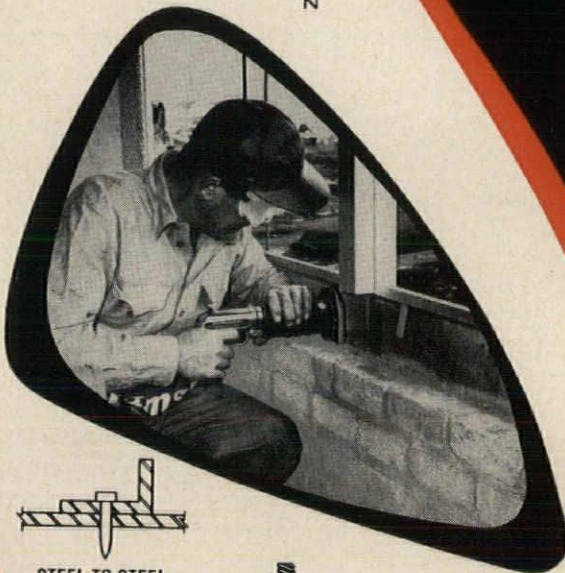
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STEEL TO CONCRETE



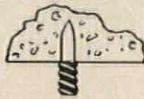
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
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INTO CONCRETE

INSIST ON THE RED TIP AND THE  TOP



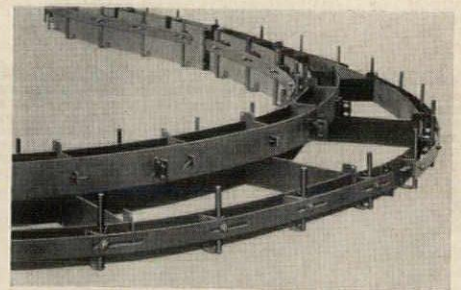
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Product Reports



Thermostatic Fire Detector

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more products on page 276

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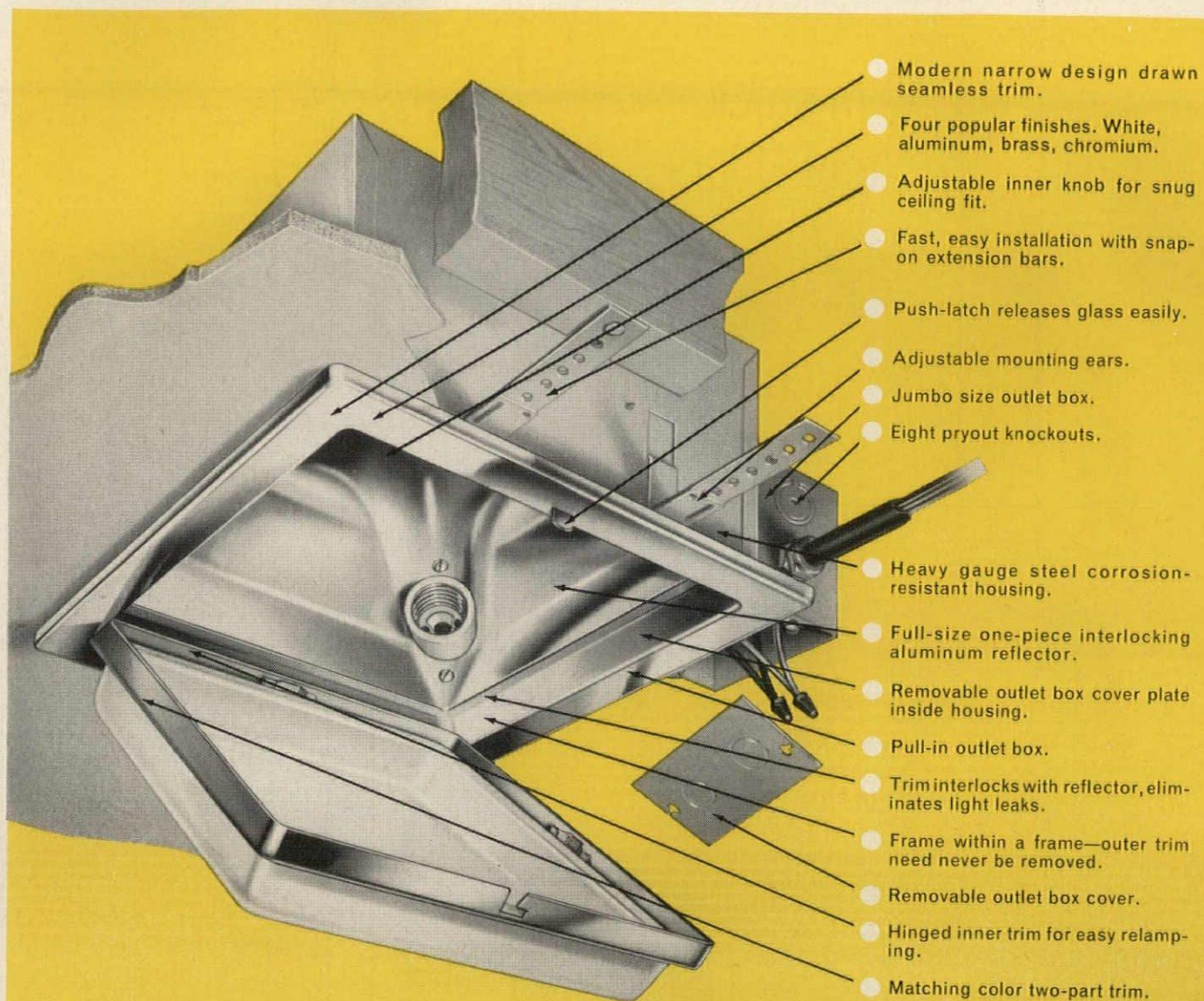
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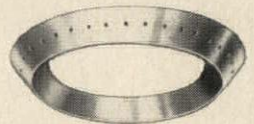
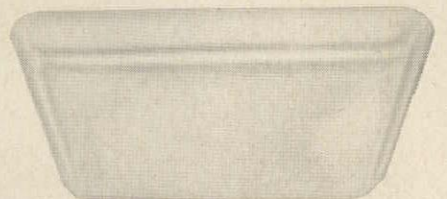
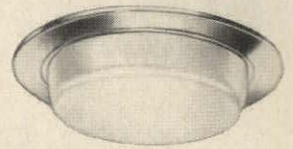
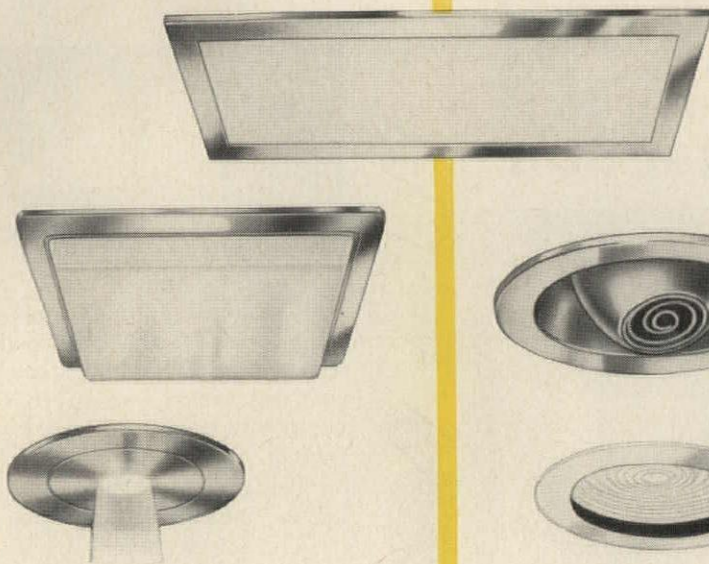
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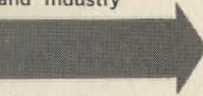
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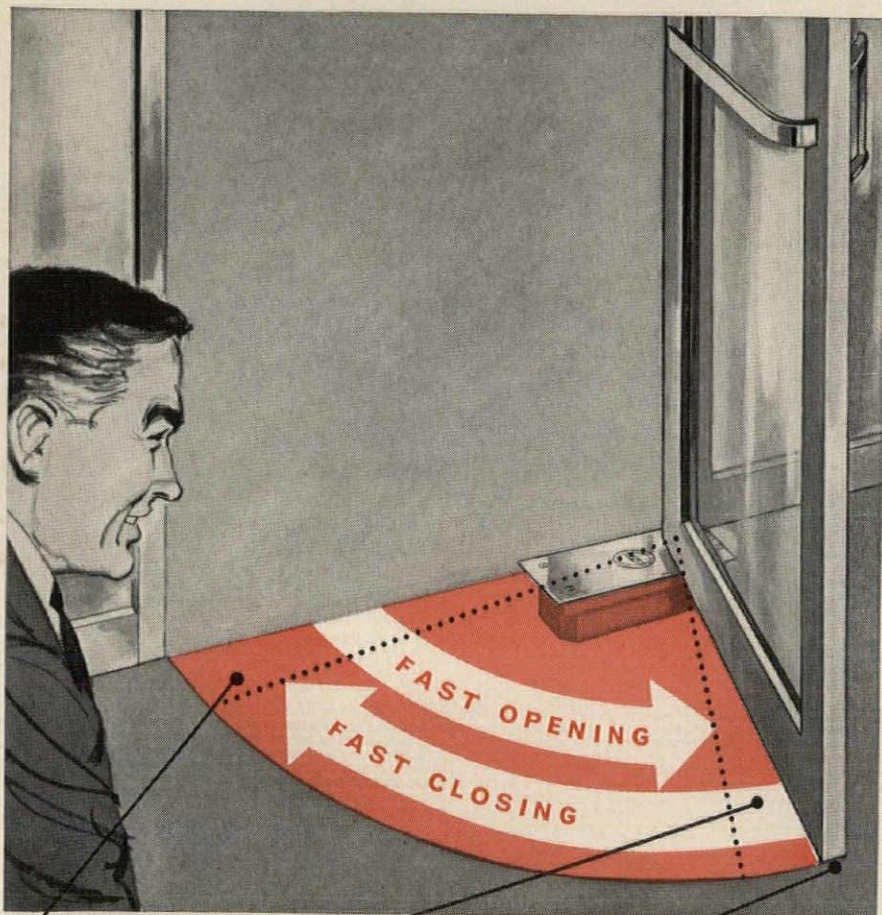
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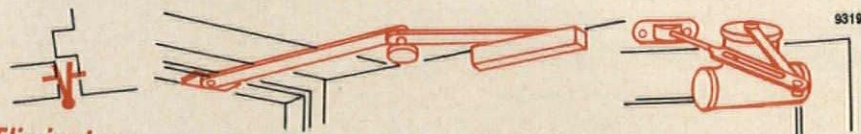
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Positive back stop 90° or 105° hold open 90° or 105°

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Available for either offset or center pivoted doors. Write for complete information on these new No. 2500 and 2600 series Hydra-Cushion door controls.



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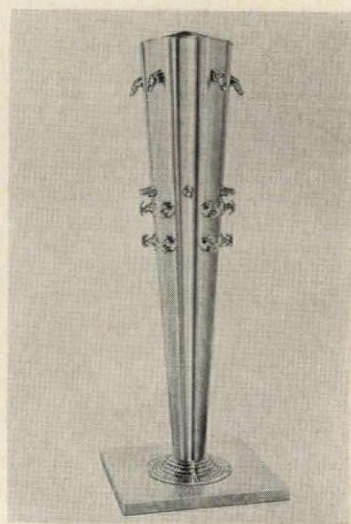
CANADA: Dor-O-Matic of Canada, Ltd., 550 Hopewell Ave., Toronto 10, Ontario

Product Reports



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New in the field of thermal insulation is a castable, quick-setting one-coat insulation cement that can be applied by any standard method direct to such hard-to-cover materials as fiberglass, cork board, foam glass and rock wool. It sets to a smooth hard finish without shrinking, blistering or dripping; can withstand freezing; is non-corrosive to metal; and has a K-factor low enough for any temperature range. Two-piece pre-molded jackets for pipe fittings are available in addition to the bulk cement. *Thermold Products Co., Grandview, Mo.*



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The new *Space'anea* free-standing shower system is available in units of one to six stations for schools, colleges or industrial use. The basic stainless steel unit includes concealed piping; a choice of hot and cold water compression valves, tempered water valve or no valve; and an optional lather type soap dispensing system. All functional parts are accessible from the outside for maintenance or servicing. *Logan Mfg. Co., P. O. Box 111, Glendale, Calif.*

more products on page 285



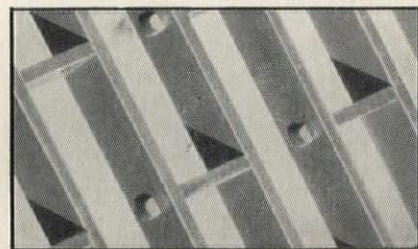
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...makes a better bed...faster

The new mortar for installing ceramic tile provides the architect and builder with a better setting bed for many important applications. The new mortar has been particularly satisfactory for concrete masonry, cement plaster and poured concrete floor construction.

This new mortar reduces radically the time and labor of tile installations. It gives a bonding strength of double that of conventional types of mix. The secret: A Tile-Council-developed additive which makes Portland Cement water-retentive and gives it more tensile strength. Result: setting beds are thinner, mixing time is cut to a

minimum, tile does not have to be soaked, backup walls do not have to be sprayed and the tile mechanic finds the mortar easier to work.

The new mix is one of many developments at the Tile Council Research Center in Princeton, New Jersey. This industry-sponsored research program continues to discover new uses and better installation methods for ceramic tile.

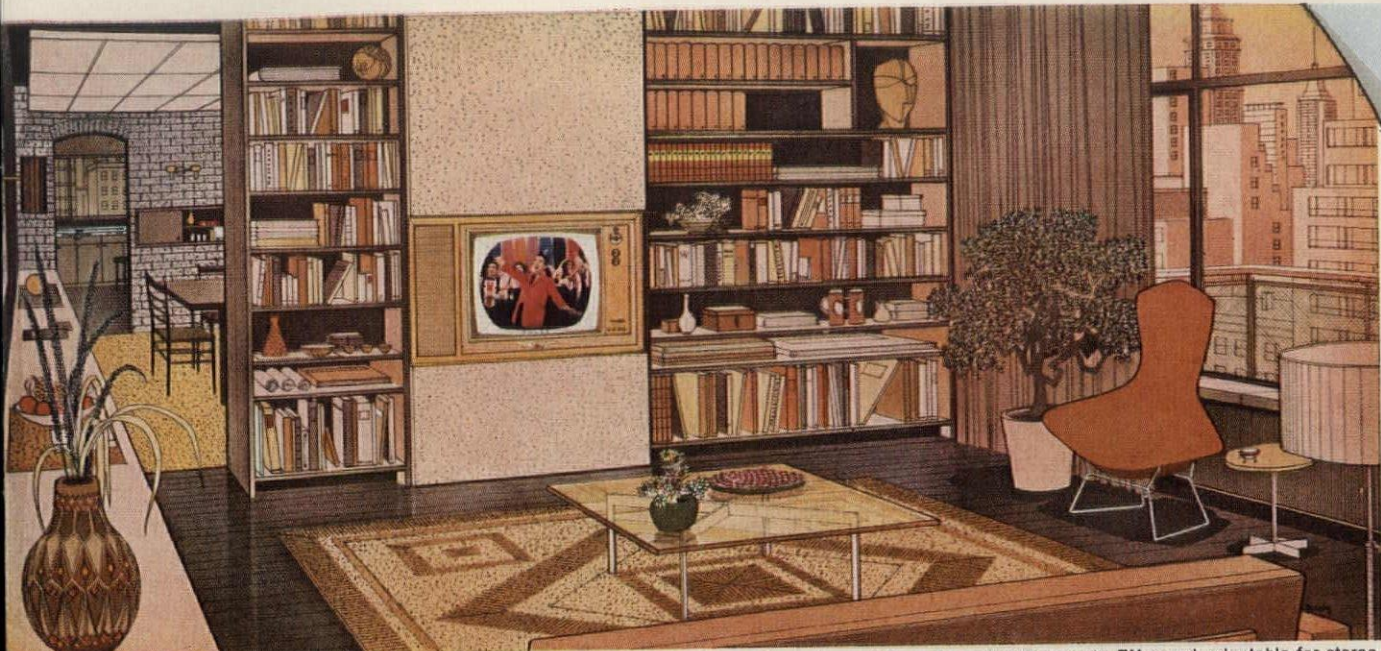
Manufactured by L. & M. Tile Products, Inc., Technical Adhesives, Inc. and the Upco Company, the new mortar is available nationally. Look for the seal of approval.

The Modern Style is

TILE COUNCIL OF AMERICA, INC. 800 Second Ave., N. Y. 17, N. Y.; Room 933, 727 West Seventh St., Los Angeles 14, Calif.; Room 207, 5738 North Central Expressway, Dallas, Texas • American Encaustic Tiling Co., Inc. • Atlantic Tile Mfg. Co. • Aztec Ceramics, Inc. • Cambridge Tile Mfg. Co. • Carlyle Tile Co. • Continental Ceramics Corporation • General Tile Co. • Gladding, McBean & Co. • Hood Ceramic Corporation • Jackson Tile Mfg. Co. • Jordan Tile Mfg. Co. • Lone Star Ceramics Co. • Monarch Tile Mfg. Inc. • Mosaic Tile Co. • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Oxford Tile Company Pacific Tile and Porcelain Co. • Pomona Tile Mfg. Co. • Redondo Tile Company • Ridgeway Tile Co. • Robertson Mfg. Co. • Stylon Corp. • Stylon Southern Corp. • Summitville Tiles, Inc. • Texeramics, Inc. • Wenczel Tile Co. • Winburn Tile Mfg. Co.

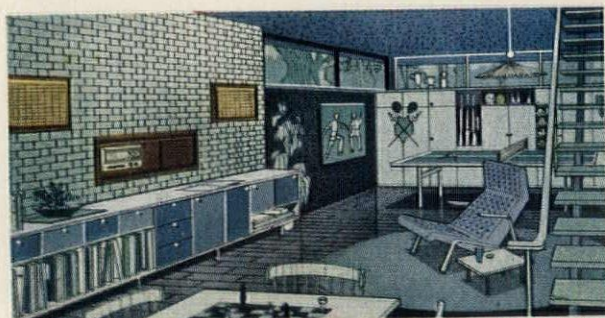
CERAMIC
tile

ANOTHER WAY RCA
SERVES YOU
THROUGH
ELECTRONICS

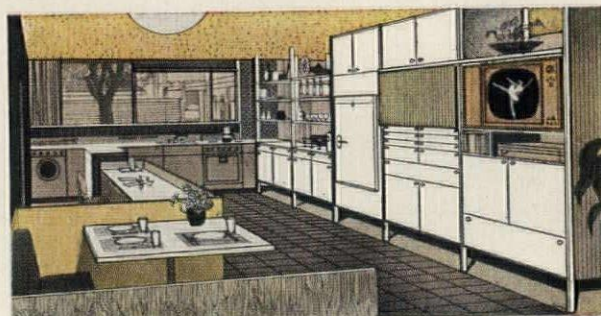


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mirror-sharp picture, 3-speaker Panoramic FM sound, adaptable for stereo. DK 107 frame for rear ventilation, with front ventilation design also available.



PUSH-BUTTON RADIO "VICTROLA"® Built-in . . . High-Fidelity Stereo. Stereo 4-speed record changer that slides out for easy loading, stereo AM-FM Tuner, visual Stereo Balance Control, 2-in-1 supercharged chassis with 58 watts of power. BK 2 shown with DK 109 Panoramic Sound, 3-speaker units. (©RCA Trade-Mark for Record Players)



B & W "MURAL TV" Built-in . . . perfect for any room. The custom look plus convenience of "Wireless Wizard" remote control. Full-feature monochrome performance—25% brighter picture. 3-speaker Panoramic sound. DK 103 front ventilation, rear ventilation type available, too.

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ity you offer the prestige of the most trusted name in Electronics.

RCA Victor Built-in units are engineered for top performance and dependability, in a complete line of fashion-leading styles . . . expressly designed for installation into walls,

permanent room dividers, or in cabinets and closets.

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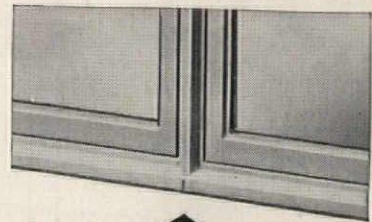
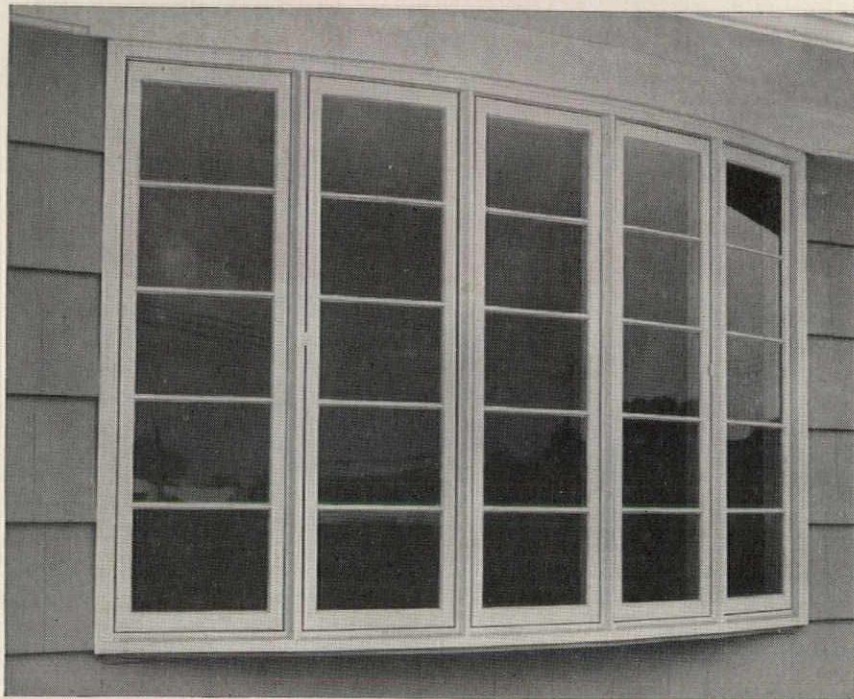
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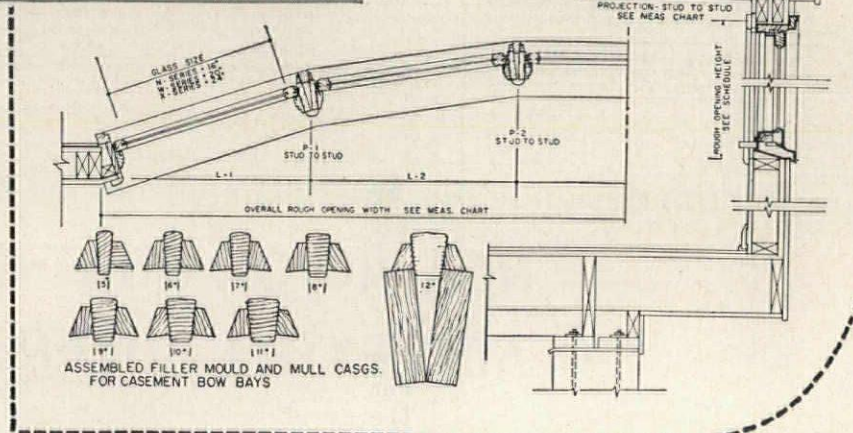
BILT-WELL Engineering offers new flexibility in planning window arrangements... new labor-saving installation features

Unique window groupings limited only by creativity of the designer with BILT-WELL's unitized sill construction and stock filler moulds.

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with **BILT-WELL**
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Super double-hung windows



Super-hold

with ingenious sash-holding device for budget homes.



Super-lift

with fingertip operation for medium priced homes.



Super-therm

with double insulating glass for custom built homes.

Casement Windows



Sleek, trim, double-weather-stripped casements with concealed hinges and hardware. Unitized sill permits side-by-side installation in long ribbons.

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New releasable hinge permits removal of sash for easy cleaning. Lever, jointed bar, rigid bar or gear operator available. Use these windows as casements, awning, hopper or fixed sash.

Kitchen Cabinets



Beautiful, streamlined cabinets of Ponderosa Pine with pine or birch doors and drawer fronts. Cabinets come in 3" modules to fit any size kitchen. Wide choice of accessories.

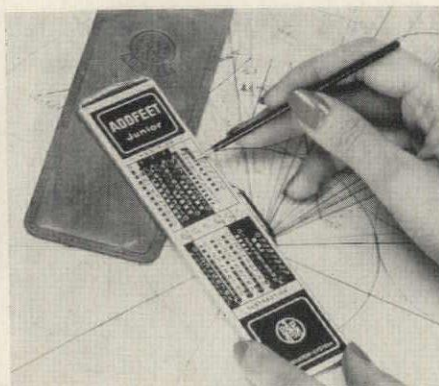
Storage Walls



Economical and practical arrangements of door and drawer units form complete storage walls. Easy to install in out-of-the-way corners for additional storage, too.

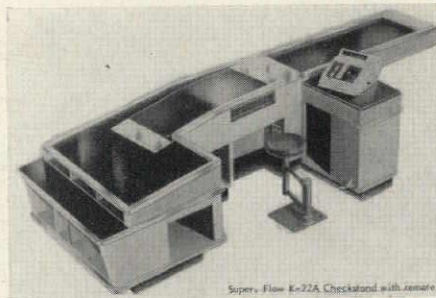
BILT-WELL Products
by **CARADCO, INC.**
Dubuque, Iowa

Product Reports



Pocket "Adding Machine"

The latest news on the office front is a "slide rule" that can add and subtract, and, what's more, can handle dimensions expressed in feet, inches and fractions as low as eighths. It also automatically converts inches into feet, and fractions of feet into inches. The compact *Add-feet Junior* is manufactured in West Germany by Addiator Rechenmaschinenfabrik, and is distributed in this country by *Alexander Drafting Equipment Co.*, 640-642 N. Chester Ave., Pasadena, Calif.



Remote Cash Drawer For Checkstand

The new *Super-Flow K-22A* checkstand features accommodation for a slant cash register and provision of space for a remote cash drawer at the location most convenient for the cashier. This is said to reduce fatigue in checkout work and assure pilfer-proof cash control, while two motor-driven conveyor belts minimize merchandise handling and checking errors. The checkstand itself comes in a wide range of baked enamel and vinyl-clad textured steel finishes, with removable outside panels that can be taken off and replaced if desired. *Super Market Equipment Div., Hapman Corp.*, 630 Gibson St., Kalamazoo 6, Mich.

more products on page 288

door less door

THE MODERN ENTRANCE



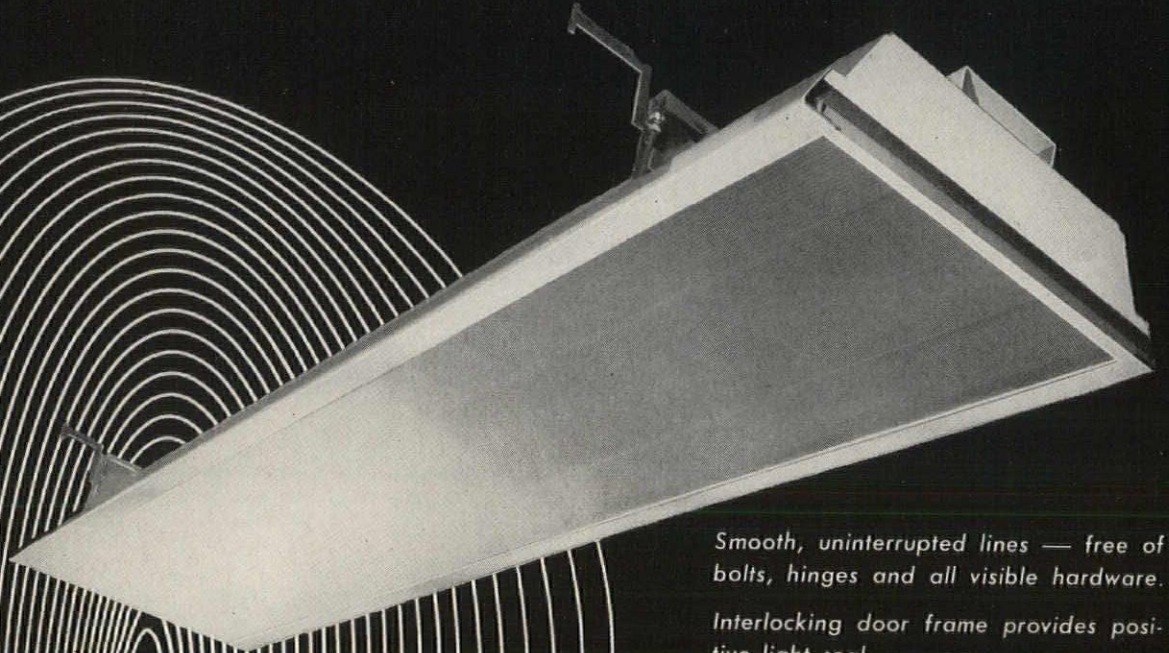
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LASTING QUALITY for your CLIENTS!



Smooth, uninterrupted lines — free of bolts, hinges and all visible hardware.

Interlocking door frame provides positive light seal.

Framed in the ceiling by a narrow metal band.

Maximum illuminated areas, softly diffused illumination.

Easily installed with time-saving mounting brackets, double-fast screws.

Four basic types fit 101 ceiling systems.

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Available in one and two-foot widths.

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LIGHTING

CHELSEA 50, MASSACHUSETTS

For your next building Color?

Configuration?

Single Wall?

Sandwich Wall?

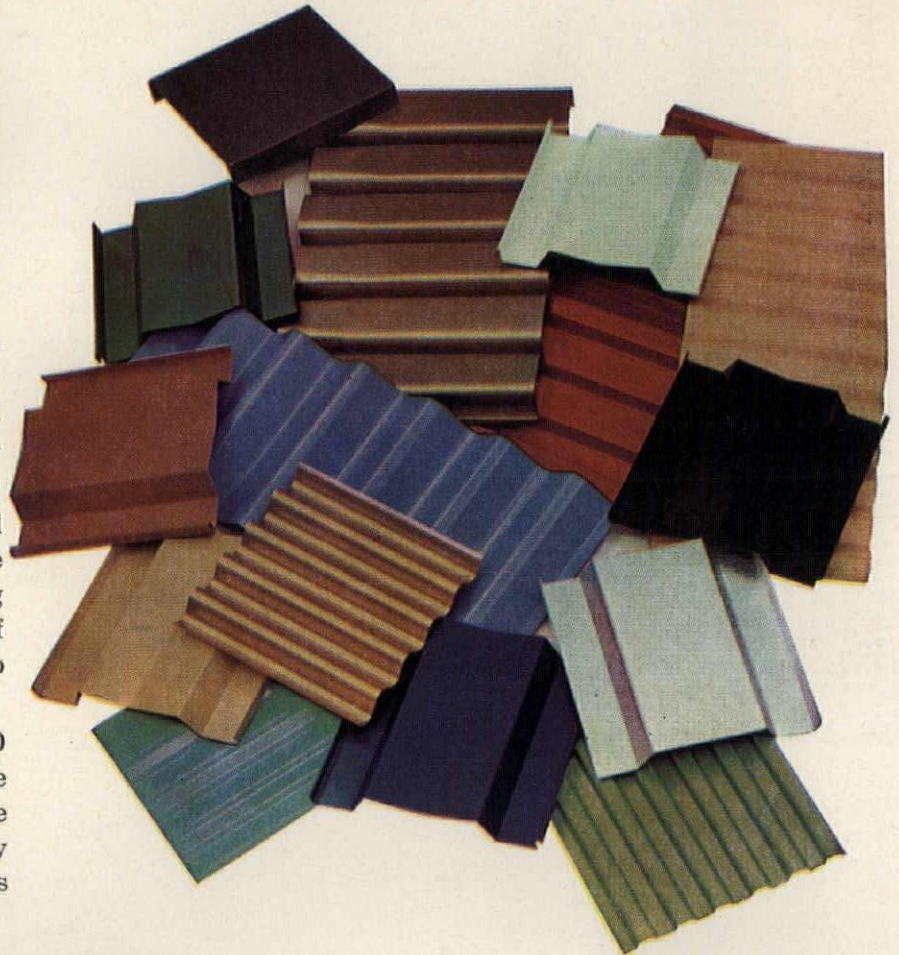
Insulated Panels?

● Your selection and procurement are simplified by investigation of EGSCO metal wall products. They comprise a complete range of sheet and panel configuration, a usable variety of baked-on, durable enamel colors, and a practical assortment of wall components in your choice of aluminum or steel.

EGSCO metal wall products are engineered for sound building construction with an economy attained through improved erection techniques, reducing erection time.

EGSCO metal wall quality and practicality have been built upon the experience of years in actual building design and erection. Thousands of EGSCO buildings from coast to coast attest these attributes.

Finally there is this plus: EGSCO erection crews have the experience and know-how to erect any of these wall combinations quickly, soundly and at a realistic cost, where this service is desired.



Here's how you can contact the nearest district office of Elwin G. Smith & Co., Inc., manufacturers of EGSCO metal wall products:

Boston	CEdar 5-1924
Chicago	Klngswood 3-3350
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Architectural File:

Curtain walls 3a/Sm
Sandwich walls 8b/Smi
Corrugated sheets 8b/Sm
Roof Deck 2c/Sm
Steel forms for concrete
roof and floor slabs 2a/Sm

Industrial Construction File:

Curtain walls 3a/Sm
Sandwich walls 8b/Smi
Corrugated sheets 8b/Sm
Curved conveyor hoods 8b/Smt
Roof Deck 2d/Sm
Steel concrete forms 2b/Sm

Copies of these catalogs may be obtained from the nearest office of:

ELWIN G. SMITH & CO., INC.

Manufacturers of  EGSCO® Metal Wall Products

Pittsburgh 2, Pa.

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SUBMERSIBLE NON-CLOG SEWAGE AND SUMP PUMP



Positively water proof—
motor is totally enclosed
and oil filled.

- Pumps Sewage and other Liquids Containing Solids up to 2½"
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Check these SEVEN important features

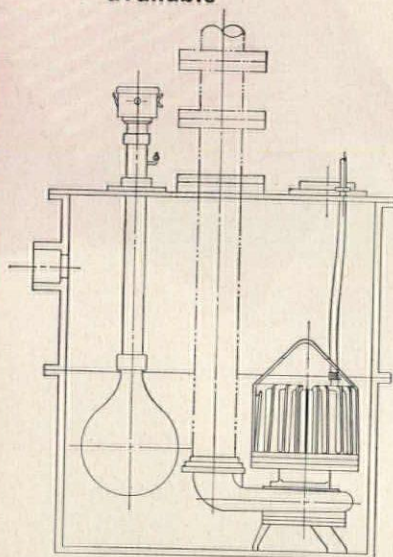
1. Low original cost
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5. No superstructures required
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7. Makes more floor space available

PLUS

Exclusive SEALTRODE Sealed Electrode Floatless Pump Controller . . . the only controller featuring completely sealed Electrodes . . . positively preventing insulation or coating by grease or other corrosive elements.

Ask for Bulletins
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"Chicago" Distributors are located in most principal cities. See the one nearest you today for full details.



Typical installation—single unit—duplex installation available



Putting Ideas to Work

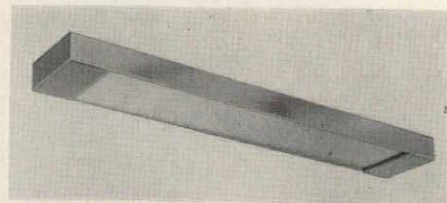
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CHICAGO PUMP

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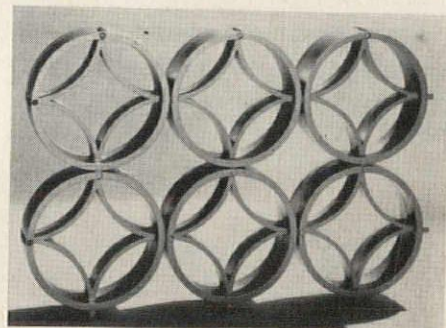


Product Reports



Thin Radiant Ceiling Heater

The Zonemaster C-209, a 2-in.-deep radiant heater, can be surface-mounted on non-combustible ceilings or suspended from standard ceilings in offices, restaurants, patios, outside porches, industrial and food plants, garages and other hard-to-heat or exposed spaces. From a mounting height of 8 to 10 ft, the 6-by-36-in. units will heat an area of 125 sq ft. Ampere Industries, 60 Boston St., Newark 3, N. J.



Decorative Aluminum Grille System

Ornamental screens can now be assembled inexpensively from the new *Alshade* system of standard aluminum components—cast aluminum sections and matching back-up plates, and optional extruded framing members—prefinished in eleven baked enamel colors. The cast sections can be placed back-to-back to form a 4-in. deep decorative and solar shading screen over walls and windows, or combined with a single back-up plate for use as a purely decorative exterior screen (2 1/16-in. deep). For overlays for ceilings and interior walls, or for space dividers, the back-up plates can be used double to form a 1 1/8-in. deep screen. Although *Alshade* is currently available only in the "Shad-O-Wheel" version shown above, production of additional patterns individually designed by architects is contemplated. Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

more products on page 292

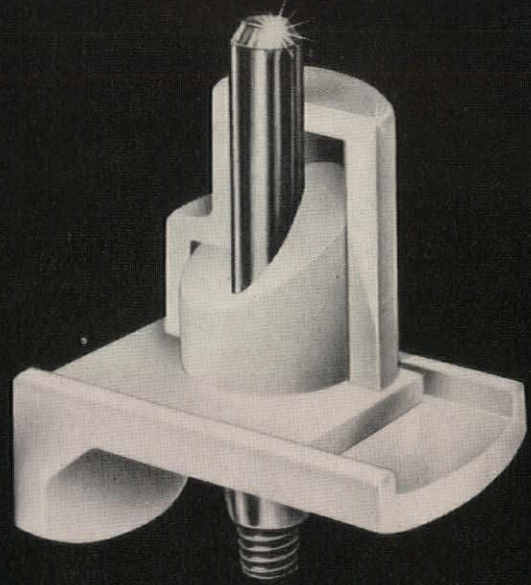
100

YEAR HINGE KEEPS TOILET COMPARTMENTS YOUNG

Friction-Free Forever . . . Made of Du Pont Zytel*
It's a FIAT *exclusive!* Accelerated 100-year cycling†
proves this gravity-closing hinge a perfect
performer forever! Impervious to chemical, fungus,
insect or heat attack, the Zytel Nylon frictionless
bushing and stainless steel pintle assure a
smoothly quiet hinge. Fully concealed in the
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†1,000,000 cycles—100 years of service at rate of more than 25 times per day.

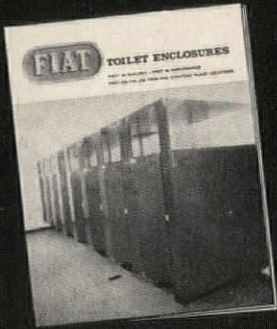
*Du Pont Trade-mark



Friction-Free Forever . . .

*Made of DuPont Zytel**

Patent No. 2,904,824



Send for new Brochure: "Fiat Toilet Enclosures" to get the facts about the FIAT line, as well as architectural details and specifications.

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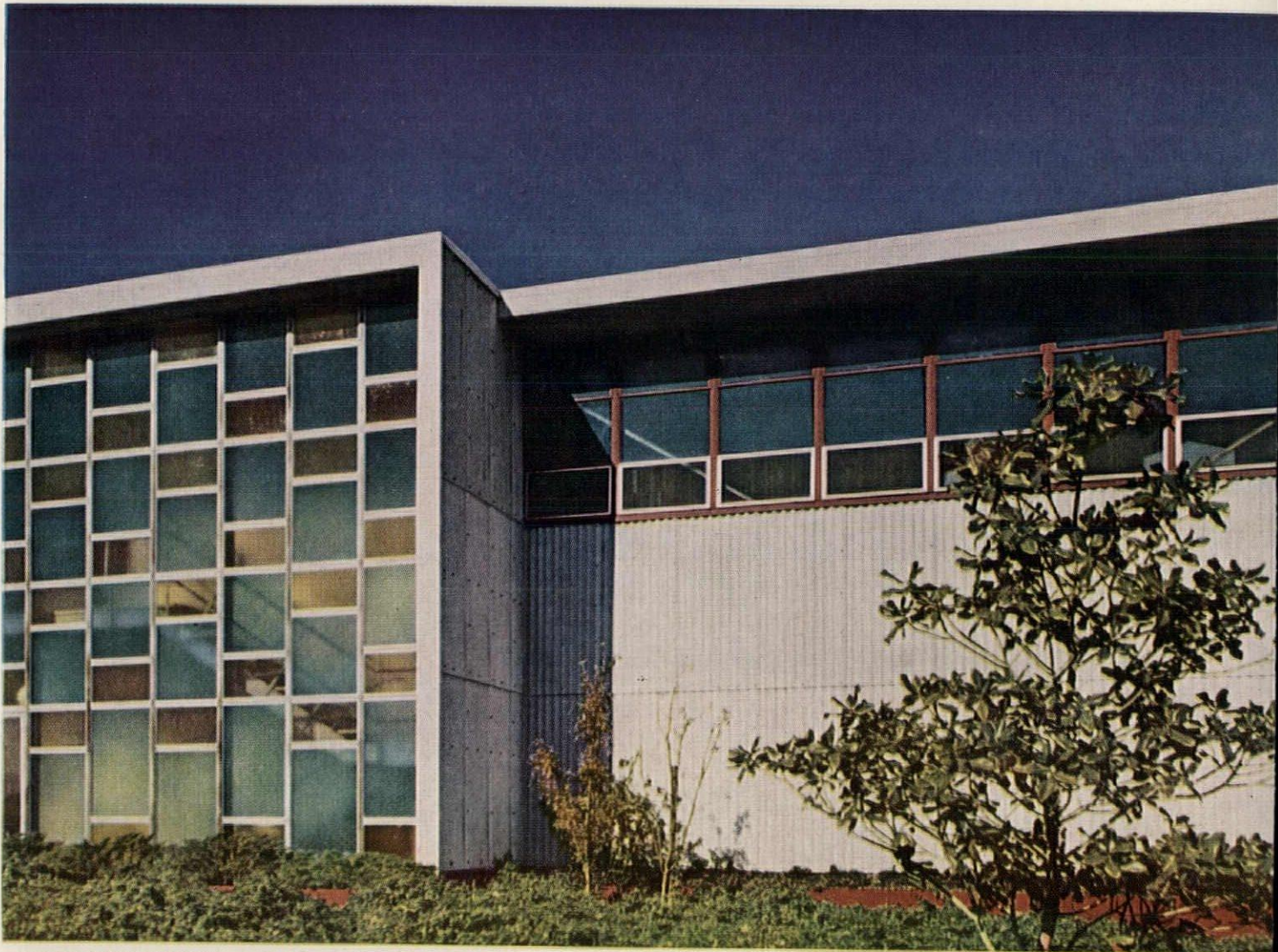
Albany, Georgia

Plainview, Long Island, New York

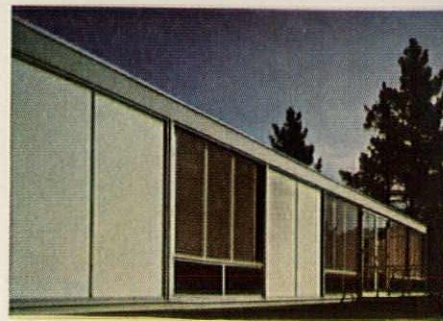


WALLS

New Approaches to Old Problems with Modern Products by Johns-Manville

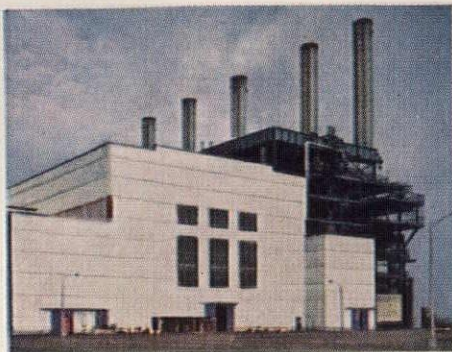


ASBESTOS WALLS . . . Soffits of the overhanging roof, window spandrels and returns at the entrance of this plant are Flat Transite. Large panels of fire-safe economical Corrugated Transite are used for the main wall areas. These structurally strong asbestos-cement sheets can be used equally well with steel frame construction or with wood framing.

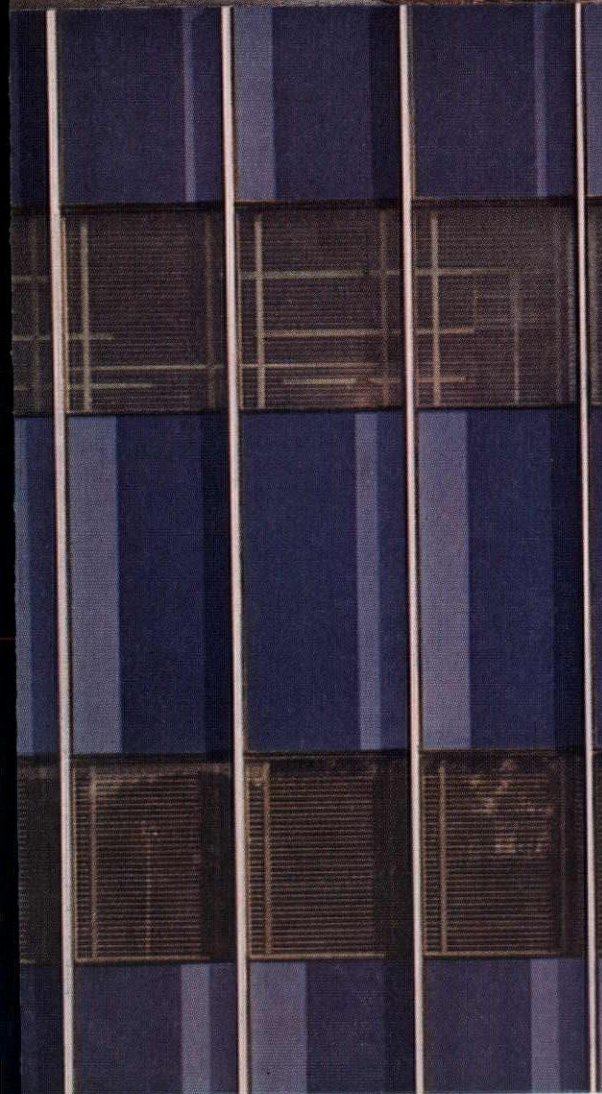




DIRECTIONAL WALLS . . . Sheets of J-M Corrugated Transite erected horizontally provide a strong directional accent at the entrance of this building. These asbestos-cement panels can be used painted or in natural stone-like gray.



MASSIVE WALLS . . . The massive main element of this power plant is faced with Corrugated Transite . . . structural panels that combine fine appearance and permanence.

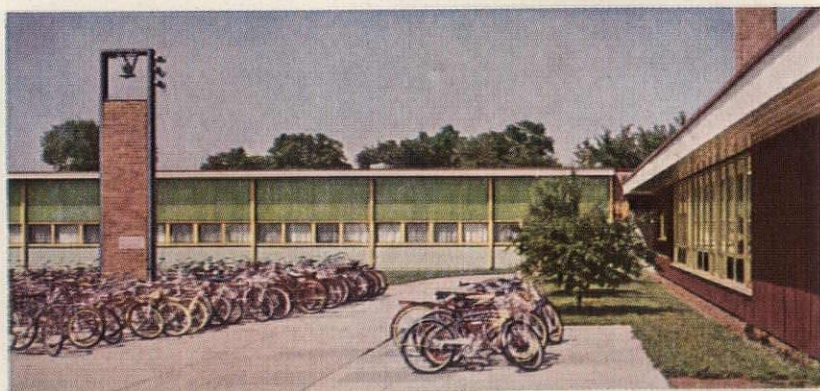


THIN WALLS . . . Here, porcelain on metal skin was laminated to both sides of Johns-Manville Micro-Flexboard for a total thickness of only 5/16". These curtain walls have no waviness; stay uniformly flat. Virtually any finish can be laminated or applied.

TWIN-PURPOSE WALLS . . . By using J-M Transi-top for the walls of this laboratory, both interior and exterior finish are provided by one material. The large, quickly installed panels consist of an insulating core faced on both sides with strong, tough asbestos-cement sheets.

Interesting and functional approaches to the handling of exterior walls—and exciting design potentials adaptable to a wide range of building types—become available with the use of Johns-Manville building products. Shown here are recent applications on buildings in different sections of the United States.

For more than a century, Johns-Manville has been famous for its leadership in research and in the development of quality building products. This knowledge and experience is available through Johns-Manville building specialists who can be reached by contacting Johns-Manville, Dept. AR-3, Box 158, 22 E. 40th St., New York 16, N. Y. In Canada, address Port Credit, Ontario.

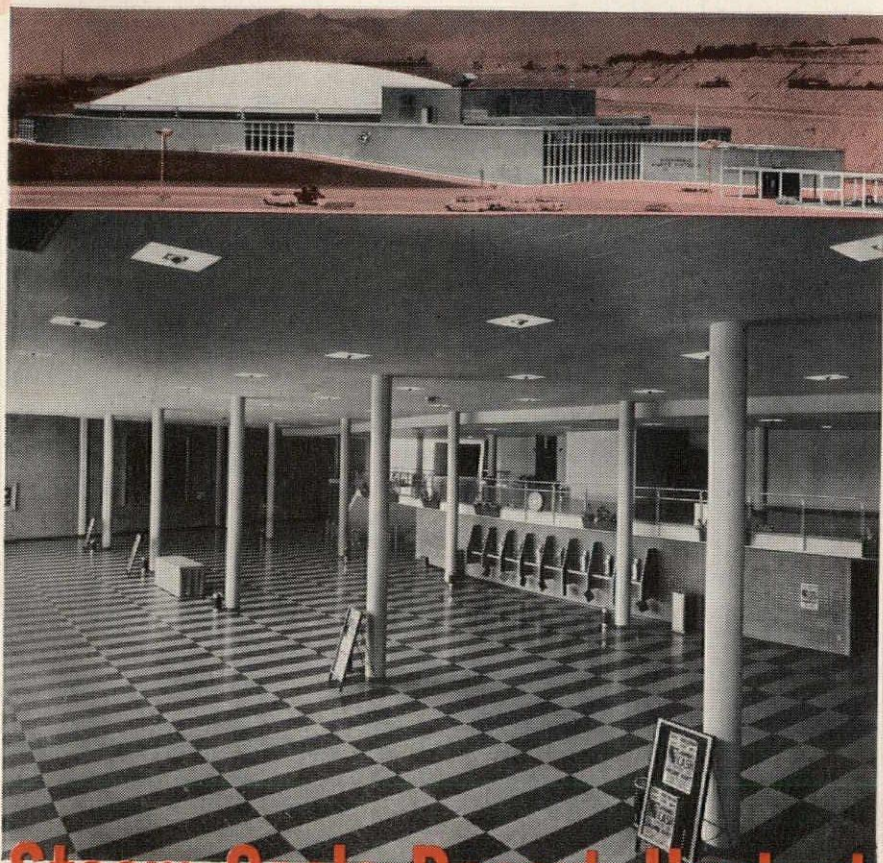


TRANSLUCENT WALLS . . . Johns-Manville Corrulux reinforced fiber glass panels combine design with function . . . to provide soft, natural interior lighting. Use these shatterproof translucent panels anywhere, corrugated or flat. Available in a wide range of colors.

JOHNS-MANVILLE



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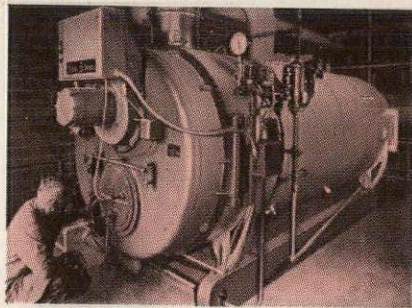


Steam Cools Desert Heat at Albuquerque Auditorium

Cleaver-Brooks CB packaged boiler supplies air conditioning system with 4,560 lbs. of steam per hour — helps keep new civic auditorium cool and comfortable in 100° outside heat.

The nation's largest thin-shell, post-tensioned dome belongs to this magnificent new structure. To help keep things cool under this concrete "parasol," the city of Albuquerque specified a CB packaged boiler — a dependable source of steam for an air-conditioning system that filters, cools and circulates 93,000 cubic feet of fresh air every minute.

Reports Dr. Marcello Giomi, consulting and mechanical engineer for the project, "We specified a Cleaver-Brooks boiler because it is a complete factory-tested unit including burner, boiler and modulation control system — all designed and built by a single manufacturer. Each component is integrated with all others for maximum operational efficiency. And Cleaver-Brooks saw to it that a factory-trained serviceman was here to supervise start-up even including



necessary compensation for job altitude."

Consultant Giomi goes on to say, "Our experience with Cleaver-Brooks products goes back at least 10 years and we have yet to find a job where they haven't proved more than adequate to handle all loads imposed."

Architects for the building were Ferguson, Stevens, Mallory and Pearl of Albuquerque. If you'd like to know more about this installation or how Cleaver-Brooks packaged boilers (15 to 600 hp) fit into architects' best-laid plans, write Dept. D, 362 E. Keefe Ave., Milwaukee 1, Wis.

Cleaver  Brooks®

ORIGINATOR AND LARGEST PRODUCER OF PACKAGED BOILERS

Product Reports

Sentry for Refrigeration Systems

The Televance *Sentry*, an electronic device that is expected to help lower operating and maintenance costs of refrigeration and air conditioning systems, keeps constant watch over the system and signals at the very first sign of a refrigerant leak or any malfunction causing gas bubbles to appear in the liquid line. It also detects and signals the occurrence of any condition that might result in non-operating of the compressor while the thermostat or compressor motor control device is calling for refrigeration. In some cases, such as a slow refrigerant leak or very inefficient compressor, it is claimed that the *Sentry* will signal that service is required months in advance of actual equipment failure.

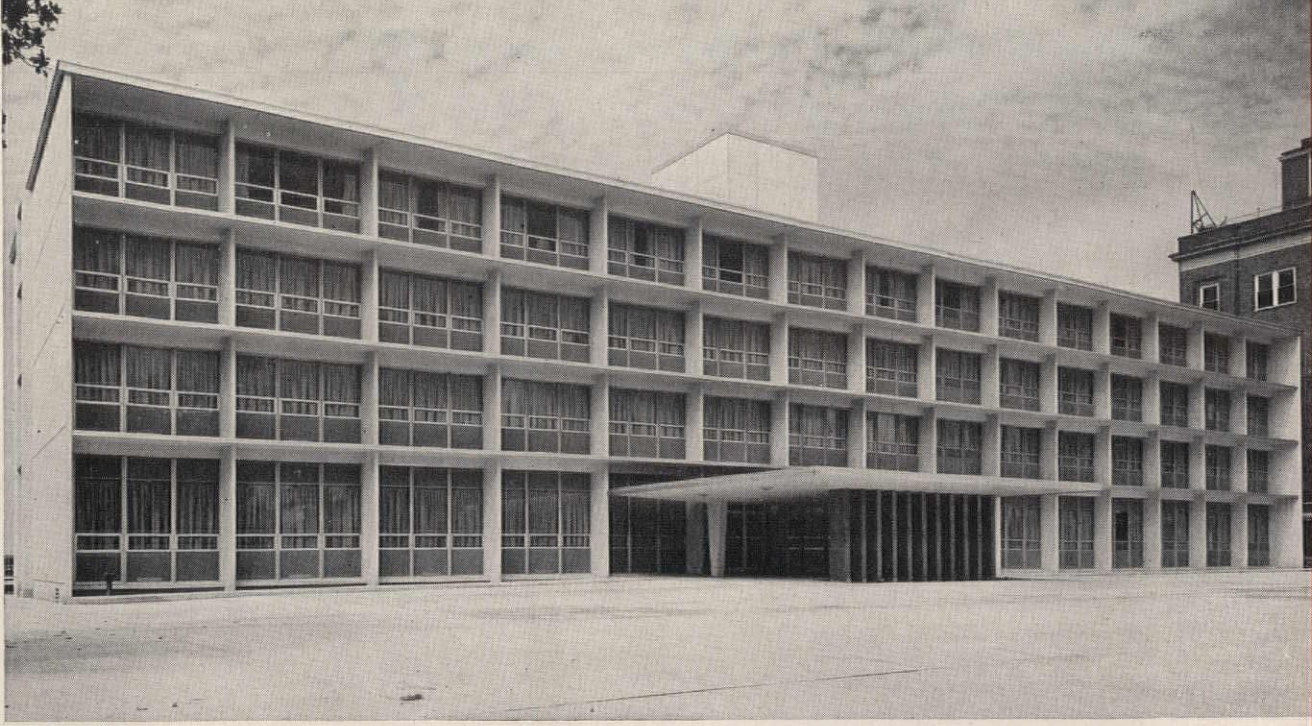
The basic unit consists of a sensing probe which is located in the liquid line of the refrigeration system, and a main electronic control unit. A multiple selector switch which permits up to five condensing units to be connected to a single *Sentry*, and a low voltage remote alarm light, are also available. One standard unit can be used on any size equipment and with all refrigerants. *Televance Corp., P. O. Box 3043, St. Louis 23, Mo.*



Noise-Controlling "Paint"

Hush-Tex, a new cork- and asbestos-reinforced plastic emulsion developed for application on ceilings of corridors, meeting rooms, auditoriums, stairways, and similar public areas, is said to provide insulation against heat, cold and fire, as well as a low-cost, noise-absorbing finish. The rough-textured resilient coating can be applied to any paintable surface at about the same cost as paint. *Preco Chemical Corp., 415 Lexington Ave., New York, N. Y.*

more products on page 296



The INSIDE STORY is told in COLOR...

by putting into actual practice the well-known psychological effects of color, it is possible to speed recovery and boost staff morale.

P&L colors were used throughout for this purpose because of their beauty, high quality and low maintenance costs.



MISSOURI PACIFIC EMPLOYEES' HOSPITAL

Little Rock, Arkansas

Architect:

Richard W. Groh

General Contractor:

Ditman, Pickens & Bond

Painting Contractor:

Gus Spickes Painting Co.

P & L Products Used:

Solidex, Alkatite Cement & Stucco-

Paint, Lyt-all Stippling Eggshell,

P & L Oil Stain, "38" Pale Trim

Varnish, Vitralite Enamel Eggshell.

MODERN HUMANITARIAN FACILITY IN SOUTHWEST

This new hospital is modern and beautiful from entrance to exit. A large overhanging roof gives the entrance an appearance of a patio. The façade of this four story structure is almost completely covered with glass except for the cement partitions and overhang which give it an "egg-crate" effect. The inside rooms are spacious and color styled with Pratt & Lambert products.

Professional-level, color planning service by experienced Pratt & Lambert representatives ... the suggestion of distinctive color plans, in addition to recommendations of authoritative painting specifications, is available upon request and without obligation. Please write: Pratt & Lambert Architectural Service Department, 3301 38th Ave., Long Island City 1, N.Y., 4900 S. Kilbourn Ave., Chicago 32, Ill., 75 Tonawanda St., Buffalo 7, N.Y., 254 Courtwright St., Fort Erie, Ontario.

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the paint of professionals for over a century

The best ideas are more exciting
in **concrete**



Precast concrete and sand molds make "sculptured walls" come easy!

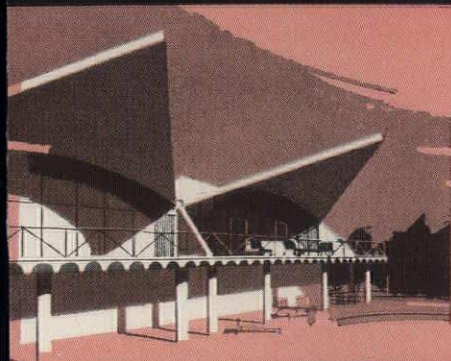
To achieve the design effect sought for the new Hartford, Connecticut, headquarters of Mutual Insurance Company of Hartford, the architects chose precast concrete. With it they turned the fronting wall into an heroic bas-relief of striking beauty.

Famed sculptor Costantino Nivola "carved" the designs in damp sand. Cast directly from these sand molds in 132 panels, the concrete captured all the detail and rich texture of the original sculpture. Color variations on buff-toned background increase the feeling of depth.

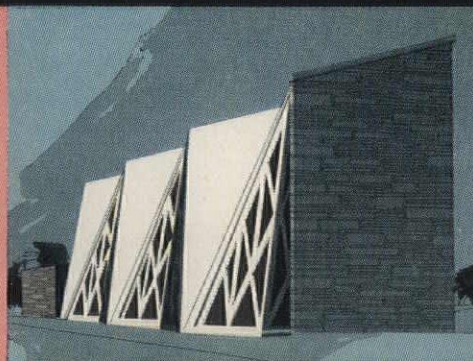
This is just one example of how today's architects are using concrete to create outstanding decorative effects. In buildings of every size and type, concrete fits both free-ranging imagination and functional requirements.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

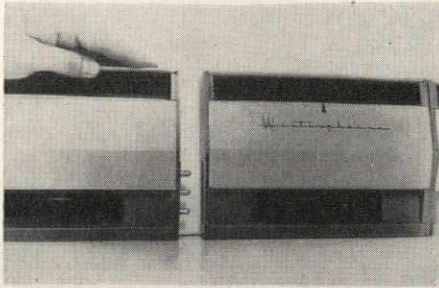


Spectacular clubhouse created for the Elks at Duncan, Oklahoma, was made possible by an inches-thin shell roof of modern concrete.



Unique house of worship, Zion Church, Milwaukee, Wis., gets strength and character from walls of concrete hyperbolic paraboloids.

Mutual Insurance Company of Hartford. Architects: Sherwood, Mills & Smith, Stamford, Conn. Structural Engineers: Werner-Jensen & Korst, Stamford, Conn. Elks Clubhouse. Architects: Cottingham and Cook, Lawton, Okla. Structural Engineers: Wilson & Associates, Oklahoma City, Okla. Zion Evangelical and Reformed Church, Architect-Engineer: W. P. Wenzler, Milwaukee, Wis.



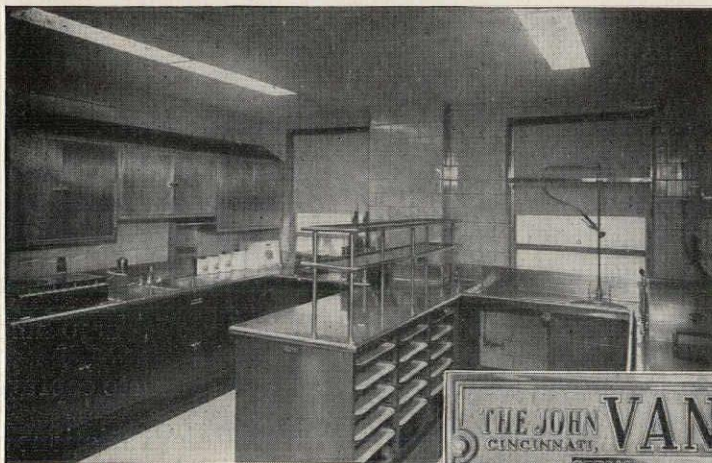
Plug-In Baseboard Heating Units
Although they are more compact, a new line of plug-in baseboard electric

heating units provides the same output as previous models (250 watts per linear foot) without increasing surface temperature. The units also cut installation time considerably since electrical connections are required only in a 9½-in.-long control section that contains a double pole switch and thermostat. They are installed by simply plugging-in to the control section through a concealed three-pronged connection that provides a continuous flow of power to each additional 2-ft section. The

units are easily fastened to the wall to complete the installation. *Westinghouse Electric Corp., P.O. Box 2099, Pittsburgh 30, Pa.*

Long-Lasting Vinyl Diffuser

Lifeguard 150, a self-extinguishing vinyl diffuser panel, is said to have light stability of 150 per cent compared to conventional light stable vinyls. Accelerated aging tests have shown it to have, in addition, a usable life of 30,000 to 45,000 hours, or 50,000 hours (15 years) when used in double "dirt shield" panels. *United Lighting & Ceiling Co., 2828 Ford St., Oakland, Calif.*



Architects & Engineers
Schenck & Williams • Dayton

Floor Kitchen
●
Good Samaritan
Hospital
●
Dayton, Ohio



Good Samaritan happy with Van equipment in new floor kitchens

- The new Villa Madonna maternity wing of the Good Samaritan Hospital at Dayton has three floor serving kitchens and one diet kitchen . . . all with most modern all stainless equipment . . . designed, fabricated and installed by Van. Sister Helene, Chief Dietitian, says that they are a joy to clean. It is so easy to keep everything shining and clinically clean.
- Van engineers collaborated with Harry I. Schenck in laying out the decentralized service for most efficient operation, providing 375 meals to patients daily, for light diet service.
- When you have a food service problem . . . whether it involves modernization, expansion or an entirely new installation . . . be sure to make use of Van's century of experience.

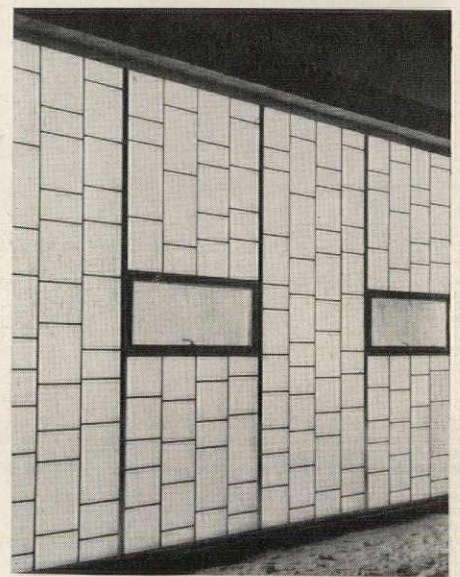
The John Van Range Co.

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Random-Grid Translucent Panel

The overall random effect of Kalwall's new *Random-Grid* translucent wall panels is achieved by varying the distance between the mechanically interlocked aluminum I-beam sections which form the core of this plastic-faced sandwich panel. The panels are manufactured in sizes up to 4 ft wide by 20 ft high, for use in wood, masonry or curtain wall construction, and skylights as well as in the new Kalwall *Panel Unit Wall* system which combines translucent and opaque panels with fixed and operating sash and louvers. Because of their high strength, they require only perimeter fastening to the building, eliminating subframing and supporting members. Color may be incorporated in the panels by specifying colored translucent faces or colored inserts in the grid openings. *Kalwall Corp., 43 Union st., Manchester, N. H.*

more products on page 302

here's one of the
 most helpful
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 ever published
 to aid you in . . .

Layouts of
 10 actual installations,
 showing:

- Overall Area
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 Kitchen & Storage, Office, Wash Rooms
- Seating Capacity
 - Car Spaces
- Number of Employees
- Listing of Bastian-Blessing Equipment
- Cost of Bastian-Blessing Equipment
- Gross Annual Drive-In Income

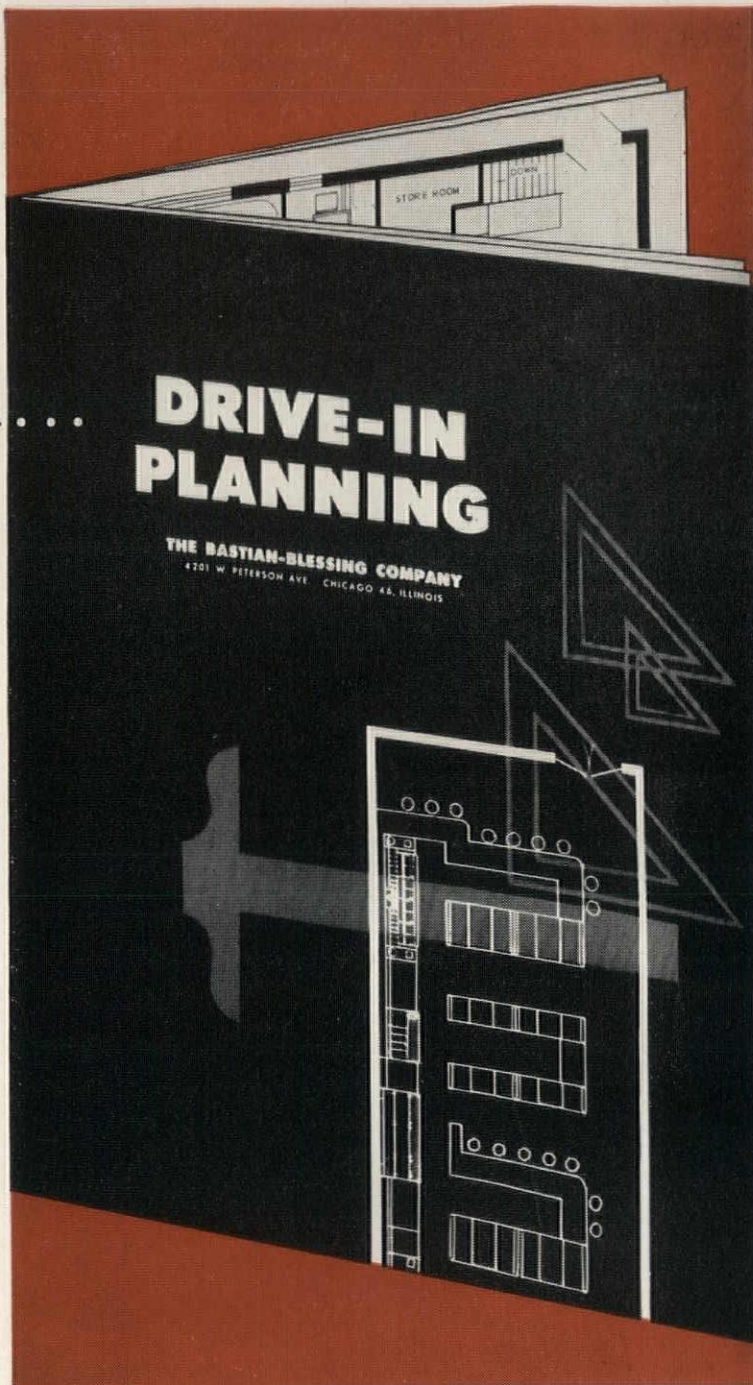
Now, you can see and compare 10 different Drive-In arrangements ranging in equipment length from 41 feet to 234 feet — in number of "peak period" employees from 5 to 22 — in seating capacity from none to 116 — in car spaces from none to 121 — in cost of Bastian-Blessing facilities from \$8,500 to \$33,000 — in gross income from \$43,000 to \$350,000 annually.

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Please rush your new Drive-In Planning Booklet SA-400.

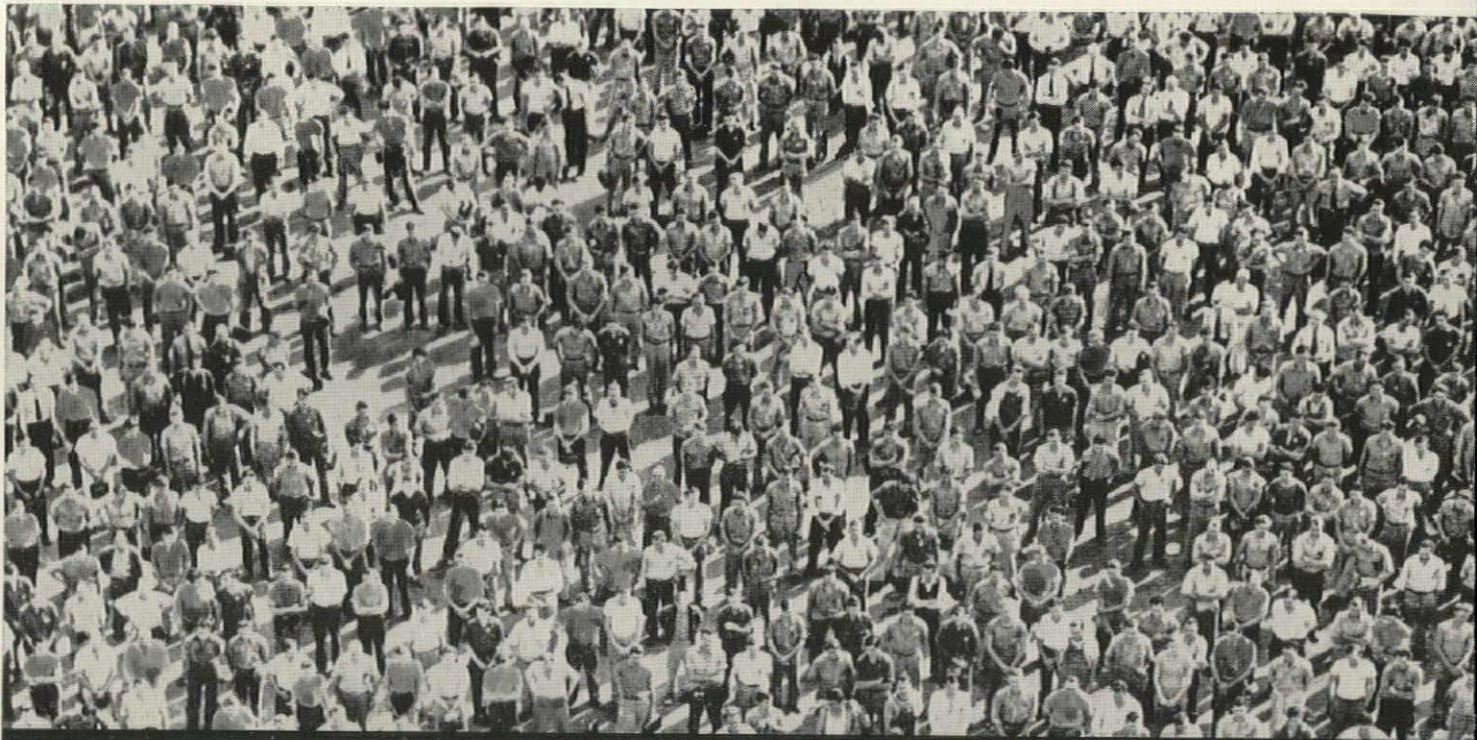
We're planning drive-ins: right now; occasionally.

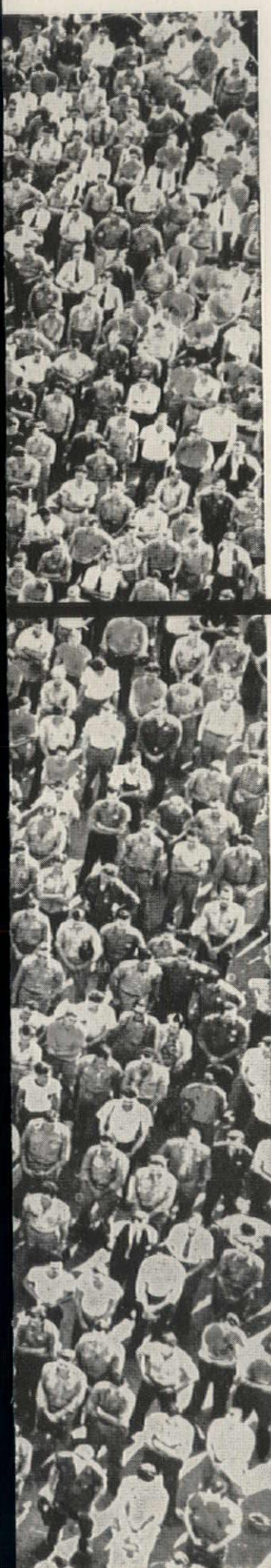
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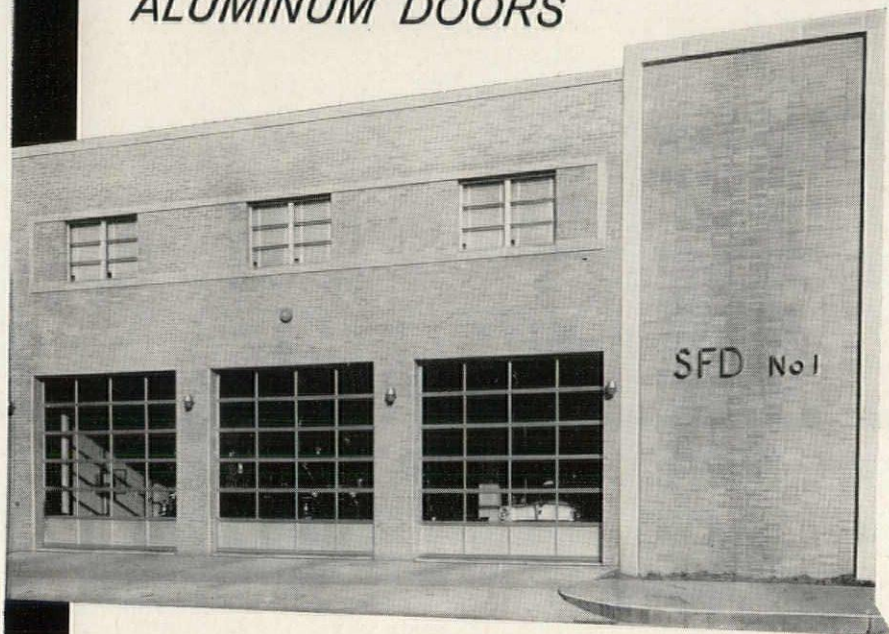
Your local Lennox *Comfort Craftsman* is listed in your Yellow Pages. Call him—or write *Lennox Industries Inc.*,
326 S. 12th Ave., Marshalltown, Iowa.

© 1960 Lennox Industries Inc., founded 1895; Marshalltown and Des Moines, Ia.;
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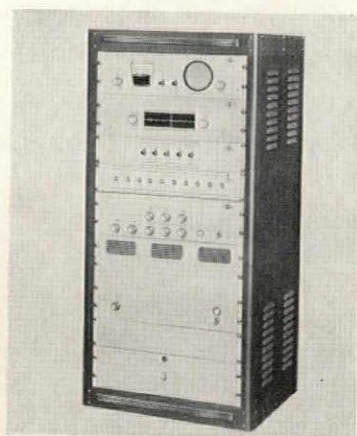
Hammonton, New Jersey



Builders of A Complete Line of Sectional Overhead Doors

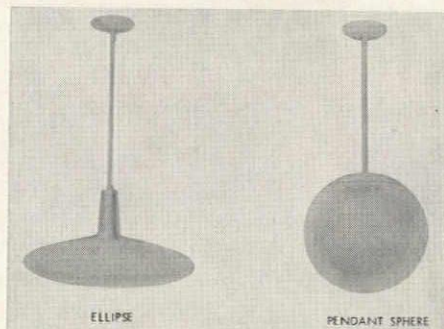


Product Reports



Compatible Sound Components

A complete line of custom sound components has been developed to provide everything from low level sound reinforcement (music distribution with hi-fi characteristics) to high-powered paging equipment, or both, with all necessary equipment mounted in a single compact rack as shown above. The basic components in the line—AC power panel, relay panel, input panel, AM-FM tuner, monitor panel, output panel (10 switches, 20 outlets), 4-speed changer and/or tape player, pre-amp panel, amplifiers, speakers and microphones—can be installed in any combination with assured compatibility. *Webster Electric Co., Racine, Wis.*

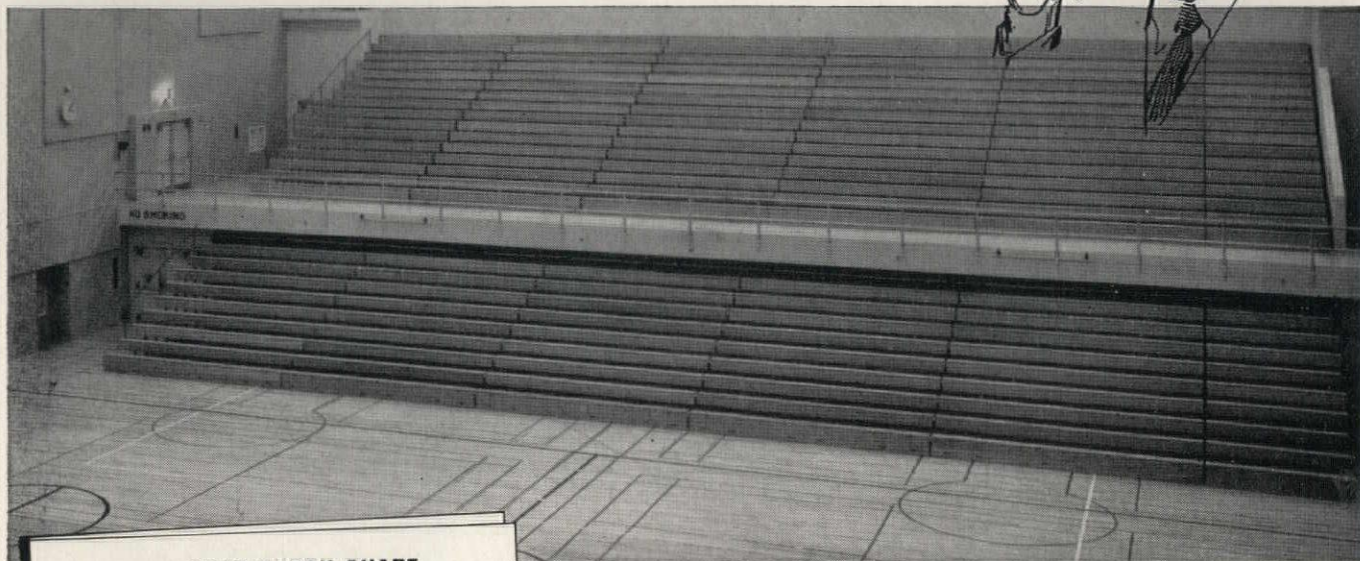


Streamlined Pendant Fixtures

Two new incandescent lighting fixtures for residential and commercial applications feature imported, hand-blown opal glass diffusers with brushed aluminum pipe and trim. The "Ellipse" is available in either pendant or surface styles with 14-, 18- or 22-in. globes. The "Pendant Sphere" comes in 12-, 14-, 16- or 18-in. globe sizes. *Halo Lighting Products, Inc., 4201 West Grand Ave., Chicago 51, Ill.*

more products on page 314

WHAT DO YOU WANT besides price when you specify or buy GYM SEATS?



GYM SEAT CHECK CHART
An easy "Do-It-Yourself" scorecard for comparing features of various makes of bleacher-type gym seats.

Check these important design and construction factors before specifying any gym seats, whether they're being or being replaced. To insure the maximum in safety, service, easy operation, and minimum maintenance.	Enter the names of gym seats under consideration and mark "YES" or "NO" in spaces provided.
1 Are fronts of seats perfectly vertical when closed to safeguard against accidents and to permit flush retraction?	
2 Do seats operate on a telescopic principle, completely free of sliding members? (See Fig. 2.)	
3 Are seats designed and constructed independent of trussing, using multiple linkage, levers and pins? (See Figs. 1, 2, 3 & 4.)	
4 Is steel understructure free-standing and self-supporting independent of wood seats, masts and footboards? Wood members should add to strength of understructure, and floor or structural steel. (See Fig. 5.)	
5 Do seats full length seat row at least four vertical uprights to support a capacity load in complete safety? (See Fig. 6.)	
6 Are uprights properly staggered to avoid overloading of standard floor? (See Fig. 7.)	
7 Are uprights interlocked at top and bottom to insure straight line, non-binding opening and closing? (See Figs. 1 & 8.)	
8 Are all opening uprights equipped with two permanent lubricated, rubber-tread rollers? (See Fig. 9.)	
9 Are rollers enclosed in steel housing as an extra protection against possible accidents and to prevent aging of excessive accumulation of dirt and debris? (See Figs. 2 & 9.)	
10 Do rollers retract into steel housing when seats are closed to lock seats in safe position? (See Fig. 10.)	
11 Are front row uprights equipped with two non-slip rubber pads to lock seats in safe position? (See Fig. 11.)	
12 Do each row board slant slightly backward for maximum comfort? (See Fig. 12.)	
13 Do wood members have an even-dried, mechanically applied, oil of masticure varnish finish, which has many times greater wear resistance than ordinary gym seat finishes? (See Fig. 13.)	
14 Can any number of seat rows be opened and safely locked in position for use while all others remain closed? (See Fig. 14.)	
15 Do seats occupy minimum floor space when closed?	
16 Can seats be located by location per your requirements, without obstructions in rear boards?	
17 Can seats be equipped with automatic lipped top risers to prevent buildup of hazardous dirt?	
18 Are movable seats equipped with an integral hydraulic lift which is controlled and operated at the front?	
19 If seats are to be counterbalanced, is power work of positive action type, completely free of floor friction drive? (See Fig. 15.)	

Courtesy of FRED MEDART PRODUCTS, INC., 333 DeKalb Street, St. Louis 18, Mo. 3070

GET YOUR COPY

A gym seat check chart that will help you in making impartial comparisons of features and values. No obligation—just MAIL THE COUPON.

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Send me a copy of the GYM SEAT CHECK CHART

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Organization.....

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City..... Zone..... State.....

GREATER SAFETY? Medart seats have it—compare them with others! Self-supporting steel understructures, plus added strength of wood members, support over 400 pounds per foot of seating space.

Four dual vertical uprights for each 16'0" seatboard. Two rollers on each upright retract and place load on floor, not walls or casters.

MORE SEATING? Medart 16-foot seat sections up to 12 rows high use only 32½" of floor depth when closed. Better seeing is assured with a choice of 17" or 18" seat heights. Ample toe and heel space add to comfort of spacious seat room.

EASIER OPERATION? Floating telescopic seat supports and interlocked twin rollers under each upright assure easier opening and closing; prevent binding and damage.

LESS UPKEEP? Harder, tougher clear wood finish lasts up to 15 times longer. Vertical fronts collect less dust. Swing-up front riser makes sweeping of debris quick, easy. Also, rubber rollers won't mar finely finished floors.

Sharply competitive in price, Medart Telescopic Gym Seats offer a host of exclusive features that promise savings in money, better performance, extra years of service.

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Strong, durable, lower in cost

You can now specify windows of sturdy, lasting stainless steel—at a cost much lower than you may think. Reason? Manufacturers now *roll-form* windows from Allegheny Stainless and pass the fabrication economies on to you.

In actual bidding recently, the price of roll-formed Allegheny Stainless windows averaged only about 10% higher than another non-stainless metal.

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WSW 7296

sive atmospheres, the brightness and freedom-from-pitting of Allegheny Stainless are recorded history; yet different patterns, textures and colors make news each day.

Stainless steel windows—of all-welded design and tubular construction—are available in Allegheny Stainless Types 202 and 302.

Include Allegheny Stainless in your design-thinking now. Learn how you can get the quality of stainless steel windows for much less than you think. For additional facts, and manufacturers' names, write to *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. Dept. R-4.*



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Williamson Free School of Mechanical Trades, Media, Pa. Wall Mural in 1½" Tile Gems® in 27 Bright, Matte, Crystalline, Decorator and Special Colors. Interior Spandrel: 1½" Tile Gems® in 76 Sage Gray, and 58 Vellum. Architect: Massena & duPont, Inc., Edward C. Cooper, Associate. Tile Contractor: United Marble Co., Inc. Color Plate 420.

Why is ceramic tile becoming so popular?

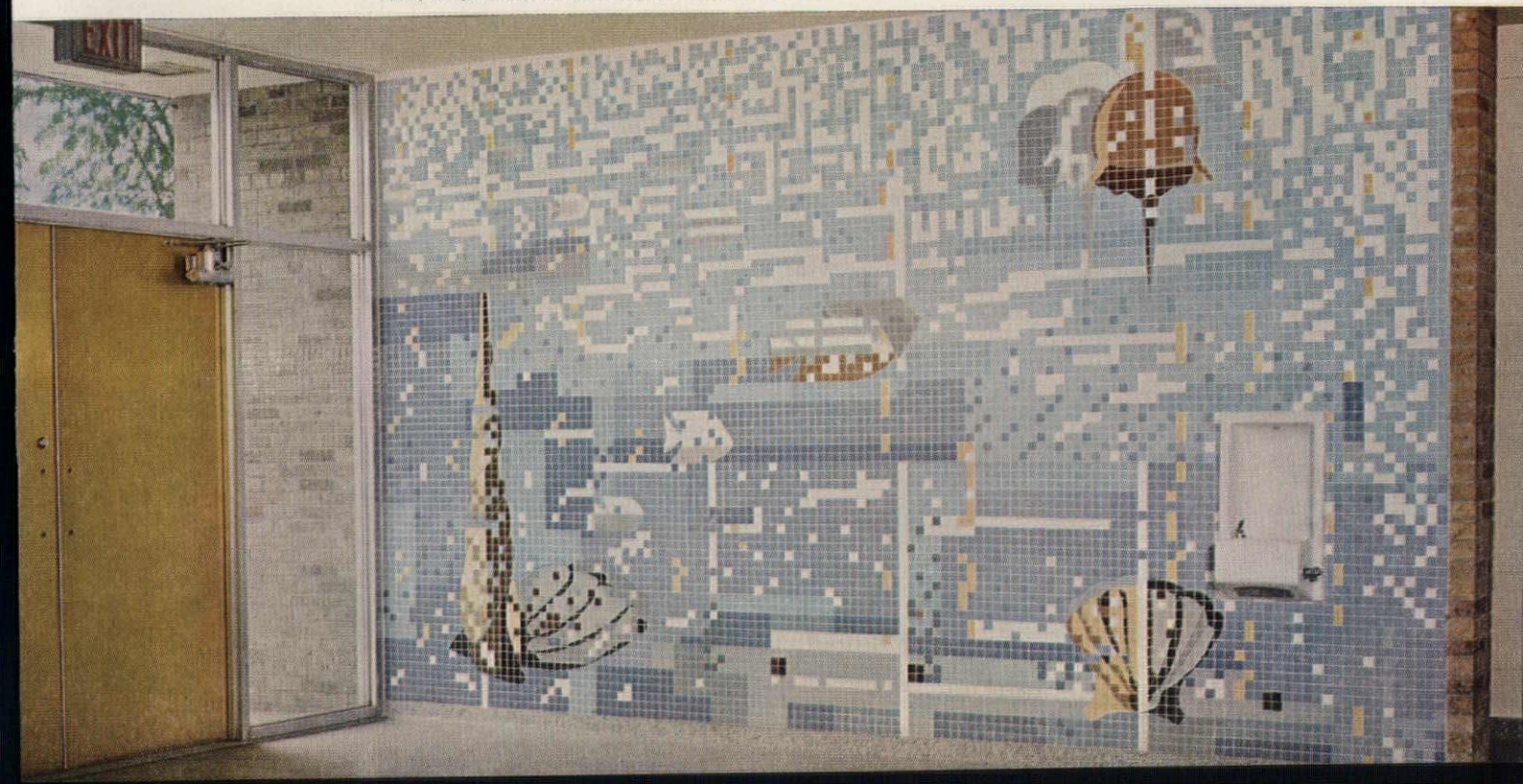
For one thing, the new importance of the wall area in today's architecture has focused attention on ceramic tile as the ideal material for architectural design. It is richly decorative, permanently beautiful, superbly functional. For another—the many new tile products developed by American Olean give the designer wide latitude for individual expression . . . as illustrated by the two wall treatments shown here. Write for Catalog 210 for details on the complete line of American Olean tile products.

Our Design Department will be glad to assist you in developing details for special design treatments.

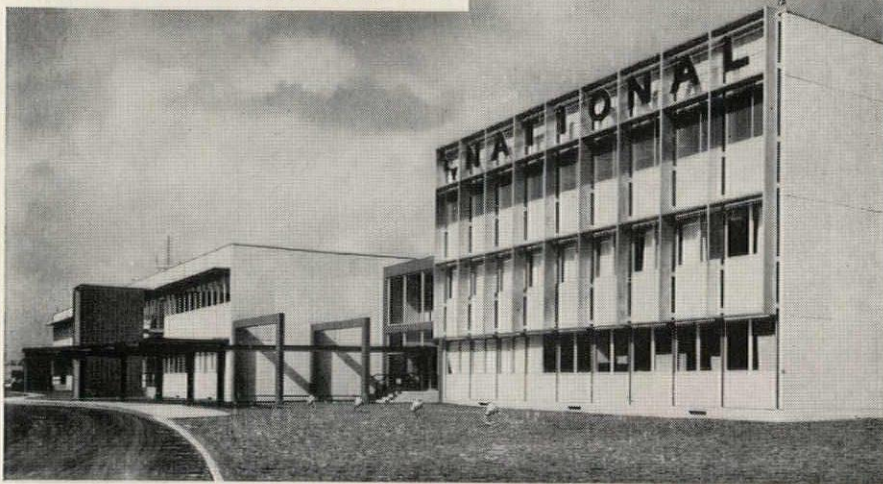
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Madison Park Swimming Pool, Lakewood, Ohio. Mural in 1½" Tile Gems® in 47 Brite White, 20 Turquoise, 63 Flax Blue, 12 Buttercup, 28 Pearl Gray, 65 Iris Blue, 21 Cornflower, 34 Berry Brown, 49 Gloss Black, 29 Oyster Gray, 81 Spruce Green, 64 Lobelia and 32 Tan Glo. Architect: John F. Lipaj. Color Plate 421.



Architect: Weed, Russell, Johnson and Associates,
 Engineer: Norman J. Dignum & Associates,
 Contractor: Bradford Builders, Inc.; Miami, Florida.



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was used to compact the sandy subsoil
 at two National Airlines Buildings.

At Miami International Airport, the nose hangar and administration building of National Airlines are built on sand compacted by Vibroflotation.



Architect:
 Weed, Russell, Johnson and Associates,
 Contractor:
 Fred Howland, Inc.; Miami, Florida.
 Consulting Engineer:
 Ammann & Whitney,
 Soil Consultant:
 D. M. Burmister; New York.

On two separate contracts, over 829 compactations were made to specified depth of 10 feet. Vibroflotation provided a rapid, effective, economical solution to the problem of eliminating foundation settlement.

Around this immediate area are several other buildings built on sand compacted by Vibroflotation including: American Airmotive Corporation's cantilevered hangar and Skyways Motel.

Write for Booklet A-19

Proven Applications

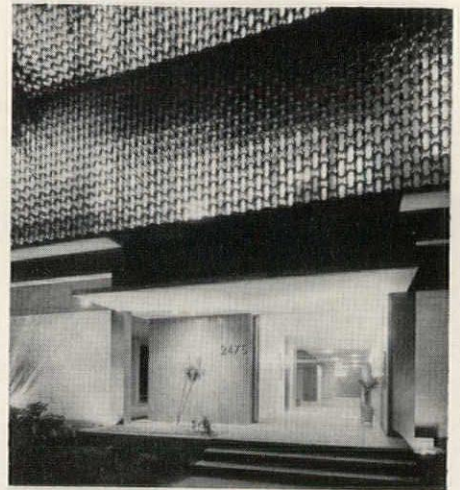
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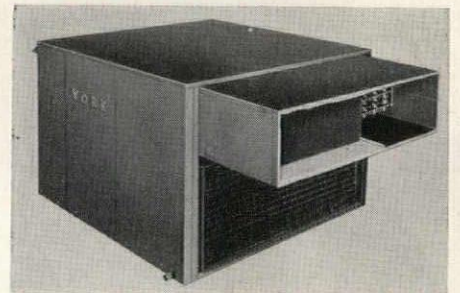
ATLantic 1-2500

Product Reports



Clay Masonry Screen Units

Among the materials available for the now-ubiquitous sun screen are three versatile clay masonry units by designer Jack Hastings (typical installation above). Notable for the delicacy of their patterns—which can be varied by setting them in offset or stack bond—the units are all 8½ in. square, and come in 3½-, 5- or 8-in. depths. The natural color of the hard-burned plastic fireclay ranges from pink to buff, but glazed finishes are also available. *Brookhaven Pressed Brick & Mfg. Co., Brookhaven, Miss.*



Improved Packaged Heat Pump

One of York's expanded line of packaged heat pumps, the Model HP36 heat pump shown above provides automatic year-round heating, cooling and dehumidifying at temperature ranges from zero to 115 degrees. Designed for a wide variety of residential and commercial applications, it features twin cooling systems for step capacity comfort and economy, and built-in step capacity electric heaters to supplement the compressors at lower temperatures. *York Div., Borg-Warner Corp., York, Pa.*

Great new things are shaping up in concrete block

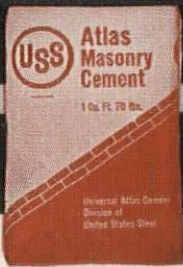
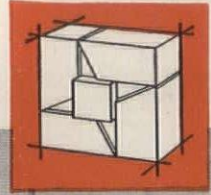


Photo courtesy of National Concrete Masonry Association

Atlas Masonry Cement provides the right mortar

"Shadowal" concrete block has often been described as "the block with a thousand faces." Used here in combination with square blocks by Architect Mario J. Ciampi, San Francisco, this unit has created a striking and distinctive example of the role concrete block plays in today's building plans. And to lay up the new concrete masonry units, Atlas Masonry Cement continues to be the preferred cementing material for mortar. It helps produce a smooth, workable mortar . . . assures a stronger bond . . . gives weatherproof joints that are uniform in color. And Atlas Masonry Cement complies with ASTM and Federal Specifications. For information write: Universal Atlas Cement, Dept. M, 100 Park Avenue, New York 17, N. Y.



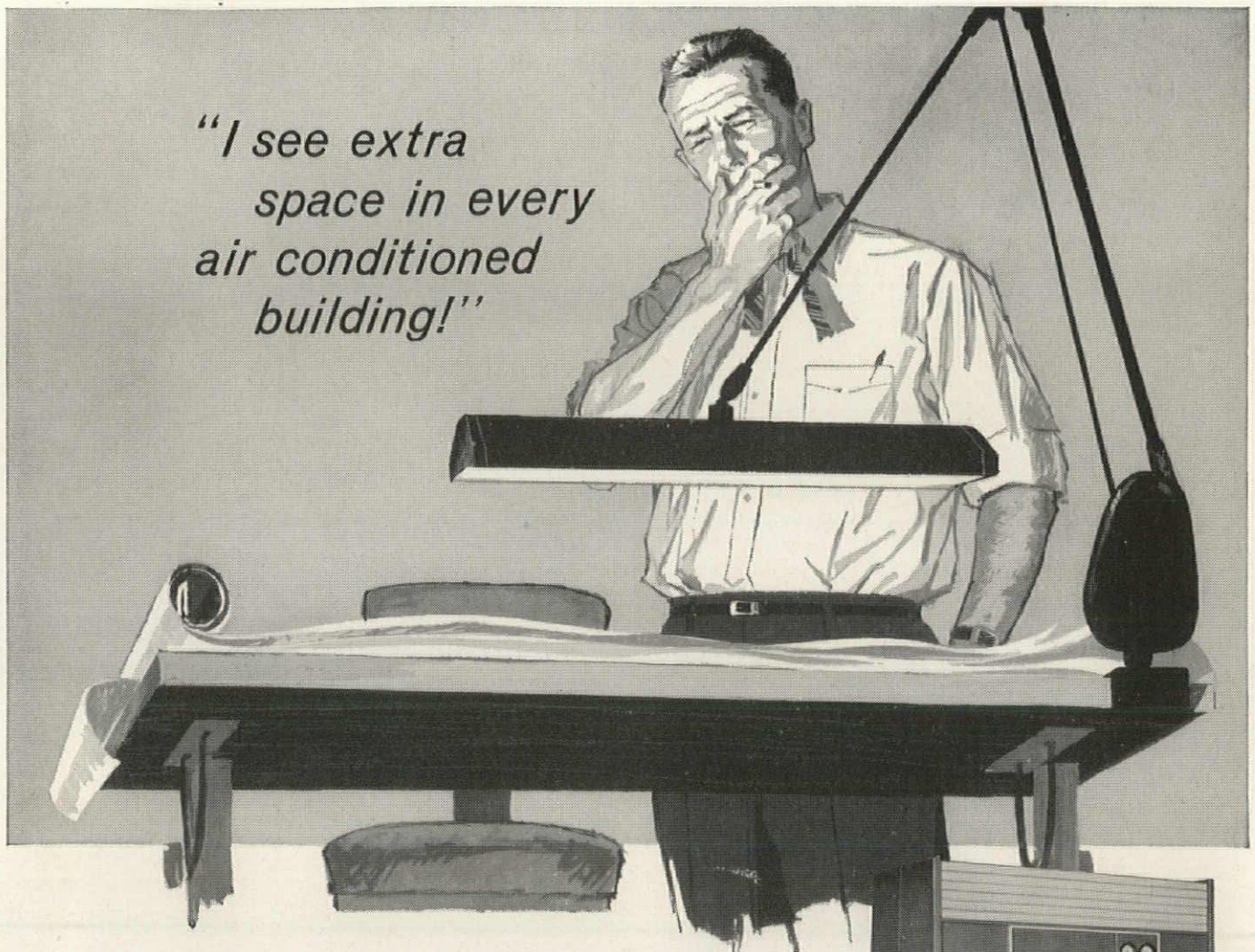
**Universal Atlas Cement
Division of
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—Fits into confined, often-wasted areas

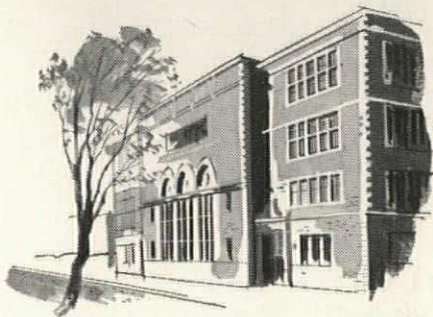


COMPACT, HERMETIC CENTRIFUGAL—A 130-ton Turbopak is only 14' long, 5' deep and 6¾' high, nearly 50% smaller than previous designs. Exclusive Borg-Warner power transmission reduces compressor rotor size to gain space-saving compactness.

COMPLETELY FACTORY PACKAGED—To cut installation costs, the Turbopak is completely factory assembled, insulated, piped, wired, charged, tested. It's shipped and rigged as a single unit—no assembly or refrigeration piping on the job.

AUTOMATIC CAPACITY CONTROL—Pre-rotation vanes provide efficient capacity reduction to 5% of full load. This continuously variable control matches compressor capacity to air conditioning load, assuring maximum system performance.

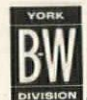
ULTRA-QUIET OPERATION—Runs more quietly than water pumps that supply it. Quiet, vibration-free operation permits location anywhere. "Push-button" controlled from convenient electronic control center. 65 tons refrigeration and up.



Another YORK Trail Blazer Concept Proved in Action at Insurance Company of North America, Richmond, Indiana—A 125-hp York Hermetic Turbopak supplies chilled water to air condition this modernized office building. Cool, clean, dehumidified air greatly increases the comfort and efficiency of the employees.

YORK

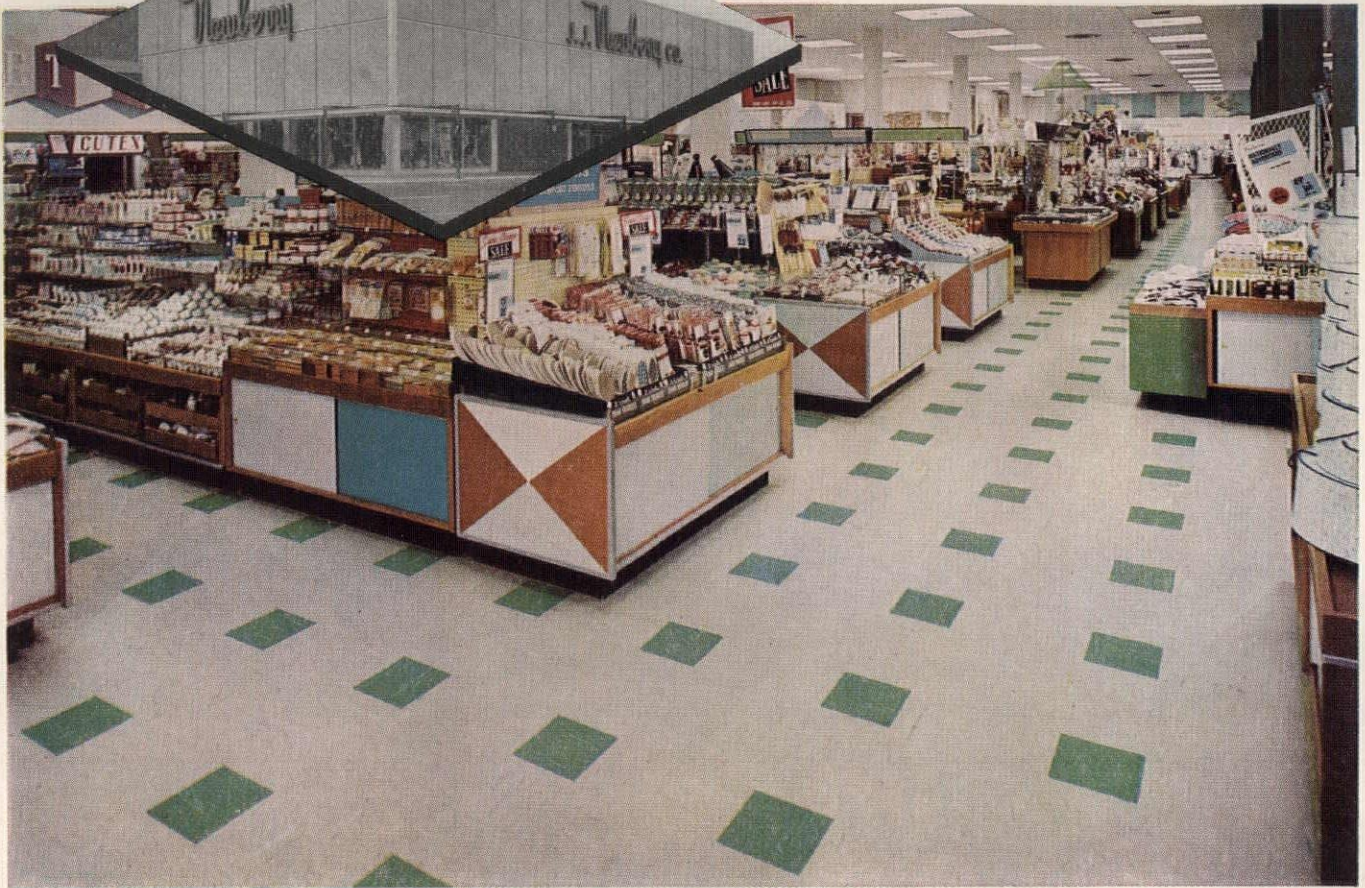
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Architect: John Graham & Company, New York, New York



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High Frequency Bus Duct

Outlines features, and gives dimensions, ratings and specifications for new high frequency bus duct. Booklet B-7326-380, 12 pp. *Westinghouse Electric Corp., P.O. Box 2099, Pittsburgh 30, Pa.**

Shallow Recessed Troffer

(A.I.A. 31-F-2) Describes the construction and installation features of the *Shallotroffer* lighting fixture series and its plug-in unitized electrical

assembly. Specifications, mounting and trim details, and technical information (brightness values, coefficients of utilization, lighting curves, etc.) for each of eleven available bottom diffusers are also included. Brochure B-2, 32 pp. *Globe Illumination Co., 2121 S. Main St., Los Angeles 7, Calif.*

Electric Motor Controls

Provides condensed listing of motor control products and accessories, with descriptive copy, design data,

and ordering information on each. Catalog 5900, 72 pp. *Furnas Electric Co., 1176 McKee St., Batavia, Ill.*

Molded Case Circuit Breakers

Describes and gives ratings, specifications and operation characteristics for full line of molded case circuit breakers. Bulletin 5001-1A, 40 pp. *I-T-E Circuit Breaker Co., 1900 Hamilton St., Philadelphia 30, Pa.*

ACI Book of Standards

1959 Edition compiles current ACI standards, recommended practices and specifications. 382 pp., \$5. *American Concrete Institute, P. O. Box 4754, Redford Station, Detroit 19, Mich.*

Painting Insulation Board

Provides information on the various types of insulation board to which paint is ordinarily applied, and suggests proper painting methods for each. Glossaries of insulation board terms and paint terms are also included. 10 pp. *Insulation Board Institute, 111 W. Washington St., Chicago 2, Ill.*

Drapery Hardware Catalog

(A.I.A. 27-C) Offers complete specifications and mounting information on cut-to-measure traverse rods for architectural drapery installations. 12 pp. *Kirsch Co., Sturgis, Mich.**

Sound Absorption Coefficients

. . . of *Architectural Acoustical Materials* (A.I.A. 39-B) provides a list of trade names and marks; summary tables which classify materials according to appearance and composition; and producers' tables which give detailed data on all listed acoustical materials of associated producers. Installation recommendations and coefficients of general building materials are also included. Bulletin XX, 44 pp., 50¢. *Acoustical Materials Assn., 335 East 45th St., New York 17, N. Y.*

Washroom Cabinets

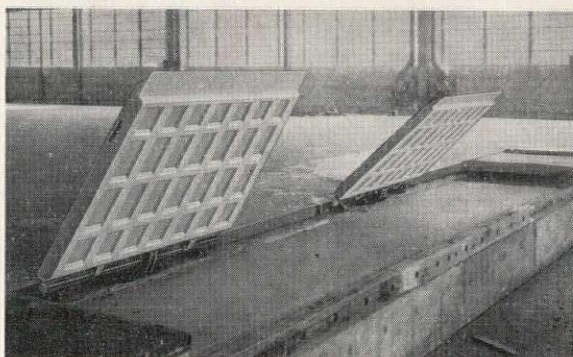
Gives installation tips, architectural specifications, unit sizes and capacities for Crown washroom dispensers and receptacles. 8 pp. *Washroom Consulting Staff, Crown Zellerbach Corp., One Bush St., San Francisco 19, Calif.**

*Additional product information in *Sweet's Architectural File*

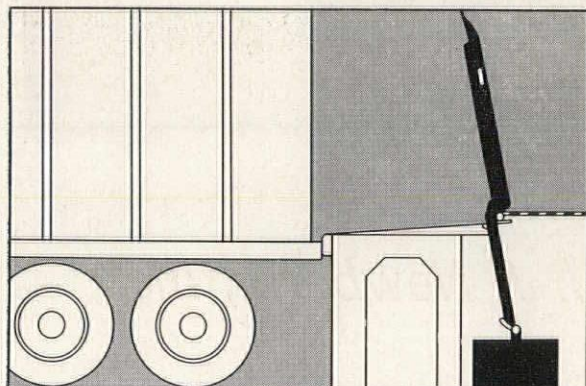
more literature on page 326



**manually
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MECHANICAL
DOCK RAMPS**



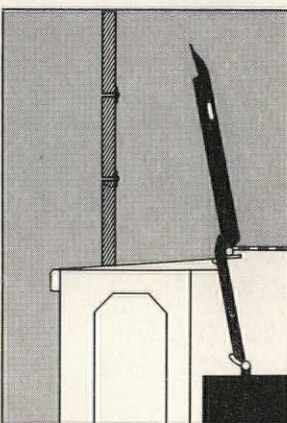
offer features your clients will want



OVERHEAD DOORS CAN CLOSE IN FRONT OF RAMP due to ramp's almost vertical position when not in use. Protects against illegal entry of building, provides complete seal against drafts, eliminates fire hazard.

EASY TO OPERATE. Unique compensating counterweight makes operation almost effortless. A slight lift of the hand floats platform up or down.

You can specify Rite-Hite Mechanical Ramps with complete confidence—5 manually operated models—6 truck operated models—all having full 10-ton capacity.



TRAILER DOORS CAN BE OPENED AFTER SPOTTING TRAILER AT DOCK. Rite-Hite ramp platform swings up to within 10° of vertical, providing ample room to swing trailer doors open and begin unloading without delay.

NO LEVERS PROJECT ABOVE DOCK FLOOR to create hazard to dock traffic and personnel.

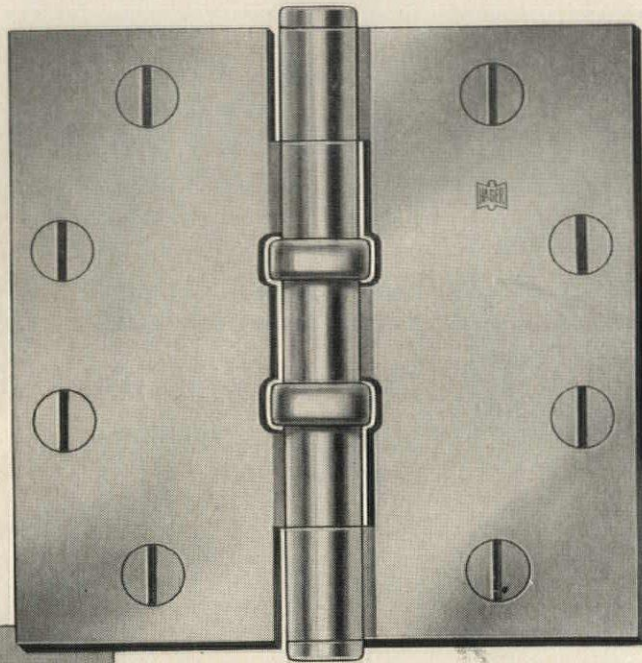
ONLY THREE MOVING PARTS. Rite-Hite's simple counterbalanced design and rugged simplicity eliminate maintenance problems.

PLATFORM CAN BE SHIFTED FROM SIDE TO SIDE to permit lining up should trailer be spotted off-center.

For descriptive literature and installation details, write Dept. A460.



LOOMIS MACHINE COMPANY
133 FOURTH STREET, CLARE, MICHIGAN



Available
on Brass
or Steel Butts—
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of all challengers!

THE ORIGINAL
Luma-Sheen FINISH
T M REG.
BY HAGER

STANDARD BEARER TO THE HINGE INDUSTRY!

Since 1954, when Hager first introduced *Permanized* LUMA-SHEEN Finish—the original and first true aluminum colored finish—it's become the most widely acclaimed finish of the door hardware industry!

Other manufacturers have tried desperately to duplicate and imitate the superb excellence of LUMA-SHEEN. When they compromised quality... they failed!

TRUE TO ITS PURPOSE... LUMA-SHEEN Finish—first of the industry—today is still first in the industry, after four long years! Specifiers, Consultants and Builders recognize that *permanized* LUMA-SHEEN has a can't-be-copied Hager craftsmanship that *out-performs* and *out-matches* them all!

PROOF OF INTEGRITY AND ENDURANCE!

1954—The Industry's first and finest! LUMA-SHEEN Finish—the only electrolytically-coated True Aluminum Color that matched other aluminum door hardware and trim.

1958—Proved by installation in practically every conceivable situation! LUMA-SHEEN remains the only finish that retains original soft lustrous beauty... resists and withstands corrosion.

When you want it to stand up to the
test of time—specify Hager LUMA-SHEEN
(symbol LS) on that next job.

C. HAGER & SONS HINGE MFG. CO., ST. LOUIS 4, MO., U. S. A.
HAGER HINGE CANADA LIMITED, KITCHENER, ONTARIO



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EVERYTHING HINGES ON *Hager!*

Radiant Ceiling News

With Burgess-Manning Ceilings — Your Building Is Better — Your Building Budget No Bigger

Burgess-Manning Radiant Acoustical Ceiling Especially Advantageous for Psychiatric Hospitals

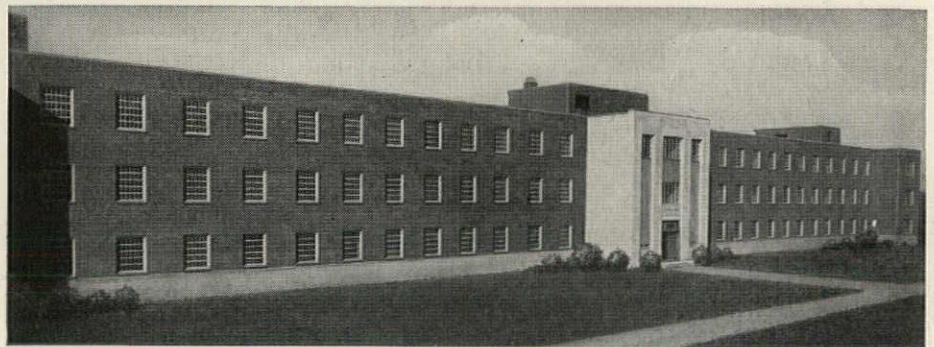
The Burgess-Manning Radiant Ceiling has many features that make it especially desirable for all hospital buildings designed for psychiatric use.

With the Burgess-Manning Radiant Acoustical Ceiling there are no hot radiators or registers within reach that can harm, or be harmed by an irresponsible person. The panels that transmit radiant energy for heating or cooling the space are located in the ceiling. Thermostatic controls can also be located out of reach. With the Burgess-Manning Radiant Ceiling as the heat source, floors are always comfortably warm, and there is no appreciable variation in temperature from floor to ceiling, or in any part of the room.

Acoustically this ceiling absorbs noise and provides maximum quiet for patients and staff.

The absence of drafts caused by convection currents, largely unavoidable with other heating systems, is another feature that is especially desirable in hospital installations.

These considerations prompted the selection of the Burgess-Manning Radiant Acoustical Ceiling for the Marquardt Building almost as much as its other features—superior comfort conditioning, economy of operation, low cost maintenance, and the virtually instantaneous response to thermostatic control.



Marquardt Building, Augusta State Hospital, Augusta, Maine.

Radiant Acoustical Ceiling Structurally Simple

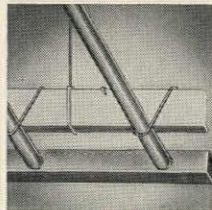
Considering the triple function—heating, cooling and noise control—performed by the Burgess-Manning Radiant Acoustical Ceiling, its construction is amazingly simple and compact. It consists of only 4 major parts.

1. Suspension

The standard suspension system of 1½" channels on 4 ft. centers is ordinarily used.

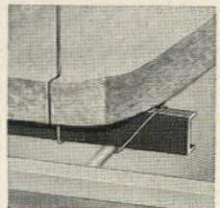
2. Water Circulating Coil

The grid type coil is made from pre-fabricated headers to which ½" laterals are welded. A sinusoidal type coil can be used where conditions make it desirable. Either type coil is attached directly to the suspension grid.



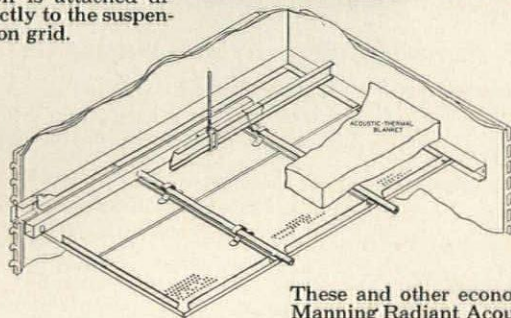
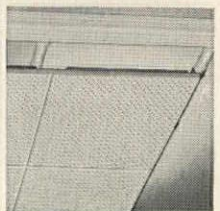
3. Acoustic Blanket

The non-combustible sound-absorbing blanket, with the required noise reduction coefficient, is laid on top of the suspension grid.



4. Snap-on Panels

Heavy gauge perforated aluminum panels of the proper thermal conductivity are attached directly to the water circulating coil.



This isometric drawing shows all 4 parts assembled—a relatively simple construction that replaces the conventional radiators, or hot air ducts used for convection type heating, and that permits reduction in size of ventilating air handling equipment such as blowers, fans, coils, filters, etc.

These and other economies permit installation of Burgess-Manning Radiant Acoustical Ceiling at a cost equal or lower than would be paid for various combinations of convection heating and air cooling, plus a suspended acoustical ceiling.

Write for descriptive
Burgess-Manning Catalog
No. 138-3



BURGESS-MANNING COMPANY

Architectural Products Division

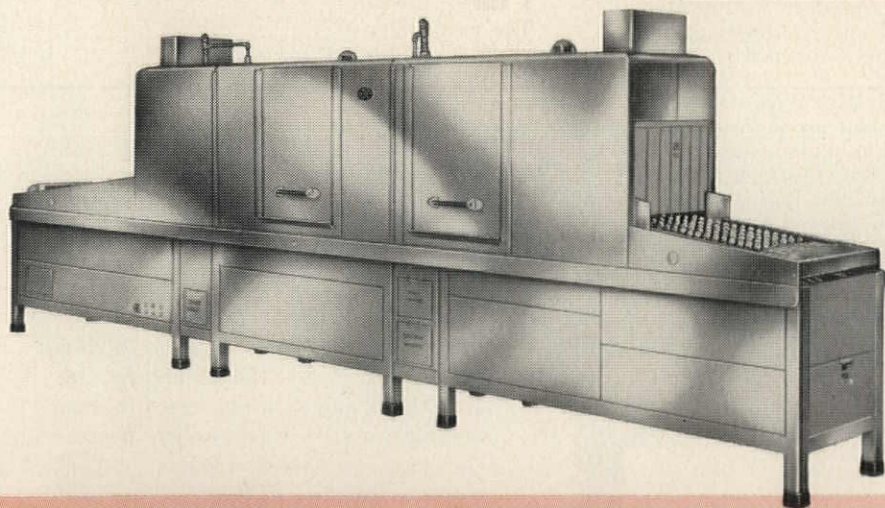
719 East Park Avenue
Libertyville, Ill.

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ARCHITECTURAL
FILE
OR WRITE FOR COPY

one thing in common...



...their tableware was washed by a Hobart
Flight-Type dishwasher...standard for volume operations



Whether in a restaurant, hotel...cafeteria in an office building, school or industry, they do have one thing in common! They eat every day, and agree with you on clean tableware. Hobart dishwashers are the unparalleled answer. "Unequaled speed, thoroughness and efficiency" skims over the Hobart flight-type dishwasher story much too fast. For here is every dishwashing service you need built into one amazingly fast machine (many models)—custom-designed to cut costs in volume food operations. Fully automatic, it delivers the lowest possible operating cost, with traditional Hobart dependability.

If your plans are for less than large volume operations, be sure to see the complete line of more than 50 Hobart dishwashers—one is exactly right for every specification.

Hobart Flight-Type Dishwashers

Completely automatic power-water-scrapping, power washing and rinsing, with human supervision reduced to a minimum. Dishes are continuously racked in conveyor between Delrin tipped, resilient, stainless steel "flight links"—stainless steel specially treated to protect china-ware against markings...side links, rollers and tie rods of stainless steel. Famed Hobart combination jet-powered and revolving wash system insures thorough sanitation. Sizes range from 12 to 26 ft. long, with conveyor speeds from 5 to 12 ft. per minute. Dozens of other exclusive features make it the most advanced dishwasher made.

Nationwide Service through over 200 Hobart Service Offices... the largest network of service in the industry.

The Hobart Manufacturing Co., Dept. HAR, Troy, Ohio

Please send me more information on: The Hobart flight-type dishwasher, the complete dishwasher line. I would like the name of my nearest Hobart dealer.

Firm name.....

My name.....

Address.....

City.....Zone....State.....

Hobart MACHINES



The World's Oldest and Largest Manufacturer of Food, Bakery, Kitchen and Dishwashing Machines

Revised Timber Standards

(A.I.A. 19-B) Two revised standards have been added to the AITC's *Timber Construction Standards*. AITC-Sa 11.06, "Selection of Adhesives," covers waterproof and water-resistant adhesives; Section 900, "Guide Specifications for Structural Timber," covers structural glued laminated lumber and sawn structural timber. *American Institute of Timber Construction, 1757 K St., N.W., Washington 6, D. C.*

Fundamentals of Building Insulation

(A.I.A. 37) Discusses how building insulation works, why it is used, and where it should be used. 44 pp. *Robert A. LaCosse, Technical Director, Insulation Board Institute, 115 W. Washington St., Chicago 2, Ill.*

Aetnawall Partitioning Systems

Offers specifications, details and photos of typical installations of five basic types of Aetnawall partition-

ing systems. *Aetna Steel Products Corp., 730 Fifth Ave., New York 19, N. Y.**

Design of Wood Formwork

... for *Concrete Structures* (A.I.A. 4-D-1) presents current information on using structural lumber and boards in formwork construction. WCD No. 3, 18 pp. *National Lumber Manufacturers Assn., Technical Services Div., 1319 18th St., N.W., Washington 6, D. C.*

Tips, Techniques and Drafting Aids

Contains sections on drawing techniques, simplifying drafting practices, protecting prints and drawings, drawing lines and curves, modifying equipment for extended use, and getting the most from drawing instruments. 32 pp., 50¢ *Alvin & Co., Inc., 611 Palisado Ave., Windsor, Conn.*

Builders Hardware Specialties

Covers *Epeco* line of friction and magnetic catches for doors and cabinets; track, guides and glides for sliding glass and panel doors; and pulls for doors and drawers. Catalog 20, 20 pp. *Engineered Products Co., P.O. Box 118, Flint, Mich.**

Sika Epoxy Compounds

(A.I.A. 7) Discusses properties and applications of six new epoxy compounds for bonding, patching, joint and crack sealants, surface coatings for concrete, and resurfacing of pavements. Bulletin SEC 759, 6 pp. *Sika Chemical Corp., 35 Gregory Ave., Passaic, N. J.**

Vermiculite Fire-Resistance Ratings

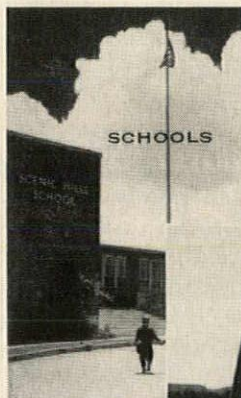
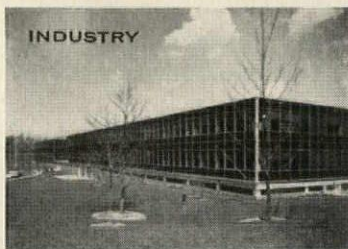
(A.I.A. 21-C-1) Gives details, descriptions and fire ratings for basic applications of vermiculite plaster, concrete, acoustical plaster and direct-to-steel fireproofing. *Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill.*

Acrylic Exterior Paints

Progress Report No. 6 gives detailed information on the results of a six-year study of applications and exposure tests of exterior paints made with *Rhoplex AC-33*, an acrylic resin emulsion. 54 pp. *Rohm & Haas Co., Washington Sq., Philadelphia 5, Pa.**

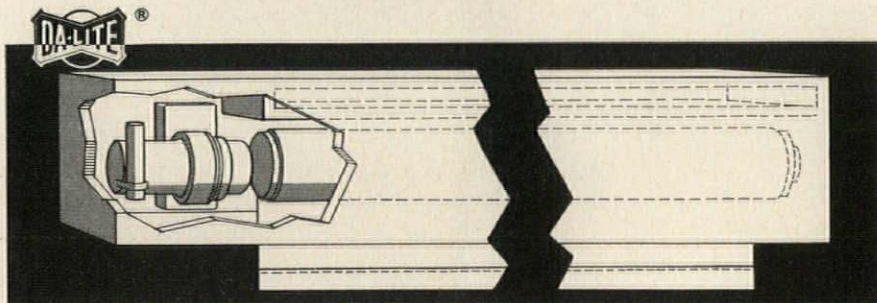
**Additional product information in Sweet's Architectural File more literature on page 330*

NEW!
**Electrically-Operated
Projection Screen**
Pre-engineered For Concealed Installation



The most practical product an architect ever specified! The exclusive Da-Lite Electrol[®] projection screen—enclosed at the factory for simplified on-job installation. Screen may be installed in a concealed position—or mounted on wall and finished to match. Da-Lite Electrol is ready for use seconds after control button is touched.

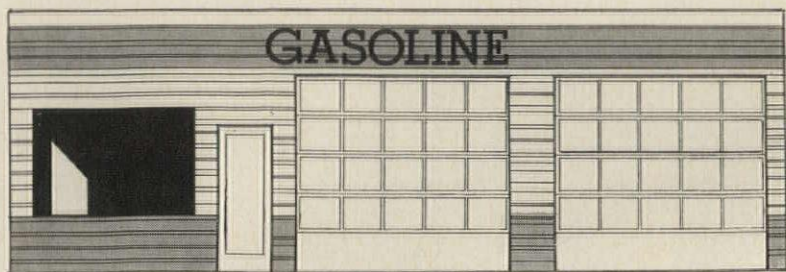
Da-Lite's quality-controlled projection screens are your assurance of years of trouble-free service. For over half a century, Da-Lite has built a reputation as the finest in projection screens for theatres, auditoriums and conference rooms!



Electrol Screens feature Da-Lite's famous White Magic glass-beaded screen fabric. Permits big-picture vision... with beautiful clarity and color. Specially-engineered electric motors are totally sealed, require no further lubrication. Screens are completely assembled at factory. Control switch and plate furnished.

WRITE TODAY!
New technical bulletin gives complete details on operation and installation of electrically-operated Da-Lite projection screens and portable tripod models.

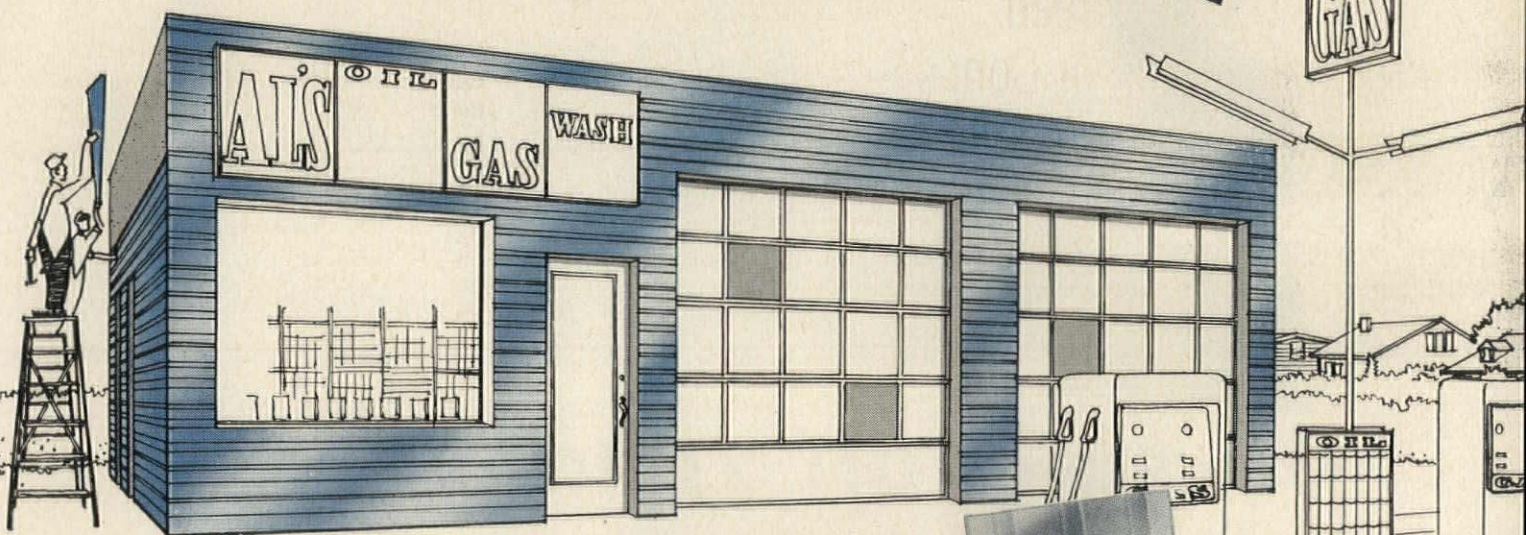




Walter Dorwin Teague designs

SHARONART[®] FACING PANELS

for modernizing older buildings



Sharonart[®] textured surface patterns lend themselves perfectly to building modernization. Roll-formed standard or random width panels, for either vertical or horizontal installation, would permit quick, easy and inexpensive refurbishing of practically any older structure, according to Walter Dorwin Teague, internationally known designer and architect.

Such Sharonart[®] panels could be inexpensively fabricated in a wide variety of patterns and colors, including stainless steel, to customize every job at extremely low cost.

Architects and building material manufacturers can get further information on this wonderful new material simply by addressing an inquiry to Sharonart[®], Sharon Steel Corporation, Sharon, Pa.

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SHARONSTEEL

Steel

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terrazzo floors
you specify
looking like
new . . .

HUNTINGTON TERRAZZO SEAL provides a tough, waterproof seal with a safe, non-slippery surface

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Huntington, Indiana

- Please send me details and specifications on Huntington Terrazzo Seal.
 Have representative call.

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New terrazzo and marble floors are lovely to see . . . a real asset to any building. The problem is to keep them new-looking. Huntington has solved this problem with Huntington Terrazzo Seal. It provides a waterproof surface which not only extends the life and preserves the beauty of these floors, but it also simplifies general maintenance. Dirt, grease and chemicals won't harm terrazzo floors that are protected with Huntington Terrazzo Seal.

There are many other major advantages: Will not darken light floors. Exceedingly durable, impervious to water, unaffected by alkalis or alkali salts. Prevents discoloration from improper cleaning methods or chemicals. Resists mars and scratches.

Specify a floor finishing job that will serve your client well for many years. Ask our representative, the Man Behind the Huntington Drum, for his assistance with terrazzo finishing and maintenance problems. His help is yours without obligation.

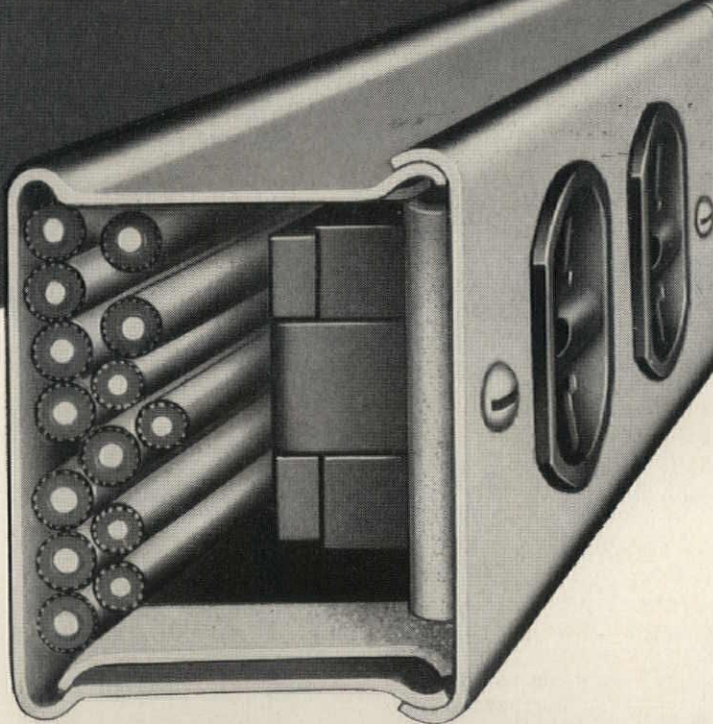
HUNTINGTON

... where research leads to better products

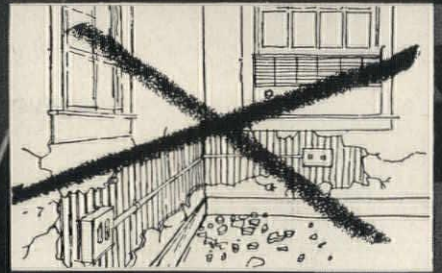


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Adding air-conditioning . . . business machines . . . appliances or outlets usually means rewiring. And modern rewiring with National Electric 1700 Surfaceduct is the economical, easy, expandable way to add electrical power.



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EASY TO INSTALL—Fasten the base . . . lay in wire . . . and snap on the cover.

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CLEAN, UTILITARIAN DESIGN—Blends well with modern or traditional architecture. Neutral gray color.

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PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.



Major surgery in Mt. Sinai Hospital, New York, being performed with illumination from windows and one emergency light.

New York says
**ONCE IS TOO
MUCH!**

Protect against power blackouts...

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KOHLER ELECTRIC PLANTS

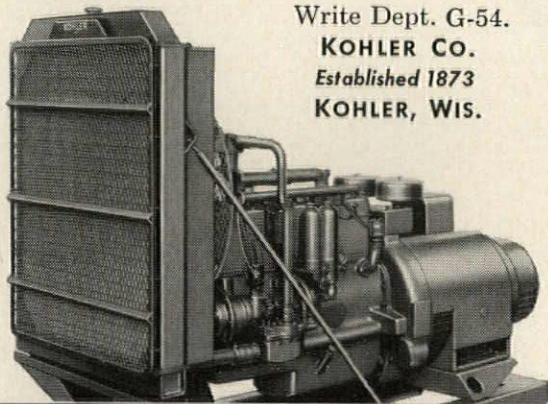
Widespread hazards, inconvenience, discomfort and loss occurred in places without stand-by power during the 13-hour power failure in New York's Manhattan last summer. Hospital surgery was performed

without proper lighting; patients were served by candlelight. Buildings of many kinds had no use of lights, air conditioning, elevators, freezers.

Kohler electric plants are reliable, easy to install for emergency power made vitally important by today's increasing dependence on electrical equipment. To help you write specifications for varied applications, Kohler Co. will send on request a manual with complete data on sizes from 1000 watts to 100 KW, gasoline or diesel.

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100 KW, 120/208
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Remote start.



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Electric Plants • Air-cooled Engines • Precision Controls

Office Literature

Specification Manual

... of *Plumbing Fixtures and Specialties for Institutional Kitchens* provides dimensional drawings and detailed specifications for plumbing fixtures "from one end of the kitchen to the other," as well as for water fixtures used in patron service areas. Manual KS1, 84 pp. *T & S Brass and Bronze Works, Inc., 128 Magnolia Ave., Westbury, L. I., N. Y.**

What the Architect Should Expect

... from *His Curtain Wall Fabricator* deals with all aspects of the fabricator's role in the engineering, fabrication and installation of metal curtain wall systems. 8 pp. *Albro Metal Products Corp., 944 Longfellow Ave., New York, N. Y.**

Permalite Insulating Concrete

(A.I.A. 4-E-13, 37-B-2) Covers use of *Permalite* expanded perlite insulating concrete in roof decks and floor fills, with specifications, load tables and other technical data. Catalog C12-1960, 8 pp. *Perlite Dept., Great Lakes Carbon Corp., 612 S. Flower St., Los Angeles 17, Calif.**

Engineered Lighting

... and *Control Equipment* includes specifications, photometric data, circuiting and dimensional information on stage lighting equipment, step and night lights, flush and surface luminous elements, exit and directional signs, hospital bed-lights, test cell units, downlights and control switchboards. Catalog 101, 44 pp. *Hub Electric Co., 2249 Grand Ave., Chicago 12, Ill.*

Sliding Glass Doors

(A.I.A. 16-E) Presents details and specification data on complete line of all-aluminum sliding glass doors. 12 pp. *Ador Corp., 2345 West Commonwealth, Fullerton, Calif.**

Architectural Porcelain Panels

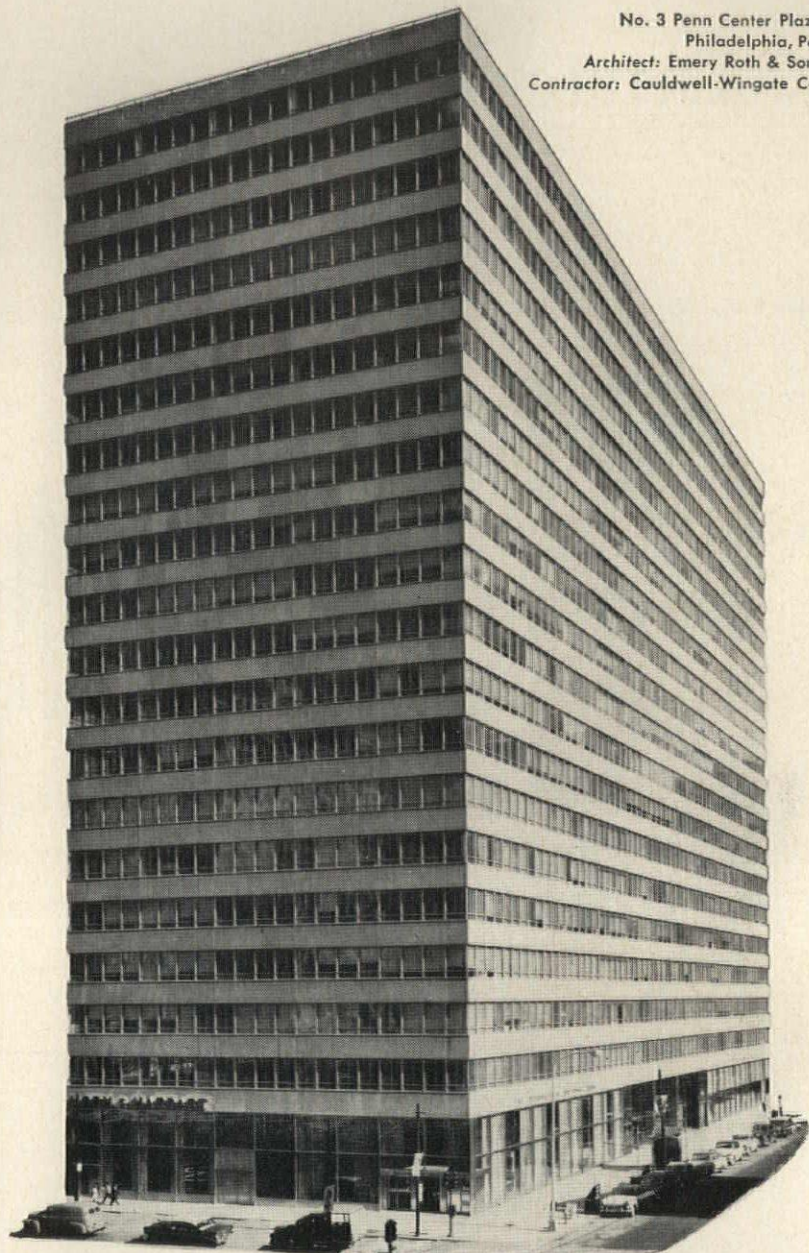
(A.I.A. 15-M-1) Gives specifications, details and general information on porcelain enamel facing and curtain wall panels, gravel stop fascia, and window surround. 12 pp. *Davidson Enamel Products, Inc., 1104 East Kibby St., Lima, Ohio**

*Additional product information in *Sweet's Architectural File*

more literature on page 334

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Philadelphia, Pa.
Architect: Emery Roth & Sons
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for
lowest
maintenance
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quality approved

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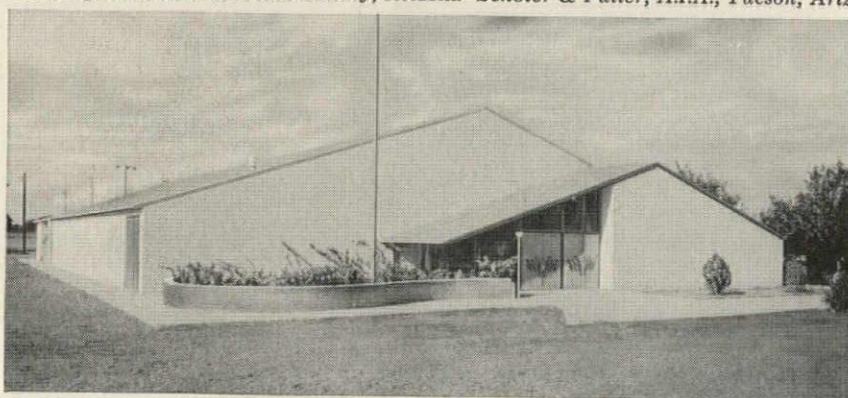
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Butler "packaged" buildings— friend or foe?

Flowing Wells School—Pima County, Arizona—Scholer & Fuller, A.I.A., Tucson, Ariz.



A "packaged" building manufacturer asks architects not to judge it by association

Are "packaged" buildings a threat to the architect, and to what he stands for? It seems that architects think so—and Butler received this news with considerable dismay. We can't testify for others, but we wish to make our position and intentions clear.

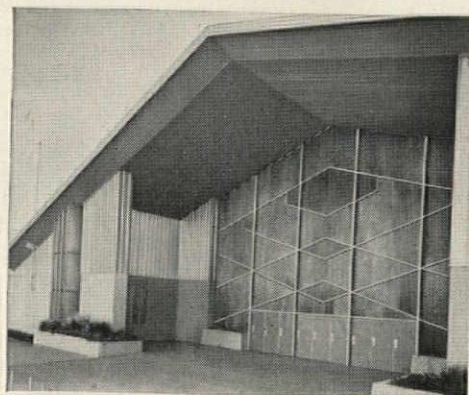
Yes, our Builder organization constructs buildings that are not architecturally designed. So do many contractors and engineering firms. A substantial number of these structures would never have involved or interested an architect in any case.

Architects have pointed out limitations in our building system to us, and we take these criticisms to heart. We are confident that we will eliminate

these objectionable elements as our technology develops. Nor do we expect that the Butler "packaged" building will ever be the "grammar" of all low-rise construction.

But the fact remains that our Builders have constructed thousands of buildings *designed by architects*. Where the structure calls for it—that's the way we want it, and we help and encourage our Builders to work through architects. Conversely, architects have called on our Builders for assistance. Under these circumstances, the "package" we offer consists of coordinated structural and roof systems, and metal wall systems—both factory and field insulated. The architect takes what is useful and adds what collateral material creates the pleasing finished product.

From our experience with many architects, we have good reason to suggest that the Butler system can, on occasion, serve you better than anything else you could substitute for it.



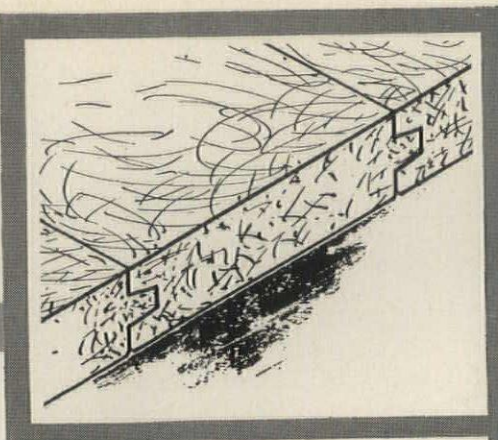
Oklahoma State Fair Grounds
Sorey, Hill & Sorey, A.I.A.
Architects & Engineers
Oklahoma City, Oklahoma

O'Rielly Motor Co.
Starkweather & Cain, A.I.A.
Tucson, Arizona

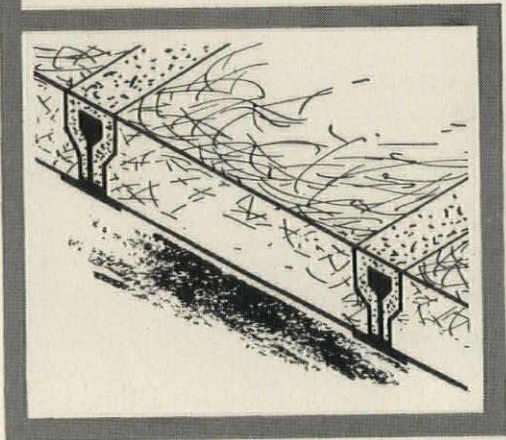


Why not contact your nearest Butler Builder. Have him call and explore the practical merits of this system further. He can often help with building financing, too. Or write direct to Butler Manufacturing Company, 7427 East 13th Street, Kansas City 26, Missouri.

THE INTERLOCKING JOINT



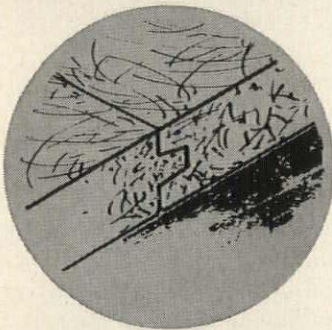
NEW



CHAMFERED EDGE

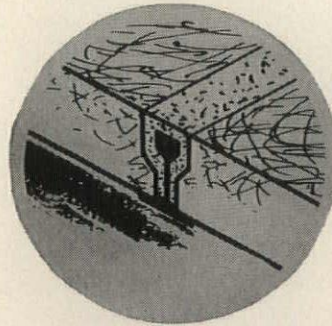
from

FLINTKOTE INSULROCK®



NEW from Insulrock - The Interlocking Joint for joist and beam construction aligns the roof deck for better appearance and greater strength; makes installation easier, faster; improves insulation; distributes loads over broader area; seals joints against run-through.

Available in standard Insulrock sizes at no extra charge.



NEW from Insulrock—improved chamfered edges in sub-purlin construction further increase resistance to uplift; provide continuous structural joints that are sealed against run-through; give joints superior strength for long years of trouble-free service.

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Specify these newest Insulrock features for even greater satisfaction with **FLINTKOTE INSULROCK** Roof Decks

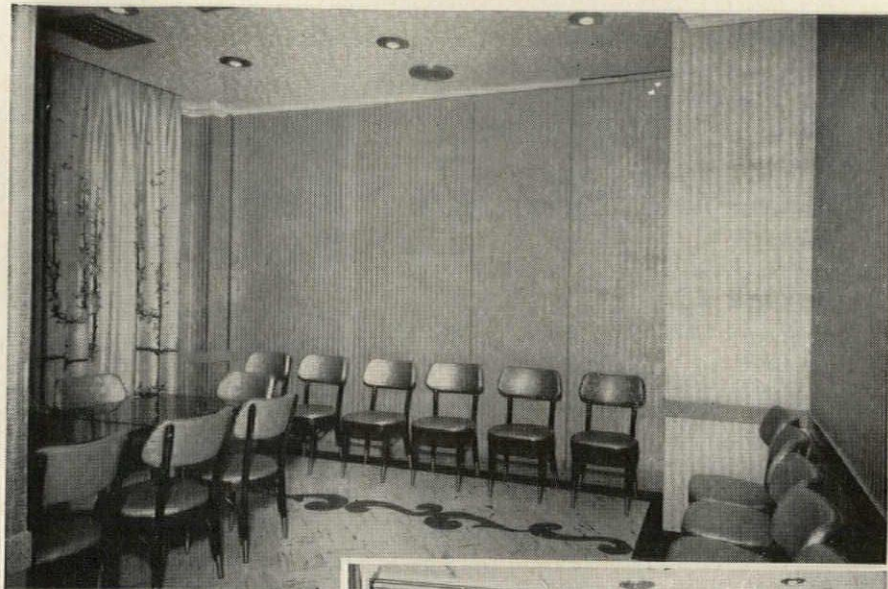


Manufacturer of
*America's Broadest Line
of Building Products*

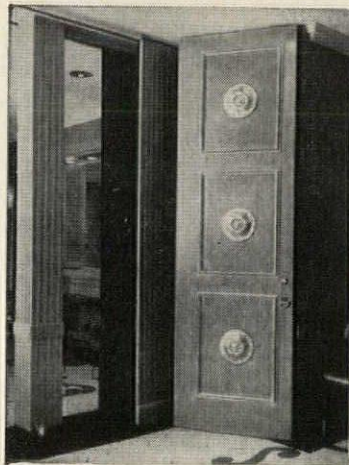
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General Sales Office: Richmond, Virginia
Plants: North Judson, Indiana; Richmond, Virginia
District Sales Offices: Atlanta, Georgia; Cleveland, Ohio;
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FOLDING
WALLS



Atlanta's explosive growth as a convention city is responsible for the all-new 10th floor of the Biltmore. 7 of 11 meeting rooms, designed for conferences or private dining, are connected with Unitfold Folding Walls. These areas can be varied to serve groups from 25 to 160 persons.

In the example above, Unitfold is faced with the same paper as the permanent walls (photo 1). Photo 2 shows Unitfold withdrawn and entirely hidden in the pockets at right; contrasting pocket doors add interest to room decor. Photo 3 demonstrates that there are actually two

walls, separated by air space. All the Biltmore walls are of this type — one of the Fairhurst features that means the highest sound retardance known in movable walls. Note close clearance at column. This is Unitfold — solid, rigid, with all the characteristics of a permanent wall.

Write Dept. AR for free information and estimates

John T. Fairhurst Co., Inc.
45 West 45th Street New York 36, N. Y.
FAIRHURST . . . First Name in Folding Walls

Office Literature

Non-Shrink Grouting

. . . of *Machinery and Equipment* describes successful grouting techniques with *Embeco* non-shrink grout by outlining and illustrating common methods of grouting different types of equipment, the mixing and placing of grout, and cold and hot weather grouting. Information on recommended mixes and estimating tables are also included. Bulletin E-1d, 16 pp. *Master Builders Co., Cleveland, Ohio* *

Ceramic Mosaics Patterns

Features full-color plates of 22 new patterns and blends in ceramic mosaics. Booklet 550, 12 pp. *American-Olean Tile Co., 1000 Cannon Ave., Lansdale, Pa.* *

Interior Fire Fighting Equipment

Contains information and specifications on automatic sprinkler systems, carbon dioxide systems, dry chemical systems, smoke detection systems, foam systems, and hose and extinguisher cabinets. Form S-62, 28 pp. *Customer Services Dept., Fyr-Fyter Co., 221 Crane St., Dayton 1, Ohio.* *

Engineering Testing Equipment

Catalogs engineering testing equipment ranging from a pocket soil penetrometer to completely equipped mobile laboratories and nuclear testing equipment, and gives recommended equipment lists for specific types of testing projects. 316 pp. *Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.*

Panels by Erie

(A.I.A. 17-A) gives pertinent data on complete line of insulated and veneer curtain wall panels, with full information on the materials, colors, textures and finishes now available in either mechanically-assembled or laminated panels. 8 pp. *Erie Enameling Co., Erie, Pa.* *

Roofing Guide

Describes and illustrates 14 common roofing problems and recommends repairs and maintenance to overcome each. *Roofing Div., Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio*

*Additional product information in *Sweet's Architectural File*

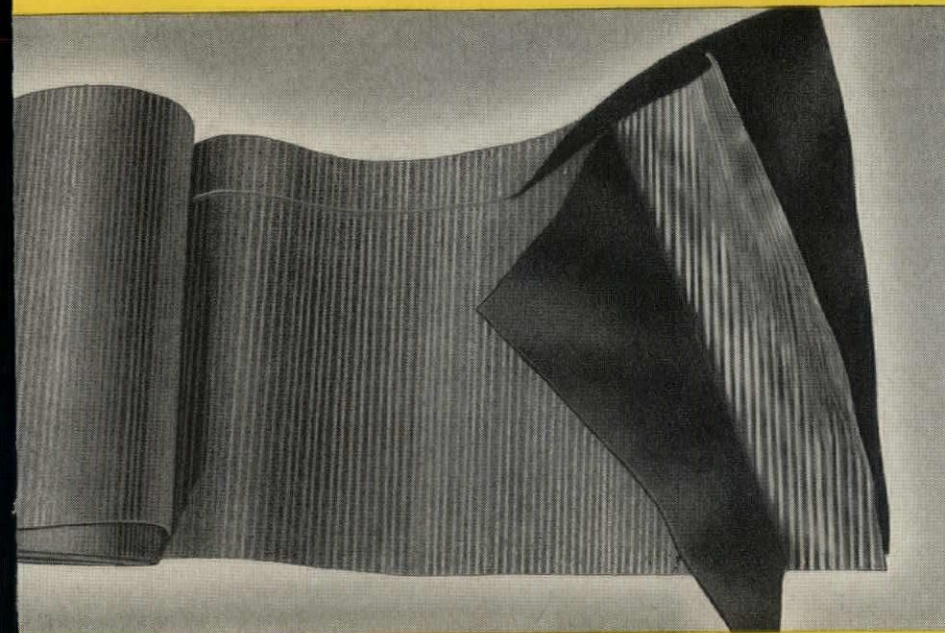
more literature on page 338

Madonna Hall
D'Youville College
Buffalo, New York
Foit & Bashnagel,
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The beauty of this million-dollar building, inside and out, has been lifetime insured by the finest flashing available. And yet, the cost of continuous spandrel flashing at all floor levels, including window heads and sills, was only 1.2% of the total construction cost . . . a modest investment for complete and lasting protection against the elements.



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The flashing in Madonna Hall is Wasco five-layer Copper-Fabric, the most versatile flashing ever perfected. Copper-Fabric is ideal for every architectural application . . . it is rugged and flexible; unaffected by heat and cold; positively will not stain or bleed. To be sure that your buildings have maximum beauty insurance, specify Wasco Copper-Fabric Flashing. Why risk a substitute? For complete details and specifications, see Sweet's Architectural File 8g/Wa.

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Invisa-Line Baseboard Heat

Perfect for use under window wall.

Extra-heavy, continuous "floating" fins heat more efficiently. Rod-type element guaranteed 5 years.



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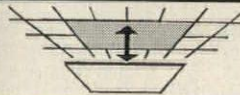
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GOES WHERE NO OTHER UNIT CAN!
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Complete flexibility
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Fits perfectly into areas of 8 ceiling tiles.



Flush-mounts perfectly within any type of 1/2" ceiling material.

Here is the slimmest and trimmest of all baseboard heat units. Because of its dramatically reduced dimensions, the new Arvin Invisa-Line "disappears" from conscious view, once installed. Now, at last, the concept of electric baseboard heat becomes a reality, literally replacing the modern, low room-baseboard with a heating unit that's equally unnoticed. Yet, with all its slimness, Arvin's low-wattage baseboard provides a world of warmth. And it's safe . . . every section contains safety thermal cutouts . . . 140 watt capacity per lineal foot assures ample heating performance without "hot spots" in the room. No other baseboard unit gives more real meaning to the modern advantages of electric heat than new Arvin Invisa-Line: all you notice is the warmth.

Also available is Arvin's high wattage Invisa-Line baseboard, with 300 watts per foot. It too contains safety thermal cutouts. Only 2" thin and 6" low, it obsoletes in appearance all other units of comparable wattage.

New Arvin ceiling panels give you the greatest freedom ever to provide modern electric heating *without* the normal restrictions of floor and wall design. Practically the entire ceiling becomes available for Arvin Invisa-Panel placement. And when installed it almost "vanishes." Flush-mounted within the ceiling surface, it can be painted to match the ceiling color. But above all, your Arvin Invisa-Panel installation produces comforting, radiant warmth without drafts; trouble-free, too, because there are no moving parts. This is the only unit of its kind in the electric heating field, with limitless applications.

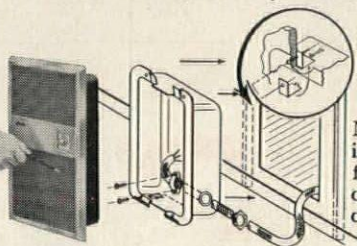
Instant-Heating Wall Heaters

A complete line, six fan-forced and radiant models, 3413 to 13,652 BTUs. Instant-heating elements Automatic thermostats, double-pole. Push-button controls.



Fastest, Easiest Installation

New Arvin rough-in box with quick-fastening clamps cuts time, labor costs.



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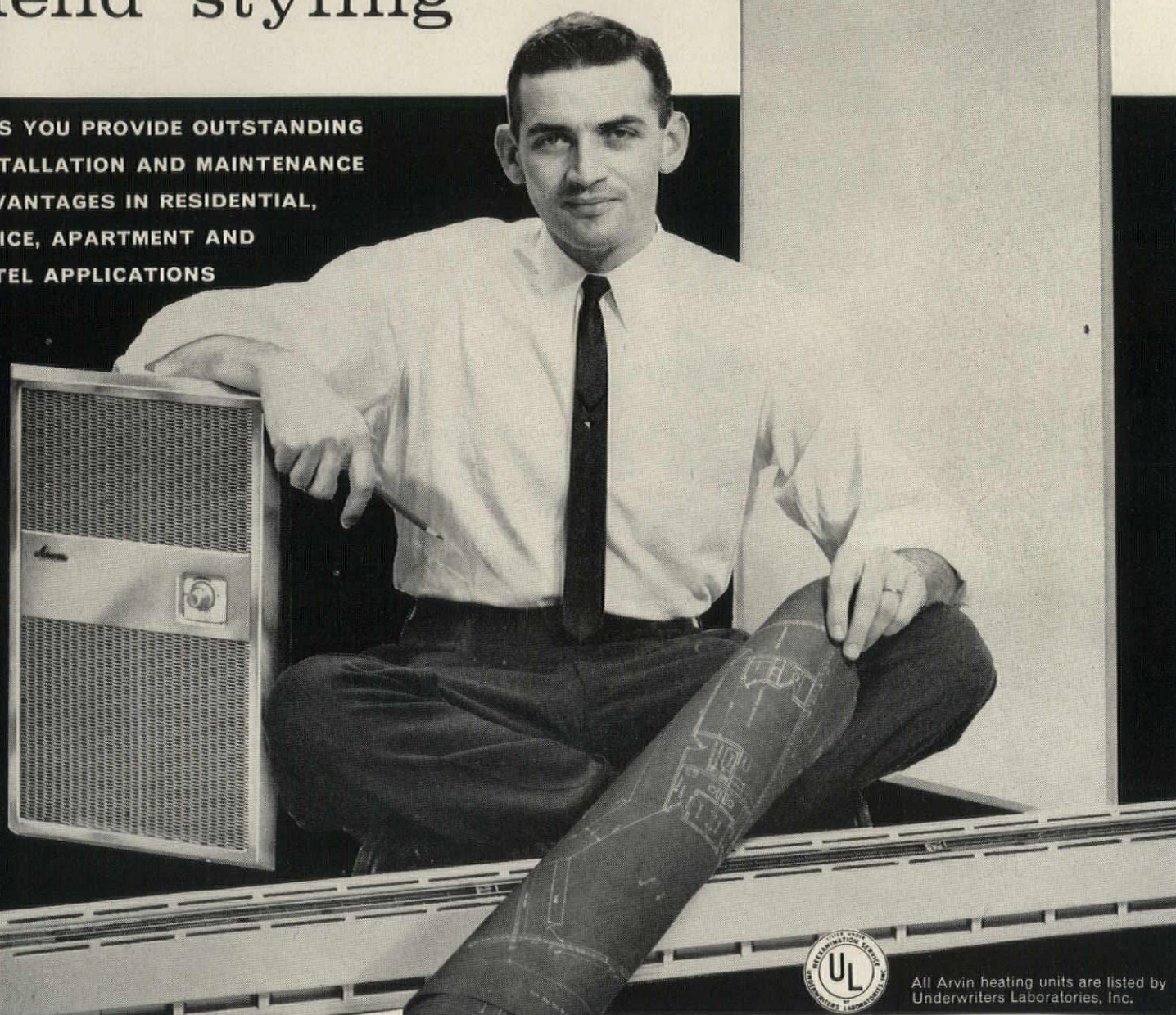
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Single, double-pole models. Fast reacting. Flush-mounting, wires from front.



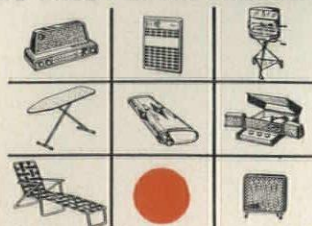
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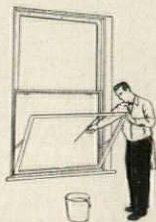
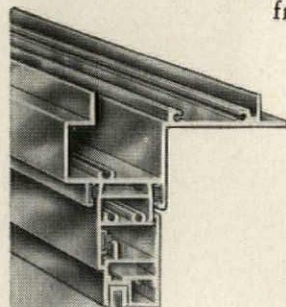


A Product Report for Architects...

Inside Window Washing

with the new Fleetlite double hung
Monumen-tilt!

For the architect engaged in conventional and curtain wall design of offices, schools, hospitals and other high rise buildings, Fleetlite offers the only monumental double hung aluminum window that can be fully screened and still cleaned at floor level from inside the building.



SHORT SPECIFICATIONS

MATERIAL All frame and sash are extruded aluminum alloy 6063-T5 with a minimum tensile strength of 22,000 psi.

DESIGN FEATURES Upper and lower sash have extruded glass-frames hinged at the lower rail of each sash. For inside cleaning, glass-frames pivot "hopper style" when in the lower position. Jambs of adjoining windows fastened with male and female screws and splined for weather tightness. Continuous head and sill for mullioned units up to 20' wide.

HARDWARE Sash balanced with removable spiral type balances. Glass-frames lock into sash by concealed stainless steel cam locks. Installation anchors of heavy gauge steel cadmium plated.

WEATHERSTRIPPING Perimeter of sash double weatherstripped with wool pile. Glass-frames continuously weatherstripped to sash.

AIR INFILTRATION Shall not exceed .50 cubic feet per minute per foot of crack length under static air pressure equal to winds of 25 mph velocity.

GLAZING Glass and glazing up to and including 1/2" insulating glass under separate contract.

MAXIMUM SIZE 4'6" x 8'0" frame overall dimensions.

SCREENS Fiberglass half or full length screens available.

FINISH Lustrous satin-like finish. Anodizing provided if specified.

Complete specifications and full size details available upon request.

Fleetlite
AMERICA'S Finest WINDOW

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Office Literature

Roofs With a New Dimension

Thin shell primer presents a brief discussion of shell action, describes the four most commonly used types (barrels, domes, hyperbolic paraboloids and folded plates), and illustrates foreign and American examples of each type. 20 pp. *Portland Cement Assn., 33 West Grand Ave., Chicago, Ill.**

Masonite Contemporary Studies

Presents twenty full-page sketches, complete with application details, of possible interior and exterior uses of hardboard panels. Design Series 101M, 24 pp. *Service Bureau, Masonite Corp., Suite 2037, 111 W. Washington St., Chicago 2, Ill.**

Plumbing for Flexicore Decks

(A.I.A. 4-K) Explains how openings can be designed into precast concrete decks and framed during construction, or hand-cut or drilled after the deck is in place. Details of typical plumbing conditions are included. 12 pp. *Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio.**

Uni-Silencers

(A.I.A. 30-J) Gives dimensional information, sound attenuation data and pressure drop tables for complete line of silencer products for air conditioning, heating and ventilating equipment. Catalog 160, 8 pp. *Acoustical Div., Elof Hansson, Inc., 711 Third Ave., New York 17, N. Y.**


The Lunning Collection

... of *Scandinavian Design* describes and illustrates a complete line of seating, tables, office furniture, cabinets, occasional pieces, lamps, rugs and textiles. 72 pp. *Fredrik Lunning Inc., 667 Fifth Ave., New York 22, N. Y.*

Schlage Hardware for Hospitals

Describes complete line of locks designed to meet the special and sometimes unique needs of modern hospitals. A comprehensive Selector Chart provides a convenient guide to the proper lock choice for specific door functions. 12 pp. *Marketing Services Dept., Schlage Lock Co., P. O. Box 3324, San Francisco 19, Calif.**

*Additional product information in Sweet's Architectural File
more literature on page 344



PROFILE ACOUSTONE—12" x 12" tiles are now produced with two kerf planes. Design possibilities are unlimited.

bold relief

Two new ACOUSTONE designs—PROFILE and ACCENT—add new shape to sound control . . . the dramatic dimension of depth. To the long recognized mineral tile advantages of ACOUSTONE, they introduce striking new advantages in beauty.

Contact your nearby U.S.G. acoustical contractor for more information on these three-dimensional ideas for ceilings, or write United States Gypsum, Dept. AR-01, 300 W. Adams St., Chicago 6, Ill.

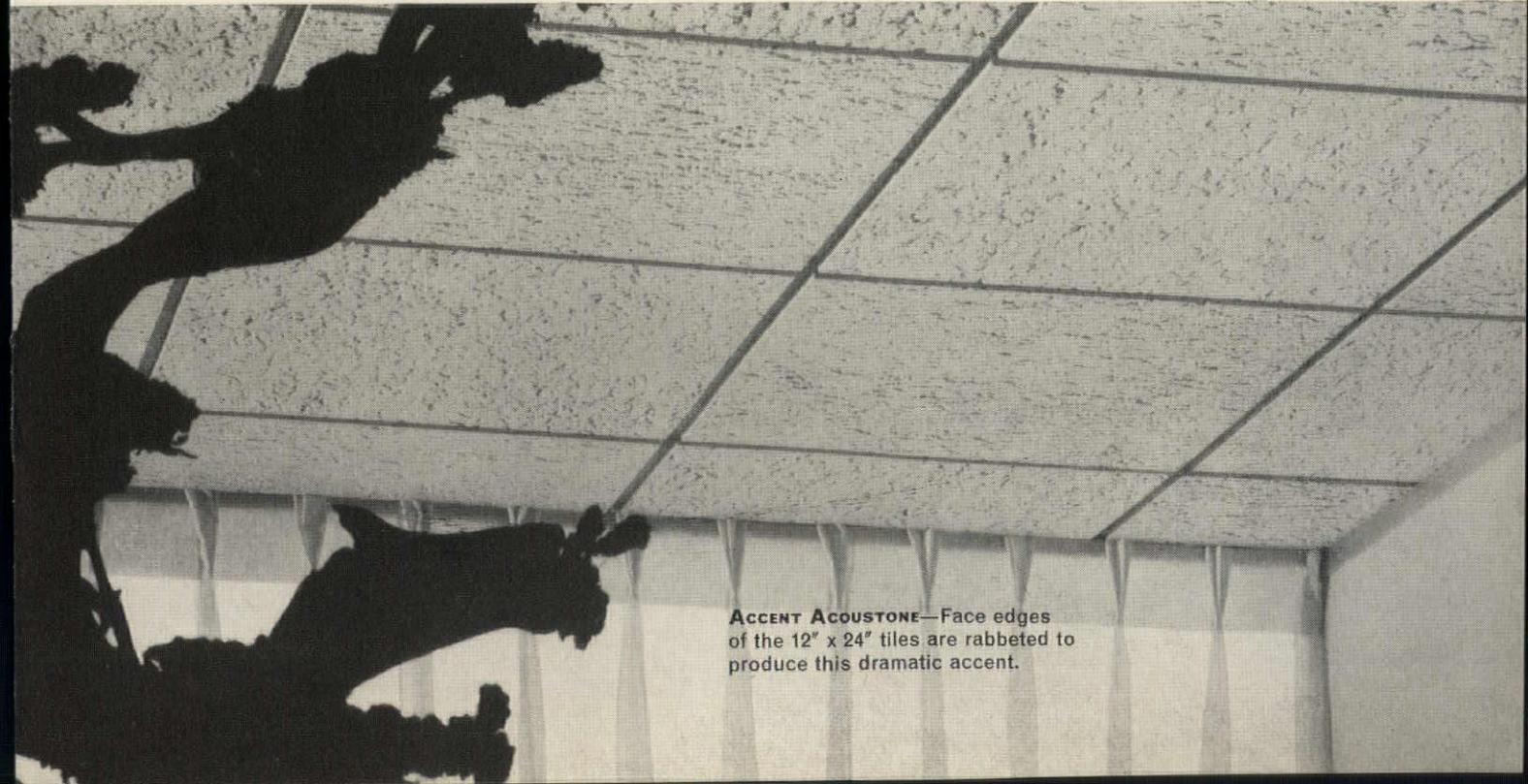


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ACCENT ACOUSTONE—Face edges of the 12" x 24" tiles are rabbeted to produce this dramatic accent.

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The **HARTFORD** Building

new concept in space and dignity . . .

served by electronically controlled

Haughton Auto-Signamatic operatorless Elevator System

Destined to become *the* Chicago landmark, the Hartford Building at 100 South Wacker Drive will provide regal surroundings and facilities for tenants and visitors.

A case in point: thirteen Haughton Operatorless Elevators with the latest automatic electronic controls will speed passengers from floor to floor with silken smoothness. They will be motivated by an amazing electronic brain that anticipates service needs at every moment, day and night, and dispatches cars at the proper times and in proper sequence to meet traffic needs exactly.

Of course, operation of Haughton Operatorless Elevators is simplicity itself. One merely enters the car and presses the numbered floor button. Doors open and close automatically at floor level, with unflinching consideration for passengers. They are controlled by proven devices of ingenious design that help make Haughton Operatorless Elevators the safest mode of floor to floor travel.

The Hartford Building . . . to be occupied in part by the Western Department of the Hartford Fire Insurance Company Group. From its unique exterior, creating a functional design accented by simple charm, to its superb location and superior facilities, this beautifully planned building carries its tasteful design throughout . . . The twenty floors are arranged for purposeful planning and unexcelled utilization of floor space. Windows are shielded from direct sun rays by the canopy effect created in the exterior design, a first in this country . . . The landscaped esplanade and spacious lobby provide an exciting vista, while building features combining the ultimate in fluorescent lights, automatic elevators, year 'round temperature control, under floor ducts for electrical and telephone equipment and other innovations make The Hartford Building an unparalleled office home for any organization.



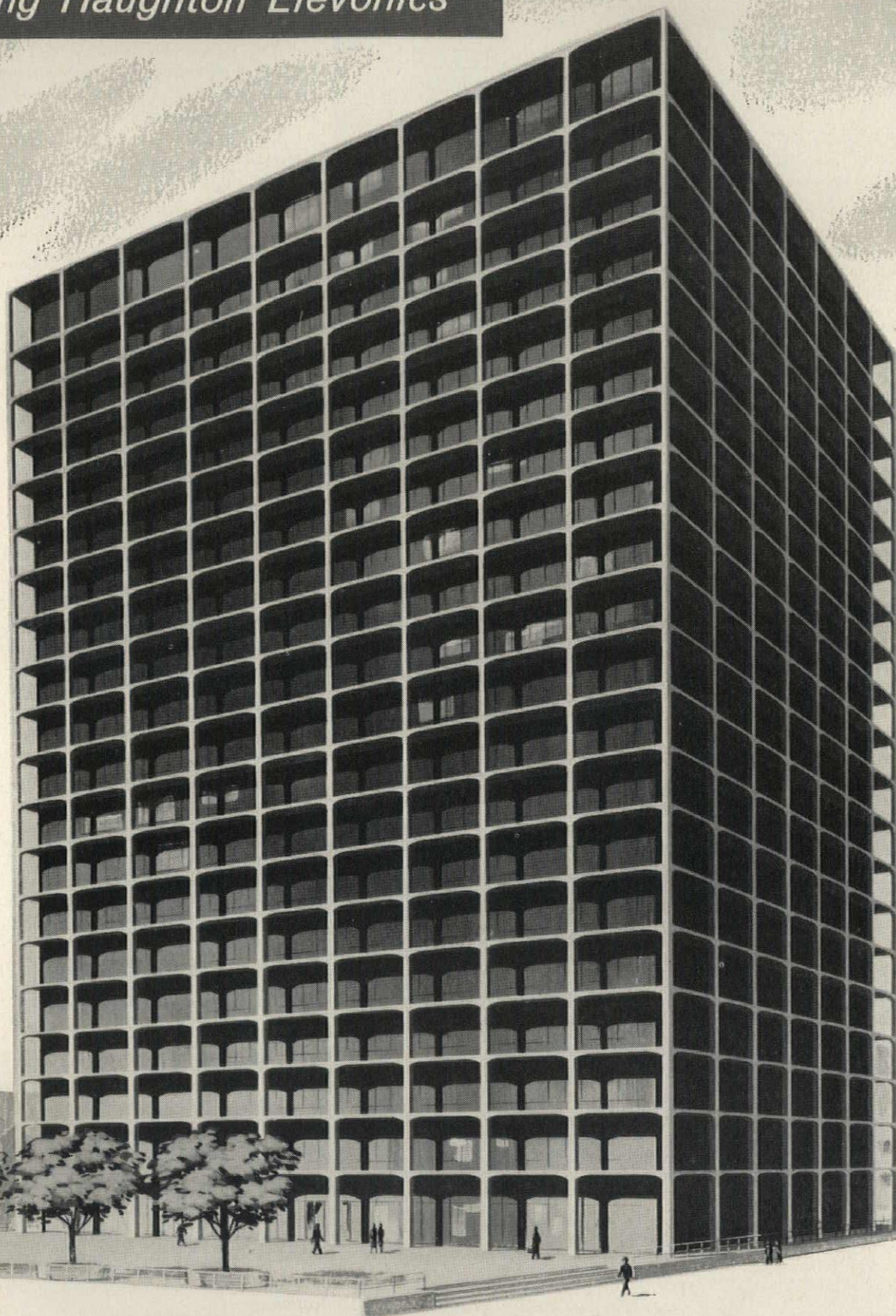
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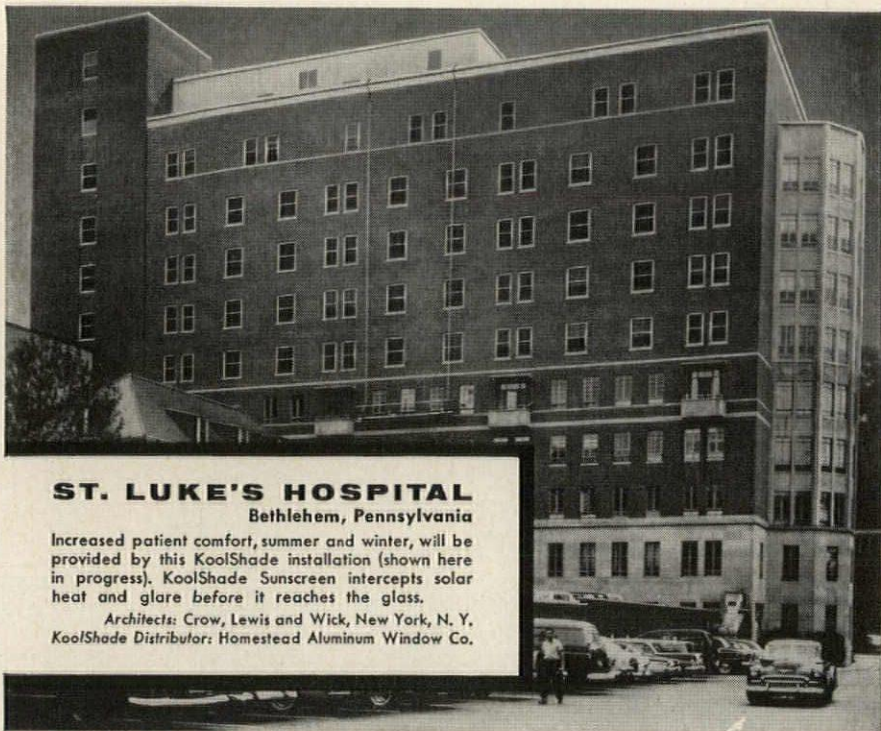
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ST. LUKE'S HOSPITAL
Bethlehem, Pennsylvania

Increased patient comfort, summer and winter, will be provided by this KoolShade installation (shown here in progress). KoolShade Sunscreen intercepts solar heat and glare before it reaches the glass.

Architects: Crow, Lewis and Wick, New York, N. Y.
KoolShade Distributor: Homestead Aluminum Window Co.

KOOLSHADE® aids patient care by reducing heat and glare

KoolShade Sunscreen installed on the outside of hospital windows provides many benefits to both the hospital and its patients.

Increased comfort. KoolShade, the quality solar shading material, intercepts up to 89% of the sun's direct rays. For a patient this means a cooler room—up to 15° cooler... without air conditioning. KoolShade also relieves eyes of tiring glare... yet provides 84% "see-out" visibility. Efficient shading is achieved without the gloominess of drawn blinds or drapes.

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ditioning loads. A rule-of-thumb guide is that 100 sq. ft. of KoolShade reduces a cooling load by one ton. On new construction this can mean a sizable reduction in cooling tonnage. On expansion jobs it may mean that the present central air conditioning unit can handle the addition.

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Office Literature

Dorm Line by Simmons

Describes, illustrates and gives complete selection information on built-in and free-standing wardrobes, chests, dressers and desks, as well as chairs, tables and beds in the *Dorm Line* group of dormitory furnishings. 16 pp. *Contract Div., Simmons Co., 1870 Merchandise Mart, Chicago 54, Ill.**

Case Plumbing Fixtures

Catalogs full line of water closets, lavatories, urinals and drinking fountains, with product photos, detailed dimensional drawings, and complete product descriptions. 28 pp. *Case Mfg. Corp., 247 Delaware Ave., Buffalo 2, N. Y.**

Air Powered Hydraulic Dockboards

(A.I.A. 35-I-141) Data file folder describes, illustrates, and gives specifications, installation diagrams, and parts and price list for *Aero-Board* hydraulic dockboards. An air compressor chart and data, and suggested construction details are also included. *Sales Engineering Dept., Allied Products Div., Freightliner Corp., P. O. Box 3591, Portland 8, Ore.*

Unitron Chair Carriers

... and *Closet Fittings* (A.I.A. 29-H-8) shows complete line of "close" carriers and fittings, long barrel adjustable closet fittings, and residential closet carriers for wall hung fixtures. Specifications and installation diagrams are included. Catalog F-2, 28 pp. *Josam Mfg. Co., Dept. X-2, Michigan City, Ind.**

Metropolitan Counters

Catalogs complete line of soda fountain and snack bar counters and accessories. 8 pp. *Bastian-Blessing Co., 4203 W. Peterson Ave., Chicago 46, Ill.**

Huck Fasteners

Includes driving cycles, strength data, typical applications, grip ranges, significant dimensional data, hole size recommendations and installation notes for each fastener in the Huck product line. 24 pp. *Huck Mfg. Co., 2480 Bellevue Ave., Detroit 7, Mich.*

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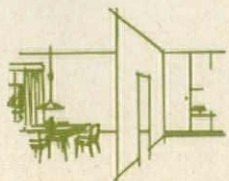
vinyl wallcoverings



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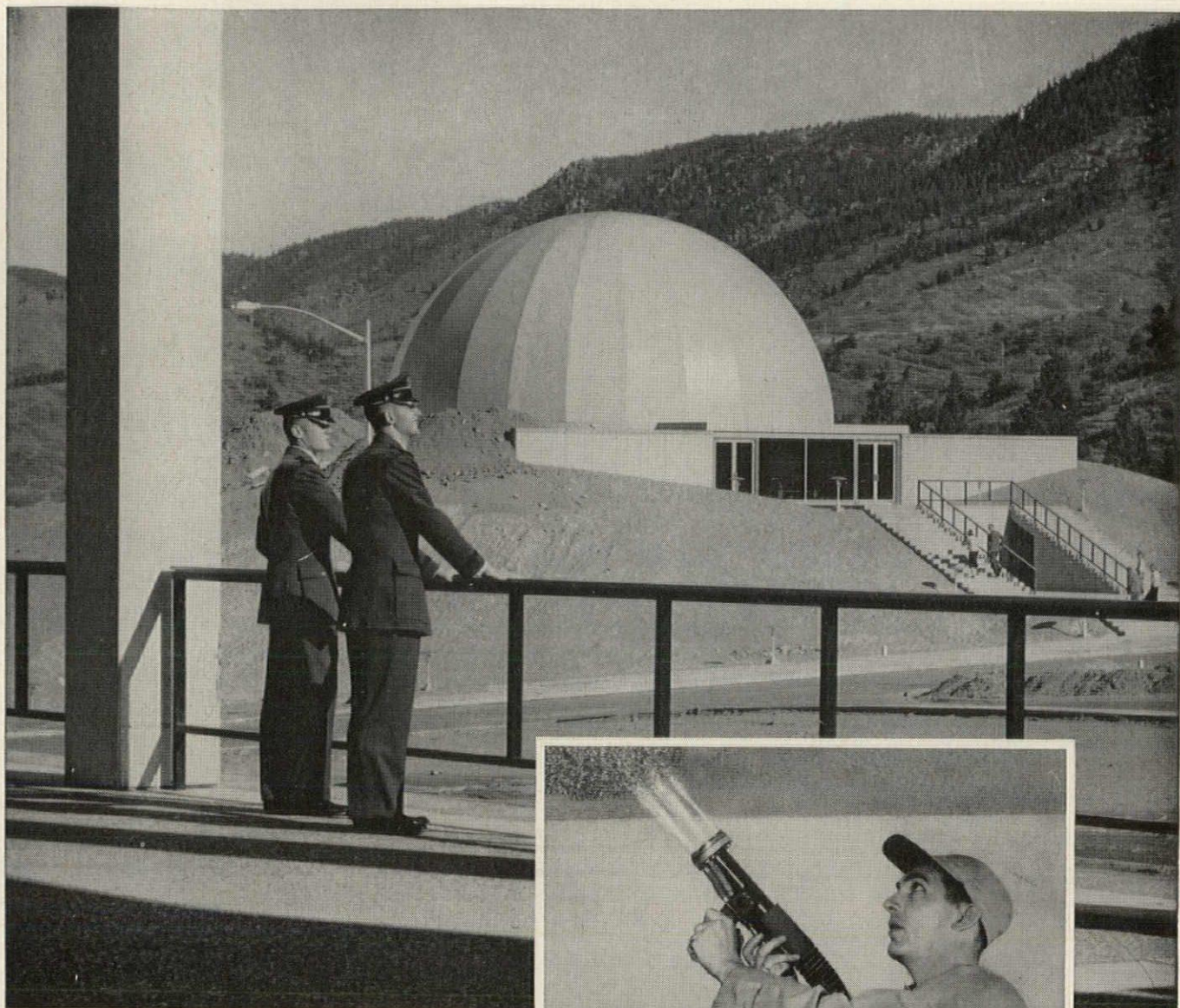
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artistry. VIENNA has a speaking role in your plans for
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charm of another era in a modern, practical wallcovering . . .
last-forever Vicrtex vinyl that never cracks, chips, peels or frays.
VIENNA in 14 enticing hues an exclusive Vicrtex creation.
This magnificent new motif is also available in matching
patterns and color range, with smaller repeats: CONTESSA.
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Faithfully follows surface contours; hides no details.

SPRAYED "LIMPET" ASBESTOS

SOUND-CONDITIONS U.S. AIR FORCE ACADEMY

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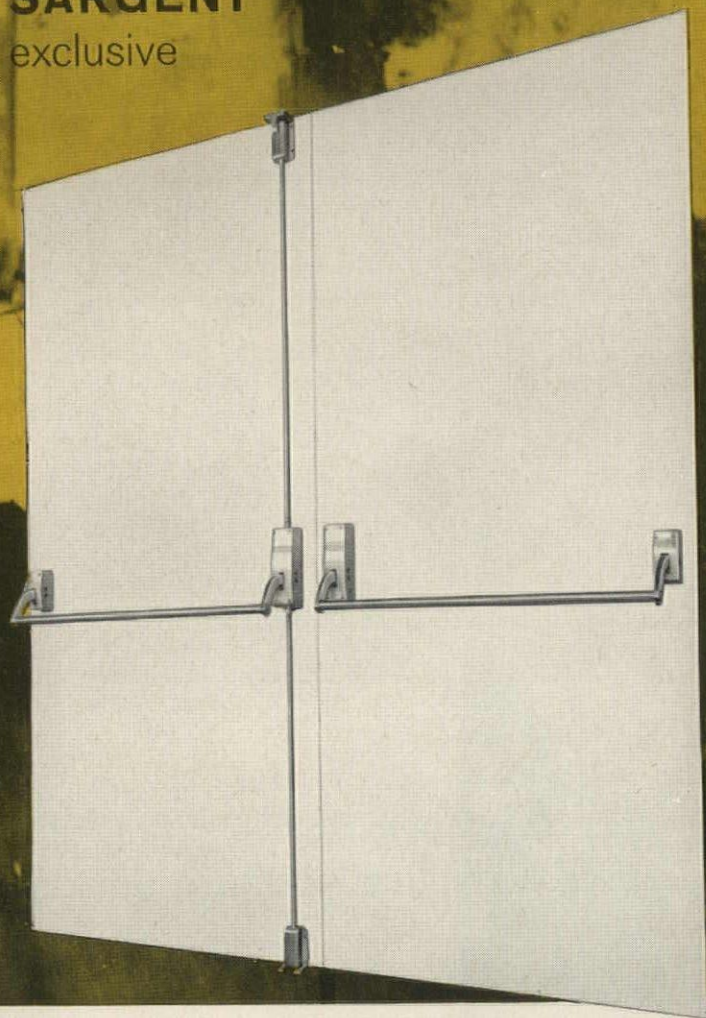
ASBESTOS. A 1½" thickness provides four hours of fire-retardancy.

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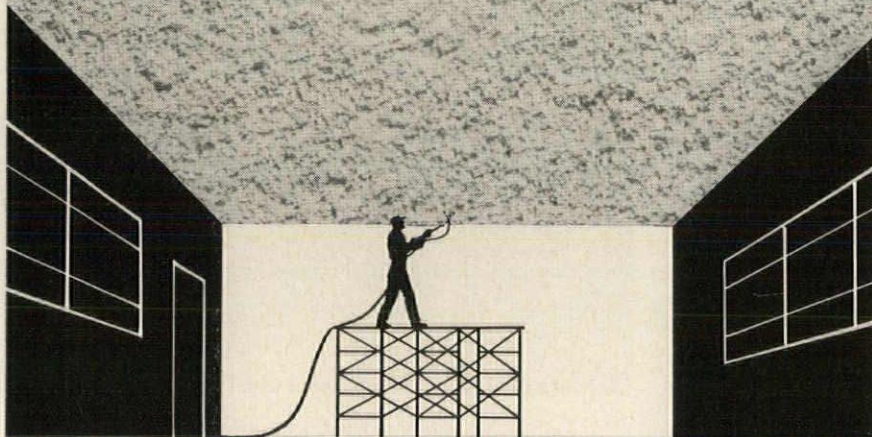
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Bestwall Lite-Acoustic can be applied over monolithic surfaces, wallboard, oil paint—any clean, firm, water-resistant surface. It is designed for machine application, and various textures are easily obtained by simply adjusting the nozzle.

Also, Lite-Acoustic is highly sound-absorbent—noise reduction coefficient is .55-.60—and provides a highly decorative texture. The white finish reflects up to 69% of light, the ultra-white 74%.

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...Color Distance

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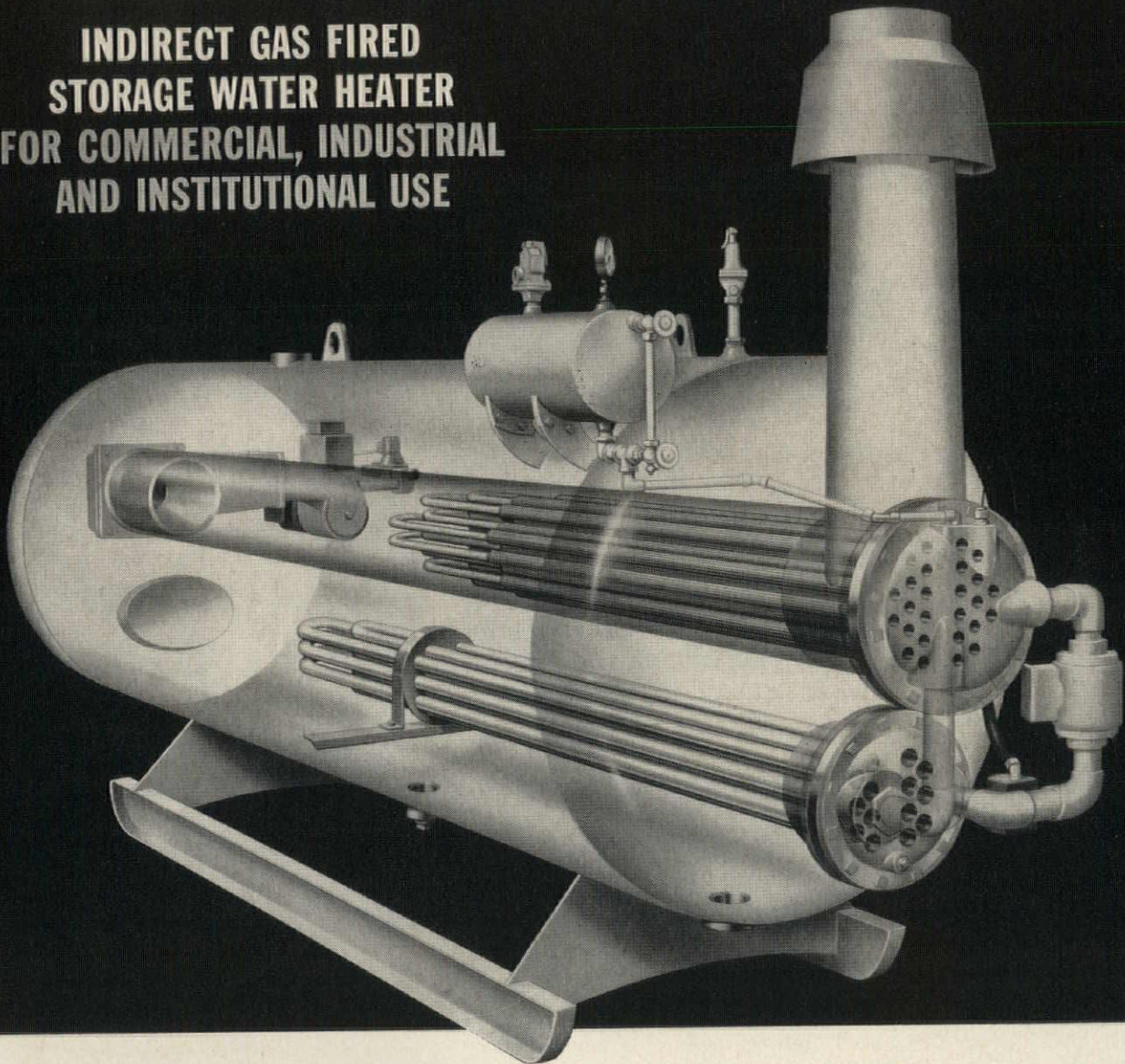
We are obviously not yet ready for any final answers to these problems—proper scientific caution saves us from the frightening task. Yet we are obligated to reach some conclusions, and there is one thing that we can say with a high degree of certainty: The rule of thumb about "warm colors advancing and cool colors receding" is not only inadequate, but also very likely incorrect. With less certainty we can conclude that the effect of color on apparent room size should be a minor consideration. And now that we have got into the swing of things—reaching conclusions, that is—we might go on to say that the temperature effects attributed to colors should also be a minor consideration in decoration. Only if information can be obtained about the particular individual involved does it seem likely that striking practical effects on temperature and distance can be achieved. However, even in the individual case, esthetic and emotional considerations are probably far more important—and more complex. But that is another story.

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8. TAYLOR, I. L., and SUMNER, F. C. Actual brightness and distance of individual colors when their apparent distance is held constant. *J. Psychol.*, 1945, 19, 79-85.

FIRST

**INDIRECT GAS FIRED
STORAGE WATER HEATER
FOR COMMERCIAL, INDUSTRIAL
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*No scaling • No drop-off in rated efficiency
• No fuel waste • No on-the-job assembly • No
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P-K SCALEFREE 230* is a unique rugged unit backed by P-K's 80 years of experience in building and designing quality water heating equipment. It heats water through hot intermediate distilled water. Transfer occurs below the temperature at which minerals that cause scaling precipitate. Efficiency remains unimpaired throughout service life. Linings of pre-Krete or copper are available

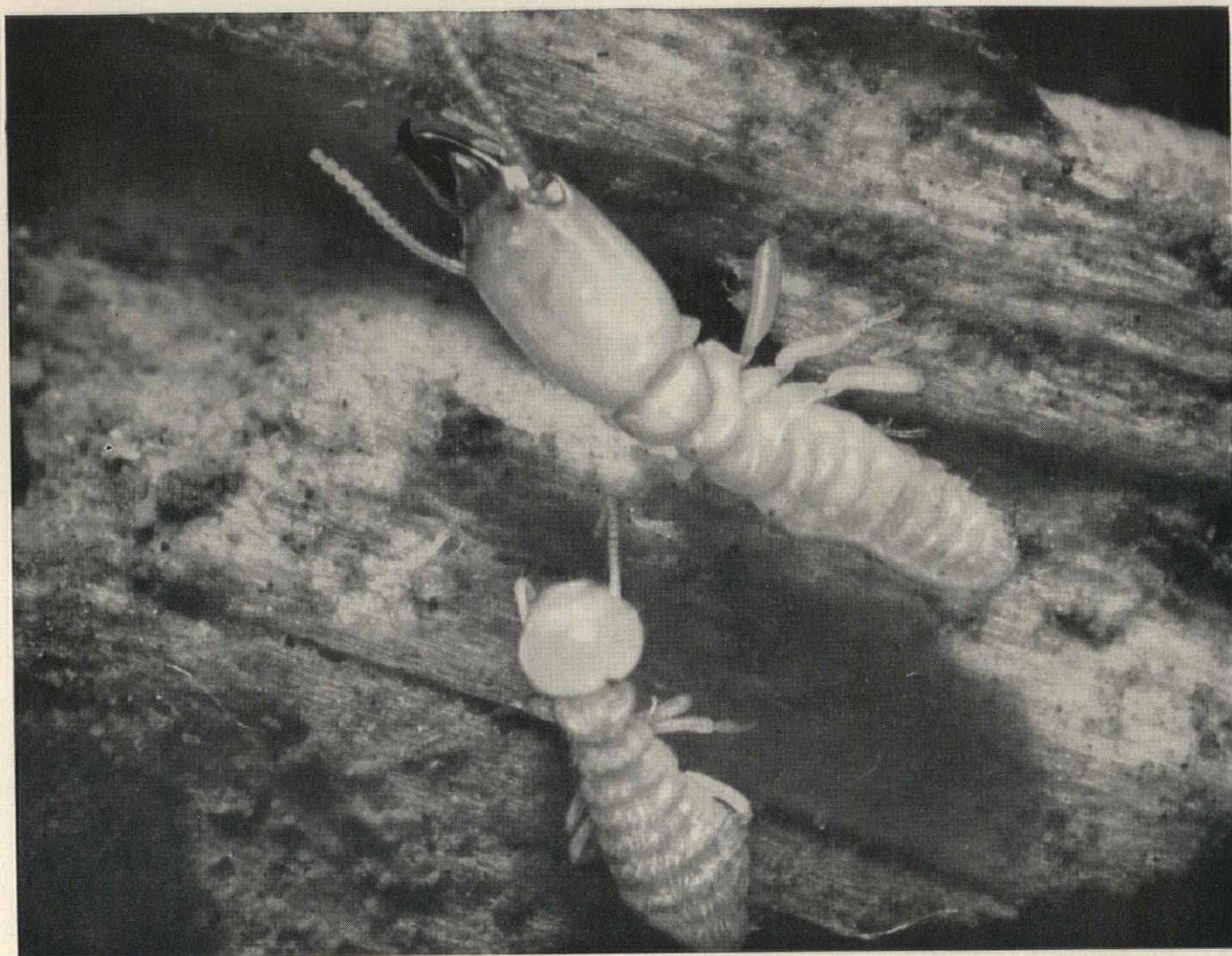
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ATLANTA • NEW ORLEANS • ST. LOUIS • SAN FRANCISCO



On the Calendar

April

- 4-8 1960 Nuclear Congress and Exhibit — The Coliseum, New York
- 5-7 Spring Conferences, Building Research Institute — Statler-Hilton Hotel, New York
- 18-19 Joint Conference on Automatic Techniques, sponsored by American Society of Mechanical Engineers and Society for

the Advancement of Management—Sheraton Hotel, Cleveland

- 18-23 92nd Annual Convention, American Institute of Architects — Mark Hopkins Hotel, San Francisco
- 19-21 Second Annual Church Design and Building Conference and Exposition — Morrison Hotel, Chicago
- 25-27 Annual Convention, Construction Specifications Institute —

Rickey's Studio Inn, Palo Alto, Calif.

- 25-29 41st Annual Convention and Welding Exposition, American Welding Society — Biltmore Hotel and Great Western Exhibit Center, Los Angeles

May

- 1-3 Chicago Electrical Industry Trade Show and Exposition — Lake Front Exposition Hall, Chicago
- 1-4 Annual Meeting, Air-Conditioning and Refrigeration Institute — The Homestead, Hot Springs, Va.
- 1-7 Congress on Better Living, sponsored by *McCall's* magazine — Washington
- 9-12 Second Instrument-Automation Conference and Exhibit of 1960, sponsored by Instrument Society of America — Civic Auditorium and Brooks Hall, San Francisco
- 11-16 World Design Conference in Japan (followed by tours, 18-20); theme, "Our Century: The Total Image" — Tokyo
- 12-14 South Atlantic Regional Conference, American Institute of Architects — Winston-Salem, N. C.
- 15-20 29th Annual National Conference, American Institute of Decorators — Beverly Hilton Hotel, Beverly Hills, Calif.
- 16-20 Annual Meeting, National Fire Protection Association — Montreal
- 19-21 Annual Meeting, Refrigeration Research Foundation — Denver
- 22-27 41st International Conference and Exposition, National Office Management Association — Queen Elizabeth Hotel and Show Mart, Montreal
- 23-26 Design Engineering Show and Conference — The Coliseum, New York
- 28ff 25th World Planning & Housing Conference — San Juan, Puerto Rico

Concentrate Responsibility...



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**SEDGWICK
Dumb Waiters
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Dumb Waiter
Doors**

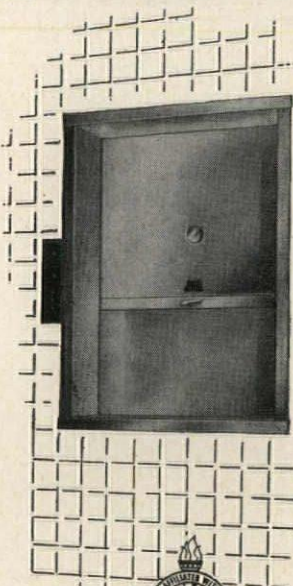
When you select a Sedgwick Dumb Waiter, you get a *completely* integrated installation — including dumb waiter doors — designed, engineered, manufactured and installed by Sedgwick.

This places the responsibility for the entire installation in the hands of *one* supplier — cutting in half the red tape, contracts and approvals, and eliminating your coordination of door and dumb waiter design and erection. Furthermore, all equipment is shipped at the same time, saving shipping and handling costs. The same mechanics install both doors and dumb waiters.

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Doors are manufactured in bi-parting, slide-up, slide-down or hinged arrangement. Also access and clean-out doors. (Underwriters' Labelled where required.) *Send today for complete literature and specifications.*



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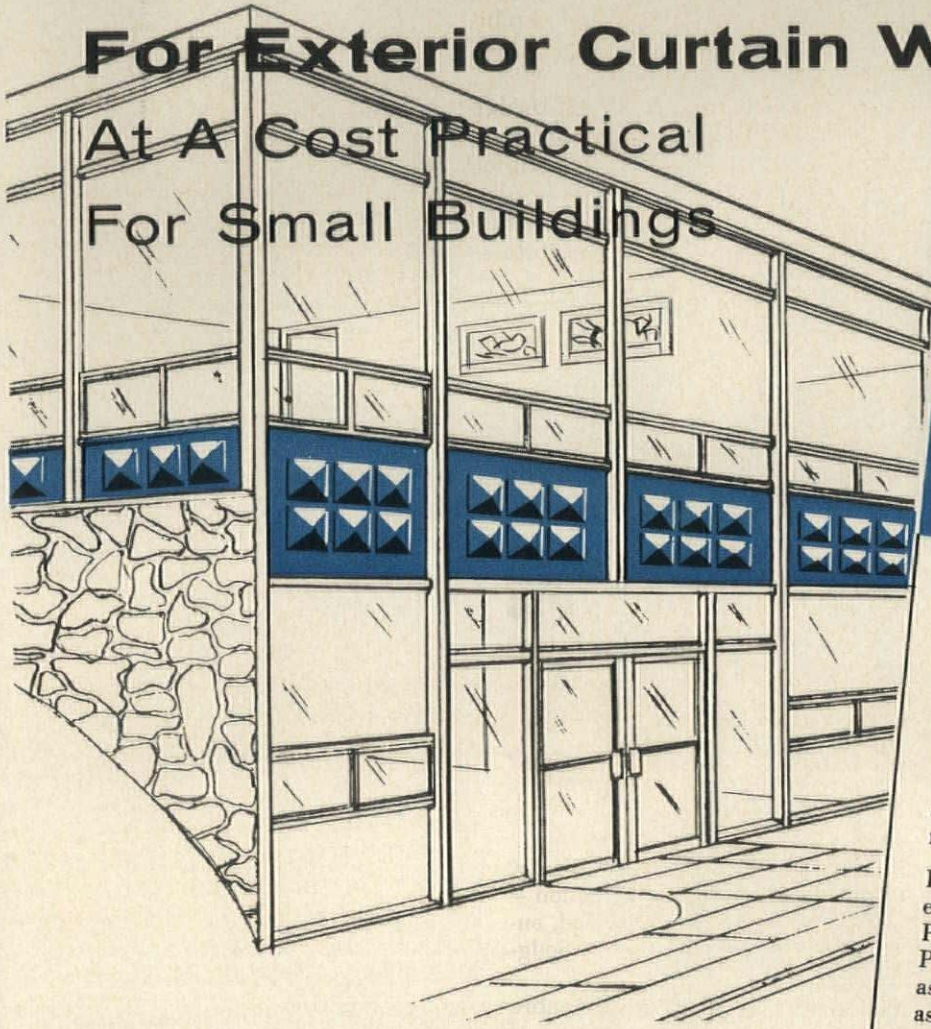
June

- 1-4 Annual Assembly, Royal Architectural Institute of Canada — Fort Garry Hotel, Winnipeg
- 8-11 Annual Meeting, National Society of Professional Engineers — Statler Hotel, Boston

continued on page 356

NEW Custom Designed Panels For Exterior Curtain Wall

At A Cost Practical
For Small Buildings



A NEW CONCEPT . . . formed, colored and textured Plexiglas facings on insulating panels in Alumiline's Series 969 Aluminum Curtain Wall for outstanding exterior curtain wall design.

CUSTOMIZED DESIGNS in a choice of 22 architectural colors in glossy or mat finish. Low die cost for panels formed to your special design makes Syntek Panels practical for even smaller builders. Customized designs, textures plus wide range of color selection open the doorway to outstanding creativity . . . distinctiveness never before achieved at such moderate cost.

Syntek Panels are strong, attractive and have excellent weathering characteristics. They were developed by The Alumiline Corporation in conjunction with the Rohm & Haas Company and are sold with a 5 year guarantee.

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A LUMILINE
SYNTEK PANELS
(in 969 Curtain Wall)
are formed of
Plexiglas in
22 Architectural
Colors

by DR. NORMAN BIENENFELD

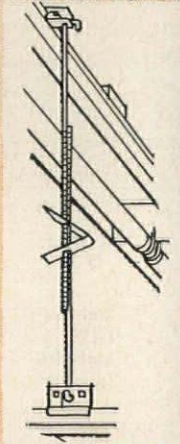
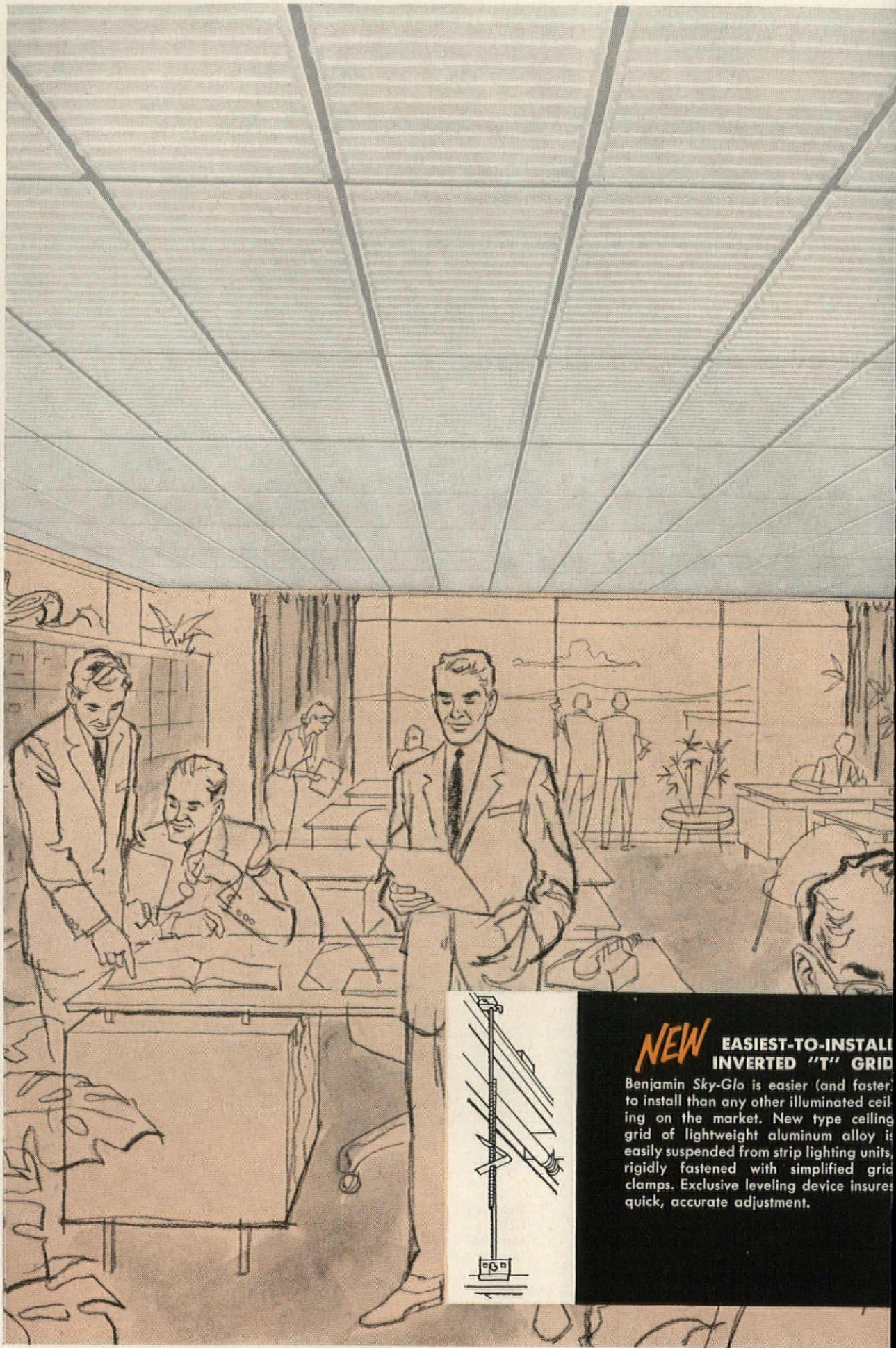
Alumiline Syntek Panels are available in 22 architectural colors that have been extensively tested. The approved colors have shown virtually no appearance change after over 15 years of field installation and utilization in signs and facings.

In addition to excellent weathering characteristics, Syntek Panels are light in weight. Plexiglas is only 43% as heavy as aluminum and 50% as heavy as glass.

Forming tools and forming operations are exceptionally low in cost . . . as little as $\frac{1}{10}$ the cost of forming tools for metal materials. The types of shapes and textures that can be achieved are virtually unlimited and include all sorts of geometric forms, trademarks, etc.

Syntek insulating panels are factory glazed and shipped as an integral part of Alumiline Curtain Wall modules. This procedure further reduces building costs and helps assure a trouble-free installation.

Costs of FORMED Syntek Panels run approximately 10-20% more than FLAT porcelainized panels, but 30 to 70% LESS than FORMED aluminum, stainless steel or porcelainized metal units.



NEW EASIEST-TO-INSTALL
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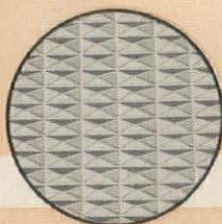


GET ALL THE FACTS on Sky-Glo Illuminated
Ceilings—write for Bulletin D; Benjamin
Division, Thomas Industries Inc., 207 E.
Broadway, Louisville 2, Ky., Dept. E

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COMPLETE LINE OF LIGHTING UNITS

Another Benjamin exclusive!... *Sky-Glo* illuminated ceiling offers you Rapid-Start, Slimline, 800 ma. or 1500 ma. Power Groove lamps in a complete new line of fluorescent strips, featuring grooved channel, simple butt mounting and new ceiling spacer.



Angled facets of
L-120 lens create
high-efficiency dif-
fusing medium.

NEW

SELECTION OF PANELS

- Acoustical perforated vinyl panel
- Sculptured vinyl panel*
- Prismatic L-120 lens
- Polystyrene louver— $\frac{1}{2}$ " cube
- Aluminum louver— $\frac{1}{2}$ " cube
- Holophane prismatic #6024

*illustrated in ceiling on opposite page

- 12-24 Fourth Annual Seminar for teachers of architecture, jointly sponsored by the American Institute of Architects and the Association of Collegiate Schools of Architecture; theme, "Technology in Architecture" — Sagamore Lake, N. Y.
- 13-15 Annual Meeting, American Society of Heating, Refrigerating and Air-Conditioning En-

- gineers — Royal York Hotel, Vancouver
- 13-15 National Meeting, American Association of Cost Engineers — Rice Hotel, Houston
- 19-22 Annual Convention, National Parking Association — San Francisco
- 19-25 National Convention (second of three in 1960), American Society of Civil Engineers — Reno

- 26ff Annual Meeting and Exhibit American Society for Testing Materials—Chalfonte-Haddon Hall, Atlantic City
- 27-29 61st Annual Meeting, American Society of Landscape Architects—Waldorf-Astoria Hotel, New York

Office Notes

Offices Opened _____

William S. Kaplan has opened an office as consulting structural engineer at 268 Market St., San Francisco

D. Stewart Kerr, A.I.A., and Thomas C. Beggs, P.E., announce their partnership in a new office at 633 East Main St., Santa Maria, Calif.

Gassner & Nathan, Architects, have opened a new office at 128 North Court, Memphis, Tenn.

Firm Changes _____

Weiler and Strang and Associates announce the formation of a new partnership consisting of four partners, Joseph J. Weiler, Allen J. Strang, Roger E. McMullin and Nathaniel W. Sample; and four associates, Robert C. Kraft, Jerome J. Mullins, Gunard E. Hans and Walker L. Patton, for the practice of architecture and engineering. Address: 810 University Bay Drive, Madison, Wis.

Moore & Salsbury, Architects, announce that Oliver J. Foster, Jr., and Frank J. Ridout have been admitted to the firm as associates.

Shepley Bulfinch Richardson & Abbott announce that James Ford Clapp, Jr., has been admitted to the firm and that Otis B. Robinson and Richard C. Tousley have become associates.

A. W. Thompson has become Senior Field Architect for American Airlines. His title was previously Senior Facilities Architect.

Ken H. Pfeiffer has joined Charles Luckman Associates as director of store interiors.

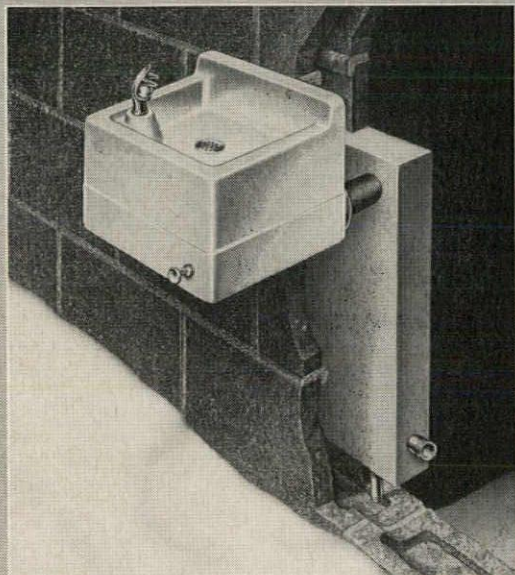
Ellington & Day, Inc., Detroit architects and engineers, announce that Henry William Ruifrok, A.I.A., has joined their staff as Chief of the Architectural Department.

New Addresses _____

Johnson, McWhinnie, Architects, are now located at 1060 University Ave., West Windsor, Ontario.

Schainen Stern Design Associates have moved to 236 E. 53rd St., New York 22.

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HAWS Free Flowing Fountain Service in any Climate!



For positive Winter Protection against costly "freeze-ups" and excessive maintenance of outdoor fountains... specify HAWS Freeze-Proof Units! Get year 'round drinking service. The choice of style is yours! Freeze-Proof Units are available with virtually any style fountain from HAWS' complete line—wall or pedestal, single or multiple bubbler. For details on model selection and installation... see SWEETS Architectural File, or write today for catalog.

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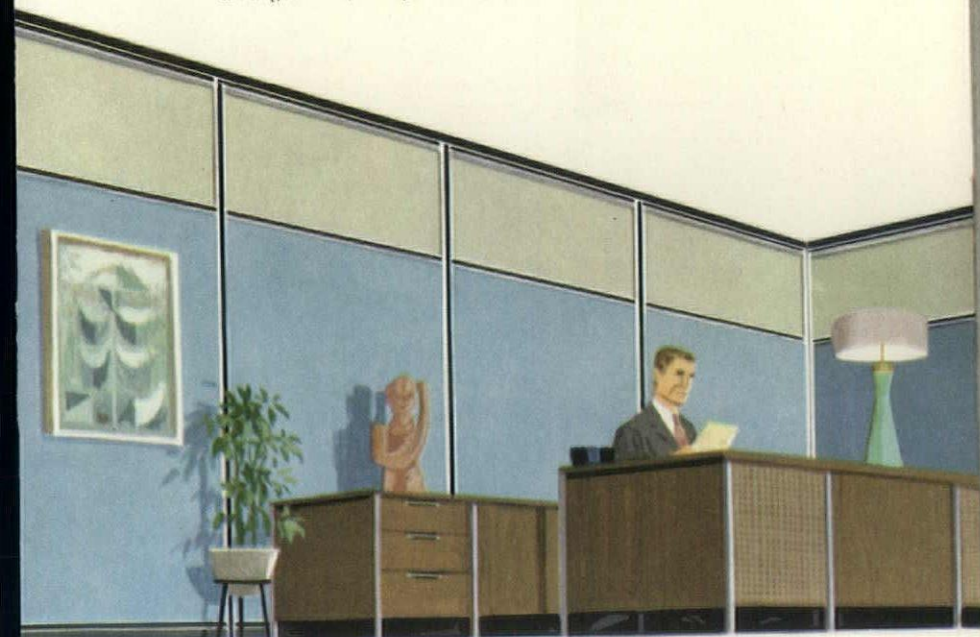
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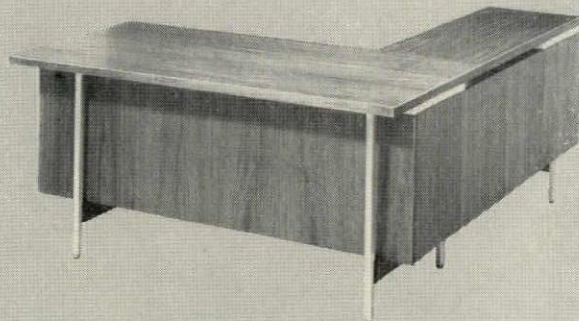
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Crisp new design in wood office furniture

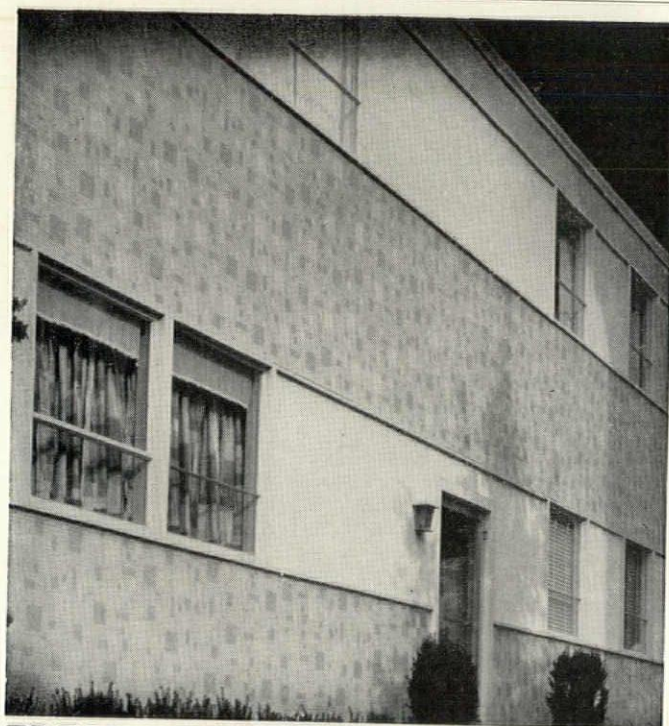


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Now quantity production makes high styled furniture affordable and practical for the general office.

Architects, designers and decorators are invited to write direct for pricing and purchasing information.

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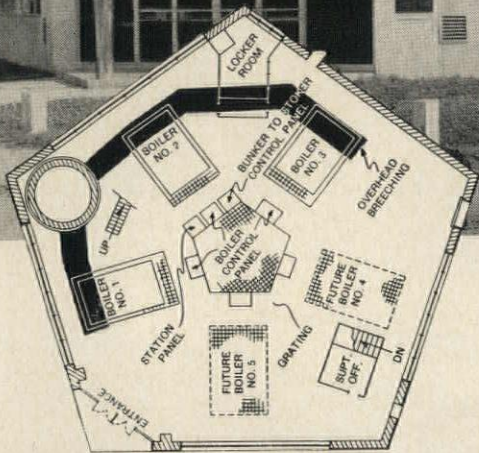
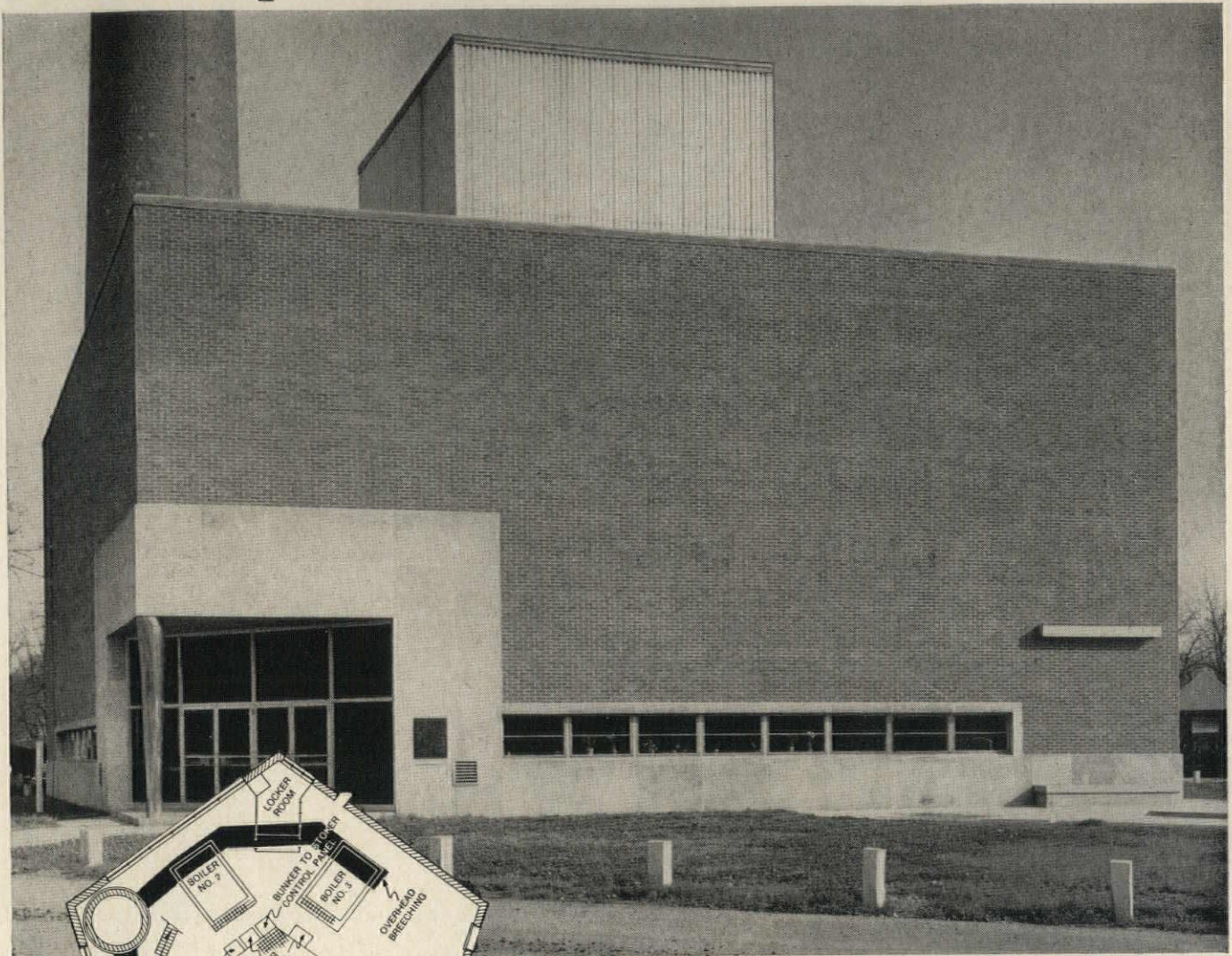


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Western Subsidiary: Redondo Tile Co.
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PENTAGONAL POWER PLANT SOLVES SPACE PROBLEM AT RICHMOND STATE HOSPITAL

When Richmond State Hospital, Richmond, Ind., decided to build a new power plant, the project was complicated by the lack of space at the desired location.

The solution was a five-sided building, designed by the firm of Fleck, Quebe and Reid, working with F. B. Morse, of Purdue University. This unique structure houses three boilers (and space for two more) facing a one-man control center, with auxiliary equipment located between units. All corners are used efficiently; actual operation is simplified by completely automatic coal handling and ash removal. To facilitate plant housekeeping, the design

allows only an eye-level vision strip and provides for a vacuum cleaning system with 23 outlets throughout the building.

Radically different from conventional power plant design, the Richmond pentagon has proved itself in lower construction costs while providing best possible adaptation of space to present and future needs.

District engineers of the Bituminous Coal Institute have detailed information on how coal-burning plants lend themselves to modern architectural design. If you have a problem in power plant design, write for the name of the BCI man in your area.

SEND COUPON FOR GUIDE SPECIFICATIONS, with complete equipment criteria and boiler room plans:

BITUMINOUS COAL INSTITUTE
Southern Building, Washington 5, D. C.

Gentlemen: Please send me:

- GS-1 (low-pressure heating plant, screw-type underfeed stoker)
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- GS-3 (automatic package boiler for heating and process plants)
- Case histories on larger plants

Name _____

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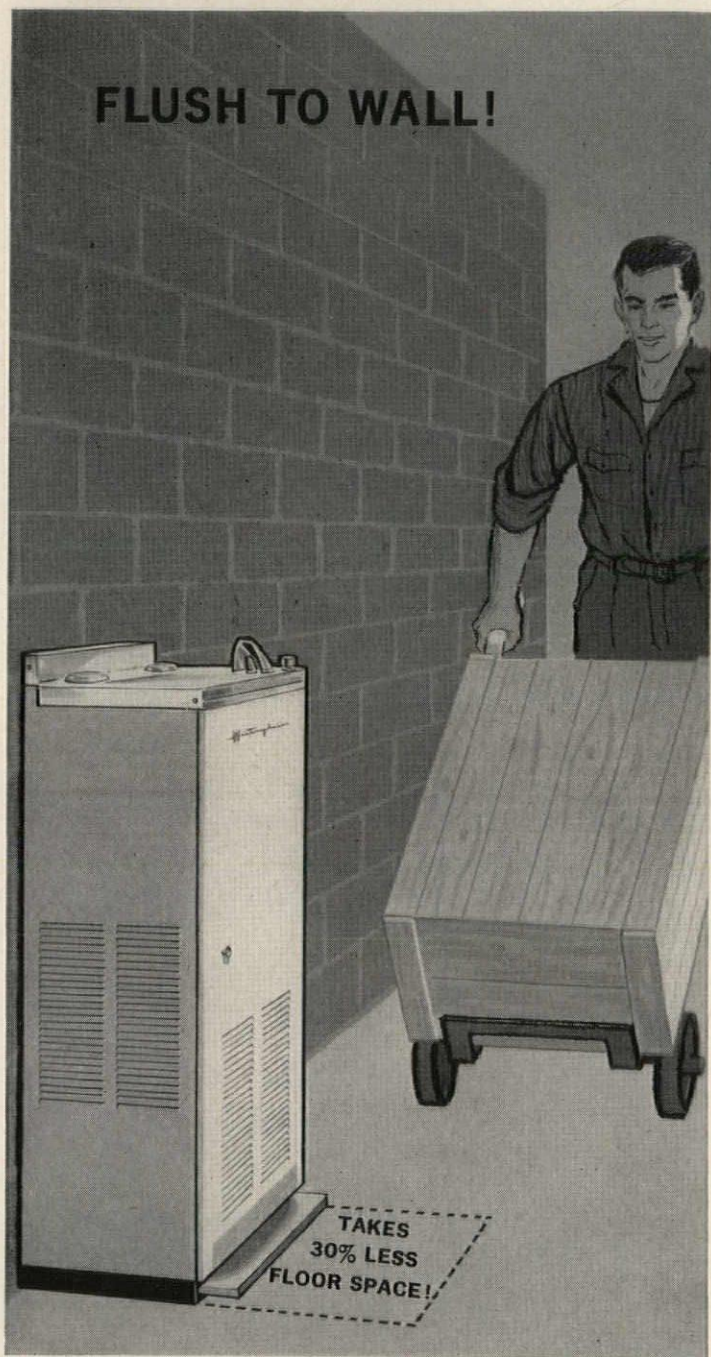
AR-04

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See our listing in Sweet's

NEWEST, NEATEST IDEA



NO UNSIGHTLY PLUMBING—IT'S CONCEALED INSIDE! Nothing juts out behind to collect dirt or mar clean appearance. As a result, instead of usual 18" to 22", this Westinghouse cooler extends only 12½" from the wall—leaves passageways clear for traffic, handtrucks. New "slip" connections inside make installation far faster and simpler, too.



SO MODERN, SO NEAT—SO EASY TO CLEAN UNDER! Slim and smart looking, this Westinghouse model fits compactly on the wall, out of the way. Completely eliminates dirt-catching areas . . . simplifies floor cleaning. Doubles as a kiddie-cooler when mounted on the floor . . . measures just 31" high, just right for schools, etc.

IN WATER COOLERS!

IN THE WALL!



FITS IN 6 $\frac{1}{2}$ " SPACE—SERVES SEVERAL FOUNTAINS! Meets the move to "built-ins!" Just 6 $\frac{5}{8}$ " slim, yet delivers as much cold water as other units requiring double the space! 5- and 10-gal. capacities, interchangeable as needs change. Serves several fountains on the same or other floors. Mounts in or on wall, under counter, etc.

WESTINGHOUSE WALL LINE

Exclusive Westinghouse Water Coolers end unsightly plumbing and wasted space . . . help keep your buildings smart and functional!

Architects have hailed the Westinghouse "Wall Line" as today's biggest news in water coolers—and with good reason! Its exciting "clean look" matches perfectly the clean, functional style of today's architectural designs. Gone is old-fashioned dirt-catching exposed plumbing—it's concealed inside. Gone is wasted space in offices and corridors—these new coolers fit compactly *against . . . on . . . or in the wall!* What's more, you've a choice of 3 completely different types that allow you maximum flexibility of style and location. Get the full story. Mail the coupon today—or call your Westinghouse Water Cooler Distributor. He is listed under "Water Coolers" in your Yellow Pages.

YOU CAN BE SURE . . . IF IT'S

Westinghouse

Write for more information on new WESTINGHOUSE WALL LINE
— MAIL COUPON NOW! —

Westinghouse Electric Corp.
Columbus, Ohio

GENTLEMEN:
Please send more information on your new Westinghouse "Wall Line" Water Coolers.

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NAME OF COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

AR-4

A Record Special Report

continued from page 10

time allotted: (1) History and Theory and Philosophy; (2) Design and the Visual Arts; (3) Urban and Regional Planning and Control; (4) Engineering (structural design and building techniques); (5) Architecture in Practice.

At Grindstone we reverted to limited topics for study, in that we examined the immediate past in architectural teaching, both in this country and in Europe, and that we then considered the realities of practice

today in order to try to frame our educational programs to the needs of the profession.

This Year: Technology

In the coming seminar to be held at Sagamore, we shall concentrate on technology. The Program Subcommittee has stated it in these terms:

"The A.C.S.A.-A.I.A. Seminar on the Teaching of Architecture, to be held at Sagamore Lake, near Raquette Lake, N. Y., June 12-24, will

be concerned with the many aspects of building technology as they are related to teaching architecture and, parallel to this, a general consideration of the art and science of teaching.

"With full recognition of our responsibilities of training for practice, we will focus attention on the performance of the architectural profession, the demands on the designer, the role of our schools and the techniques of teaching in relation to our world of advancing technology."

We are trying to achieve something for different kinds of teachers with varying backgrounds, and varying interests, as this is believed to be essential in meeting the problems of providing proper preparation for a profession which arrogates to itself leadership in the creation of our man-made environment.

At the trial run in Cambridge, all but one of the twenty participants were teachers of design. In the seminars since then the committee has sought to persuade the heads of schools making the recommendations to choose from among their staff some of those teaching courses other than design. Last June this objective of diversity was largely realized. In naming a theme and charting out a course of study relating to a profession as comprehensive as architecture, there is always the danger of becoming involved in the minutiae of a profession which has to operate on such a broad front including, as it does, the practical, the factual, the artistic and the scientific.

This we have tried to avoid.

If Design Is Not All—

If there is one unifying idea in architecture, it is the idea of the central position occupied by design. Here, if at all, is the focal center. Furthermore, it is in his capacity as designer that the architect is the one who offers a unique and exclusive service which no one else is qualified to furnish.

We have attempted in these seminars always to hold in front of us, regardless of theme, or direction, or subject under discussion, no matter what it may be, this basic concept of the overall importance of design.

But having said this, something else quite different also needs to be

continued on page 366

Coming next month . . .

Motels, Hotels, Restaurants and Bars

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Completely Revised and Expanded New Second Edition

Over 200 NEW pages 50% MORE material

This informative book will present an up-to-date, detailed study of physical design in motels, hotels, restaurants, and bars, and show the important relationship between good design and good business.

Over 700 illustrations of successful establishments show where well-planned, functional design has paid off in flourishing trade and satisfied clientele. Each case study is profusely illustrated with interior and exterior photographs and floor plans. In many instances, structural diagrams are also included for clarity. Each study thus becomes a compact survey of the building, its purpose, and its problems.

Every word of this valuable book is designed to save you time and work in countless ways, and to open up new opportunities for you in this active field. The editors of ARCHITECTURAL RECORD have selected only the best and most significant projects. They guide you expertly through an area where good design has an amazing bearing on eventual success.

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AN ANSWER TO SPACE/COST PROBLEM IN APARTMENTS

In providing individual apartment heating and cooling, the architect and owner faced the inevitable problem of minimizing space cost and noise level. Uniform comfort throughout the apartments, which range from efficiency to three-bedroom suites, was a "must".

You see the answer here. The Bryant air conditioner was placed above the Bryant furnace in a small closet on an outside wall.

The furnace blower circulates air through a very simple duct system.

The return air for heating and cooling is brought from the apartment through a grille and short duct to the furnace. It is then circulated by the furnace blower through a simple duct system.

Air to cool the unit is pulled in through the closet door, through the unit and is discharged to the outside through the grille in the outside walls. No protrusions to spoil the clean lines of the building.

The system, as designed with the aid of Bryant's distributor, United-Bryant Corp., Washington, D.C., is simple, quiet, easy to control — and economical to install and operate.

Bryant engineering and planning service are available to assist you with your apartment air conditioning problems. This system is ideal for small homes, too. Call your local Bryant distributor or factory branch—see the Yellow Pages. Ask for our Apartment House Brochure. Bryant Manufacturing Company, Indianapolis, Indiana.

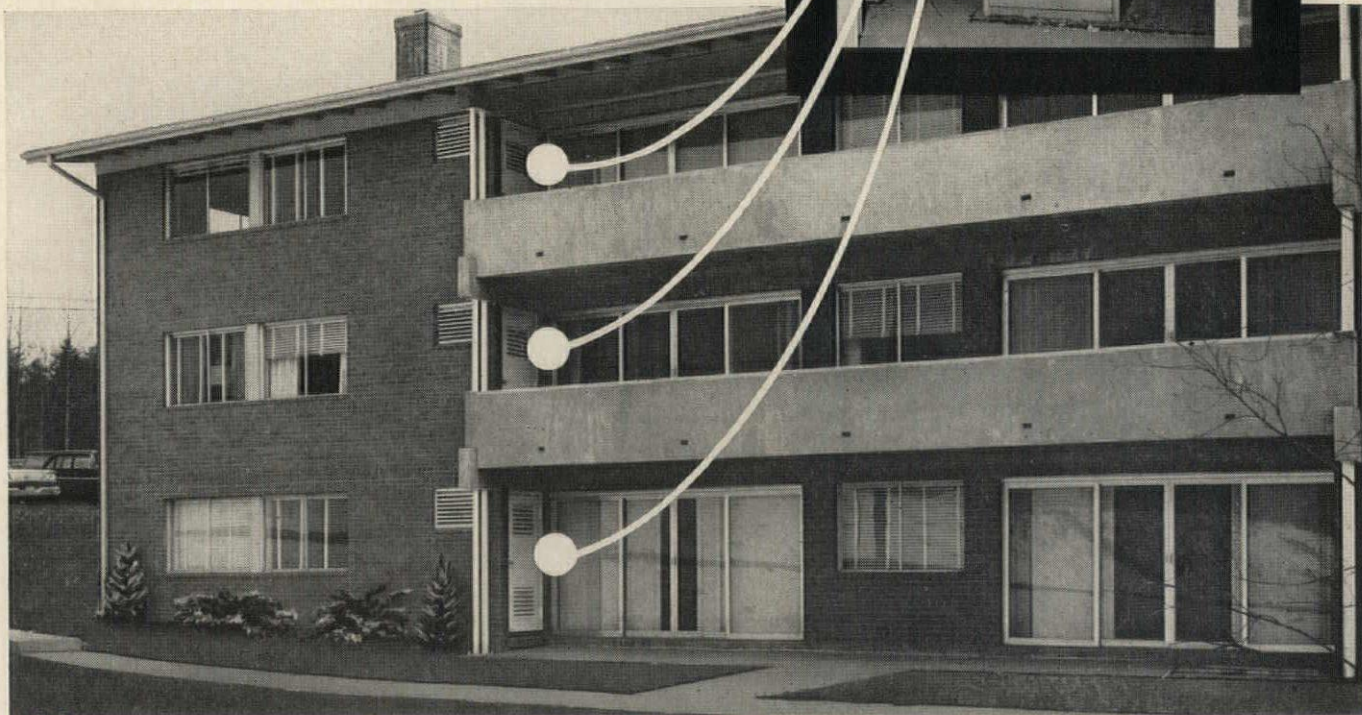
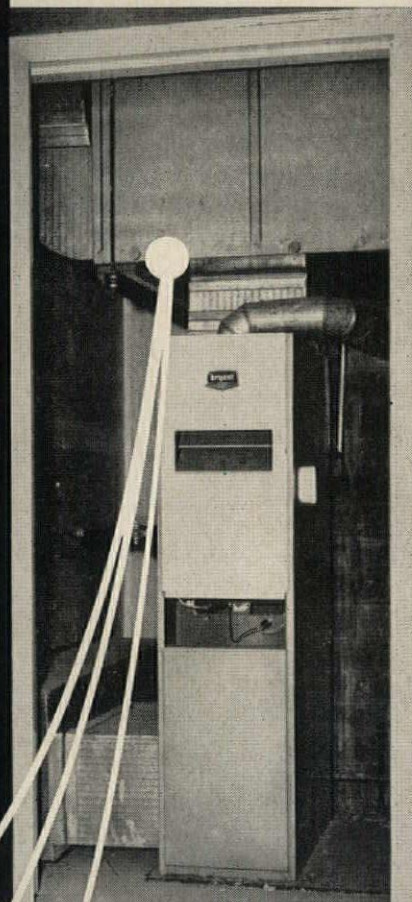



AIR CONDITIONING

America's most complete line of heating and air conditioning equipment

*Engineer: Arnold Kronstadt, Collins & Kronstadt and Associates, Architects & Engineers
• Builder: Carl M. Freeman, Inc. • Heating & Air Conditioning Contractor: Thos. Moylan Inc. • Project Job: Carl M. Freeman, Inc., Hamlet West Apartments, Alexandria, Va.*

Note access to equipment from balcony. Bryant heating and cooling units are housed in a space only 36" square.





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of electrified floor system

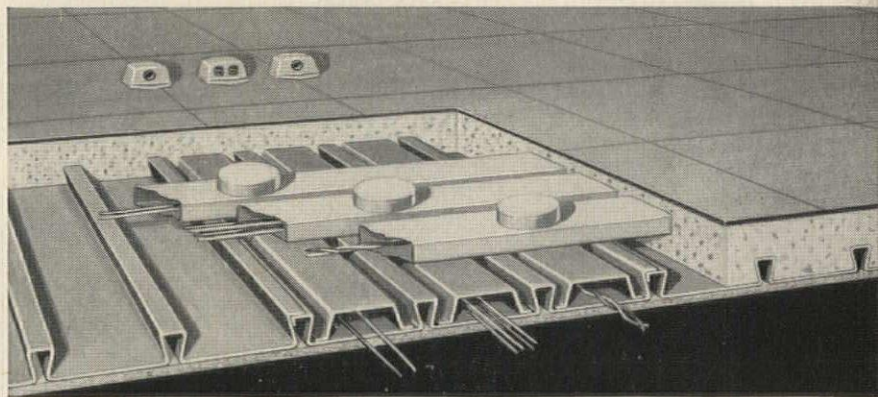
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FIFTY-NINE STORIES HIGH ...

with room for a work force of 25,000—Grand Central City will be the largest commercial office building ever built. A monumental job for architect, engineer, contractor and owner.

Fenestra will supply 2,200,000 square feet of Holorib Elect-Re-Form to reinforce and provide electrification to the floors of this building. As a reinforcing form, it offers top load capacity, permits use of thinner, stronger concrete slabs. As an electrification system, it offers maximum flexibility . . . lets you provide electrification more economically wherever needed *without* wasteful "dead" cells.

New Fenestra Holorib roof and floor structural systems may answer a design problem now facing *you*. For full information, see Sweet's File, call your Fenestra representative (he's in the Yellow Pages), or write: *Fenestra Incorporated, Dept. AR-4, 2252 E. Grand Blvd., Detroit 11, Michigan.*



Versatile Holorib Elect-Re-Form can be supplied with one, two or three cells as the job requires—provides electrification where needed without wasteful "dead" cells. Pyramidically designed ribs key into concrete—a more positive bond, higher strength.

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said; namely, that because it is central is not to say that design is everything.

As the Profession Goes—

There is this other danger—the danger inherent in the concept of the individual architect as artist, wrapped in the cloak of genius, one who transcends the mundane; the idea that the designer, per se, as an individual occupies a position which places everyone else with whom he

has to deal on an inferior plane; the idea of the prima donna—the solo operator; as opposed to the idea of team action. It is an image, inherited from the past, that we should beware of. The image still holds in the case of a few men of genius like Le Corbusier and the late Frank Lloyd Wright, and especially in the schools, if not in the profession, we are inclined to think of architecture in these terms. But, in actuality, architecture, because of increasing com-

plexity and demands for a wide range of specialized knowledge and diversity of skills, is more and more the result of many minds brought to bear in collaboration in the working out of a complex problem and carrying it through.

What this means in terms of education was brought to our attention at Cambridge and again at Nantucket by Hugh Stubbins,* was critically presented by James Hunter at Aspen, and was reiterated in its broadest implications by John E. Burchard in his keynote speech at Grindstone Lake.**

—So Goes Education?

The need for change in the thinking of the educator has been expounded still further by Buford Pickens in the A.I.A. *Journal* of December 1959 in his article entitled "Practical Experience and the Education of Architects."

At Grindstone Lake two areas of discussion, one dealing with objectives of the educational program, and the other related to design concepts, developed a certain ambivalence in the conference; but the basic issues remained:

1. Is the school only or predominantly interested in the talented design student or, on the other hand,
2. If its aim is full recognition of the needs of the profession, what is it doing, or what should it do for the men who will serve the profession in areas outside of the initial creative design process but contributory to it?

Burchard's analogy with education for the professions of medicine
continued on page 370



New Birch-Las Olas parking lot on beach side of Intracoastal Waterway, Fort Lauderdale, Fla. It holds 670 cars.

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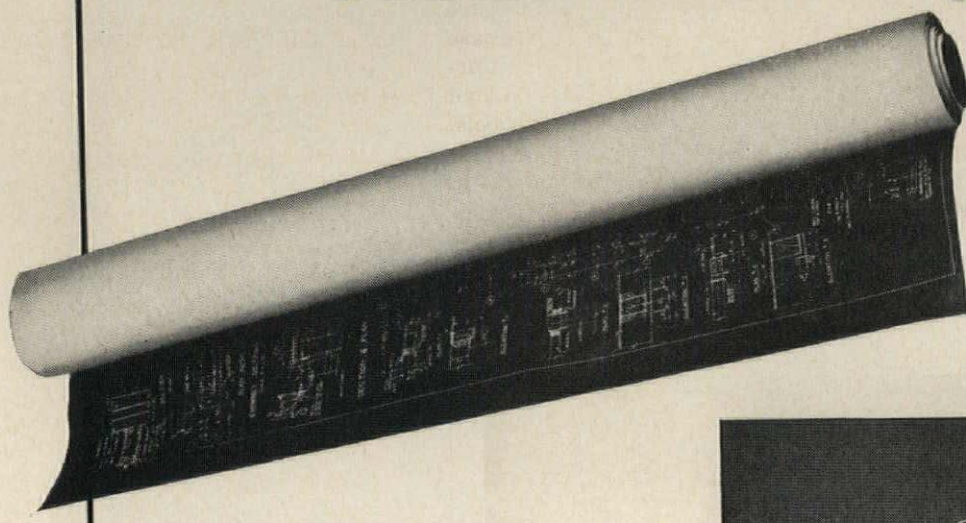
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* Hugh Stubbins' speech printed in: *Journal of Architectural Education*, Vol. XIII, No. 2, Autumn 1958; *A.I.A. Journal*—September 1958.

** John E. Burchard, "Some Keys to Pandora's Jar": *Journal of Architectural Education*, Vol. XIV, No. 2, Autumn 1959; *A.I.A. Journal*, February and March 1960.

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Here's a new high in "eye appeal" for your home with Flintkote's new Spring flooring fashions

Flintkote's Spring collection of new flooring styles sparks ideas by famous Interior Designers that fashion-minded home buyers will want to see



Everyone gets ideas in the Springtime. But Tom Lee, Geraldine Nicosia, Burton Singer and Emily Malino—famous Interior Designers—have the brightest of all: fresh home floor designs for Spring created with Flintkote's new flooring styles.

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and law pointed up architectural education's deficiencies.

What has been said might lead one to believe that this seminar was primarily a debate over the issue of the scope and aims of an architectural educational program of study. This would be an erroneous impression.

It was at Nantucket that a system of small group discussions was instituted and at Grindstone Lake the groups were made up of those with

similar interests. Each group was asked to report back to the plenary session on a number of problems being tackled by everyone simultaneously but separately by different groups on such matters as: Creativity and the Role of the Artist in the School; Basic Design in the Curriculum; The Teaching of Planning and Civic Design for Architects; The Teaching of Structures; Architectural Research; Theory and the Place of History in the Curriculum.

Needed Now: Support

It has taken a great deal of encouragement, support, and hard work on the part of many people to inaugurate and to keep the project going. During the first two years, in order to give us a start, money came from two foundations, Ford and Graham, plus a grant for scholarships from the A.I.A. Last year help was given by A.I.A. groups, and many architects and architectural firms throughout the country responded to an emergency call for help in meeting operational costs.

Our efforts this year are concentrated on gaining the support of A.I.A. chapters, state associations and other architectural groups. The hope is that sufficient funds will be granted to provide for one-half expense scholarships to enable at least one man from each of the participating schools to attend the Sagamore Seminar in June. The A.I.A. has already given us \$4000. The Texas Architectural Foundation has appropriated five \$400 full scholarships for each of the five Texas schools. The National Institute of Architectural Education in New York gives \$330 for a scholarship for a prospective teacher. Several A.I.A. chapters have granted from \$100 to \$350 also for scholarships. It is this kind of support which gives those of us who are giving our services to this project encouragement to carry on. We are hoping for the same kind of generosity from other chapters and architectural organizations.

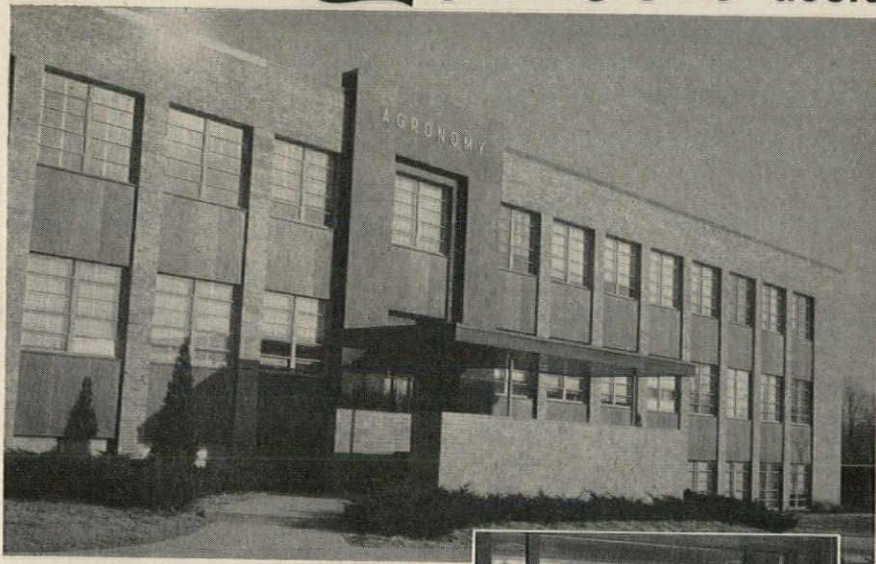
This will be the fifth year that teachers of architecture will come together to give serious thought to their profession.

The backward glance, the inward look, the forward view, peering into the future—how difficult, how futile, some will say. But, how necessary, if we are to hold our own in competition for survival. Who else should be better qualified to see ahead clearly the role we must play in creating a better world in which to live and work than those who believe in their potential as leaders, not followers: the teacher—who should be and sometimes is artist, architect, philosopher—whose life work constantly calls forth the employment of analysis, imagination and judgment; qualities most needed for advancement of the profession through education.

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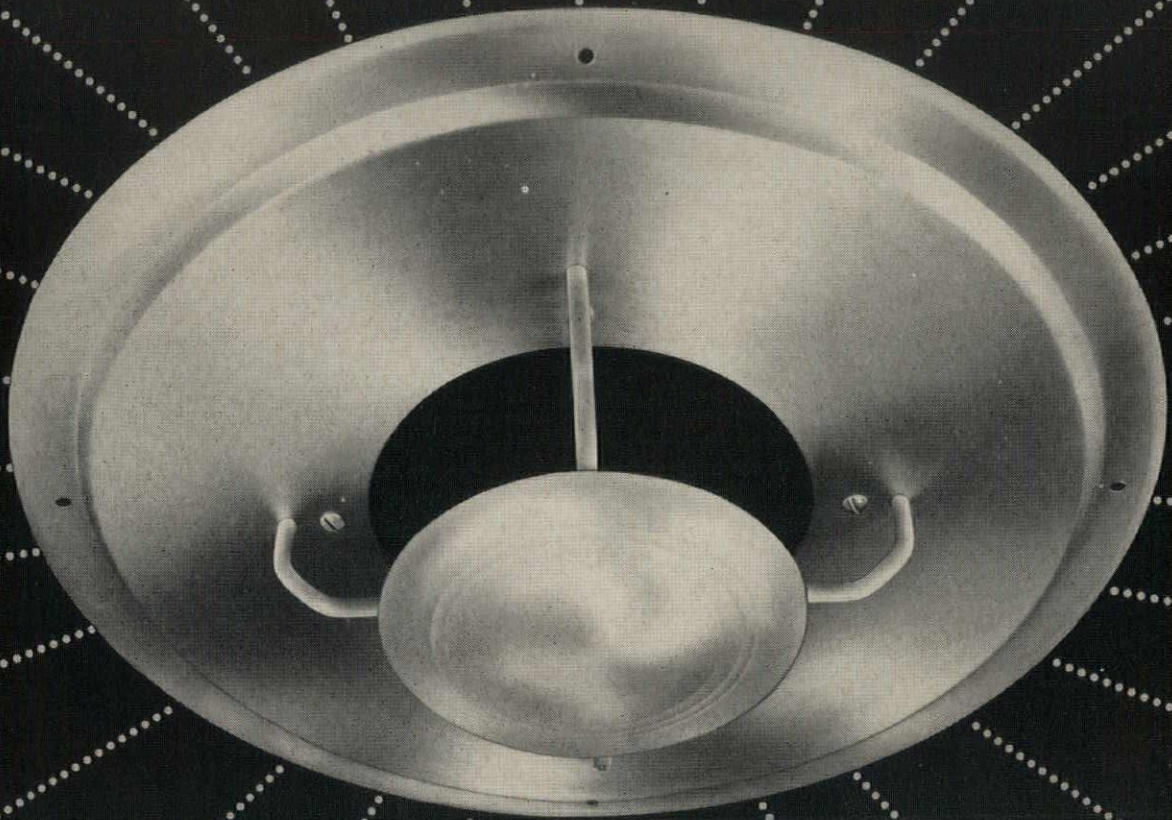
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NEW

Pittsburgh Fab-Form, available in lengths up to 28 feet, 3 inches with $\frac{5}{8}$ -inch corrugation, is handled easily on steel joists by one man at St. Regis Church and School in Trafford, Pa. Contractor H. Justin Brown & Son, Mt. Lebanon, Pa., reported it took four men just one day to lay 10,800 square feet of Fab-Form. Fab-Form was sold and engineered by W. N. Dambach, Inc., Pittsburgh, Pa. Architect: Ermes Brunettini, A.I.A., Verona, Pa.

New Fab-Form by Pittsburgh Steel Cuts Floor and Roof Slab Costs, Gives Greater Length and Width

Fab-Form, a brand new addition to Pittsburgh Steel Products' line of quality construction products, builds in savings of materials and erection time for concrete floor and roof slabs.

New Fab-Form—longest and widest corrugated, permanent steel form for slabs poured over joists—reduces the number of end and side laps through its 32-inch cover width and extra length.

In addition, Fab-Form has an exclusive new welding method that is literally a snap.

Fab-Form is fabricated:

- In standard lengths, plus other lengths up to 28 feet, 3 inches—twice as long as most others.
- In a cover width of 32 inches
- With deepest corrugation — a full $\frac{5}{8}$ -inch — of any standard steel centering.
- Plain or Bonderized with an exclusive baked-on duPont red oxide primer that provides weather protection and serves as an excellent primer base for further painting of exposed underside. Fab-Form's special protective finish prevents water stain or "white rust."

Fab-Form's uniform strength comes from high-tensile (90,000 to 100,000 psi), 27 gage, cold rolled steel sheet.

• **Ideal for School**—One of the first construction jobs in which Fab-Form was used was the new St. Regis Church and School in Trafford, Pa. Architect for the job was Ermes Brunettini, AIA, Verona, Pa. More than 33,000 square feet of Fab-Form supports three-inch concrete floor and roof slabs set on steel joists.

Thomas A. Laboon, job superintendent for H. Justin Brown & Son, general contractors from Mt. Lebanon, Pa., said that the deeper corrugations in Fab-Form helped make a stronger slab. Pittsburgh Steel's six-inch square mesh made of No. 6 gage wire was used for reinforcing.

Fab-Form's speed of installation also impressed Mr. Laboon. He said that it took four men just one day to lay 10,800 square feet of Fab-Form on roof joists. After sections were laid, welders using the unique Fab-Form Welding Washer Stick made plug welds to every other joist.

• **Easy as A, B, C**—Welders found using the exclusive Fab-Form Welding Washer Stick unusually simple. Pittsburgh Steel developed the unique stick so that each welder bent up the end washer on the stick, made his plug weld and snapped off the washer—in just seconds. This eliminates fumbling in heavy gloves for individual washers. Next, mesh was installed and the slab was poured.

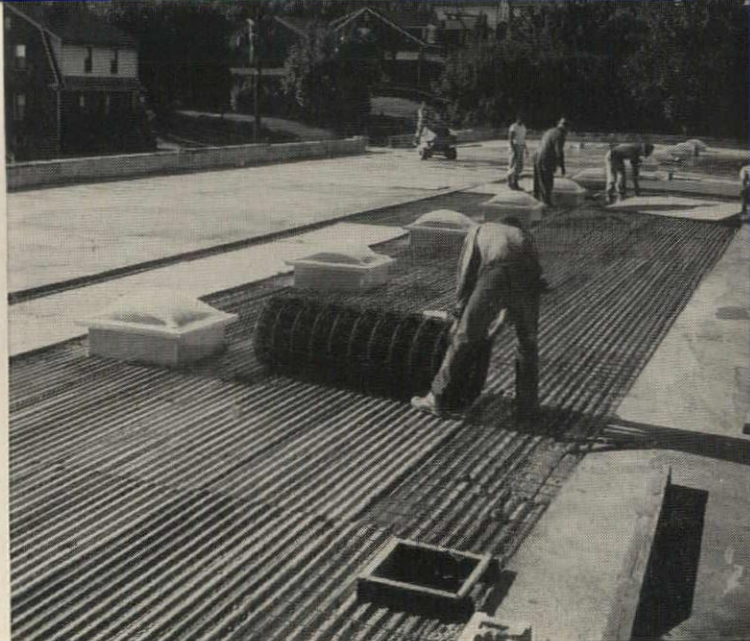
"Everything came out exactly right with no scrapped material," said Mr. Laboon in commenting on the economy of Fab-Form. "The side and end-lapping worked out exactly right.

"On top of that," he added, "you know that when Fab-Form is down you have a material that will take a beating from men tramping on it, buggies and even rough weather.

"Later, after the slab is poured



Deepest corrugation, $\frac{5}{8}$ -inch, of all standard steel centering is available with Fab-Form. Job Superintendent Thomas A. Laboon, left, shown with Pittsburgh Steel Products Salesman C. W. Bainbridge Jr., said deep corrugation helped make a stronger slab.



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Pouring is no problem with Fab-Form. Here a buggy has rolled over Fab-Form without damaging the material. Six-inch square mesh made of No. 6 gage wire is from Pittsburgh Steel, too.



Exclusive Fab-Form Welding Washer Stick reduces installation time. After the end washer on the stick is bent up, the welder makes a plug weld and snaps off the washer. Then mesh is installed and slab is poured.

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The fastest growing branch of the aviation industry is the business and commercial fleet, he continued. Business has found that air transportation means savings and as a result, any industry seeking a new site is keenly sensitive to the availability or absence of aviation facilities. He is convinced that county planning must take into account the need for a local airport if it is to provide realistically for the future.

The administrator proffered this

advice: zone airport sites carefully, protect the airport's environs, and provide room for expansion.

Engineer Fees on U.S. Projects Found Lower than Reputed

Average fees charged by private engineering consultants on government projects are considerably lower than figures that have been widely publicized in the past, according

to results of a survey conducted by a special task force on government contract relations of the National Society of Professional Engineers.

Surveying projects costing more than \$4.3 million in overall construction expenditures, the task force found that the average fee for design was 2.95 per cent. Individual fees ranged from .5 to 14.7 per cent. Engineering inspection services on projects totaling more than \$495 million averaged 2.19 per cent, the N.S.P.E. unit said, and individual fees varied from .5 to 7.5 per cent of the cost.

The conclusions were drawn from information furnished by 118 firms on 1464 engineering service contracts with 17 different Federal agencies and bureaus.

N.S.P.E., through its functional section for consulting engineers in private practice, noted that a Hoover Commission task force report in 1955 found engineering service costs supplied by Federal agencies ranging from 5.23 to 17.8 per cent. The lower percentages applied to agencies making greatest use of private consulting engineers, the highest to agencies making very little, if any, use of them, it was said.

The N.S.P.E. task force drew five conclusions:

1. The average fees of private consultants are considerably lower than the figures widely publicized.
2. A common erroneous assumption is that the consulting engineer always receives a maximum fee based on a percentage of construction costs.
3. It is impractical to generalize on engineering fees as a function of construction cost for a specific project. Lump sum fees are generally more equitable to the government and to the engineer.
4. By using private consulting engineers, the public pays for the services only when needed.
5. Privately consulting engineers, motivated by a profit desire, constantly strive to minimize overhead and can adjust more quickly to changes in conditions.

The report stated that variations in the ratio of engineering fees to construction costs are attributable to many factors. It named these: repetitiveness in design, complexity of the work, individual elements in the design, changes in scope or method after analysis, remoteness

continued on page 378

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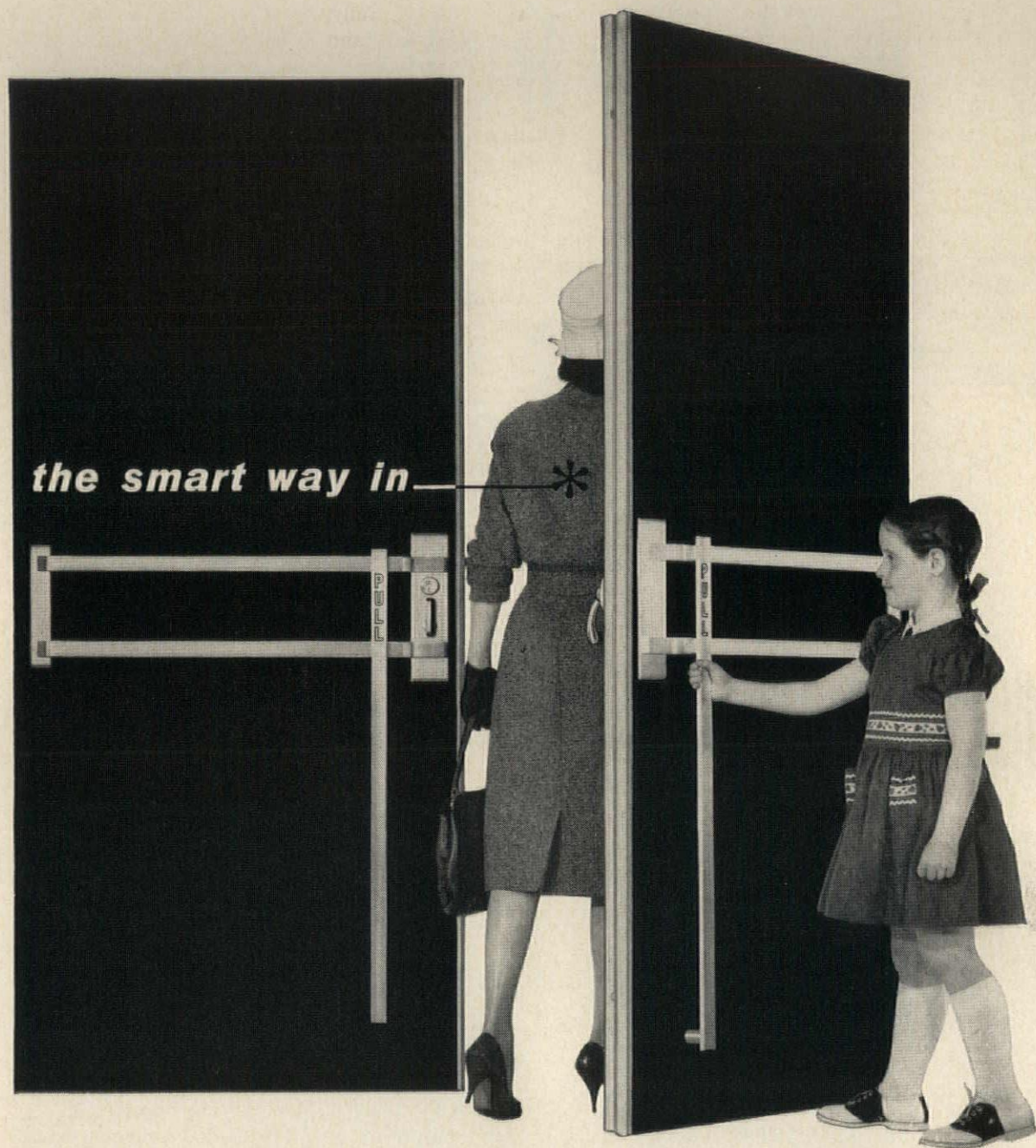
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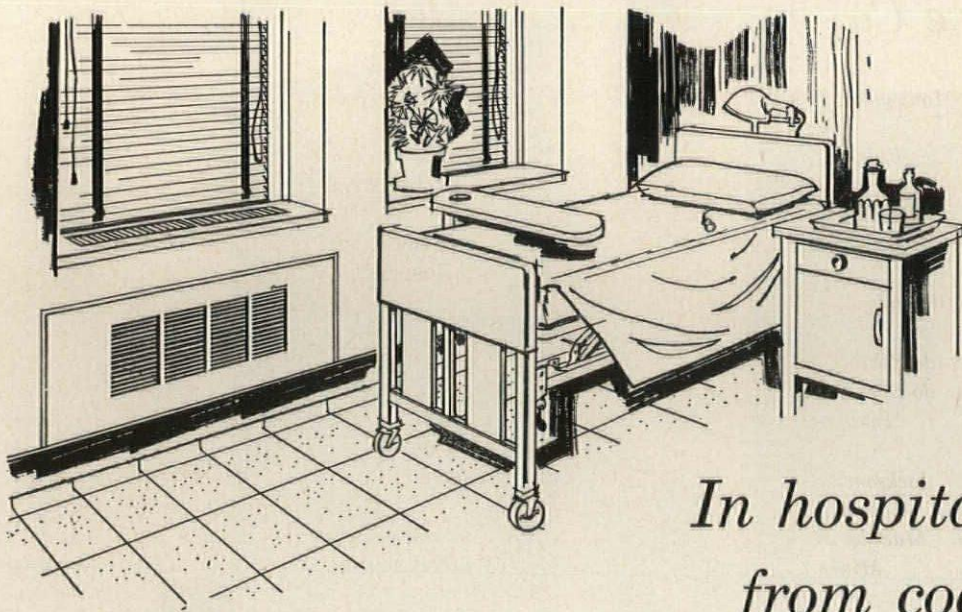
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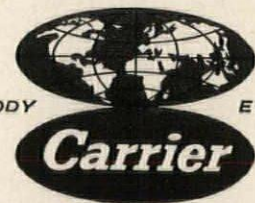
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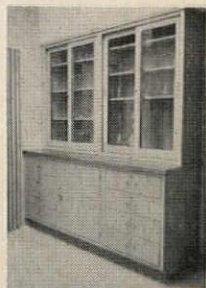
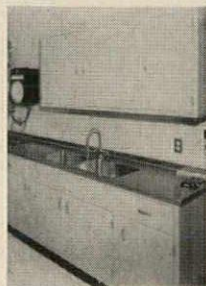


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Washington Topics

of project, and unusual and difficult site conditions.

Four recommendations were made:

1. Economy and public interest should determine whether engineering service should be furnished by private consultants or engineering personnel in government agencies.

2. Governmental agencies should be responsible for preliminary study, pre-planning, and budgeting, and essential supervisory management and control, with private consulting engineers handling design and other engineering services to the extent consistent with the best interests of the public.

3. Congress should avoid general limitations on engineering service fees.

4. Congress should extend and update the 1955 task force study to indicate the current costs of engineering services performed by governmental agencies.

Ford-Backed Project Seeks Cost Data on Geodesic Dome

The Ford Foundation has expressed a willingness to spend money to prove or disprove the feasibility of geodesic dome construction applied to school gymnasiums.

It has approved an \$8500 grant under which the Washington, D. C., architectural firm of McLeod and Ferrara is preparing preliminary plans for a high school in nearby Montgomery County. If the studies prove the feasibility of application of the Fuller construction principle to the gymnasium in this instance, a subsequent grant would cover the cost of final plan preparation, it was understood.

John McLeod, formerly chairman of (and presently a member of) the American Institute of Architects' Committee on School Buildings and Educational Facilities, said the study would bring out new data on relative costs of the geodesic structure as compared to more conventional construction. The Montgomery County, Md., school board has been seeking an alternative to more usual gymnasium construction with

continued on page 382

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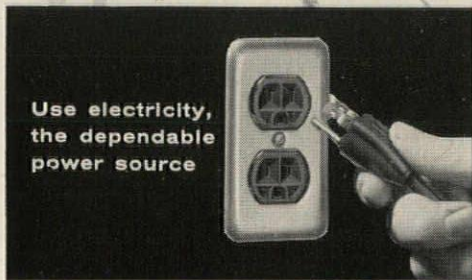
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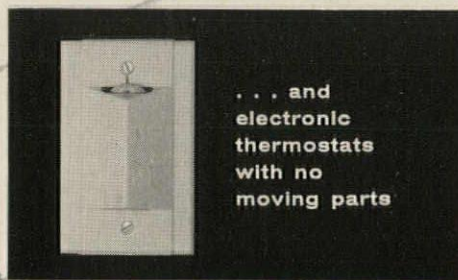
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Moisant International Airport, Kenner, La. Architects: Goldstein, Parham & Labouisse and Herbert A. Benson—George J. Riehl, New Orleans, La. Painting Contractor: Bailey, Lewis and Williams, Atlanta, Ga.

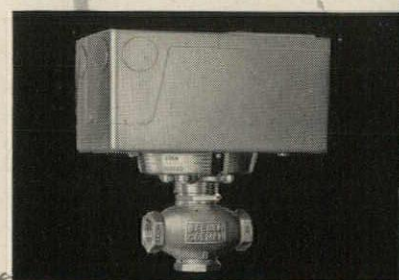
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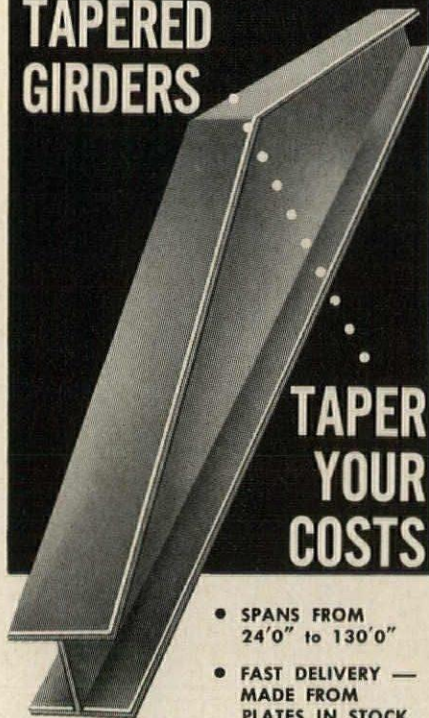
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operators for
accurate
control of
air and
liquid flow.



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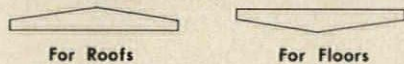
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Washington Topics

its rising costs and inadequate seating space, it said.

Comparative bids on alternate plans will be taken to prove the costs as precisely as possible, Mr. McLeod said.

Boom in Chemical Facilities Suggested by Survey

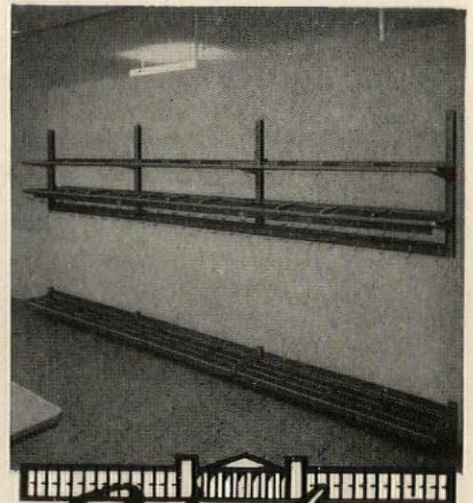
The country will see the completion of \$1657 million worth of new chemical production and research facilities, now either under construction or planned, by 1962, the Manufacturing Chemists' Association announced.

The figure includes \$1172 million for construction already started, and \$485.5 million for projects scheduled for early ground-breaking and completion by the end of 1961. The data were collected in M.C.A.'s annual construction survey.

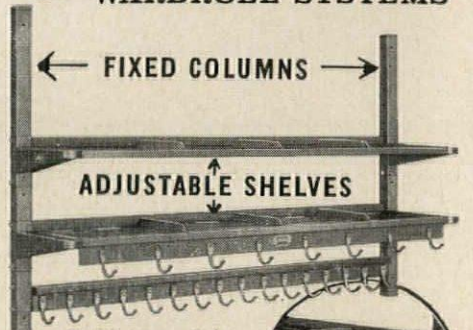
Projects completed in 1959 were estimated to cost \$1344 million, bringing construction cost of such facilities in the three-year period 1959-1961 to an estimated \$3002 million. This involves 820 projects by 318 companies in 458 communities of 42 states. M.C.A. found of special interest the fact that record highs were established this year in the survey categories of planned construction, total projects, companies participating and communities involved. This would seem to indicate, the association said, a resurgence of construction activity from the downswing of the 1958 recession and a continuing tendency away from plant-site concentration. The survey covered the chemical industry itself and the construction of chemical-producing facilities by firms identified with other industries such as oil, paper, and rubber.

A total of 290 projects being carried out by 149 concerns in 198 communities in 39 states accounts for the \$1172 million in construction underway, it was said. At this time last year the M.C.A. reported 216 projects costing \$1050 million as underway in 142 communities of 33 states by 98 companies. The planned construction, to be completed before 1962, includes 151 projects in 126 communities of 34 states at a cost

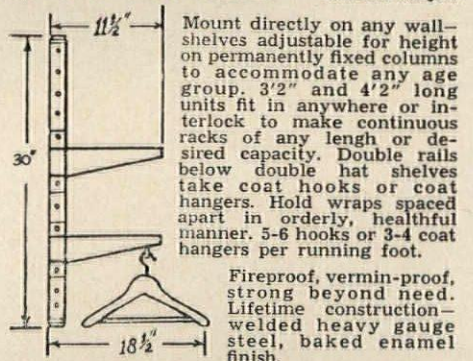
continued on page 386



Schooline®
WARDROBE SYSTEMS



Adjustable WALLMOUNT HAT AND COAT RACKS



OTHER Schooline® UNITS

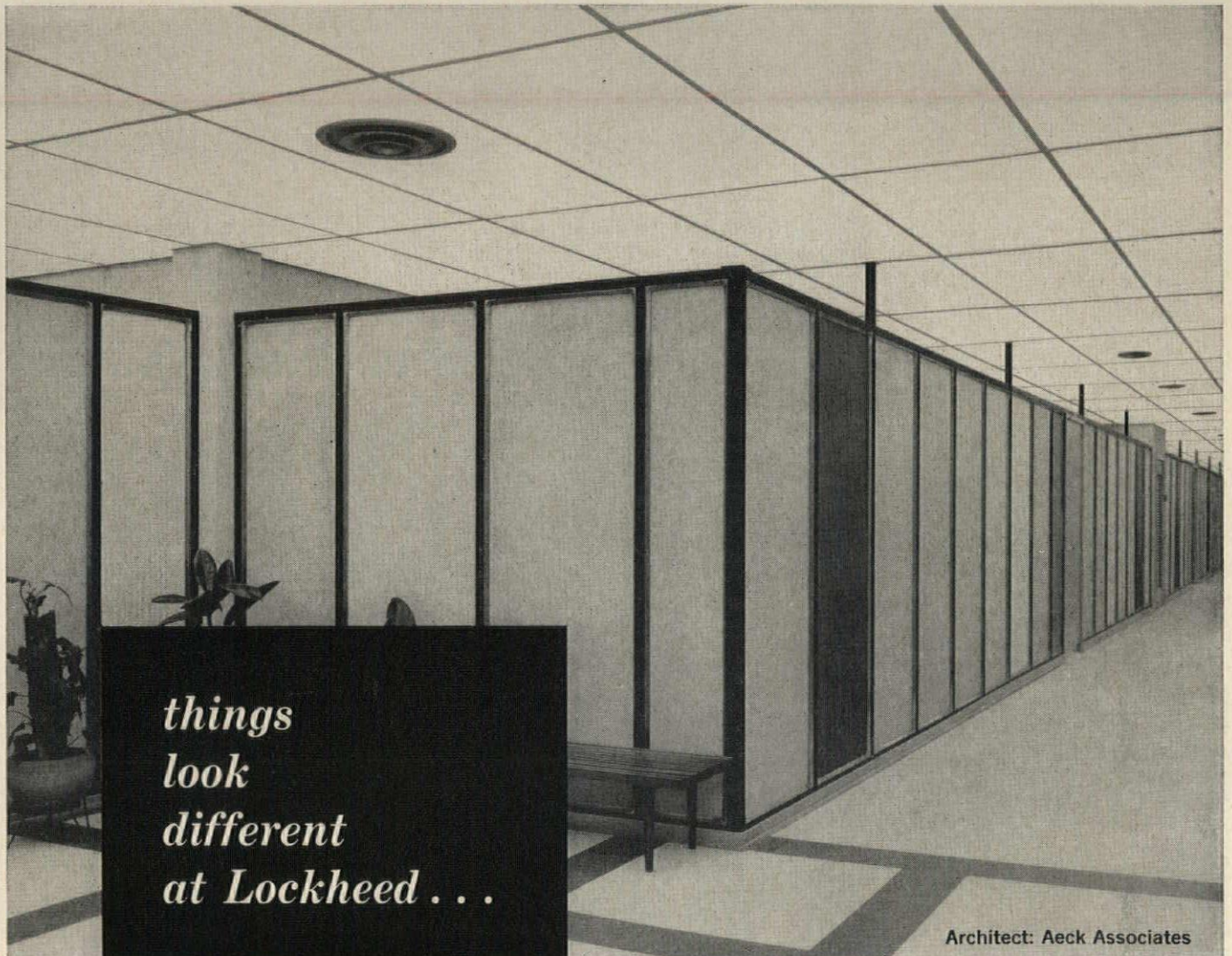
Wallmount™ Overshoe Racks mount on wall at base board. Keep overshoes paired, and off the floor. Come in matching units of Wallmount hat and coat racks. Have same interlocking and construction finish.

Multiple purpose 4 ft. wide wardrobe racks backed with chalkboard (The Chalkrobe®) or corkboard (The Corkrobe®). Come on glides or casters for extreme flexibility and efficiency in use of space. Also available with closed base for use as movable room dividers.

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Architect: Aeck Associates



Under HONEYLITE Luminous Ceilings*

Honeylite luminous ceilings played an important part in the striking modernization of Lockheed's Administration Offices at the Marietta, Georgia, plant. Made of durable Hexcel aluminum honeycomb, Honeylite delivers shadow-free, glare-free light into every corner of the working area below . . . at the same time enhances modern decor by concealing overhead pipes and ductwork.

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In new construction or remodeling, versatile Honeylite can help you achieve any desired lighting effect. For complete information on Honeylite, today's most advanced luminous ceiling system, write Department G-4.



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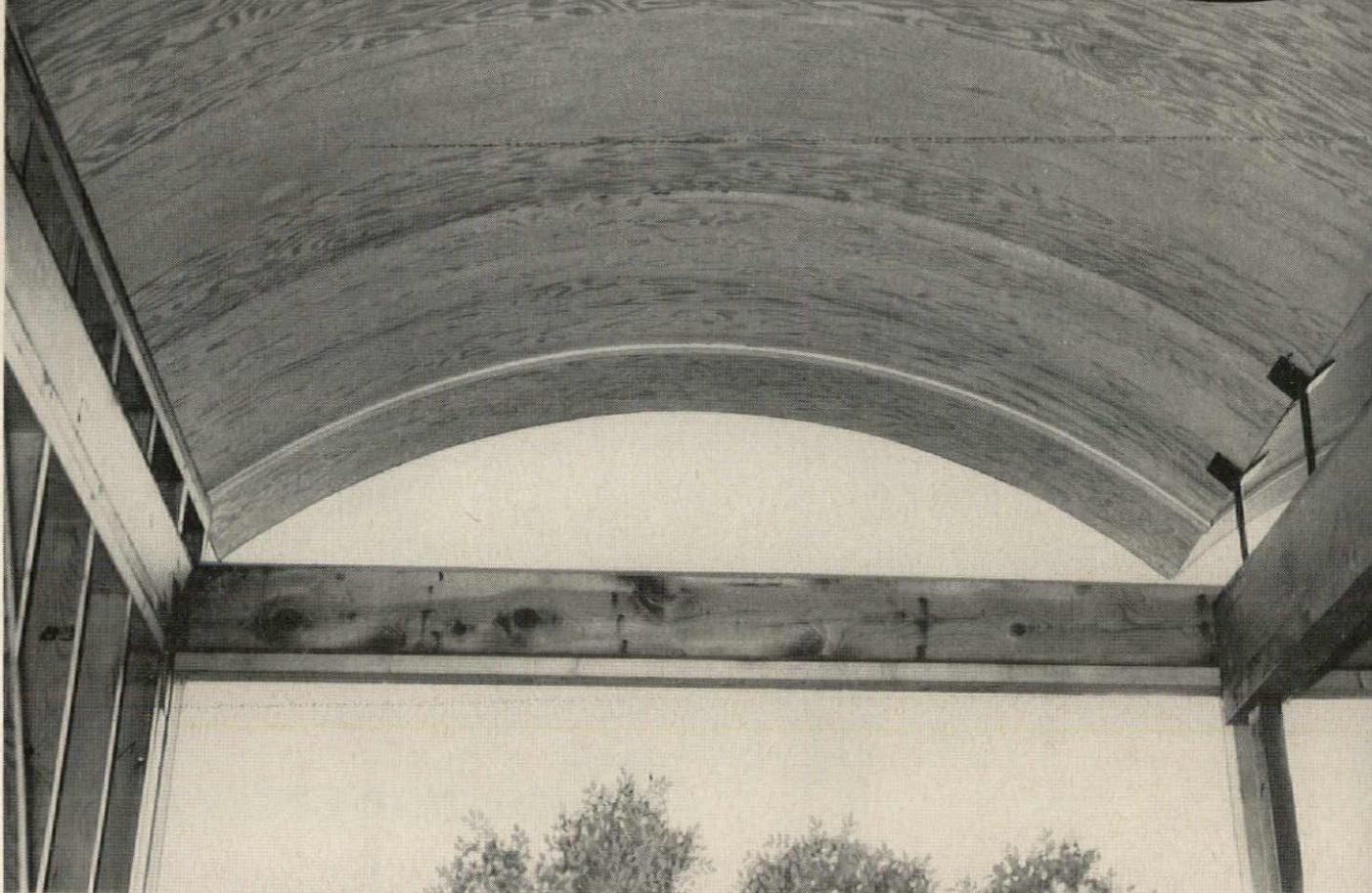
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6294

HINES



Hines Curved Panels make a graceful clerestory in a residence in Madison, Wisconsin. Architect: Emil Korenic, A. I. A.

NEW LOW COST WAY TO

Span a hundred feet or more with lightweight beams in almost any shape your imagination suggests. Or enclose an entire building in just a few hours with insulated panels that serve as subfloor, walls and roof. These are only a few of the construction feats possible with Hines Plywood Components.

This modern way to build permits both esthetic effects and construction economies that can't be achieved with conventional methods. Hines field engineers will be glad to give you *free* assistance in estimating and engineering for use of Hines Plywood Components.

Hines manufactures these components under conditions rigidly supervised by inspectors of the Plywood Fabricator Service, Inc., sponsored by the Douglas Fir Plywood Association. (In addition, Hines maintains its own fully equipped quality control laboratory.) And Hines provides reliable delivery.

BOX BEAMS—Structural members made by combining laminated lumber flanges and plywood provide high strength-to-weight ratio. Span up 120'. Can be manufactured in a variety of decorative shapes to precise specifications. Dimensionally stable. Basic efficiency of concept gives low in-place costs.

STRESSED SKIN PANELS—Most versatile plywood component is made of plywood laminated to seasoned lumber framing with hollow core that can be filled with insulation during fabrication. Panels are rigid and suitable for use as subfloors, roof decks or walls.

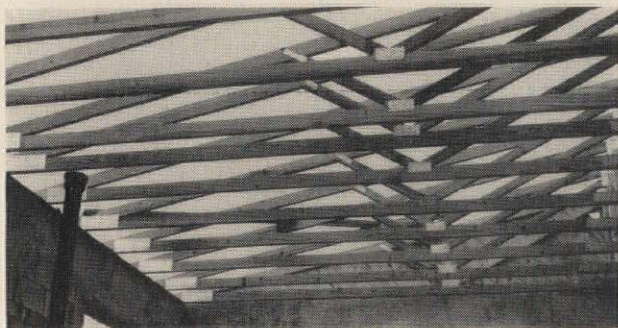
CURVED PANELS—The beauty of the arch combined with up-to-date efficiency. Hines Curved Panels are manufactured to exact radius, easily span up to 16'. Available filled with insulation. Strong, but lightweight and easy to assemble.

PLYWOOD COMPONENTS



In building at Rochelle, Illinois, Hines Box Beams span 35'. Stressed Skin Panels form roof deck. Architect: Gene C. Jackson.

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GANG-NAIL® GUSSETS MAKE HINES TRUSSES EXTRA RIGID
Hines Trusses are built with patented Gang-Nail metal gussets and superior grades of kiln-dried Douglas Fir and Western Hemlock for the highest quality. Use Hines Trusses to speed building, save labor costs, reduce lumber waste, and eliminate interior bearing walls.

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Just call or write the man from **HINES**

Edward Hines Lumber Co. Sawmills at Hines, Westfir, Dee and Bates, Oregon. Other plants: Plywood, Westfir; Hardboard, Dee; Millwork, Baker and Hines, Oregon. Engineering and Development Division: Hood River, Oregon.

Edward Hines Lumber Company Dept. 232
200 South Michigan Avenue, Chicago 4, Illinois

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C/S Sun Controls

in extruded aluminum for the patient's comfort, soft diffused light, vision without glare, and a pleasing climate.

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in extruded aluminum with permutable patterns that provide infinite variations, in rhythm, light, color and texture.

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- West Grant Street, Escondido, California

Washington Topics

of \$485 million to 87 firms. Last year 58 companies were planning to allocate \$464 million for 88 projects in 73 communities of 25 states.

The continued upswing in announced expenditures for the construction of new laboratories is especially significant, M.C.A. said, for to a large degree they equate the prospects for continued growth with the results of successful research. The industry long has been the leader in privately-financed research and its total research budget last year topped \$600 million.

The three-year figure of \$220.5 million for laboratory construction in this year's survey shows a substantial rise over the \$157.2 million last year, and the \$107.2 million the year before. The industry has been marketing more than 400 new products annually during the past several years.

**Two New Soil Study Projects
Announced by BRAB**

The Building Research Advisory Board announced a new national study of soil fills for single and multi-story residential properties. This is another in a continuing series of research studies carried on by BRAB for the Federal Housing Administration. It comes under a contract between FHA and the National Academy of Sciences—National Research Council.

Two specific considerations in soil fills will be the objective of the Board's study. The first deals with the design and construction of proposed non-hydraulic soil fills and the evaluation of underlying strata to support fills. The second phase will evaluate existing non-hydraulic and hydraulic soil fills, including the underlying soils supporting fills.

Project director for BRAB is John Wilkes.

Another development in earth study announced by the Building Research Institute was a project under sponsorship of the International Cooperation Administration carried out at the Texas Transportation Institute. This is evaluating existing methods of earth construction, such as adobe bricks, rammed

continued on page 390

**CONSTRUCTION BY
ADHESION®**

**LEADING
ARCHITECTS
AGREE**

**“It's wise to
specify the
Miracle 'Thin-Set'
method of setting
Clay Tile”**

TO BE SURE of over-all performance, specify Miracle—the quality adhesive. Let's take a look at the record. Miracle is tried and true over the years. Proof? Miracle tile installations can be found in subways, tunnels, hospitals, office buildings, schools and government projects all over the world. Swimming pools in the Dominican Republic, hospitals in Switzerland, hotels in Canada, projects in the Arctic — all easily installed by the Miracle 'Thin-Set' Method.

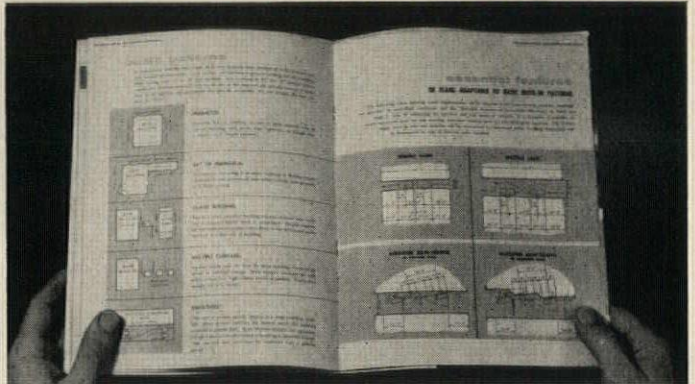
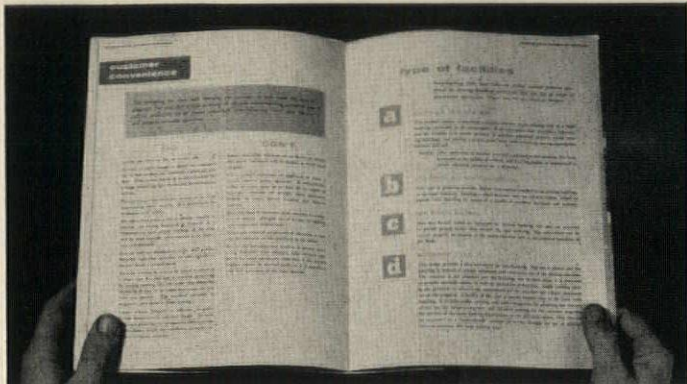
In addition, Miracle Adhesives Corporation offers architects and contractors full cooperation in providing specifications and details for all types of tile installations — showers, baths, sink tops, roof decks, promenades, facings, ceiling work.

**MIRACLE
ADHESIVES
CORPORATION**

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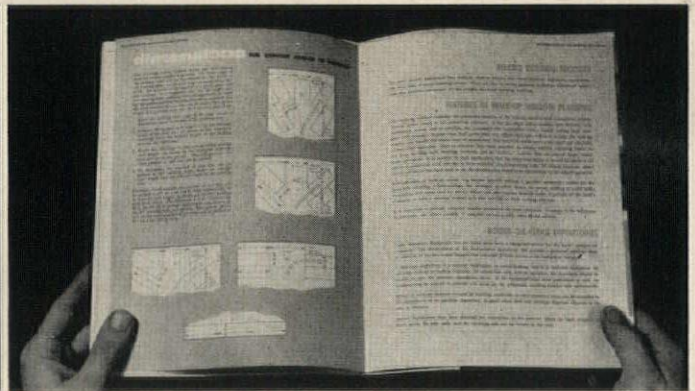
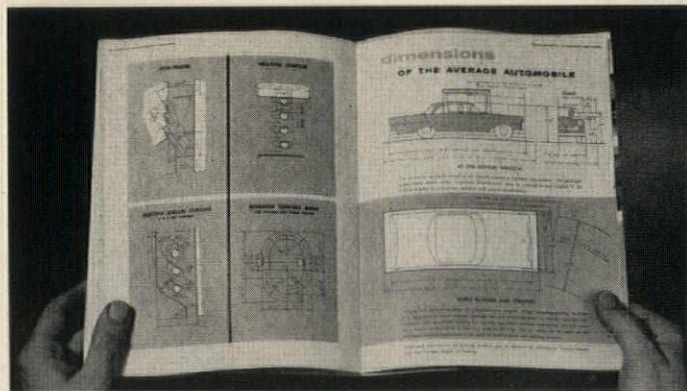


20 years of Auto-Banking experience... at your service!



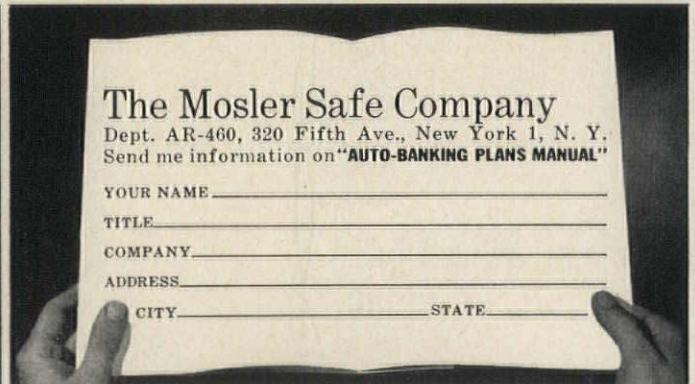
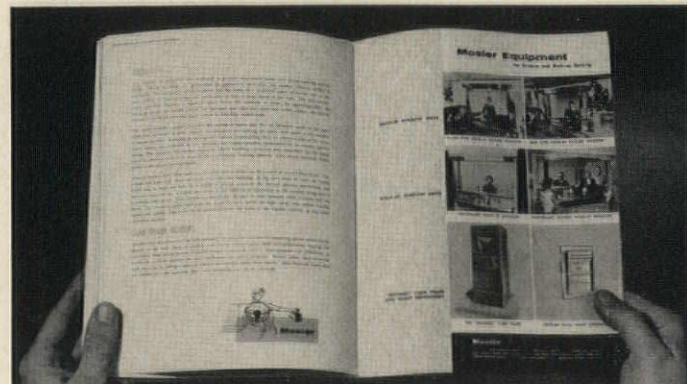
The first drive-in window specifically designed for motor-banking service was installed by Mosler in 1940. Ever since, architects have drawn on Mosler's

unparalleled experience in Auto-Banking to solve a great variety of knotty problems arising from the need for modern, *practical*, drive-in facilities.



Now, Mosler has put much of this valuable experience in a 16-page, carefully detailed brochure that's

yours for the asking. It describes *types* of installations, related facilities, covers conversions as well as



new installations, points out pitfalls and lists a variety of design features that make for efficient, comfortable

motor banking... all based on actual experience. Above are sample pages. Send for complete brochure, today.

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Send me information on "AUTO-BANKING PLANS MANUAL"

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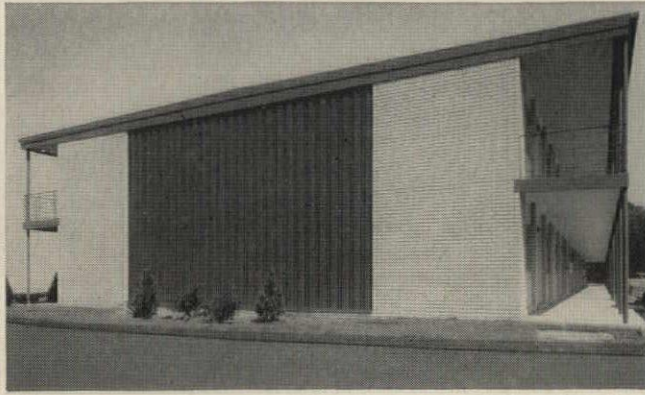


MAHON CURTAIN WALLS

IN NATURAL OR COLORED METALS

**provide an ideal combination—
high design potential...
low-budget installation**

Mahon Curtain Walls of charcoal-gray enamel are functionally and attractively used in this new motel at Plymouth, Mich., General Contractor: Don Primo Co.



Even used with dissimilar building materials (as shown in this rear view of the Hines Park Motel) Mahon Curtain Walls integrate easily for modern design expression.

The design flexibility of Mahon Metal Curtain Walls gives you a practical answer to many architectural and construction problems. Walls for the long runs of a giant industrial plant... for the touch of individuality in small commercial buildings or for the vast sweep of modern, multi-story buildings... exterior walls that glisten in clean metal or glow in dynamic color... walls that decorate, protect and solidify. Mahon Curtain Walls will meet your every requirement. They can be erected up to 60 feet in height without a horizontal joint... vertical joints are invisible. Quality Metal Walls from Mahon cost no more when specified nor do savings stop with installation—maintenance is low, durability is long. To learn how Fiberglas-insulated Mahon Curtain Walls fit into your project, contact your local Mahon representative, write for descriptive catalog or see Sweet's Files.

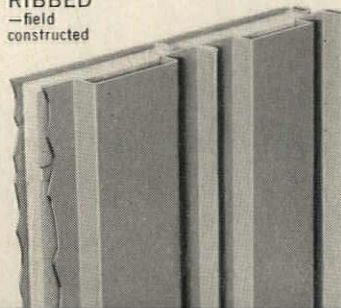
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- Permanent Concrete Floor Forms

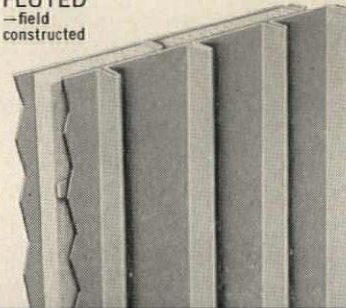
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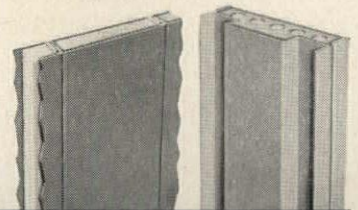
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—field
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FLUTED
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FLUSH or FLUTED
PREFAB PANELS



Mahon Curtain Walls are supplied in galvanized, porcelainized, enameled or stainless steel, and aluminum in many finishes, each in three types

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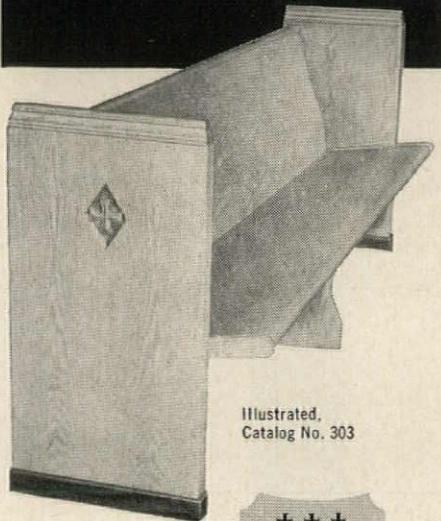
Manufacturing Plants—Detroit, Michigan and Los Angeles, California.
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Crestwood

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the church seating with an important PLUS!

Church architects have been demanding a pew with ends that wouldn't warp or crack—a problem that has plagued the industry for years. The new **CRESTWOOD** by Endicott is especially designed and constructed for the church that cannot control temperature and humidity seven days a week!

The beautiful oak veneered pew ends contain a specially developed core, which eliminates warping and cracking, provides greater strength as well as greater screw holding qualities. After being submerged in water for more than two weeks, these cores absorbed less than 1/10 of 1%—so little it could hardly be measured.

Pew ends available in Contemporary, Gothic and Colonial styles—also all types of backs and seats, including Endicott's time-tested CUSHION-EZE upholstered foam cushioning.

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Washington Topics

earth, and others. New methods of using earth for construction of durable and attractive homes will be developed. The information is expected to be of particular interest to countries of the Far and Middle East where the purchase of conventional materials for housing is not economical, but where natural earth for the purpose is readily available.

FHA Accepting Applications On Nursing Homes

All FHA field offices now have been given authority to accept applications from approved mortgagees for mortgage insurance on proprietary nursing homes.

Nursing home mortgage insurance is, actually, a new venture for the FHA. Commissioner Julian H. Zimmerman noted that the program had been put together after many hours of thorough analysis and planning. He had the advice of industrial authorities serving on advisory committees.

"It is aimed at effecting the rehabilitation of sound existing nursing homes as well as the construction of new ones," Mr. Zimmerman said.

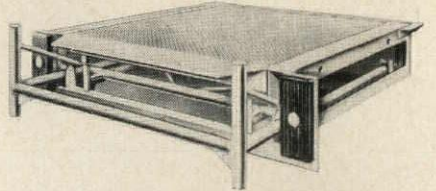
The new insurance plan was authorized in the housing act passed by Congress last year. FHA said it would help provide nursing home capacity and related medical services for people of all ages—convalescents and others—who are not acutely ill or in need of hospitalization but who do require such care and services.

Under the law, any such nursing home, to be eligible for the government mortgage insurance, must be for the accommodation of such persons. It must also be licensed or regulated by the state—or authorized state subdivision—in which it is located. The skilled nursing care and related medical services must be prescribed by, or performed under the general direction of, persons licensed to provide them in accordance with the laws of the state.

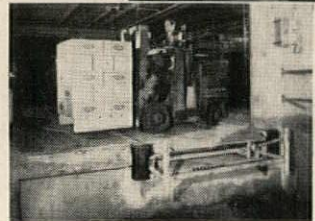
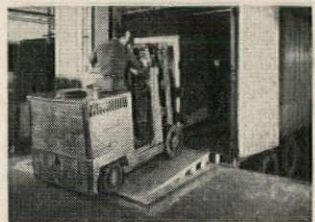
Within the statutory limits of \$12.5 million, the maximum insurable mortgage amount is 75 per cent

continued on page 398

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TO
PEAK
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DOCKBRIDGE
AUTOMATIC LOADING RAMP



Specified Most Frequently Because of Installation Ease, Adaptability and Proficiency

You can stake your reputation on "DOCKBRIDGE" with utmost confidence. Throughout industry this fully-automatic, truck activated loading ramp is keeping trucks rolling and producing—eliminating wasted man hours. It accepts trucks up to 16" above and down to 10" below dock level. Provides for full cross traffic when not in use. No need for costly, complicated hydraulics or jury-rigged mechanisms. Only self-contained package ready to install in a prepared dock pit 17½" deep. Where pit is impractical, addition of four sturdy legs make "Dockbridge" a free-standing unit. Adaptable to either existing dock or new construction. Three models available: 6' x 6', 6' x 8', 6' x 10'. Write for free catalog.



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Visit the H. J. Heinz Company's new Research Center and you see a strikingly attractive structure . . . *and every bit as functional!* Here—every design detail, every material used contributes to greater scientific productivity.

Within the many laboratories—equipped to test foods for taste, aroma, color, appearance—there's a marked accent on cleanliness. Every piece of equipment is planned to prevent contamination, to stay clean and rust free. That's why corrosion-resistant Transite Industrial Vent Pipe was chosen to vent every one of the Research Center's laboratories.

Whether used indoors or out, Transite offers you many advantages. Made of asbestos-cement, Transite retains its original, attractive appearance. *Saves on upkeep* because it never needs painting or preservative coating. *Saves on maintenance* because it resists the attack of most gases, mists, fumes and dusts . . . is unaffected by weather.

For further information on Transite Industrial Vent Pipe, write to Johns-Manville, Box 14CO, New York 16, N. Y. In Canada, Port Credit, Ontario.

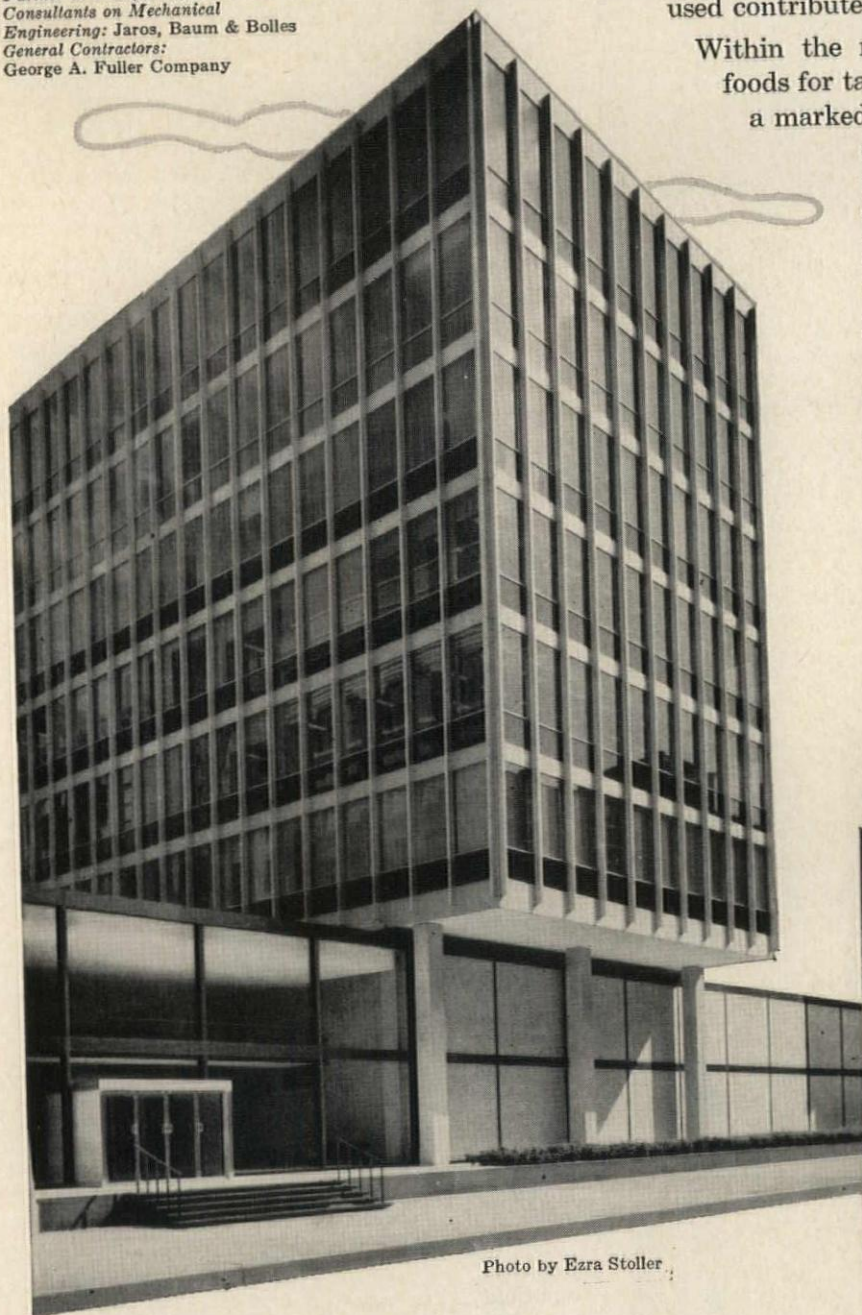
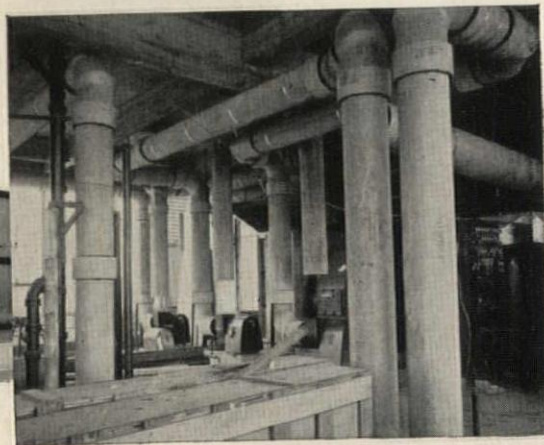


Photo by Ezra Stoller

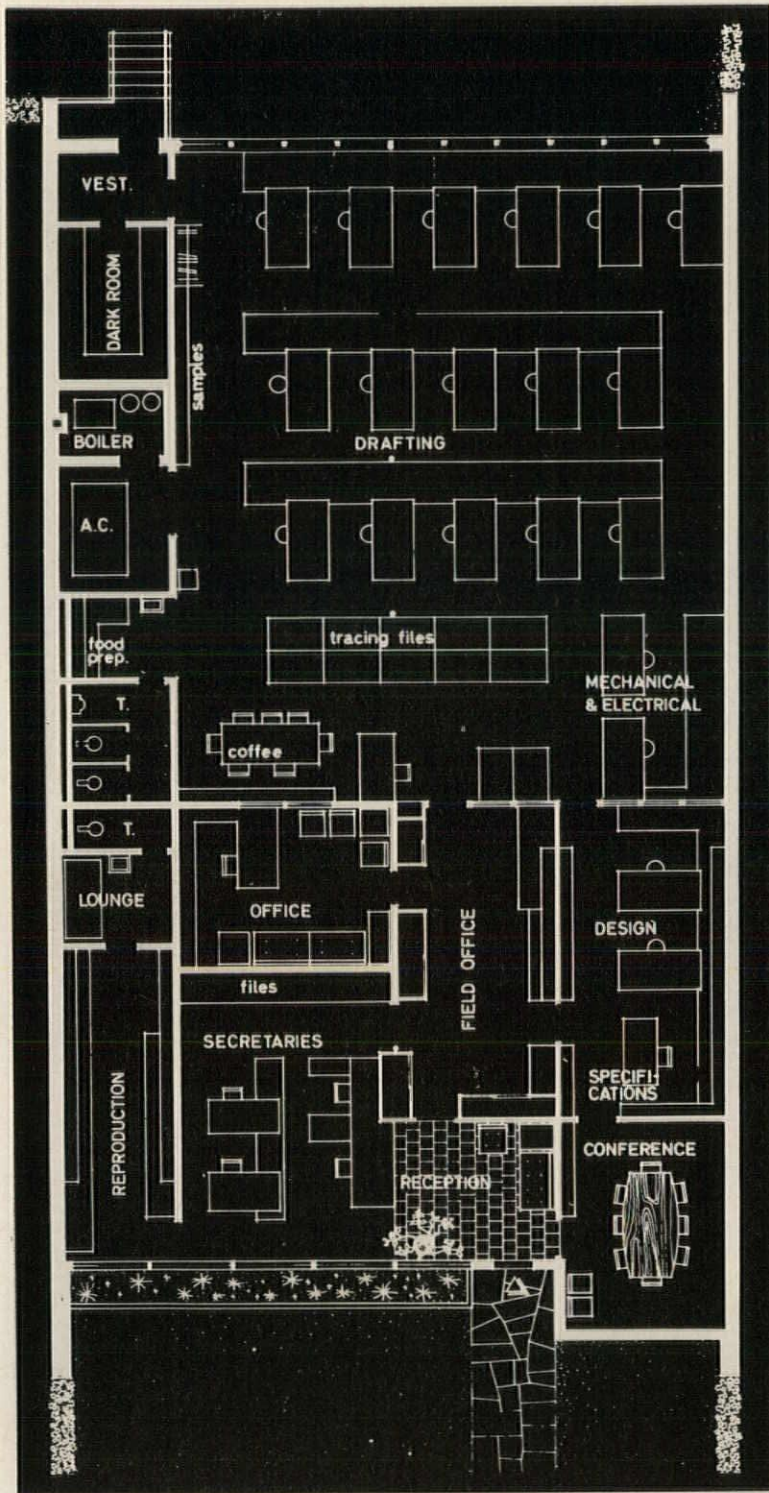


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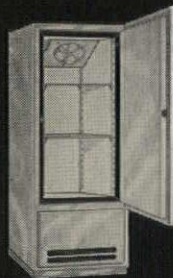
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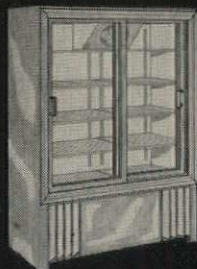
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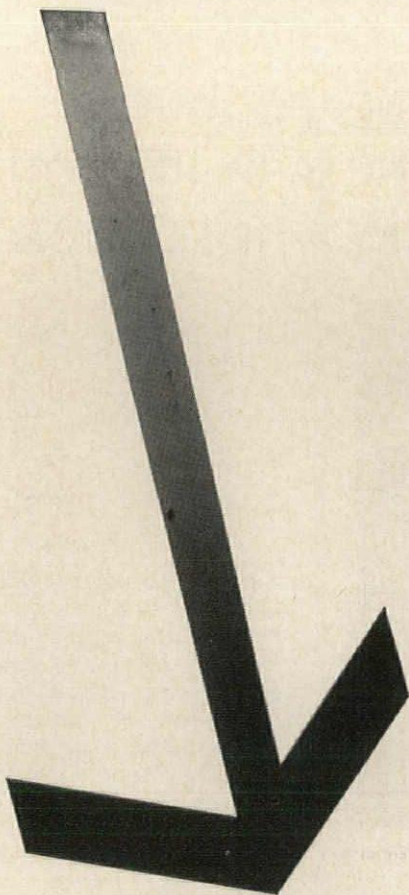
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Washington Topics

of the FHA-estimated value of the property or project when proposed improvements are completed. The maximum interest rate is 5¼ per cent; the FHA mortgage insurance premium, half of one per cent. The mortgage is amortized over a period not exceeding 20 years.

FHA explained that it cannot insure a nursing home mortgage without first receiving from the state agency involved certification that the home is needed and that reasonable minimum standards for licensing and operating nursing homes are in force in the state. It also must have assurance that such standards will be applied and enforced with respect to every nursing home on which FHA provides mortgage insurance.

Mortgagors may be corporations, trusts, partnerships, or individuals approved by the agency and regulated by charter or agreement. Projects can be either new or rehabilitated homes consisting of not less than 20 beds each. The mortgages may include advances made during construction.

Said Commissioner Zimmerman: "Our minimum property standards for nursing homes apply to all new construction projects and, with specified minor requirement, to all rehabilitation projects. They include standards for site and building planning, for construction and materials, and for mechanical equipment. They specify fire protection standards that all structures in the project must meet with respect to fire-resistant construction and to fire protection and detection systems."

FHA advised sponsors interested in developing nursing home projects under the Section 232 program to present their proposals to officials of the FHA office serving the area in which they plan to locate, and to take this step before making formal application for an insured mortgage. The proposal should contain enough detail for the office to determine whether or not the project is feasible and the sponsors are acceptable. It should include full information about the property, about a definite care and service plan for occupants, and about the sponsor's qualifications to develop and carry the project.

SPECIFY

Parker

ACCESSORIES

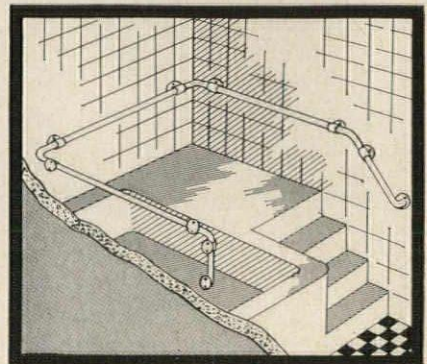
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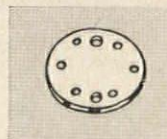
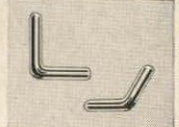


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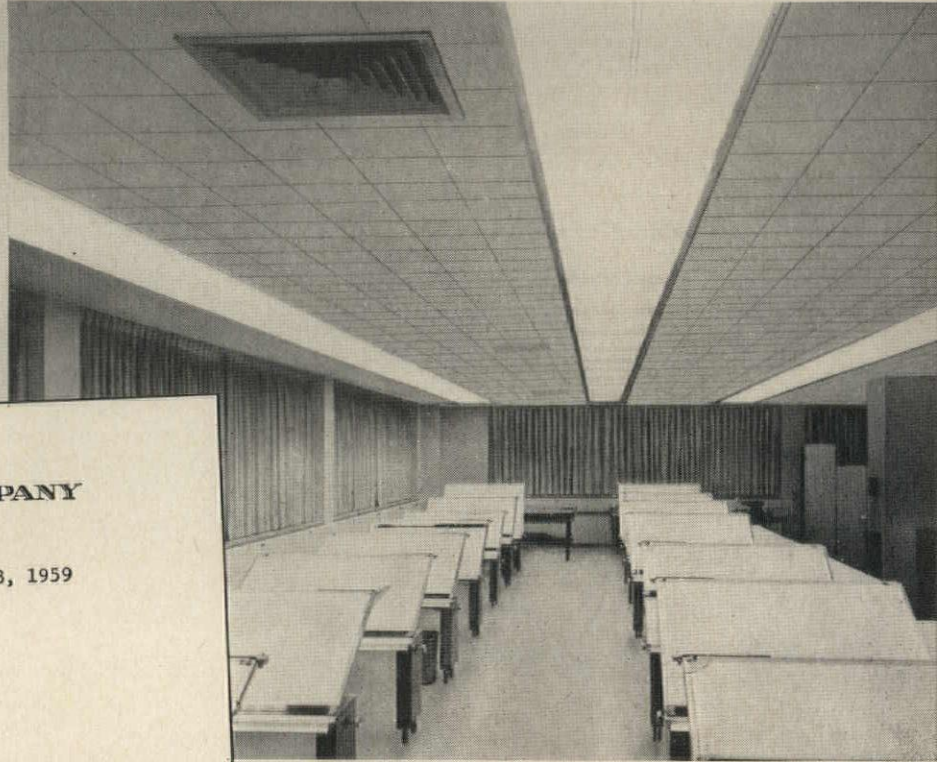
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The installation has proved very satisfactory from the visual comfort and the illumination level. The graceful styling lends itself beautifully to our surroundings with particular reference to the shallowness of the unit.

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Very truly yours,

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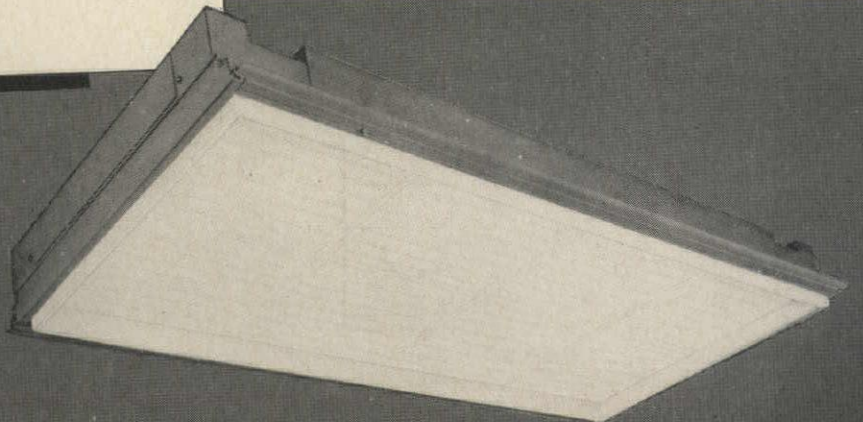
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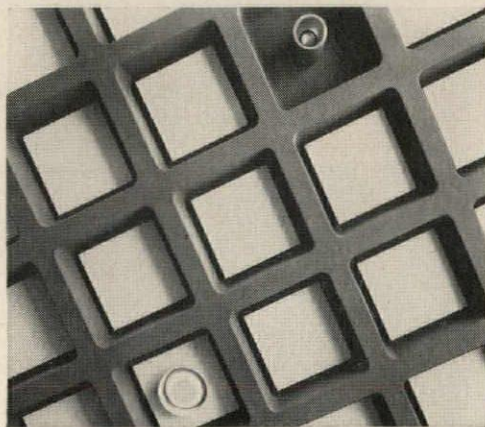


The corridor of a Fred Harvey Oasis Restaurant on Tri-State tollway near Chicago, illustrating the dramatic, decorative treatment possible with Steeldome construction. The exposed concrete waffle ribs of the ceiling are painted charcoal gray, sounding a new note in decor motif.

Architect & Engineer:
Pace Associates.
General Contractor:
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Straight-up view of two-way concrete joist construction formed with Steeldomes. The exposed concrete has been painted and the voids treated with acoustical tile. Voids also provide a new convenience for the placement of lighting fixtures, ventilators and intercom equipment.



Wide open space, free of columns, is economically attained in the general restaurant area with Steeldome construction. Here again the fresh, new decorative scheme is made possible by attractively painting the exposed concrete waffle design ceiling, adding charm to the room.

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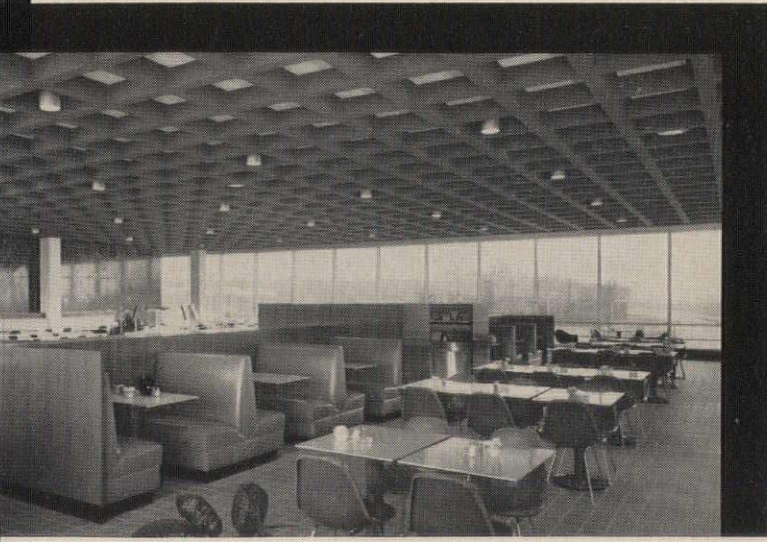
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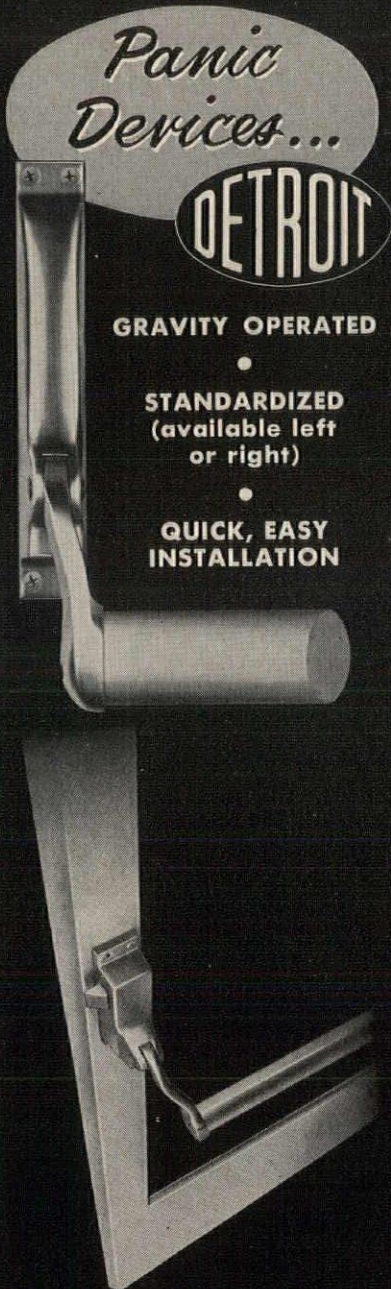
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ROSEVILLE, MICHIGAN

A Washington Report

continued from page 54

Act provisions. This shows that on January 1, 1960, there were throughout the country 290,979 beds of this type. But under Hill-Burton standards for fire, safety, sanitation, functional layout, and desirability of location, only 58 per cent of these could be rated acceptable. A total of 120,838 beds was "nonacceptable."

It should be noted that the figures do not include all facilities providing nursing home care, as most states exclude from their inventories all unlicensed homes of three or less beds. The total bed count, however, has risen from an estimated 200,000 in 1954.

Despite the rate of growth in recent years, the states estimated total need on January 1 to be 427,171 beds based on the planning ratios of one to four beds per thousand population. (Federal Hill-Burton regulations allow the states to program from one to four beds per thousand population, according to their individual views of need.)

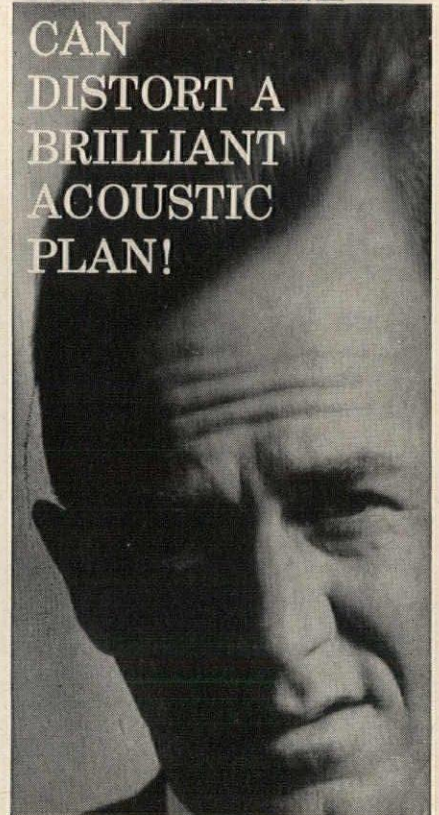
The Public Health Service figures show that of the 257,030 additional new beds now needed, 120,838 would be to replace existing unsuitable beds and the other 136,192 to fill unmet demands for care. It was pointed out that the 427,171 beds would provide 1.47 bed per thousand population, a conservative figure based on a 1957 study. This study produced replies from physicians indicating a need of four beds per thousand population if ability to pay or shortages of facilities no longer limited the patient's ability to receive care.

Said the McNamara subcommittee: "Assuming that present concepts of institutional care for the chronically ill and disabled in nursing homes do not change significantly in the next decade, it is obvious that larger capital outlays for new facilities are required to provide as a minimum safe, clean efficient facilities in which the sick and elderly may receive care and live with a modicum of dignity and comfort.

"Where these monies are to come from is a major question in itself. It is likely that both private and public investment will be required to solve this problem. Particularly is this true in view of the demand for higher standards of construction, increasing cost of building, and higher costs of borrowing money."

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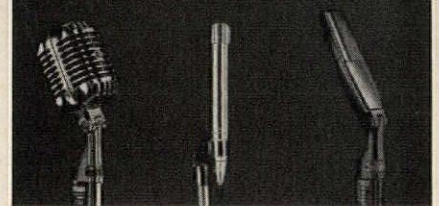


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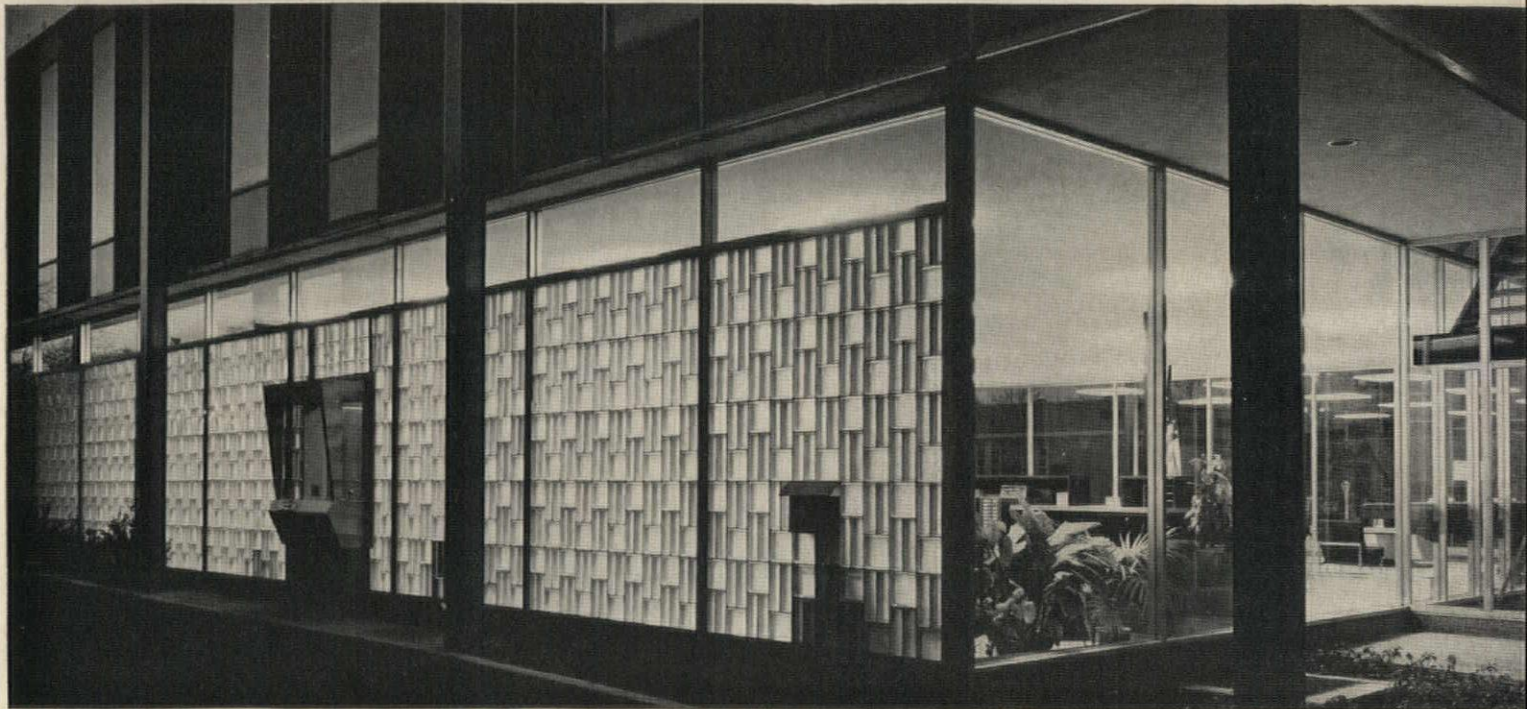


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example: PC 4 x 12 Glass Blocks give dignity a new flair at Media Savings & Loan

The retreat from cold austerity in bank design has called for a growing exercise of the architect's creative authority over his materials. That, in turn, has called for materials which offer the architect increased latitude in their design use. That is what the PC 4 x 12 is all about. Design authority.

Here—in a striking dimensional variation of the PC Glass Block—the architect has been given almost limitless capacity to inject new visual vitality into the daylight wall. Take for example the design by architects Clifford E. Garner—Arthur B. White, Associates, Philadelphia, Pa., for the Media Federal Savings and Loan Assn. Building, Media, Pa. Creative interpretation of the light transmitting wall presents an attractive contemporary flair without sacrificing the characteristic dignity of the building.

Like the new Sculptured Glass Modules described on page four of this advertisement, the PC 4 x 12 represents Pittsburgh Corning's constant attention to the architect's need for materials which free design from purely mechanical constriction.

P I T T S B U R G H



C O R N I N G

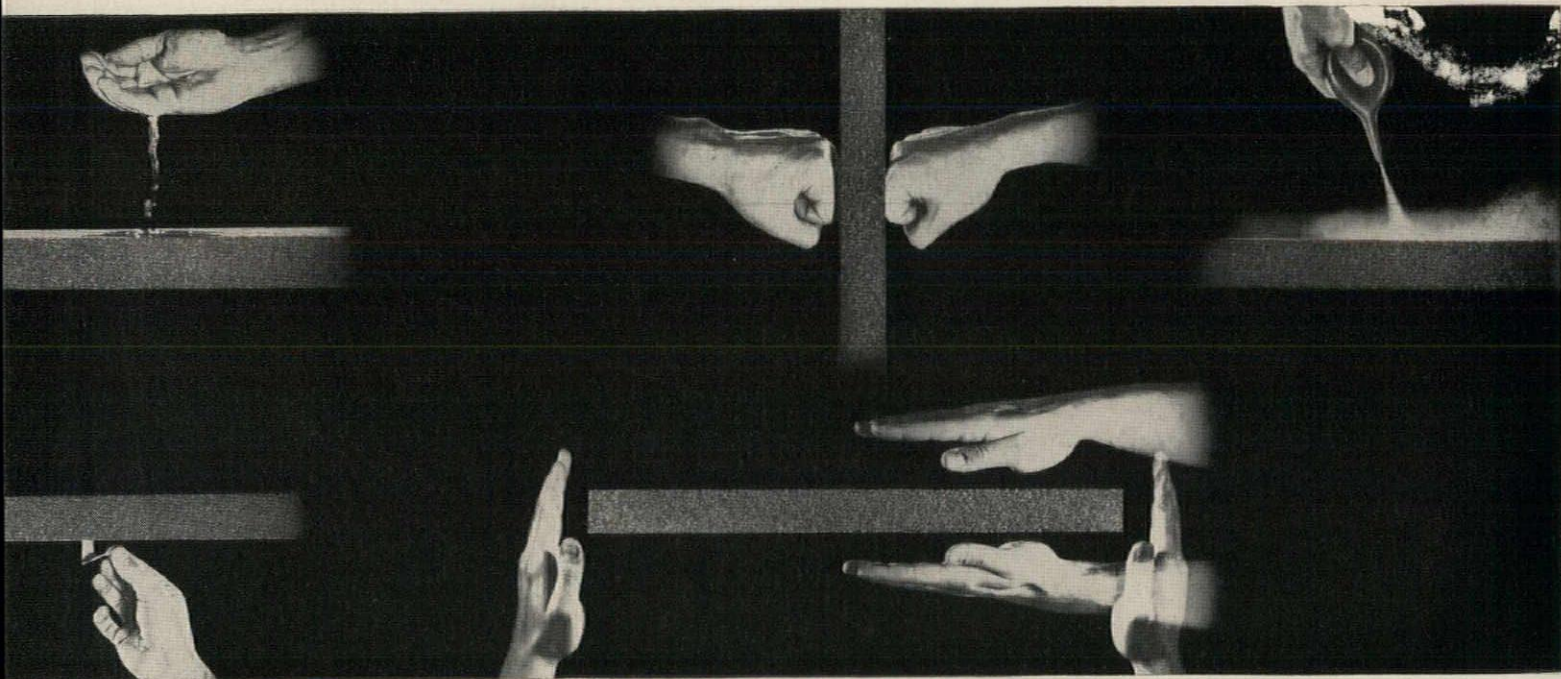
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P I T T S B U R G H



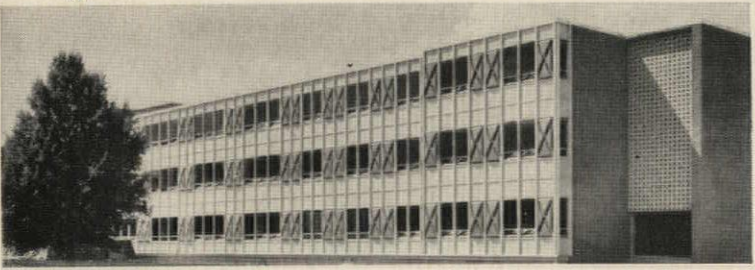
C O R N I N G

- A. JEFFERSON MEMORIAL HOSPITAL**, Pine Bluff, Arkansas
Architects: Reed & Willis & Whittenberg, DeLong and Davidson, Pine Bluff and Little Rock, Ark.
Panel Fabricator: Architectural Porcelain Division, Caloric Appliance Corp., Tipton, Pa.
- B. FORD CENTRAL OFFICE BUILDING**, Dearborn, Michigan
Architect: Skidmore, Owings & Merrill, New York, N. Y.
General Contractor: Bryant & Detwiler Co., Detroit, Mich.
Panel Fabricator: Ingram-Richardson Mfg. Co., Beaver Falls, Pa.
- C. EXECUTIVE HOUSE**, Chicago, Illinois
Architect: Milton M. Schwartz & Associates, Inc., Chicago, Ill.
Panel Fabricator: Haskelite Mfg. Corp., Grand Rapids, Mich.
- D. RCA CHERRY HILL OFFICE**, Camden, New Jersey
Architect: Vincent Kling, Philadelphia, Pa.
General Contractor: Turner Construction Company
Panel Fabricator: Ingram-Richardson Mfg. Co., Beaver Falls, Pa.
- E. GULF OIL CORPORATION**, Bala-Cynwyd, Pennsylvania
Architects & Engineers: George M. Ewing & Co., Philadelphia., and Welton Becket, FAIA & Associates, Los Angeles, Calif.
Curtain Wall Contractor: Williams & Williams Products Corp., New York, N. Y.
Panel Fabricator: Seaporcel Metals, Inc., Long Island City, N. Y.

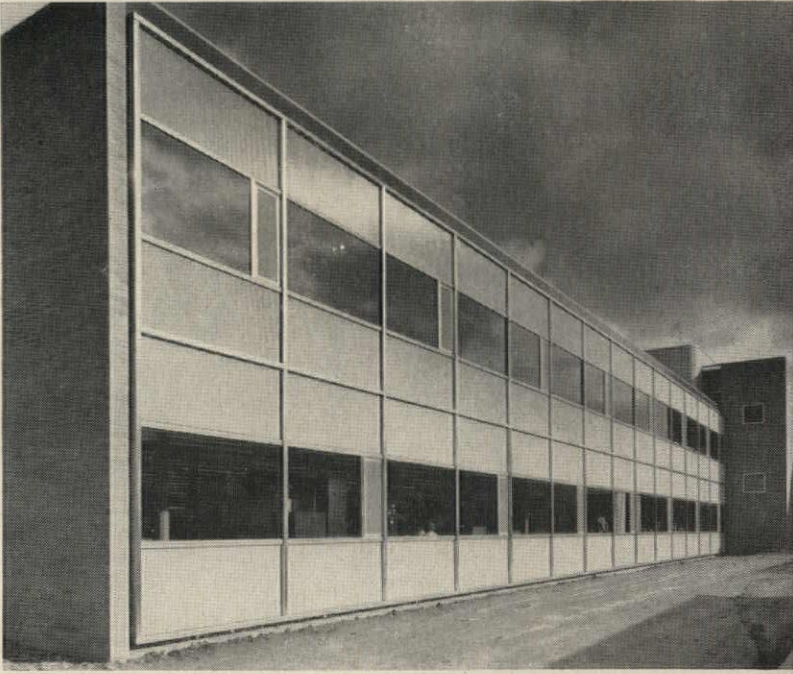


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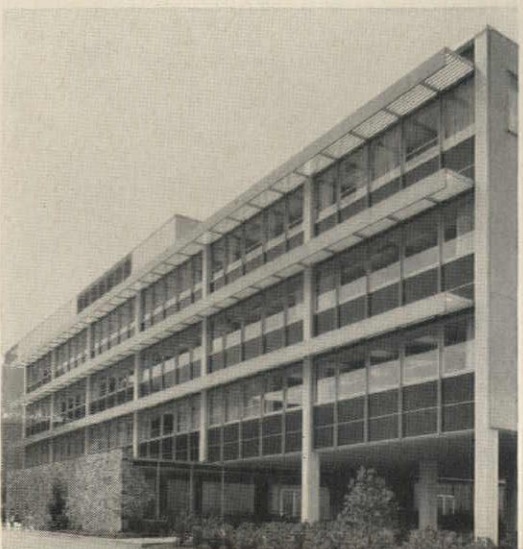
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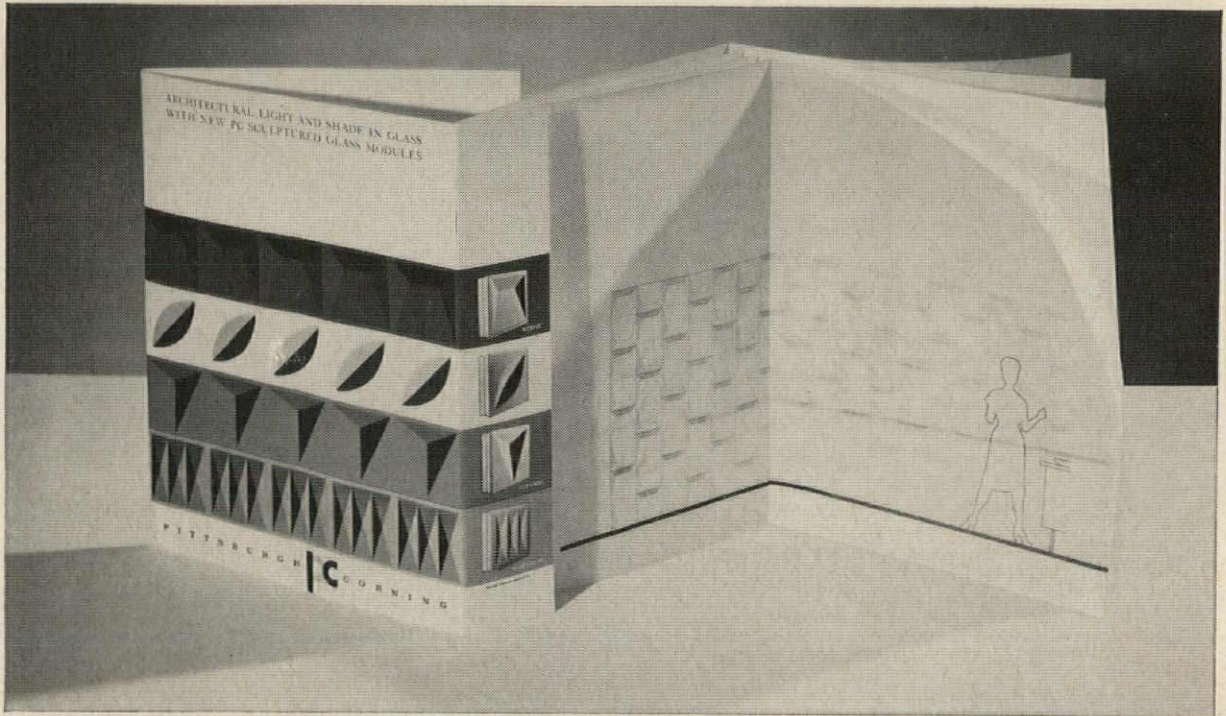


D



E

example: new Sculptured Glass Modules for design vitality through an artful use of architectural light and shade



This bulletin discusses and illustrates Sculptured Glass Modules—Pittsburgh Corning's latest contribution to the vitality of building design. Inside or out, a wall or partition can now gain full textural impact from the artful interplay of light and shade. Patterns pressed deep into the surface of each module create nearly endless capacity to achieve a variety of effects hitherto impossible. And a single material carries the effect on both sides of a wall, partition or panel. Four patterns in 12 colors and clear are currently available—on architects' specifications only. Check coupon for your copy.

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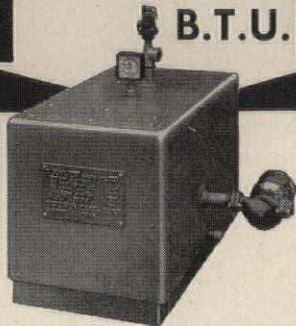
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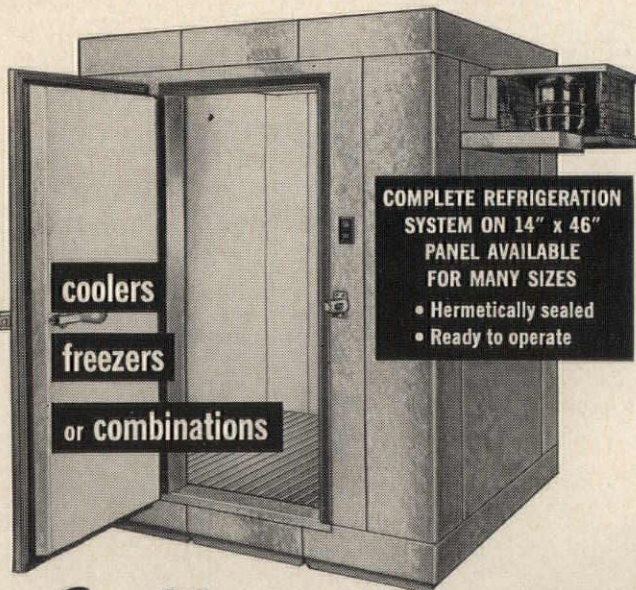
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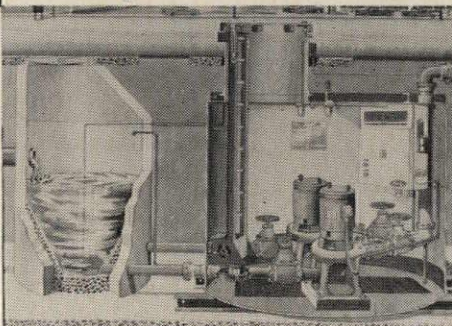
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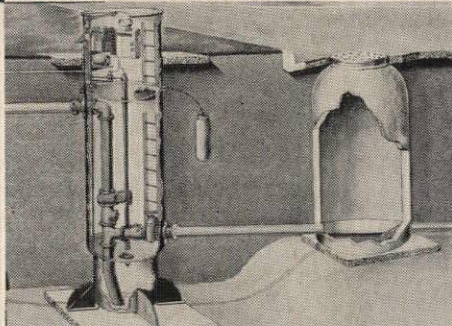
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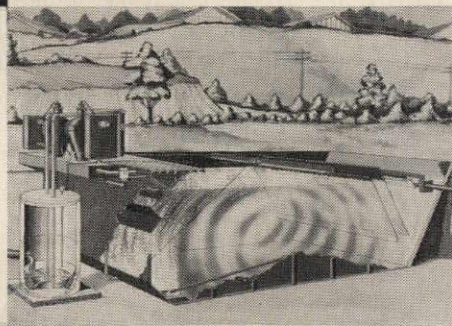
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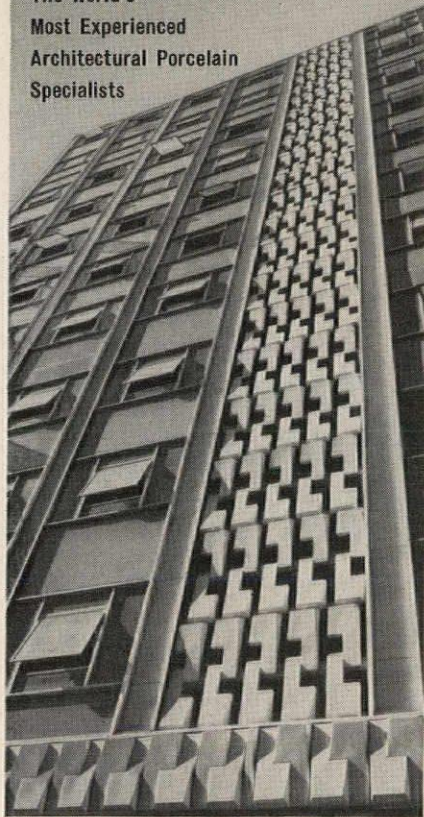
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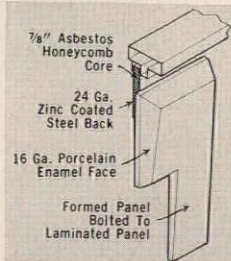


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Required Reading

continued from page 72

Two . . .

undertaken by the publishers of *Milan Today* to show the work of the individual architects "who have contributed to the development of this Milan." Mr. Minoletti would seem to be a good choice for the start of such a series. Though his work is perhaps not as well-known in this country as that of some of the other Milanese architects, he displays the versatility and range of interests we have come to expect from the Italians—buildings, display design, ship and plane interiors, a prefabricated bathroom, and some interesting, if abortive, plans for dealing with Milanese traffic. All text and captions are written in English, as well as in Italian, French, German and Spanish.

Mr. Pedersen's book on the Danish architect Arne Jacobsen is a revised edition of an earlier work, replacing projects with stories on the completed buildings, and adding material on new projects. The author hints in his introduction that Mr. Jacobsen finds architecture easy; whether this is true or not, certainly his buildings all have the grace which makes a difficult accomplishment *look* easy—from his early houses, through housing projects so human in scale and detailing (particularly the row housing) that Americans are likely to feel a twinge of conscience, to the cleaned-lined SAS hotel and Christenson factory. Although written in Danish, the book carries a full English translation, and captions are all in both Danish and English; plans, unfortunately, are keyed in Danish, but are still fairly readable.

How to See Architecture

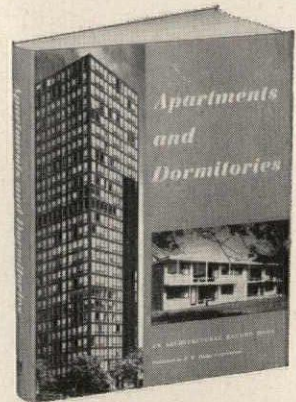
EXPERIENCING ARCHITECTURE. *By Steen Eiler Rasmussen; translated by Eve Wendt. Published jointly by Technology Press, Massachusetts Institute of Technology, Cambridge 39, and John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. 251 pp., illus. \$4.50.*

Though it was written with a hypothetical 14-year-old in mind, this book

continued on page 414

the complete survey of multiple dwellings

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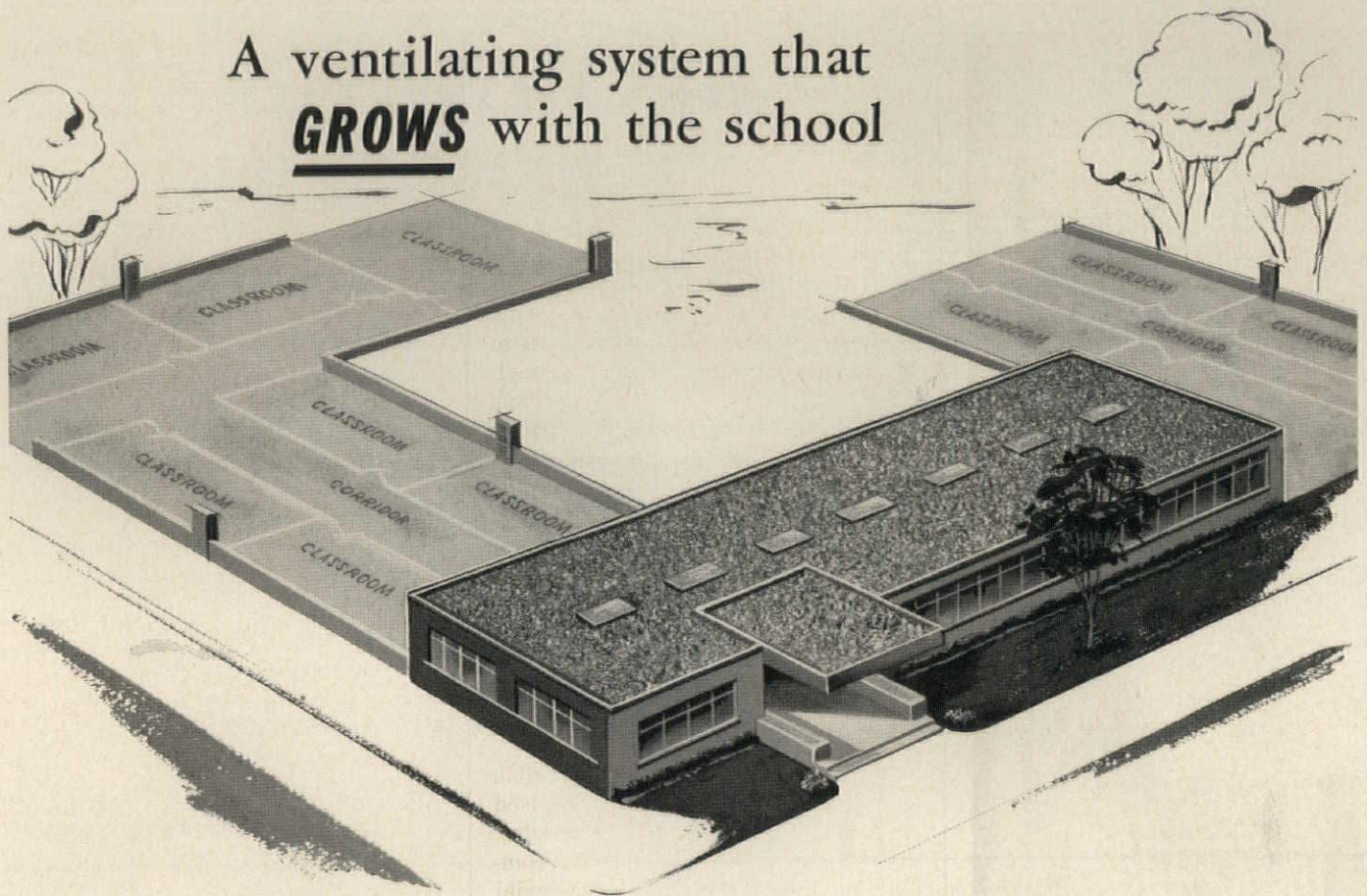
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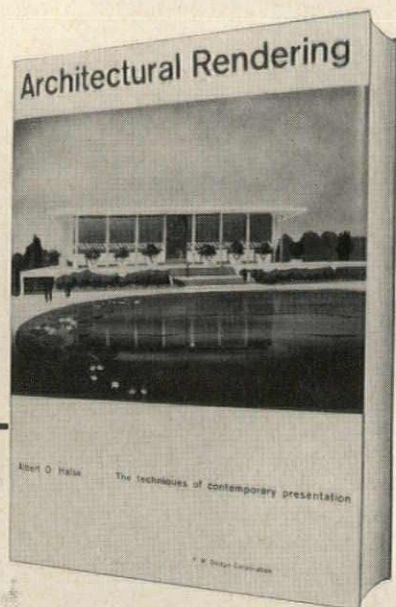
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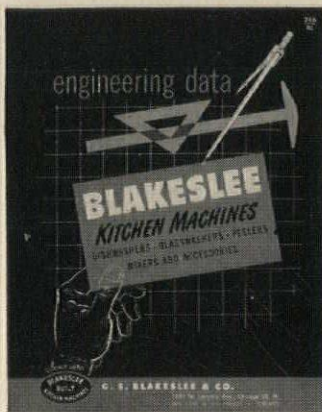
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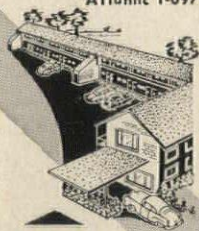
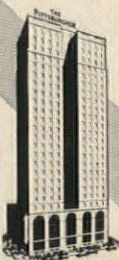
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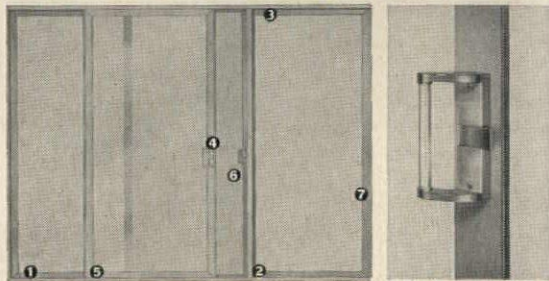
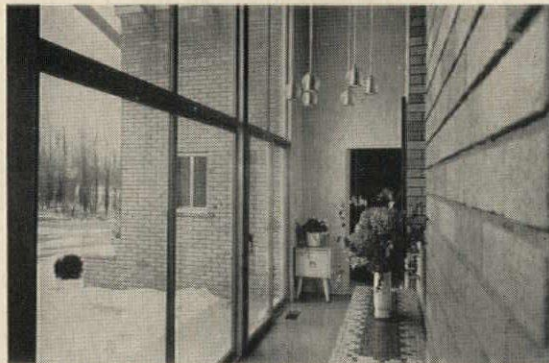
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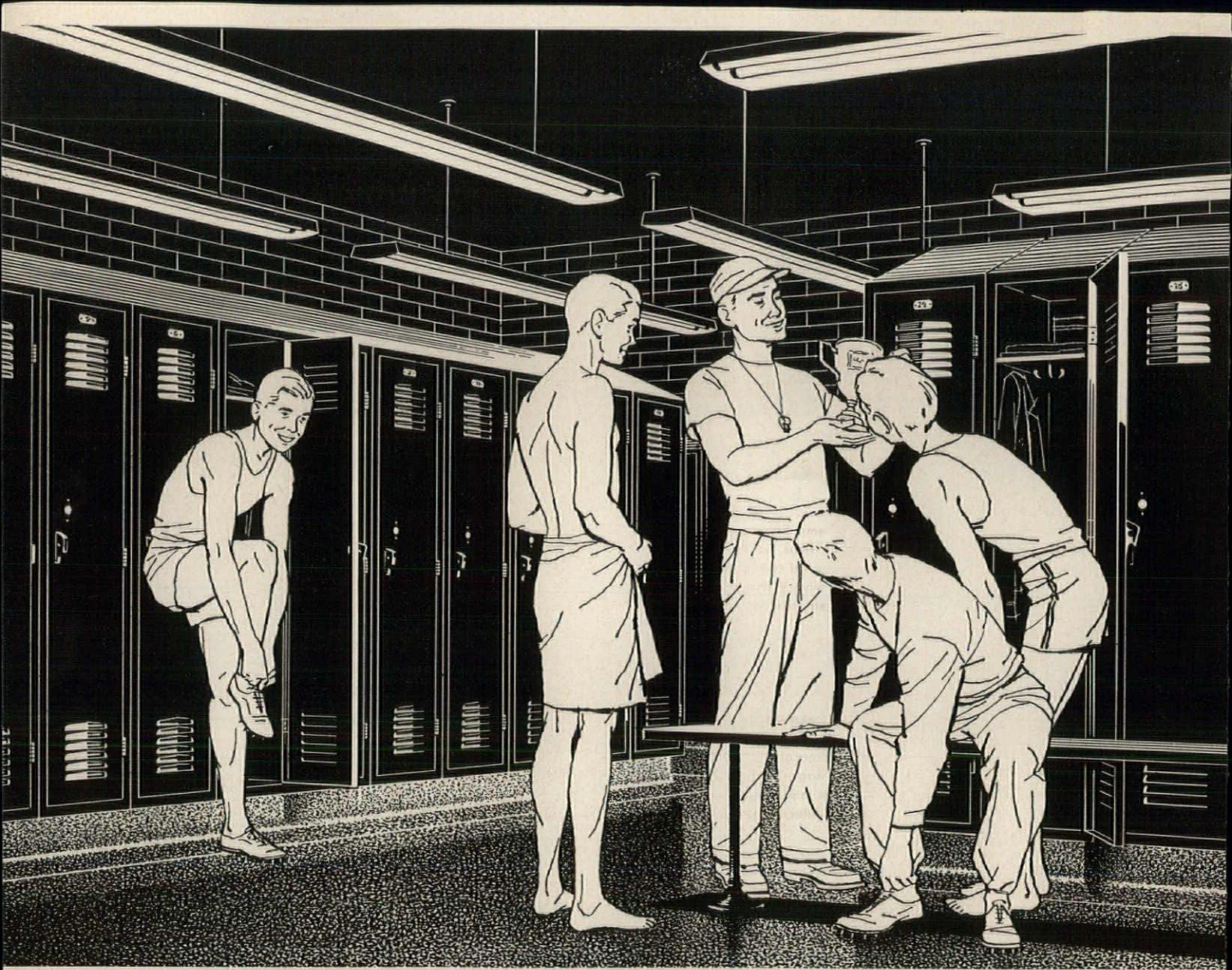
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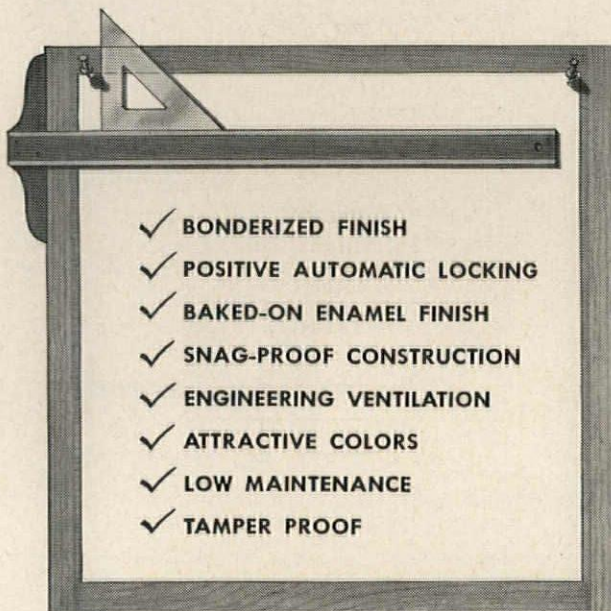


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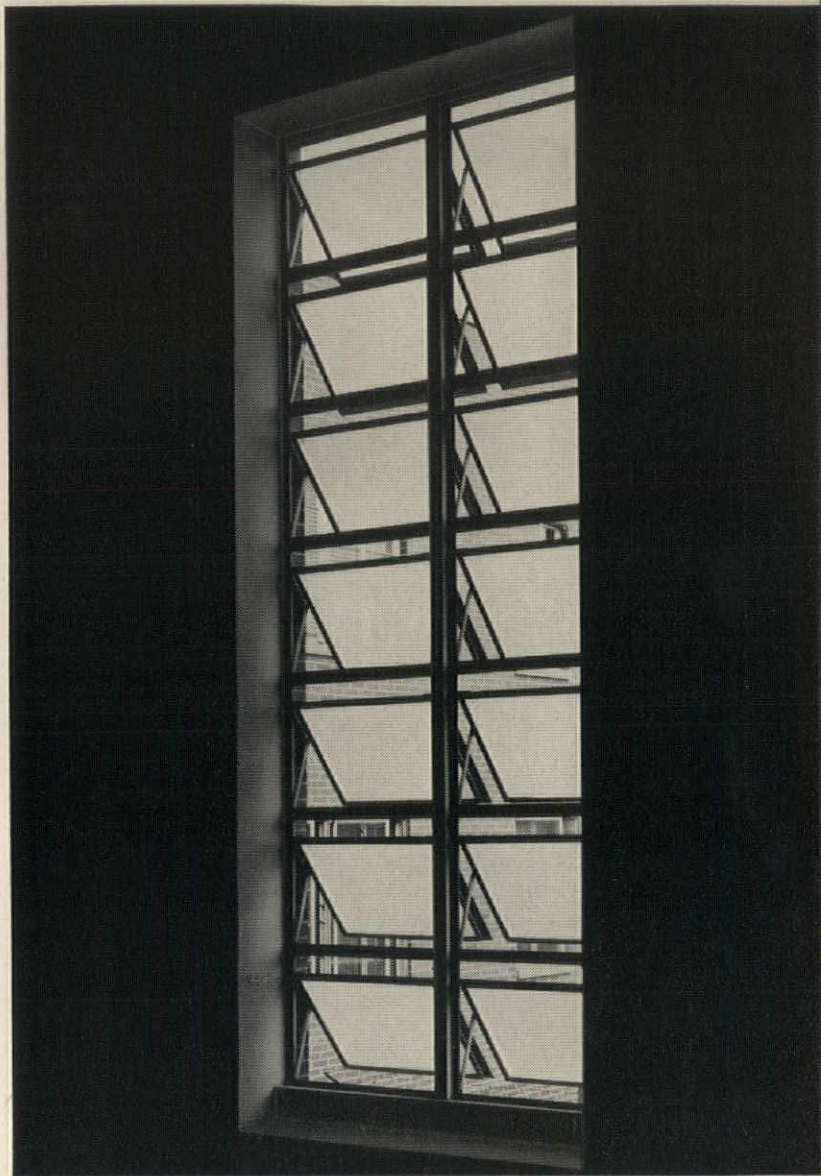
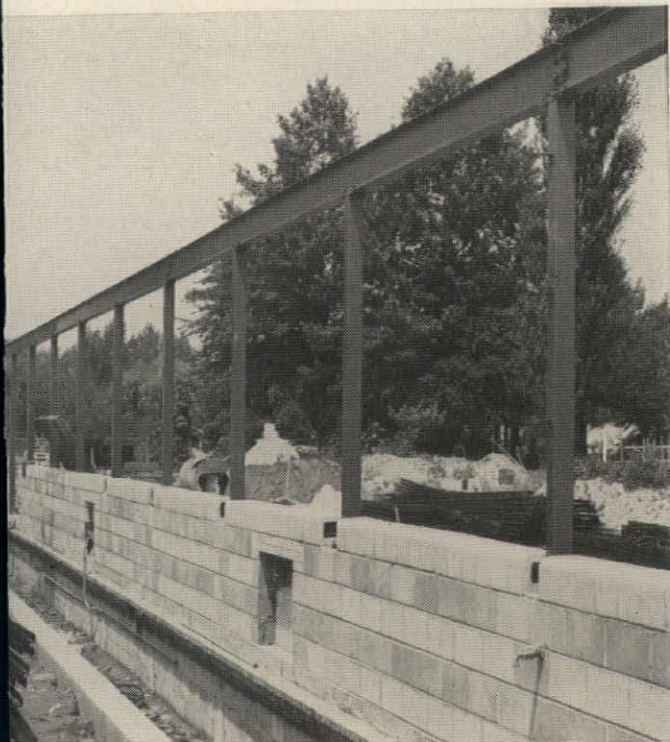
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Required Reading

continued from page 408

How . . .

is not in the slightest condescending and should be most helpful to the adult layman who is more interested in learning how to look at architecture than in learning a few handy names to drop. It is likely to entertain even architects themselves, since Mr. Rasmussen is not only an enthusiastic user of his own eyes, but is able to convey some of the charms and rewards of this activity. His imagination in selecting illustrations of his points is flexible and free-wheeling (an actor in Renaissance costume riding a bicycle to illustrate unsuitability; Venetian façades linked with the Tugendhat house to illustrate color planes). Recommended, without prejudice, to either older children or eager clients.

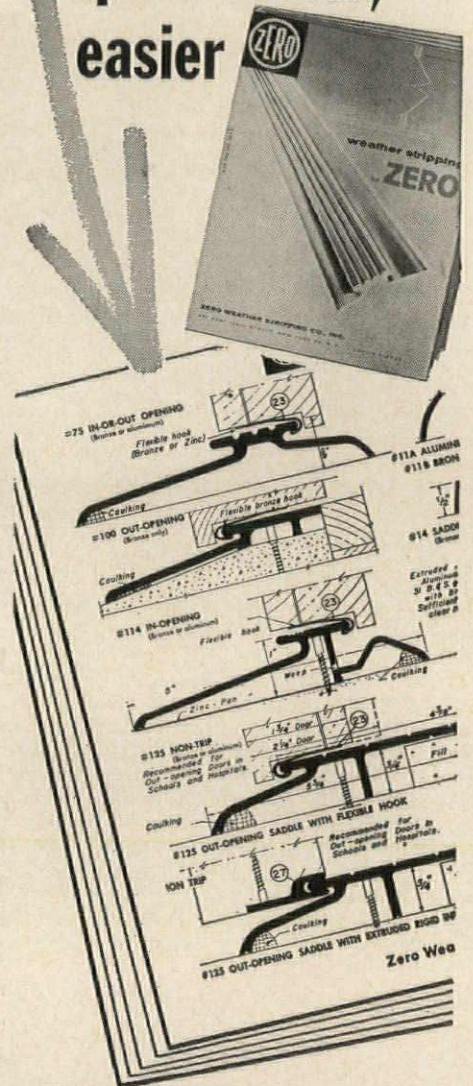
The Flowering of Rococo

FROM BAROQUE TO ROCOCO: AN INTRODUCTION TO AUSTRIAN AND GERMAN ARCHITECTURE FROM 1580 TO 1790. By Nicholas Powell. Frederick A. Praeger, Inc., 64 University Pl., New York 3. 248 pp., illus. \$10.

A good, general, English-language survey of the baroque and rococo architecture of Austria and southern Germany would certainly be welcome, but this book does not fill the bill. The coverage is exceedingly detailed—each page bristles with names and places—so that most of the chapters are mere catalogs of buildings, divided according to region, date, and use. Background for the period is slighted or submerged in the welter of factual data, and it is hard for the reader to gain any real historical perspective. Moreover, the clumsy handling of the black-and-white photographs (relegated to a separate 64-page section in a sequence that does not follow their mention in the text) makes the book hard to use even as a reference work, much less in the way the author suggests, as a guide for the "art traveler."

Recommended (mostly for its indexes of architects, stuccatori, patrons, iconography, and the like) to specialists only. —ARTHUR FISHER

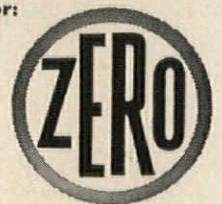
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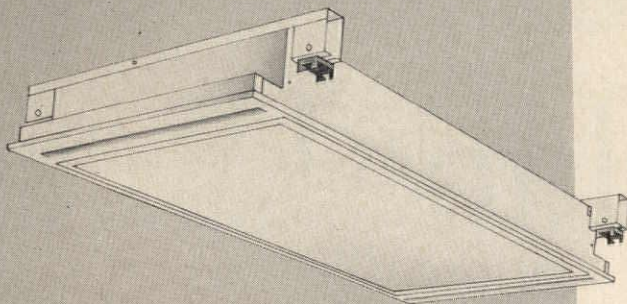
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"Specified American Standard toilet fixtures after seeing advertisement on 'Norwall' toilets, 'Sherrilyn' lavatory and 'Contour' tub."

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"Wrote to Republic Steel regarding steel tubes for structural members."

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"In a bowling lane building I specified an Armstrong acoustical ceiling which I noted in an advertisement in your magazine."

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"I have discussed Crane Company's wall hung flush tank water closet with a plumbing engineer and a contractor. Later specified for a residence."

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"On a job we are presently doing, I am specifying Mahon insulated ribbed wall (aluminum), using information obtained from them as the result of an ad in Architectural Record."

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"Saw Wooster ad for thresholds, wrote to them for information; also contacted local agent."

ENGINEER—ST. LOUIS, MO.

"Noted advertisement on 'Perma Cushion' gym floor system. Wrote manufacturer and included in current University of Nevada gym building."

ARCHITECT—LAS VEGAS, NEV.

"An ad for Gibson 'Ortho 66' lighting fixtures in the January '59 issue interested me. I checked on it, contacted Gibson and recommended use of fixture in New Jersey school."

ENGINEER—N. J.

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"Specified 'Romany-Spartan' tile as a result of an ad in the Record."

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18.8	2
24.8	3 (average)
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9.5	5
4.8	6
3.6	7
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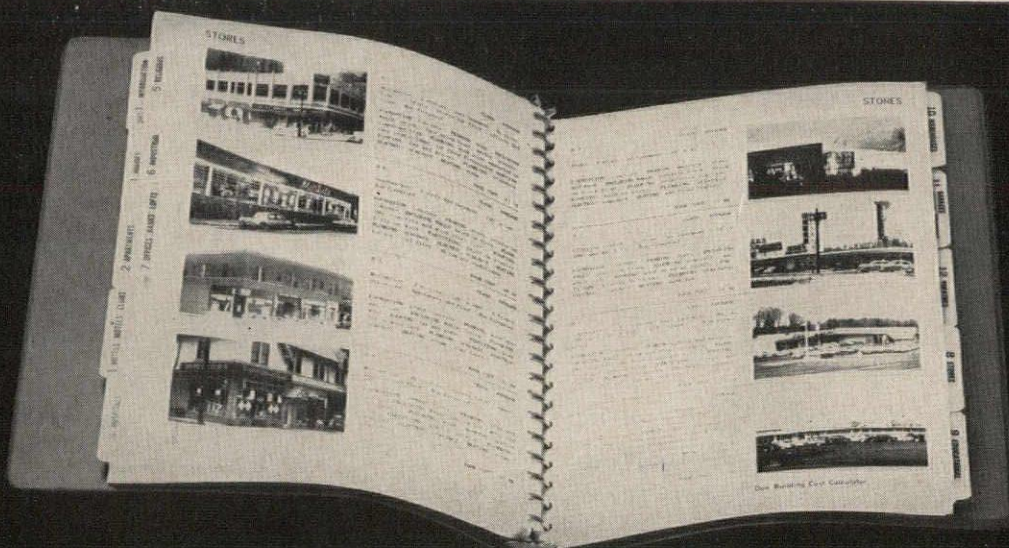
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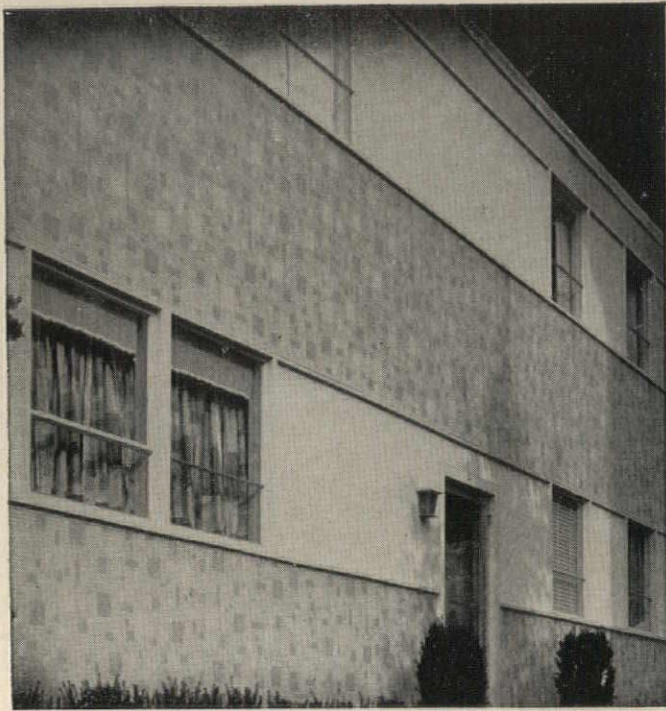
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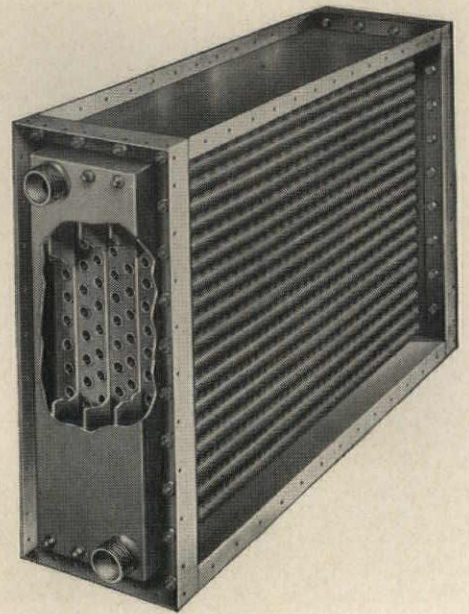


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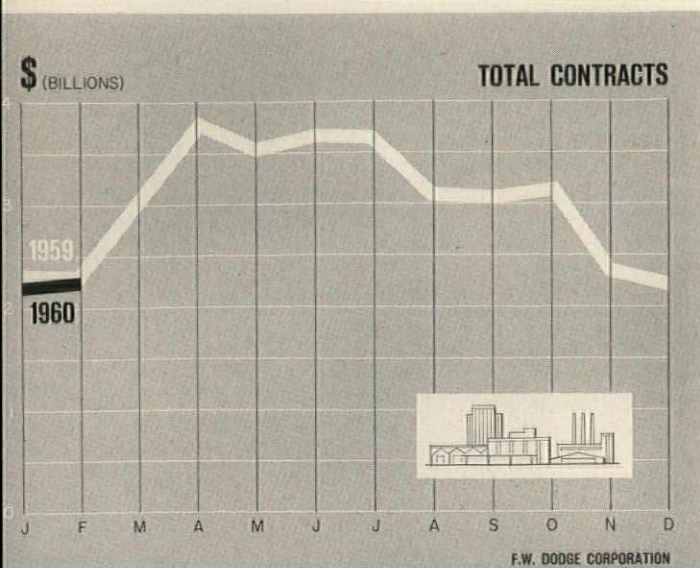
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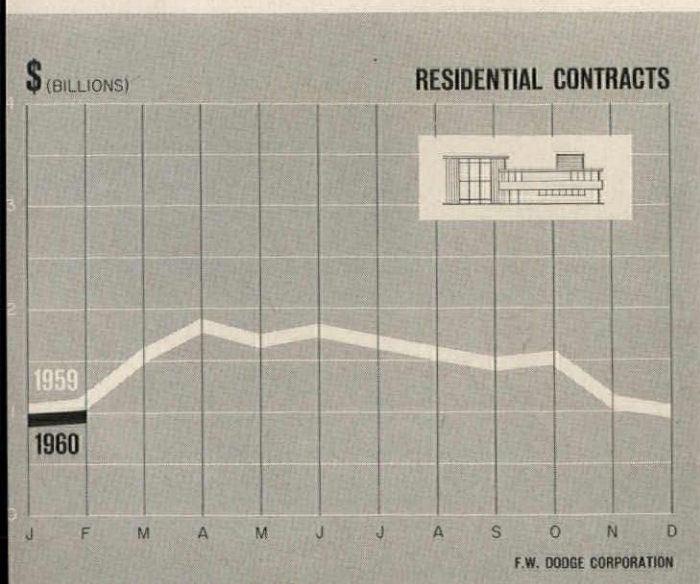
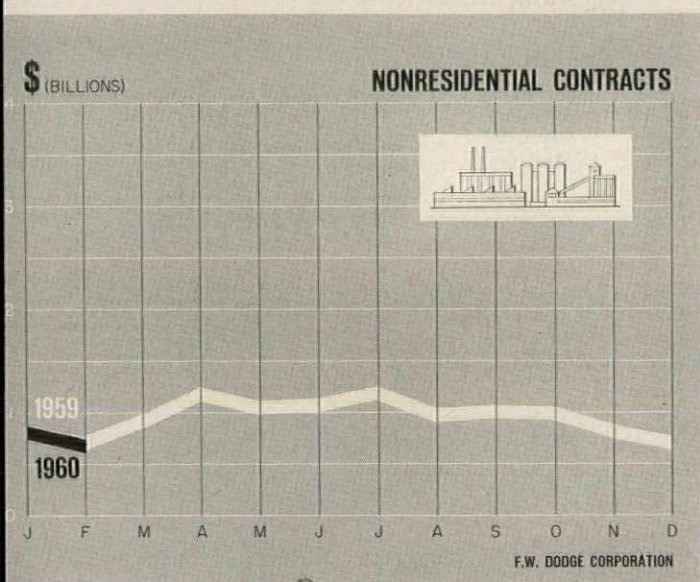
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WHY did the market get the jitters? Technicians will explain it in terms of "stilt formations," yield ratios, overbought-itis and similar mumbo-jumbo. An economist might point to some other factors. One is tight money, which made bonds considerably more attractive as investments than they had been, thereby causing some stockholders to switch from stocks to bonds. A similar result might have been produced by a feeling that inflation has been slowed, at least temporarily, thus reducing emphasis on stocks as a hedge against the declining value of the dollar.

ON TOP OF THIS, the course business seemed to be taking was a source of concern. Housing had been expected to decline, but very high hopes were held for a boom in the rest of economy. Steel and auto production, and consumer spending, by failing to live up to these rosy expectations, were a disappointment. As noted in this column last November, there were two schools of thought about what would happen at the end of the steel strike. One group (the great majority) expected a big upsurge in everything as the economy made up for lost time. The other group expected the gap in steel production to result in a hiatus in the nation's normal growth trend. As we said then, "the truth probably lies somewhere in between." And that's about the way it has been—a good quick recovery from the effects of the strike, but no big upsurge. This really should be grounds for rejoicing, but to those who expected more, it has been a disappointment. They will get over it, as they begin to realize that things aren't so bad after all.

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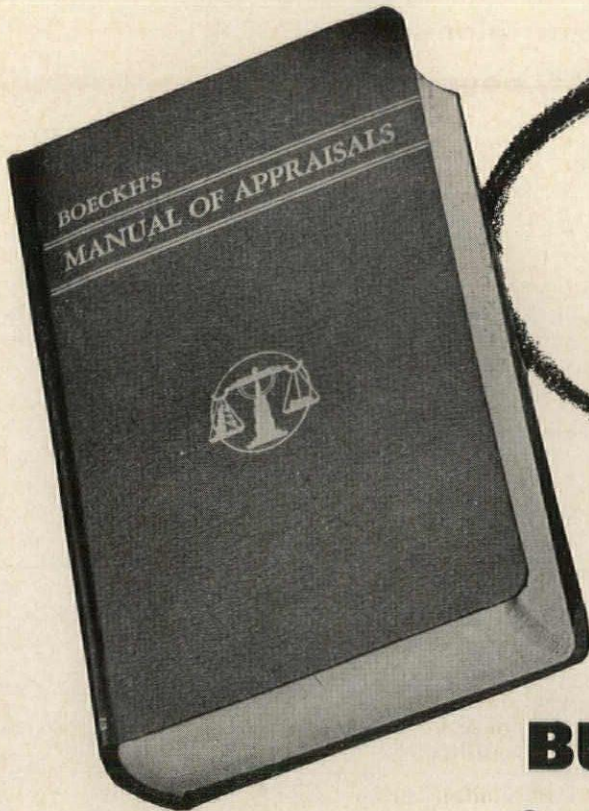
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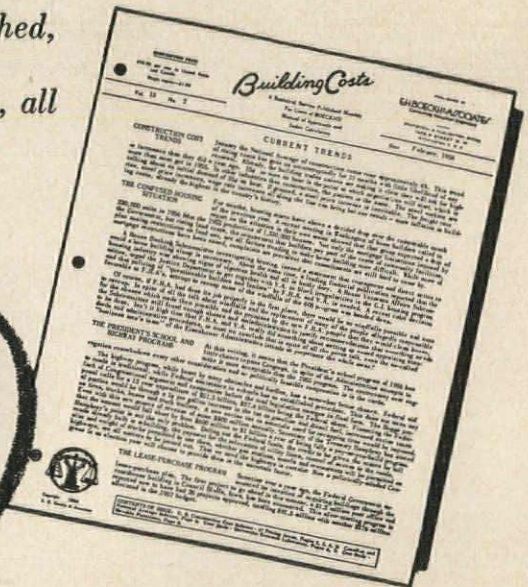
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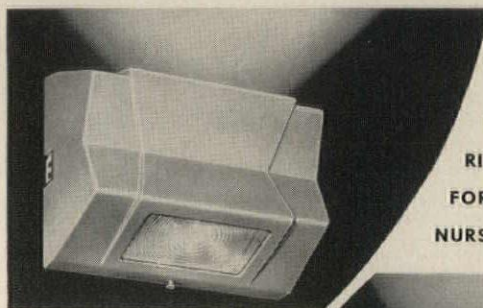


*A (Architectural Catalog File)

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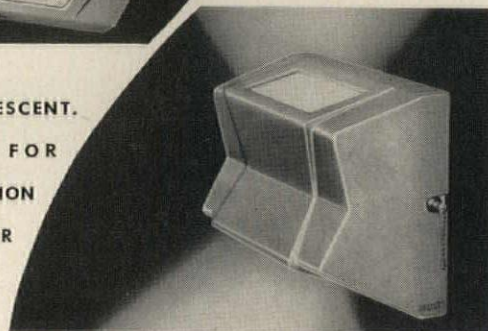
LC (Light Construction Catalog File)

Newest **HOSPITAL ROOM-BED FIXTURE** MODERN IN DESIGN
BY **MULTI** PLEASING TO THE EYE
EFFICIENT TO USE



THE RIGHT AMOUNT OF LIGHT AT THE RIGHT LOCATION FOR THE PATIENT, NURSE OR DOCTOR.

DUAL INCANDESCENT. VENTILATED FOR COOLER OPERATION AND LONGER LAMP LIFE.



THREE-WAY PULL SWITCH OPERATES LAMPS
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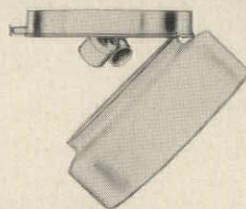


This new Multi fixture provides the ideal type of illumination required for hospital room lighting, also excellent for motel, hotel and bedroom lighting. It is cast aluminum with a finely grained surface, finished aluminum bronze or with primer coat to be finished to match any room color motif. Designed for cool operation it can be mounted directly to an outlet box or on the wall and serviced by a cord and plug. Convenience receptacle is located in the side of the unit.



MULTI CEILING TYPE FIXTURES WITH HINGED OPAL GLOBE AVAILABLE IN FIVE SIZES.

FOR GENERAL ILLUMINATION OF CORRIDORS, KITCHEN AREAS, SERVICE ROOMS, ETC.



For further details on this unit and other Multi fixtures for commercial and industrial lighting, see our catalog in Sweets or write today.



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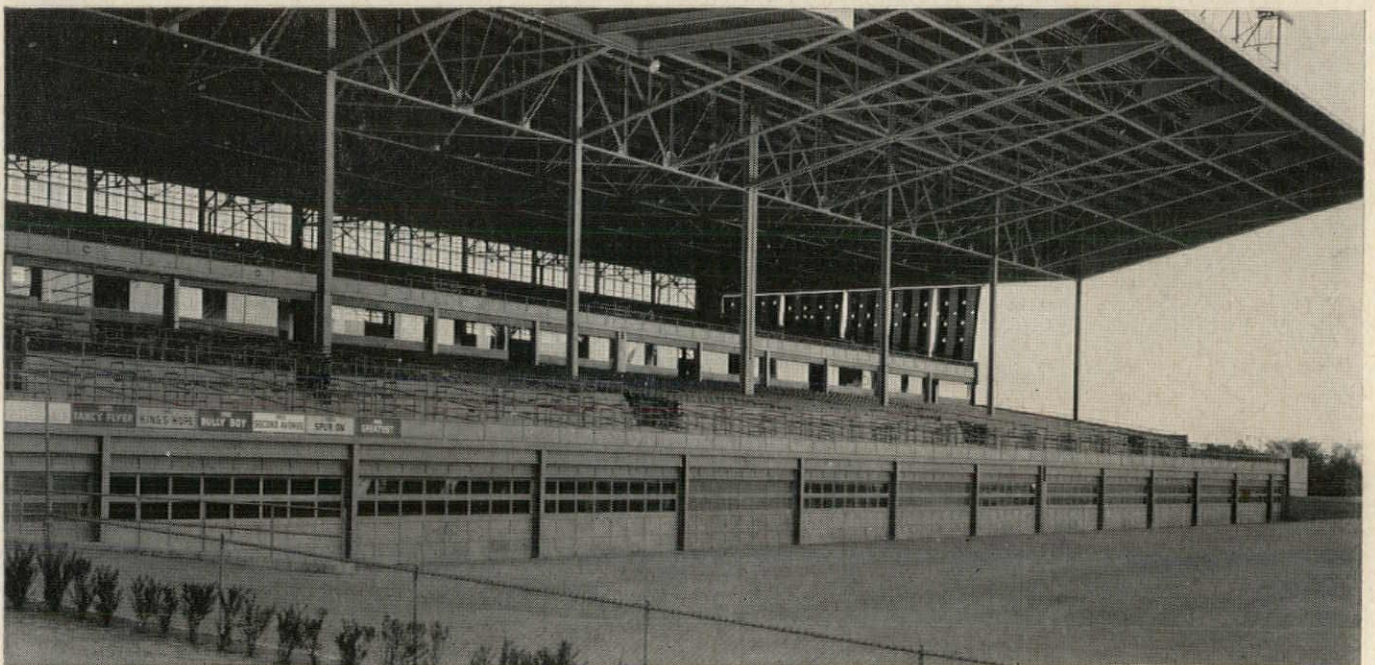
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AT POST TIME

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Architect: Giffels and Rossetti, Inc., Detroit

OVERdoors deliver perfect year-round performance—smooth, trouble-free operation. Precise, tight closure affords maximum protection against weather and intrusion. Maintenance of doors is minimum. There is a reliable OVERdoor application for nearly every type of industrial, commercial, and residential structure. For complete data on OVERdoors, Electric Operators, Radio Door Controls, see our catalogs in Sweet's or write to

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