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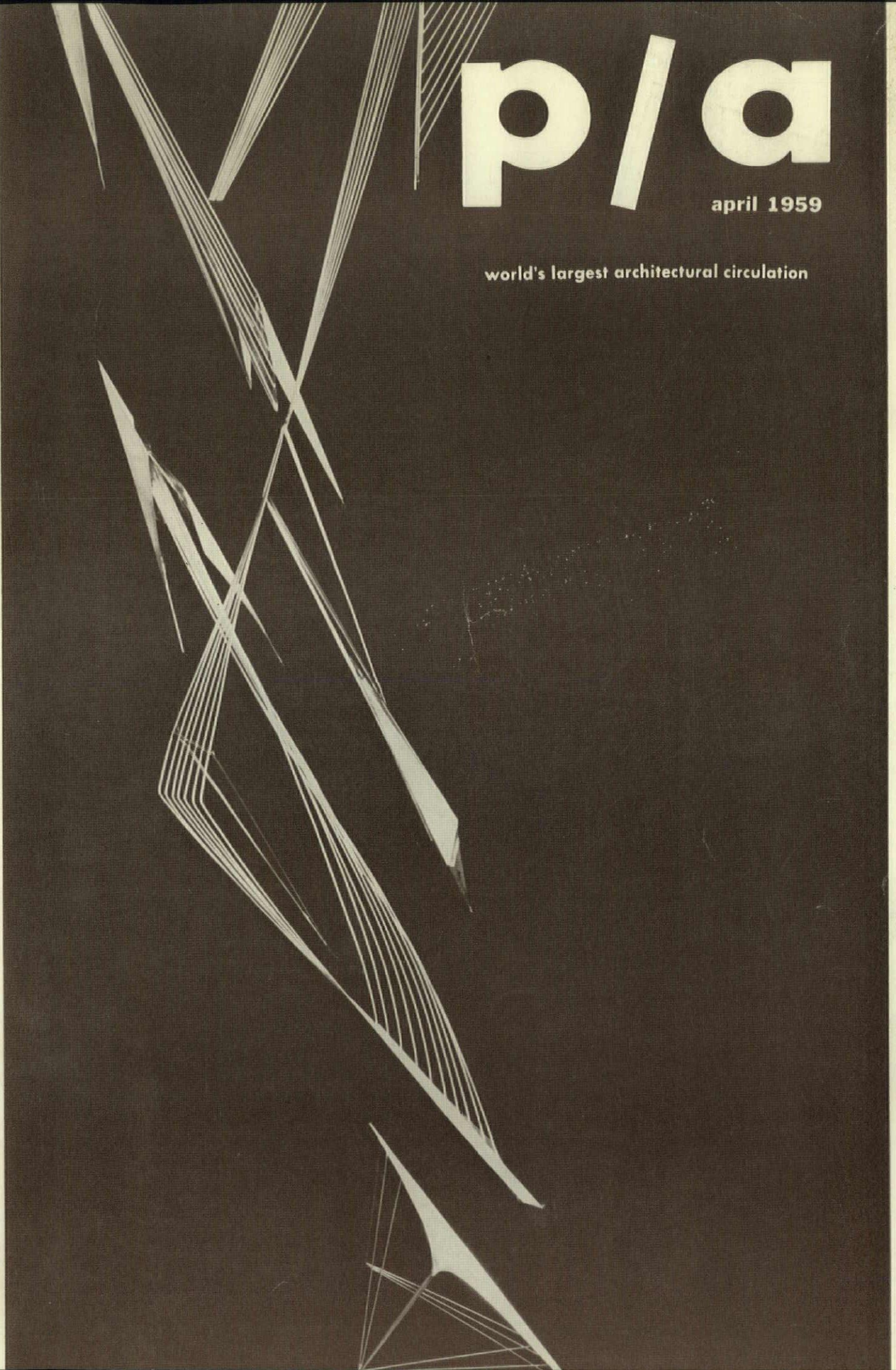

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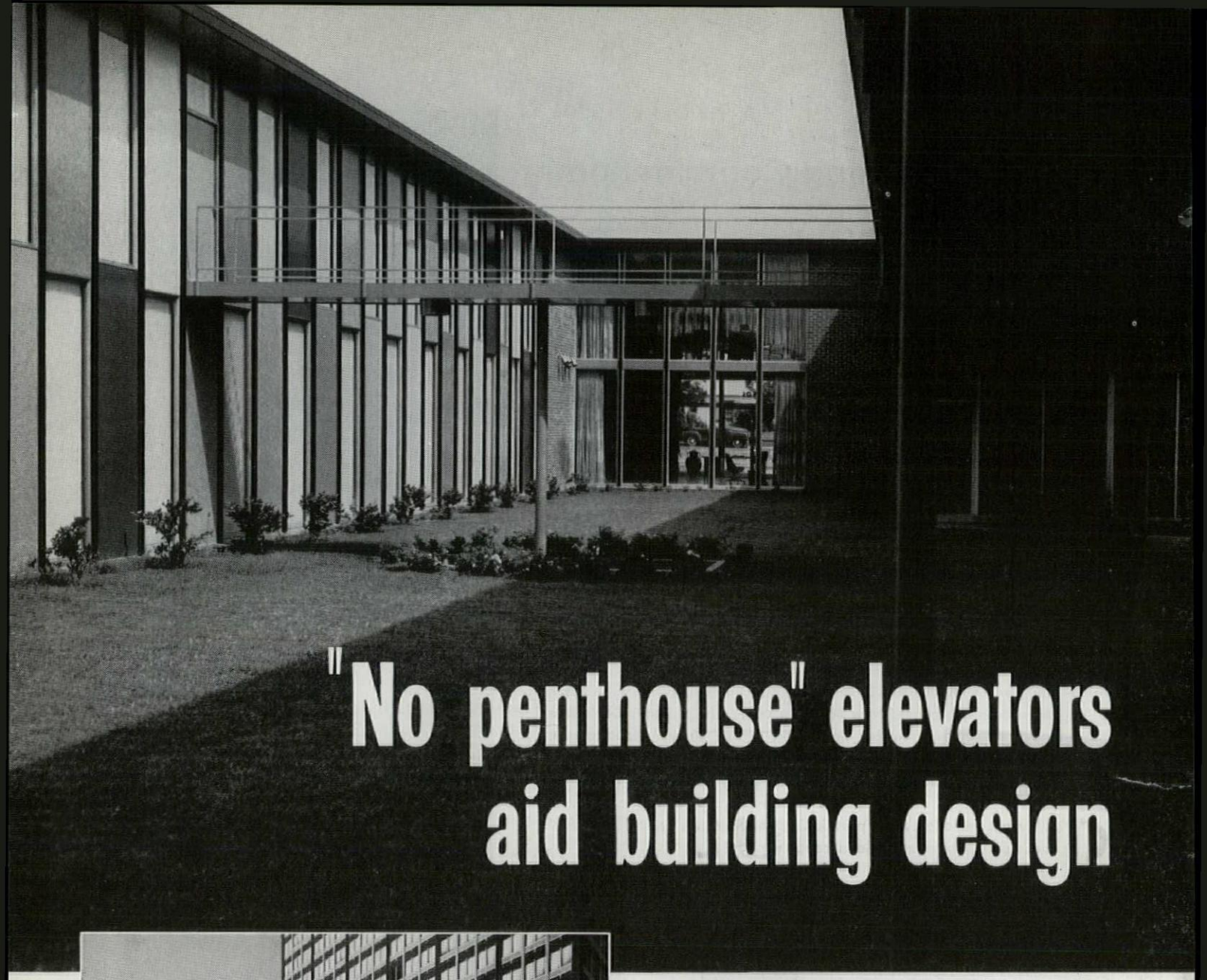

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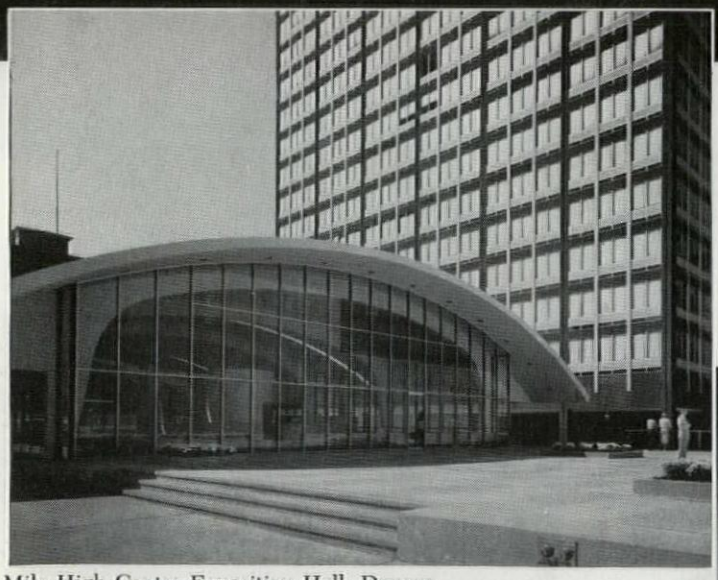

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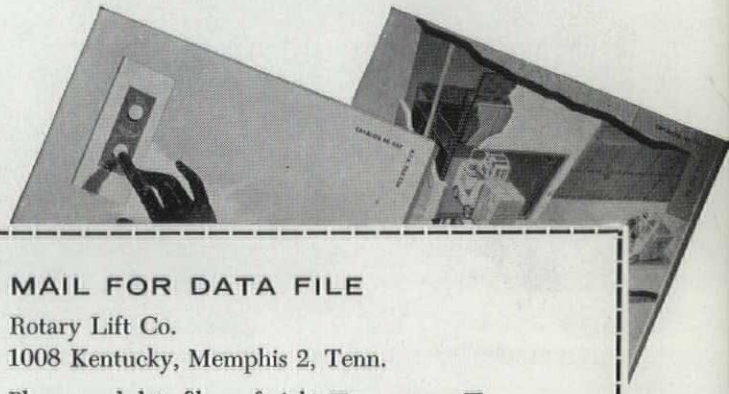

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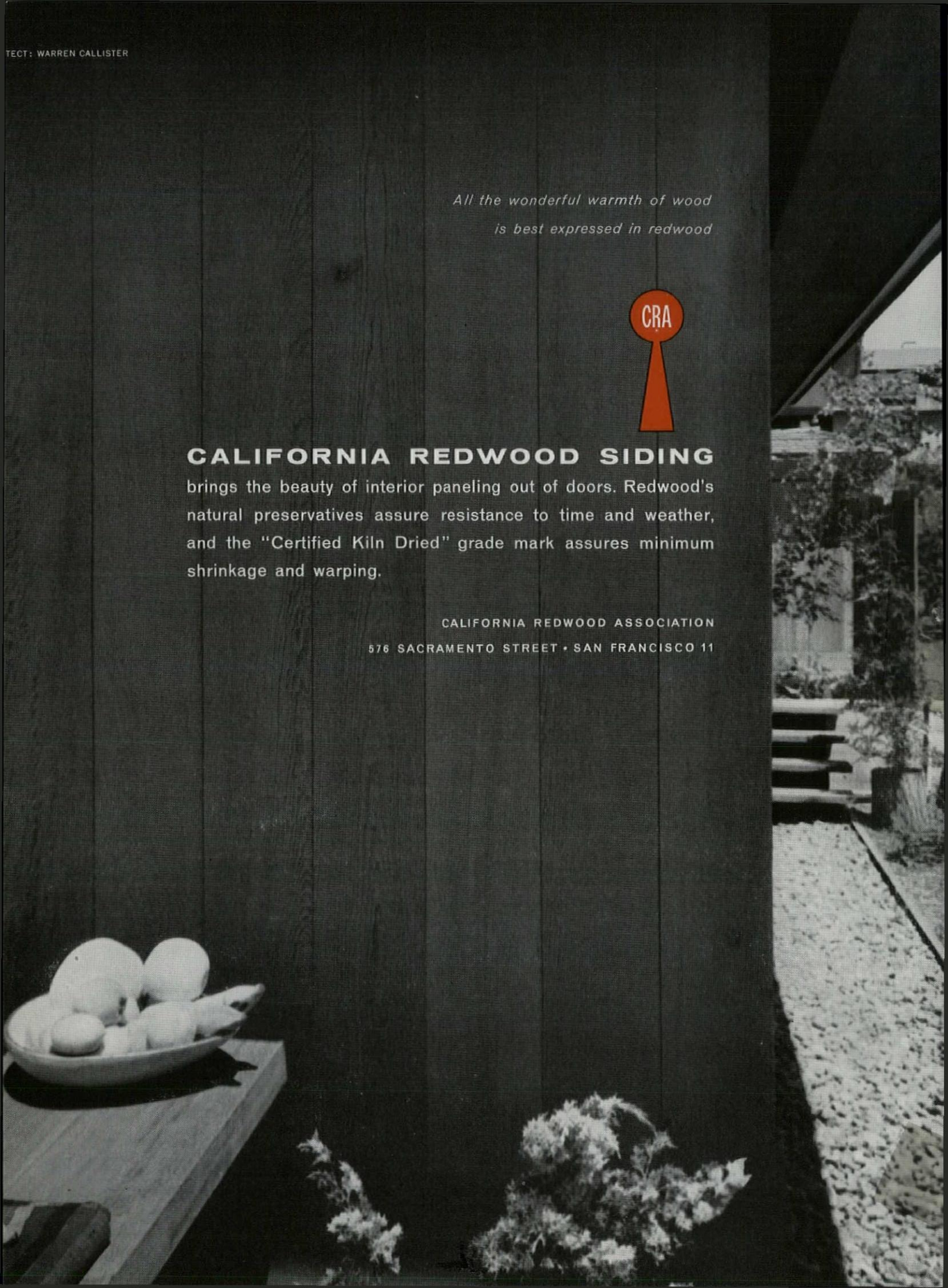
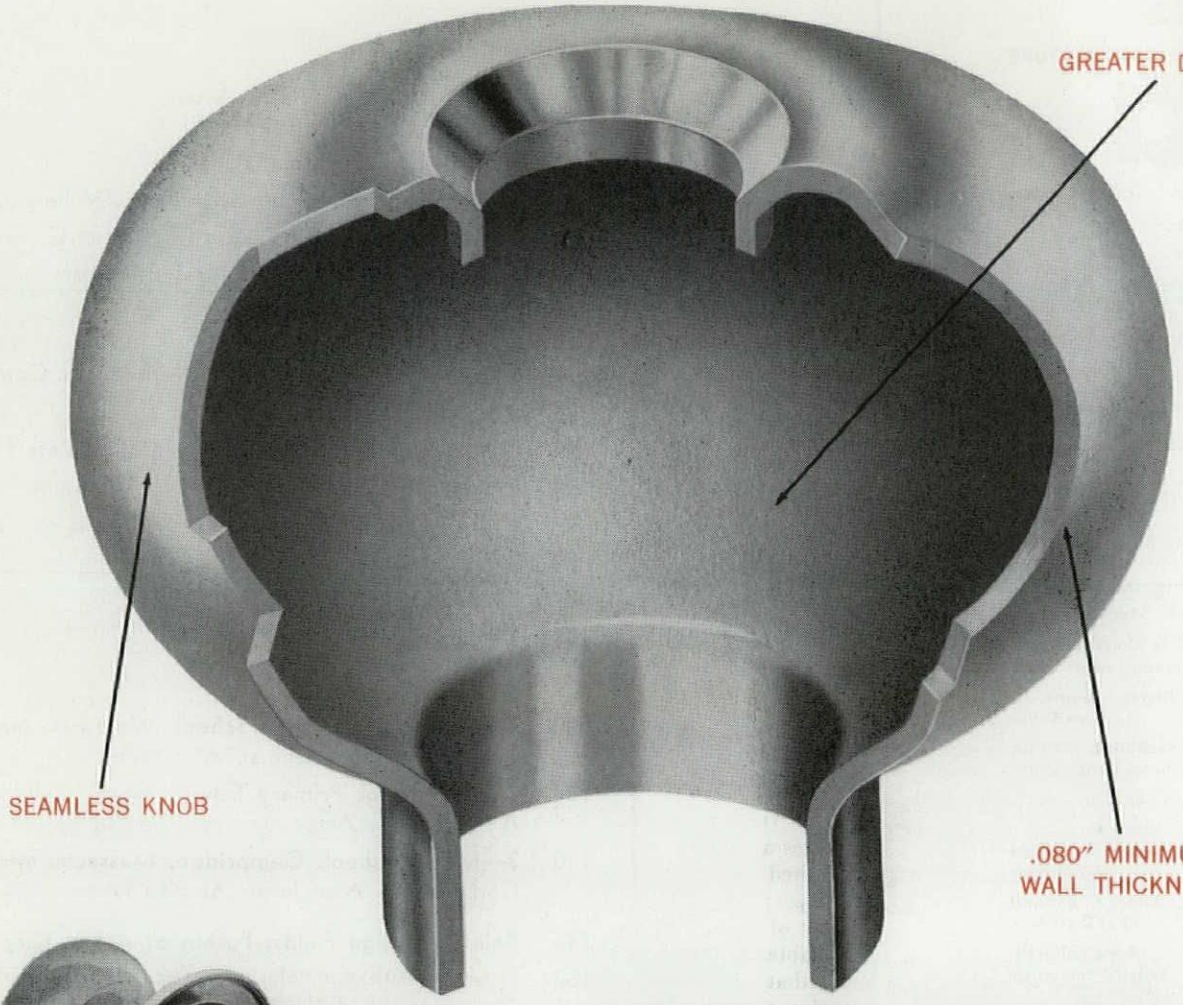
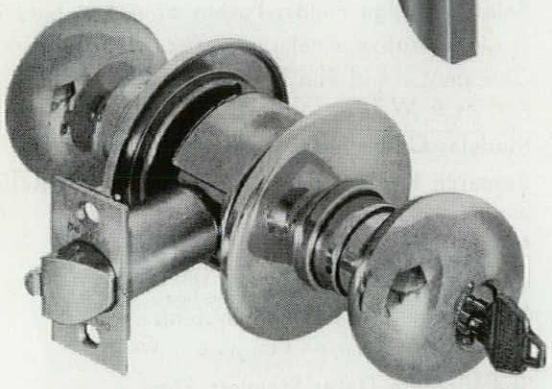


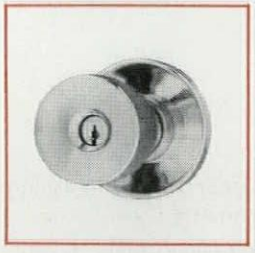
PROGRESSIVE ARCHITECTURE

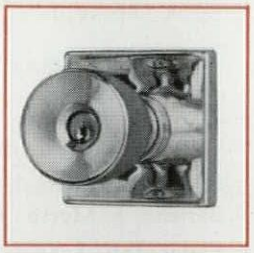
April 1959

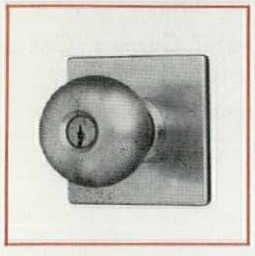
Published monthly by REINHOLD PUBLISHING CORPORATION, 430 Park Avenue, New York 22, N. Y. Second-class mail privilege authorized at New York, N. Y. Professional subscription—$5. (For full data, see page 62.)
Volume XL, No. 4

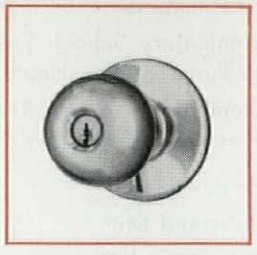












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Use Zoning—Public Benefit or Persecution?

It's The Law Column by Bernard Tomson

P/A Practice of Architecture ***article reviewing some problems of enforcing zoning amendments prohibiting the continuance of nonconforming uses or structures.***

It is well settled that a statute or ordinance which zoned a particular area for residential use would be unconstitutional if it also required, simultaneously with its enactment, the immediate termination of all nonresidential uses. However, the courts of some states have upheld the validity and constitutionality of zoning ordinances which require the termination of a prior noncomforming use or structure within a reasonable time after the adoption of the zoning ordinance. The Court of Appeals of New York, the State's highest court, by a sharply divided 4 to 3 decision has rendered the latest ruling on this point (*Harbison* v. *City of Buffalo*, 4 N. Y. 2nd 553).

In the *Harbison* case, the petitioner owned real property in Buffalo, New York, on which he had been operating a cooperage business since 1924. This business, under local law, was classified as a "Junk Yard." At the time the business had been established, the street upon which it was located was unpaved, and there was a city dump and glue factory in the vicinity. In 1926, two years after the commencement of the cooperage business, the area was rezoned for residential use, but the petitioner continued his business as a prior nonconforming use.

In 1953, the zoning ordinance of the City of Buffalo was amended to provide in substance that certain nonconforming uses of structures or property located in a residential district must be discontinued within three years. "Junk Yards" were expressly covered by this amendment. In 1956, the City of Buffalo refused a license to the petitioner for the operation of his cooperage business on the ground that the three-year period in which the business was to be discontinued had expired. The owner petitioned the court for relief.

The lower court ruled in effect that the right of an owner of real property to continue a use which was lawful prior to the adoption of a zoning ordinance was perpetual. The New York Court of Appeals by majority opinion reversed the lower court, holding that a municipality might require the termination of a prior nonconforming use provided the time in which such termination was reasonable. The majority stated:

"In ascertaining the reasonable period during which an owner of property must be allowed to continue a noncomforming use, a balance must be found between social harm and private injury. We cannot sav that a legislative body may not in any case, after consideration of the factors involved, conclude that the termination of a use after a period of time sufficient to allow a property owner an opportunity to amortize his investment and make other plans is a valid method of solving the problem.

"To enunciate a contrary rule would mean that the use of land for such purposes as a tennis court, an open air skating rink, a junk yard, or a parking lot—readily transferable to another site—at the date of the enactment of a zoning ordinance vests the owner thereof with the right to utilize the land in that manner in perpetuity, regardless of the changes in the neighborhood over the course of time. In the light of our ever expanding urban communities, such a rule apears to us to constitute an unwarranted restriction upon the Legislature. . . ."

In a vigorous opinion, the dissenting judges argued that the Buffalo ordinance resulted in a confiscation of the petitioner's property and constituted an infringement of basic individual rights for questionable objectives. The minority pointed out that the business was not a nuisance or injurious to the community, and that the residents who objected to this business purchased and moved into the neighborhood after the petitioner's business was in operation. The minority further asserted that the ordinance in question was, in reality, a retroactive zoning in the nature of urban redevelopment, and that this can only be constitutionally authorized by statutes which provided for just compensation for property appropriated. The dissenting opinion stated:

"Observing the vagaries of modern zoning, many a businessman (large or small) might properly hesitate to invest his life savings in a store or other commercial or industrial property knowing that his investment is liable to be expropriated after the enterprise has been successfully launched, if some pressure group succeeds in obtaining favorable action from a municipal legislature. That is not in the public interest. Constitutional security against such developments is infinitely more important to the public at large than the occasional presence of a nonconforming use, or the possibility that a nonconforming use may acquire some advantage by way of monopoly in the use of district. . . .

"The circumstance that this is a cooperage establishment or junk yard ought not to obscure that the principal of the decision applies to any kind of business which, due to lapse of time, has been overtaken by changes in the neighborhood. The principle of the decision applies equally to stores, shops, or service organizations which are retroactively legislated out of existence by the abolition of prior noncomforming uses. If petitioners' establishment is not secure against this kind of invasion, no one else's business is better protected. The neighbors or the officials of a municipality in one year may look askance at a junk or cooperage yard, and in another year may frown upon the conduct in a particular locality of any other type of commerce or industry. The people who moved into petitioners' vicinity and now find their business offensive may not be aware that the principle of this decision unsettles their own property rights, and that it may suddenly be used against them in unexpected ways if agitation arises to legislate them out of business. . . ."

The minority, in discussing decisions of other states which have upheld similar statutes or ordinances, pointed out that these laws prescribe the same time limit for many different kinds of property and business use, and that there was no relationship between these "grace periods" and the type of structure or business involved. The dissent said:

"This theory to justify extinguishing nonconfrming uses means less the more one thinks about it. It offers little more promise of ultimate success than the other theories which have ben tried and abandoned. In the first place, the periods of time vary so widely in the cases which have ben cited from different states where it has been tried and have so little relation to the useful lives of the structures, that this theory cannot be used to reconcile these discordant decisions. Moreover, the term 'amortization' as thus employed, has not the same meaning which it carries in law or accounting. It is not even used by analogy. It is just a catch phrase, and the reasoning is reduced to argument by metaphor. Not only has no effort been made in the reported cases where this theory has been applied to determine what is the useful life of the structure, but almost all were decided under ordinances or statutes which prescribe the same time limited for many different kinds of improvements. This demonstrates that it is not attempted to measure the life of the particular building or type of building, and the word 'amortization' is used as an empty shibboleth."

The conflict between individual rights and zoning objectives is most intense when the municipality attempts to prohibit a use or structure in existence at the time that the zoning ordinance is enacted. This conflict involves significant implications of a social, economic, and political nature. Consequently, as the law in this area evolves and develops, it warrants the closest scrutiny and consideration.

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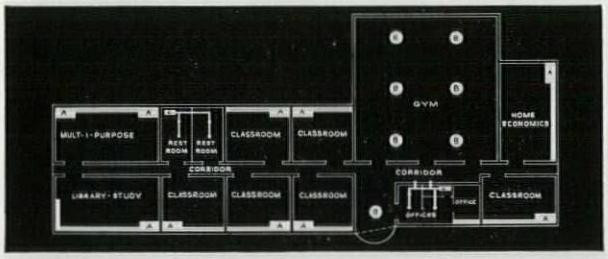

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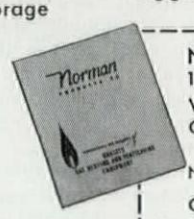

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Report Documents Aluminum in Electrical Distribution

Mechanical Engineering Critique by William J. McGuinness

P/A Practice of Architecture *column on mechanical and electrical design and equipment devoted this month to the increasing use of aluminum in electrical systems.*

For use as wires and cables, bus bars and busways, aluminum is taking its place in increasing volume alongside copper. In many installations it is also replacing steel for use as conduit, switchgear enclosures, and lighting fixtures. The reasons for these changes have been price, availability of the metal, and its lightness which facilitates ease of installation.

Electrical Resistance and Weight

METAL	RESISTANCE Ohms/mil-ft	WEIGHT grams/cc
Aluminum	15.75	2.58
Copper	9.56	8.90
Gold	12.23	19.30
Silver	8.85	10.50

The four metals that offer the least resistance to the flow of electricity are aluminum, copper, gold, and silver. The elimination of gold and silver on the basis of cost leaves aluminum and copper as competitive conductors. Although aluminum offers 65 percent more resistance than copper, it is less than one-third as heavy. The net result is that one lb of aluminum will conduct twice as much electric current as one lb of copper. For the nonelectric uses such as conduits and fixtures the comparative weight ratio of aluminum to steel, also about 1 to 3, favors the lighter metal in many cases. For both electric and nonelectric uses, the comparison of competitive bids has proved that aluminum has a definite place in electric systems.

The present position of aluminum in the electrical industry was appraised recently by the firm of Edward E. Ashley, New York Consulting Engineers, at the request of the Aluminum Company of America. The history, development, and current acceptance of the material comprised the study and were the bases for this report to the industry and to related professional groups.

Electric suitability was established rather early. In 1895 Alcoa installed a large amount of flat aluminum bus bars for a 20,000 amp installation in its smelting plant at Niagara Falls. It remained in service for 54 years until the plant was retired in 1949. In 1929 aluminum buses were used in a large steel manufacturing plant in Ohio. Aluminum bus risers appeared in 1930 in the Marshall Field Office Building, in Chicago, where they extended vertically from the basement to the 45th floor and were fabricated from 60 ft channels. Telephone exchanges used aluminum in the 1930s and its use has been common in chemical plants where resistance to corrosive fumes has justified its choice.

In 1950 the Alcoa Building in Pittsburgh was the first modern skyscraper to use aluminum exclusively for wiring, conduit, and electric fixtures. Its efficient aluminum bus-riser system, though not the first of its kind, was the first to serve an entire system of the same material.

wires and cables

Appearing at the turn of the century, aluminum conductors were first used for transmission and distribution lines. This outdoor use proved their reliability under electrical, corrosive, and mechanical conditions far worse than they have encountered later when used in office buildings and in industry. An aluminum wire has approximately the same current-carrying capacity as a copper wire two gages smaller. For instance, a No. 8 aluminum wire would carry about the same current as a No. 10 copper wire. It can be connected to copper and has been used successfully where No. 12 aluminum was attached to No. 14 copper fixture-leads by simple connections. It has been used in steel conduit, as in the case of the Abraham & Straus store, on Long Island. Frequently comprehensive comparative studies have preceded the selection of aluminum cable. Before using it in the Standard Oil Company Building, in San Francisco, it was compared with copper bus, aluminum bus, tubular bus, and copper cable. Results of these studies were published in 1952 and 1956.

As part of the investigation preceding the Ashley Report, 400 electrical contractors were polled for their opinions about aluminum products. Concerning aluminum wire and cable, three-fifths of them said that they had had experience with it. Many held the opinion that it is economical for wire sizes above No. 4/0, but not competitive below that size.

busways

High-capacity service conductors may now be carried up through a building as power risers instead of being terminated at a basement switchboard. This is very much in keeping with the spirit of enlarging the capacity of electrical systems to provide for contemplated future expansion. It provides a convenient central power stack from which unexpected power concentrations may be tapped at various floors. The means chosen for this distribution is the solid bus bar—flat, square, channel-shaped, or special extrusion. Exposed and uninsulated but protected by durable caging, it presents a new picture in the electrical systems of buildings. Often at high voltage it may have transformers at the several floor stations to produce lower usable voltages. In these bus-risers, the lighter weight of aluminum is a distinct advantage and its larger area provides a greater heat-dissipating surface. For the same load capacity, aluminum has a lower voltage-drop than copper.

Two recent examples of aluminum bus bars are in the Socony-Mobil Office Building in New York and the New York Coliseum.* In the former, the saving in weight by the use of this bus-riser instead of copper cables-in-conduit was one ton per story. When high voltages are used, conductor-metal may be reduced. This was done in the Coliseum exhibition area and office building where 480/277-v were used as distribution voltages within the building. This was one of the first high-voltage installations of its type. Lateral bus feeders were used at ceilings. Contractors reached through the Ashley poll reported savings of 5 to 20 percent when aluminum bus duct displaces more conventional methods.

conduit

Aluminum conduit may be bent more easily than steel and with less force. The bends are more accurate because the metal has less resilience than steel. Small sizes are cut with a hacksaw and large sizes with regular power equipment. Care and sharp dies are necessary for threading conduit ends. A special interior coating makes wire-pulling easy, but terminal bulbs must be used on fish-tapes to prevent their ends scoring the conduit as wire is pulled through. About half of the contractors felt that the use of aluminum conduit effected appreciable savings. Others thought that savings occurred mostly in the use of conduits of the larger sizes.

The list of buildings in which aluminum products have been used is impressive. Clients named in the Ashley Report include Ford Motor Company, Illinois Institute of Technology, Owens-Illinois Glass Company. The new 60-story Chase-Manhattan Bank Building, in New York, will use aluminum conduit selected on the basis of competitive bidding.

*See MECHANICAL ENGINEERING CRITIQUE, MAY 1956 P/A.

The "Do-It-Yourself" Clause

*by Samuel C. Florman**

P/A Practice of Architecture ***article setting forth strongly and intelligently a general contractor's arguments in favor of subcontracting.***

The other day there arrived in our estimating department still another specification which, in the General Conditions, warns all would-be bidders that the concrete, masonry, and carpentry work is not to be sublet by the general contractor, but must be performed by his own forces. This proviso is becoming more and more fashionable among architects, who apparently feel that it serves the best interests of their clients.

The obvious intent of such a clause is to preclude from the bidding those general contractors sometimes referred to as "brokers," who subcontract the work almost completely, not themselves performing any of the principal trades. These "brokers" are, in the stereotype, thought to be sharp businessmen who know little and care less about the fine points of construction. They are supposed to bid for work in cutthroat fashion, then shop around for unwary subcontractors who will meet budget figures for the various trades. Once the job is "bought out," the "broker's" profit is secure and his worries are over; he merely puts a superintendent on the site and orders his subcontractors to get to work. Then, according to this popular conception, all bedlam breaks loose. The subcontractors are busy elsewhere when they are needed on the job, and the general contractor is unable to get them started on schedule. Disputes arise over which subcontractor is responsible for which items of work, and who is to get stuck with the items which the G.C. overlooked completely. There are battles over payments, backcharges, and extras. Before the work is sixty days advanced, acrimony and confusion reign supreme. The job eventually staggers to completion, months behind schedule, with a punch list that no one will clean up, and with liens, arbitrations, and lawsuits piling up on the desk of the harassed architect.

Contrasted with this sordid picture is that of the general contractor who does all work in the basic trades with his own forces. This paragon of virtue came up through the ranks as a bricklayer or a carpenter, and consequently takes pride in his work, is easy to get along with, shuns sharp business practices, and produces a quality job on schedule and without problems for the architect.

So much for the popular myth—and myth it most certainly is. For the fact of the matter is that the finest, most efficient and most trouble-free jobs are being built today by general contractors who utilize qualified subcontractors to the fullest extent possible. And there are compelling reasons why, in this modern age of specialization, work *should* be subcontracted rather than performed directly by the G.C. The principal reasons are: (1) quality; (2) speed; (3) economy; and (4) efficiency. To elucidate:

1 *Quality.* The subcontractor is a specialist. He knows his trade better than any general contractor possibly could. He has the experience, the know-how, the equipment and—most important—he has the men. A masonry subcontractor, for example, has the continuity of work in his trade which enables him to maintain a basic crew of masons, and over the years he winnows and selects until he has only men of top competence. A general contractor cannot schedule his work so as to build up a permanent crew in any trade, and his constant hiring and firing preclude him from getting the best mechanics.

2 *Speed.* Being a specialist, and having a permanent crew of top men, the subcontractor is better prepared to move on to a job and man it properly from the start. His men are well organized, he has the proper equipment and he has steady suppliers who service his needs promptly. His men know that they will have another job to go to, and that their best interests are served by producing, not by trying to featherbed.

3 *Economy.* If he has the best men, the fastest workers, and an organization of top efficiency, the subcontractor will naturally have minimum labor costs. His constant purchasing of certain materials in quantity enables him to reduce materials costs. He has just the right equipment for his line of work and he gets maximum use from it. He knows all the tricks of his trade. As many a general contractor has learned to his sorrow, a subcontractor can often make a handsome profit under a contract amount that would not come close to covering the G.C.'s basic cost.

4 *Efficiency.* The primary functions of the general contractor are well known to the architect. The G.C. must know costs and estimating procedure. For each job he performs he must be prepared to award and execute perhaps fifty or more subcontracts and purchase orders. He has to schedule the work properly and integrate the work of all trades into his schedule. His is also the responsibility for laying out the job physically in the field and seeing to it that all trades are given accurate control lines and elevations. He is required to coordinate details of all manufactured items going into the building to be sure that everything "fits." Questions arise concerning discrepancies in the plans and specifications, and matters of interpretation which he must review with the architect, and resolve. If he is not a topnotch expediter, the contractor is lost. He must expedite the submission and approval of shop drawings, cuts, and samples. Then he must expedite the fabrication and shipment of crucial manufactured items from plants scattered all over the country. He is the central agent for the financial workings of the job, preparing cost breakdowns for the architect's approval and making up monthly requisitions on behalf of all trades. The "General Conditions of the contract" are his to fulfill: the provision of supervisory personnel, field offices, temporary light, power, heat and water, toilet facilities, access roads, site fence, watchmen, cleanup, project signs, photos, etc. He is looked to for harmony in labor relations on the job. He is responsible for job safety precautions. He must cope with adjoining property owners. Insurance is his concern, and in construction this entails much more thought and work than is generally realized. Public agencies such as the Building Department, Police and Fire Departments look to the G.C. to adhere to all regulations and to take out all necessary permits. The general contractor has been compared to the conductor of a symphony orchestra. This image may be somewhat flamboyant, but there can be no doubt that leadership and co-ordination are—or ought to be—his principal concerns.

On the other hand, each subcontractor contributes to the job skilled personnel and an experienced foreman under the supervision of one or more construction executives, backed up by an entire functioning organization. In refusing to subcontract work, the general contractor deprives himself of this valuable assistance and simultaneously plagues his office and field personnel with problems which distract them from their primary tasks.

When the general contractor does not subcontract, his office is burdened with the additional chores of purchasing and transporting myriads of items such as plywood, shores, tarpaulins, cement,

(Continued on page 13)

* *Vice-President, Kreisler-Borg Construction Co., White Plains, N. Y.*

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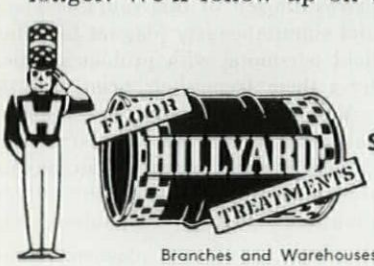
Free Specification Folders for Every Type Floor

A-4



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The "Do-It-Yourself" Clause *(continued)*

sand, bolsters, ties, expansion joint material, oils and acids, scaffolds, tubs, vibrators, pumps, mortar, block, brick, small tools . . . *ad infinitum*.

Even worse, his field superintendent is deluged with the details of receiving, checking and distributing these materials, and of hiring and supervising large gangs of men. The superintendent is changed willy-nilly from an executive coordinator to a "pusher" of men. His main interest is diverted from producing a good job on schedule to meeting labor budget costs. Efficiency in both office and field is thus impaired.

•

According to this analysis, instead of helping the job and protecting the owner's interests, the architect who prohibits subcontracting of the main trades is actually lowering the quality of workmanship, extending the time of completion, raising the cost of construction, and reducing job efficiency!

Let it be said immediately that there are exceptions to the rule that subcontracting is good practice. If a job is small in size and low in cost, the practicality of subcontracting is sharply reduced. If the job is located in an area where there are no reliable subcontractors it may prove unsatisfactory to import subs. Sometimes the nature of certain work does not lend itself to subcontracting. For example, it is generally preferable for the G.C. to do his own carpentry work on a school or church job, where a carpentry subcontractor would be constantly coming and going, unable to set up a continuous operation. This does not apply to a large housing job, however, where continuity in rough and finished carpentry work is more feasible. (None of this, it goes without saying, applies to heavy construction where there are often no "trades" to subcontract. A contractor should not be permitted to bid on a dam, for example, unless he is prepared to build it himself!)

Of course, some large contractors have concrete and masonry "departments" which function independently on a job, much as a subcontractor would, with good results. And it must be admitted that there are some contractors who, in spite of all the preceding arguments, do most of their own work, and manage to do it very well indeed.

In the last analysis, the qualifications of a general contractor bear no direct relationship to whether he subcontracts one or more of the principal items of work. There are superior and inferior contractors of both sorts, and there is an increasing number of intelligent contractors who have no fixed policy in the matter, regarding each job as an individual problem requiring its own particular solution.

How then is the architect to protect himself from the hazards of allowing an unscrupulous and incompetent contractor on his job? Only by a system of prequalification of bidders. This means careful investigation of each contractor's experience record and financial responsibility prior to allowing him on the list of bidders. (It is manifestly improper to permit a contractor to invest in preparing an estimate if he is not considered eligible to be awarded the contract.)

If a contractor has a record of completing his previous work on schedule to the satisfaction of architects and owners, and if he has maintained a good credit rating and shown himself able to work harmoniously with subcontractors and suppliers—in short, if he has proved himself to be a competent and reliable general contractor—then, by any reasonable standard, he must be considered qualified.

Such an investigation entails time, effort, and expense on the architect's part. It is much simpler, obviously, to insert a single sentence in the specifications and to trust in that sentence to serve as a cure-all. But, unfortunately, there is no such easy and sure solution. All that the "do-it-yourself" clause really accomplishes is to deprive the architect and his client of the benefits to be gained from an enlightened policy of subcontracting.

Sources of Specifications Are Many

Specifications Clinic by Harold J. Rosen

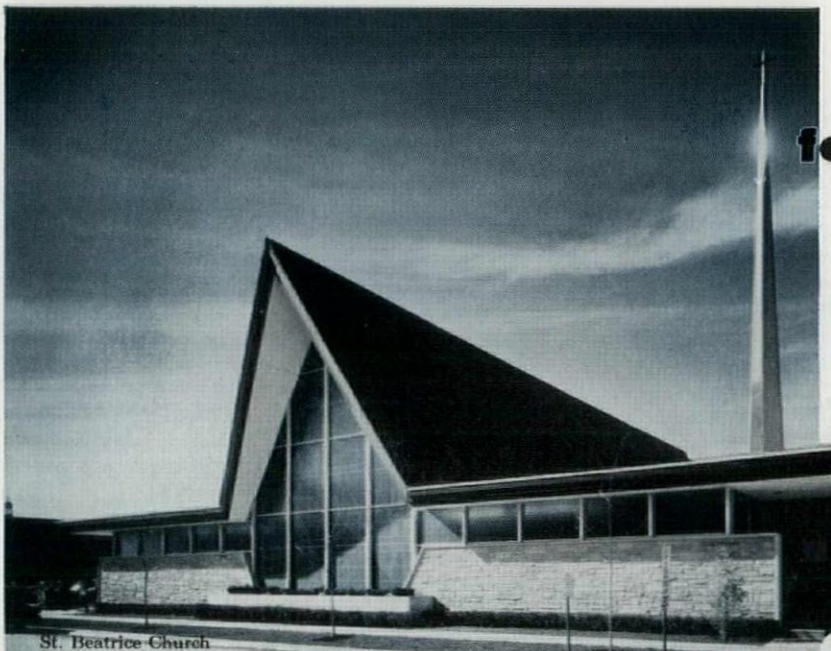
P/A Practice of Architecture *article citing valuable sources of architectural data provided by code bodies, governmental agencies, technical and trade associations.*

The scope of architectural specifications is so broad—encompassing the gamut of materials from acoustical products through zinc coatings—that no one specifications writer can possibly have a complete and intimate knowledge of all these materials, nor of the constant improvements which manufacturers are continually making. Knowing where to look for information is half the battle. Applying that information successfully is the other half. The specifications writer should familiarize himself with these specification reference sources and learn to differentiate between the good and the not too useful material that is available, since the latter will simply clutter his files. These technical references should be accumulated and made a part of a ready reference file for the specifications writer's use.

Copies of these standards are necessary in order to select types, grades, and other criteria contained therein, because some of these are optional and the specifications writer must choose those elements he wishes to incorporate in his specifications. These standards are also necessary to determine whether certain materials, submitted for approval, meet the specification requirements. The specifications writer should obtain indices listing the various standards that certain agencies and associations have published in order to secure those which will be useful to him in his work.

Specifications reference sources fall into several categories. There are codes and ordinances promulgated by official bodies, such as cities and municipalities, which have been developed to safeguard health, life, and property. These include zoning regulations, building codes, and plumbing and electrical codes. Occasionally these codes may be for minimum type of construction only and the specifications writer may prefer to specify a better grade of construction than that permitted under the codes. A reference source often used when no code prevails

(Continued on page 15)



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Sources of Specifications Are Many (continued)

or when a higher type of construction is desired is the *Building Code* of National Board of Fire Underwriters, 85 John St., New York 38, N. Y. Other nationally recognized codes are:

Plumbing Manual—issued by the National Bureau of Standards, U.S. Dept. of Commerce, Washington, D.C.
National Electric Code—issued by the National Board of Underwriters.
Code for Protection Against Lightning—National Bureau of Standards (Handbook 46).
Medical X-Ray Protection—National Bureau of Standards (Handbook 60).

Standards for materials have been devised and issued by governmental agencies, by national technical associations, and by certain producers of materials in order to provide uniform standards as to criteria, grading, and testing. The specification reference sources for these material standards are as follows:

Federal Specifications—issued by General Services Administration, an independent agency of the Federal Government and available from Superintendent of Documents, Washington, D.C.
American Society of Testing Materials Specifications—issued by American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa.
Simplified Practice Recommendations—issued by National Bureau of Standards.
American Standards Association Specifications—issued by American Standards Association Inc., 70 E. 45th St., New York, N.Y.

Another valuable service that has been performed by some governmental agencies and by national technical associations is the laboratory investigation of properties of building materials and the structural elements of buildings as well as the performance of mechanical equipment for buildings. Many of these reports have also been compiled on the basis of the experience record of many individuals who have had close association with certain materials. These specification reference sources are:

Building Materials and Structures Reports—issued by National Bureau of Standards. These reports are excellent reference sources on physical properties of materials and certain assemblies of materials.
Housing Research Papers—issued by Housing & Home Finance Agency, Washington, D.C.
Building Research Reports and Building Science Directory—issued by Building Research Institutes, Washington, D.C. The investigations by Building Research Institute are compilations of the experience record of individuals who are expert in their respective fields.
The Wood Handbook—issued by Forest Products Laboratory, Madison, Wisc., is an excellent reference source on the subject of wood.
Reports by the Small Homes Council, University of Illinois, Urbana, Illinois.

Other very pertinent sources of architectural information are the publications and standards promulgated by manufacturing, contractor, and technical associations as follows:

Acoustical Materials Assn., 57 E. 55 St., New York, N.Y.
Aluminum Assn., 420 Lexington Ave., New York, N.Y.
Aluminum Window Mfgrs. Assn., 75 West St., New York 6, N.Y.
American Concrete Institute, P.O. Box 4754, Redford Station, Detroit, Mich.
American Institute of Steel Construction Inc., 101 Park Ave., New York, N.Y.
American Institute of Timber Construction, 1757 K St., N.W., Washington, D.C.
American Hot Dip Galvanizers Assn., First National Bank Bldg., Pittsburgh, Pa.
American Iron & Steel Institute, 150 E. 42 St., New York 17, N.Y.
American Walnut Manufacturers Assn., Rm. 1729, 666 N. Lake Shore Dr., Chicago, Ill.
American Wood Preservers Institute, 111 W. Washington St., Chicago, Ill.
Appalachian Hardwood Mfgrs. Inc., Mercantile Library Bldg., Cincinnati, Ohio.
Architectural Terra Cotta Institute, c/o Structural Clay Products Inst., 1520 18 St., N.W., Washington, D.C.
Architectural Woodwork Institute, 332 S. Michigan Ave., Chicago, Ill.
Arkansas Soft Pine Bureau, Boyle Bldg., Little Rock, Ark.
Asbestos-Cement Products Assn., 509 Madison Ave., New York, N.Y.
The Asphalt Institute, Asphalt Institute Bldg., University of Maryland, College Park, Md.
Asphalt Roofing Industry Bureau, Rm. 2006, 50 E. 42 St., New York, N.Y.
Asphalt Tile Institute, 101 Park Ave., New York 17, N.Y.
Building Research Institute, Academy of Sciences, National Research Council, 2101 Constitution Ave., Washington, D.C.
Building Stone Institute, 420 Lexington Ave., New York, N.Y.
California Redwood Assn., 576 Sacramento St., San Francisco, Calif.
Cast-Iron Soil Pipe Institute, 205 W. Wacker Dr., Chicago, Ill.
Concrete Industry Board Inc., 220 E. 42 St., New York 17, N.Y.
Concrete Reinforcing Steel Inst., 38 S. Dearborn St., Chicago, Ill.
Construction Specification Inst., 1520 18 St., N.W., Washington, D.C.
Copper & Brass Research Assn., 420 Lexington Ave., New York 17, N.Y.
Douglas Fir Plywood Assn., 1119 A St., Tacoma 2, Wash.
Expanded Shale, Clay & Slate Inst., National Press Bldg., Washington, D.C.
Facing Tile Institute, 1520 18 St., N.W., Washington, D.C.
Fine Hardwoods Assn., 666 N. Lake Shore Dr., Chicago 11, Ill.
Finishing Lime Assn. of Ohio, 240 Huron St., Toledo 4, Ohio.
Fir Door Institute, 1205 Rust Bldg., Tacoma 2, Wash.
Gypsum Assn., 20 N. Wacker Dr., Chicago 6, Ill.
Hardboard Assn., 205 W. Wacker Dr., Chicago, Ill.
Hardwood Plywood Institute, 600 S. Michigan Ave., Chicago, Ill.
Indiana Limestone Institute, P.O. Box 471, Bedford, Ind.
Insulation Board Institute, 111 W. Washington St., Chicago, Ill.
Lathing Foundation of Chicago, 221 N. La Salle St., Chicago, Ill.
Lead Industries Assn., 420 Lexington Ave., New York 17, N.Y.
Maple Flooring Mfgrs. Assn., 35 E. Wacker Dr., Chicago, Ill.
Marble Institute of America Inc., 32 S. Fifth Ave., Mt. Vernon, N.Y.
Metal Lath Manufacturers Assn., 636 Engineers Bldg., Cleveland 14, Ohio.
Metal Roof Deck Technical Inst., 53 W. Jackson Blvd., Chicago, Ill.
Modular Bldg. Standards Assn., 2029 K St., N.W., Washington 6, D.C.
Mosai Associates, P.O. Box 606, New Haven 3, Conn.
National Builders Hardware Assn., 515 Madison Ave., New York, N.Y.
National Building Granite Quaries Assn., 1028 Conn. Ave., Washington, D.C.
National Bureau for Lathing & Plastering, 316 Tower Bldg., Washington, D.C.
National Combination Storm Window & Door Institute, 280 Madison Ave., New York 16, N.Y.
National Concrete Masonry Assn., 38 S. Dearborn St., Chicago, Ill.
National Hardwood Lumber Assn., 59 E. Van Buren St., Chicago, Ill.
National Inst. of Wood Kitchen Cabinets, 75 E. Wacker Dr., Chicago, Ill.
National Lime Assn., 925 15 St., N.W., Washington, D.C.
National Lumber Manufacturers Assn., 1319 18 St., N.W., Washington, D.C.
National Mineral Wool Assn., 2906 American Bldg., Rockefeller Ctr., New York, N.Y.
National Oak Flooring Mfgrs. Assn., 814 Sterick Bldg., Memphis, Tenn.
National Paint, Varnish & Lacquer Assn. Inc., 1500 Rhode Island Ave., N.W., Washington, D.C.
National Ready Mixed Concrete Assn., Munsey Bldg., Washington 4, D.C.
National Sand & Gravel Assn., 1329 E St., N.W., Washington, D.C.
National Slag Assn., 613 Perpetual Bldg., Washington, D.C.
National Slate Assn., 455 W. 23 St., New York, N.Y.
National Terrazzo & Mosaic Assn., 711 14 St., N.W., Washington, D.C.
National Woodwork Manufacturers Assn. Inc., 332 S. Michigan Ave., Chicago, Ill.
Northeastern Lumber Manufacturers Assn.

(Continued on page 16)

Specifications Clinic

(Continued from page 15)

Northern Hemlock & Hardwood Manufacturers Assn., Washington Bldg., Oshkosh, Wisc.
Northern Pine Manufacturers Assn., 4329 Oakland Ave., Minneapolis, Minn.
Oxychloride Cement Assn., 29-28 41 Ave., Long Island City, N.Y.
Painting & Decorating Contractors of America, 540 N. Michigan Ave., Chicago, Ill.
Perlite Institute, 45 W. 45 St.. New York 36, N.Y.
Philippine Mahogany Assn. Inc., 1017 Fair Oaks Ave., S. Pasadena, Calif.
Ponderosa Pine Woodwork Assn., 105 W. Monroe St., Chicago 3, Ill.
Porcelain Enamel Institute Inc., 1145 19 St., N.W., Washington, D.C.
Portland Cement Assn., 33 W. Grand Ave., Chicago, Ill.
Red Cedar Shingle Bureau, 5510 White Bldg., Seattle 1, Wash.
Sliding Glass Door & Window Institute, 7421 Beverly Blvd., Los Angeles, Calif.
Southern Cypress Manufacturers Assn., P.O. Box 5772, 2133 Kings Ave., Jacksonville, Fla.
Southern Hardwood Producers Inc., 805 Sterick Bldg., Memphis, Tenn.
Southern Pine Assn., 520 National Bank of Commerce Bldg., New Orleans, La.
Steel Door Institute, 2130 Keith Bldg., Cleveland, Ohio.
Steel Joist Institute, 1346 Conn. Ave., Washington, D.C.
Steel Kitchen Cabinet Manufacturers Assn., Engineers Bldg., Cleveland, Ohio.
Steel Window Institute, 806 Rowland Rd., Cheltenham, Pa.
Structural Clay Products Inst., 1520 18 St., N.W., Washington, D.C.
Tile Council of America Inc., 10 E. 40 St., New York, N.Y.
Tile Manufacturers Assn., 1604 K St., N.W., Washington, D.C.
Vermiculite Institute, 208 S. La Salle St., Chicago, Ill.
Wallpaper Institute, 509 Madison Ave., New York, N.Y.
Weatherstrip Research Institute, Box 128, Riverside, Ill.
West Coast Lumbermen's Assn., 1410 W. Morrison St., Portland, Ore.
Western Pine Assn., 510 Yeon Bldg., Portland, Ore.

Manufacturers' catalogs represent another specification reference source. Many of these catalogs are contained in Sweet's Architectural File, published by F. W. Dodge Corp., 119 W. 40 St., New York, N. Y. Individual catalogs can be obtained from the material manufacturer. The suggested specifications in manufacturer's catalogs should be used with caution by specifications writers. While some publications include manufacturer's specifications which are accurately drawn, others are vague, and so written as to exclude certain items of work, and leave much to be desired in the way of precise, informative, and clear subject matter and specifications.

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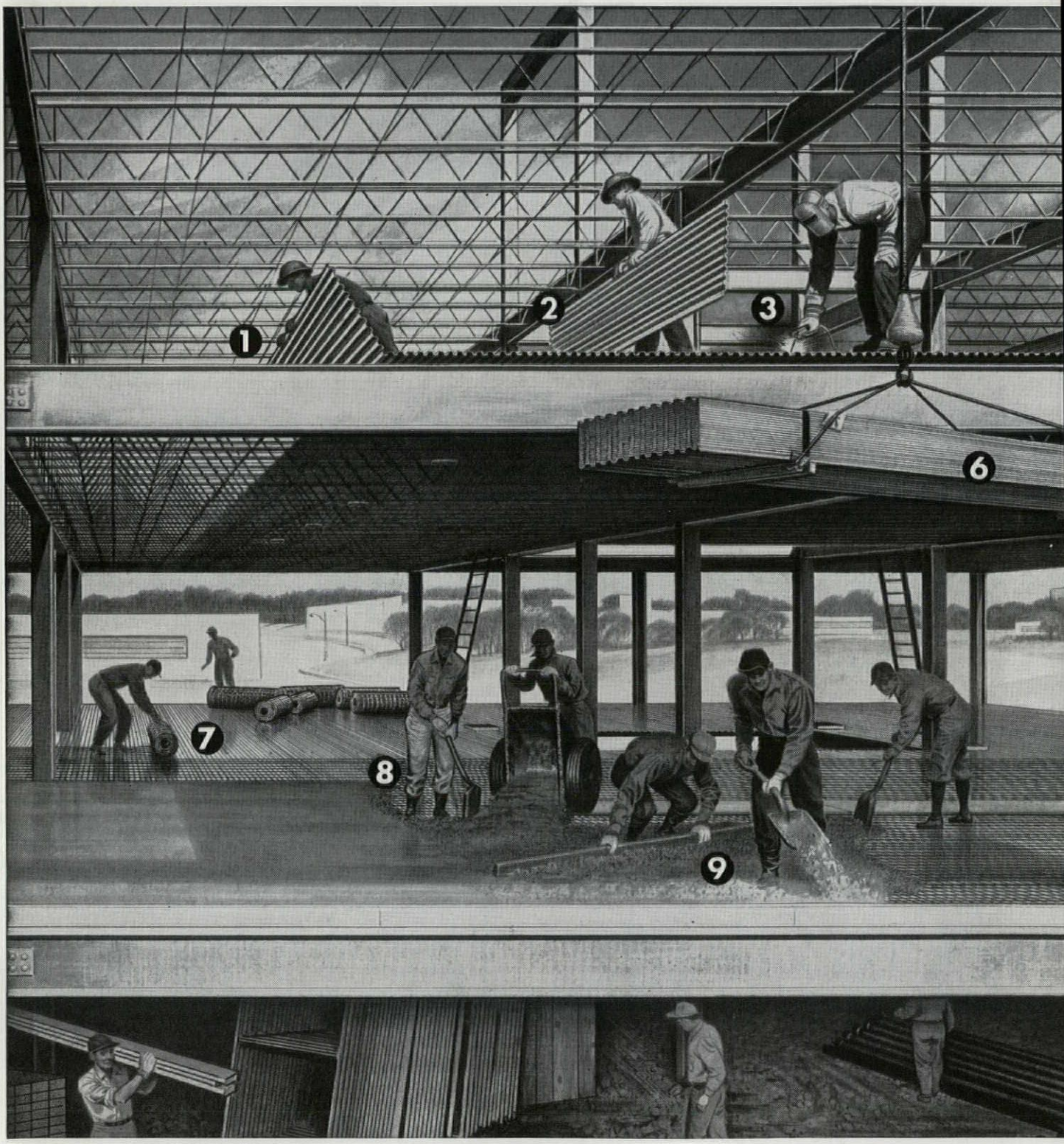

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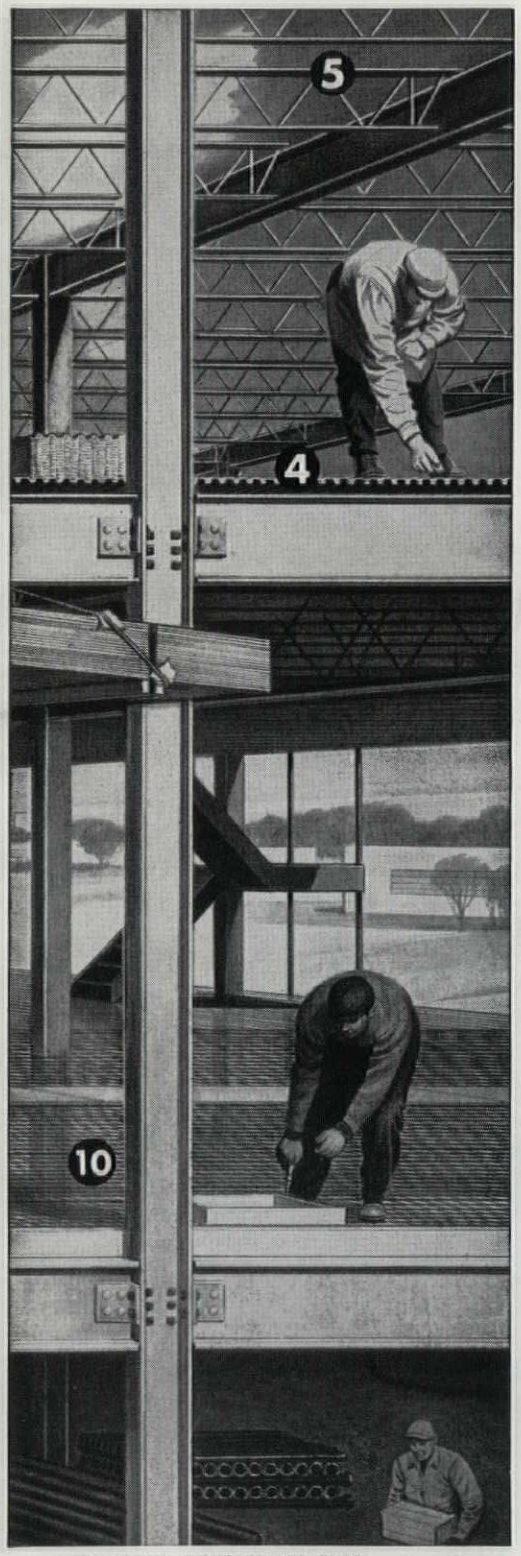

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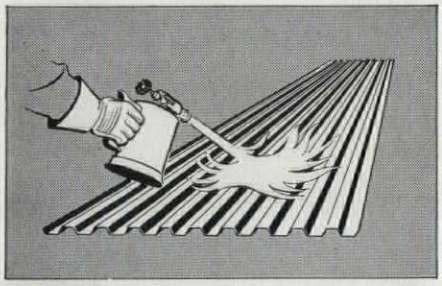

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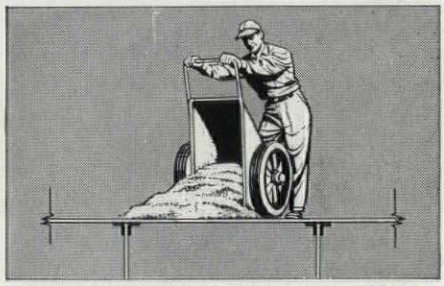

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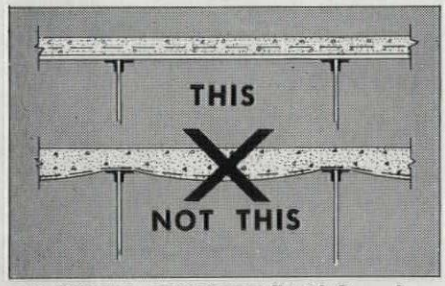
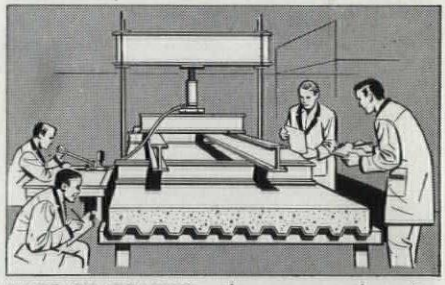


NO WASTED CONCRETE! Rigid Corruform sheets form a tight solid base, save 20% or more in concrete over "flexible type" centerings. No sacrifice in slab design.



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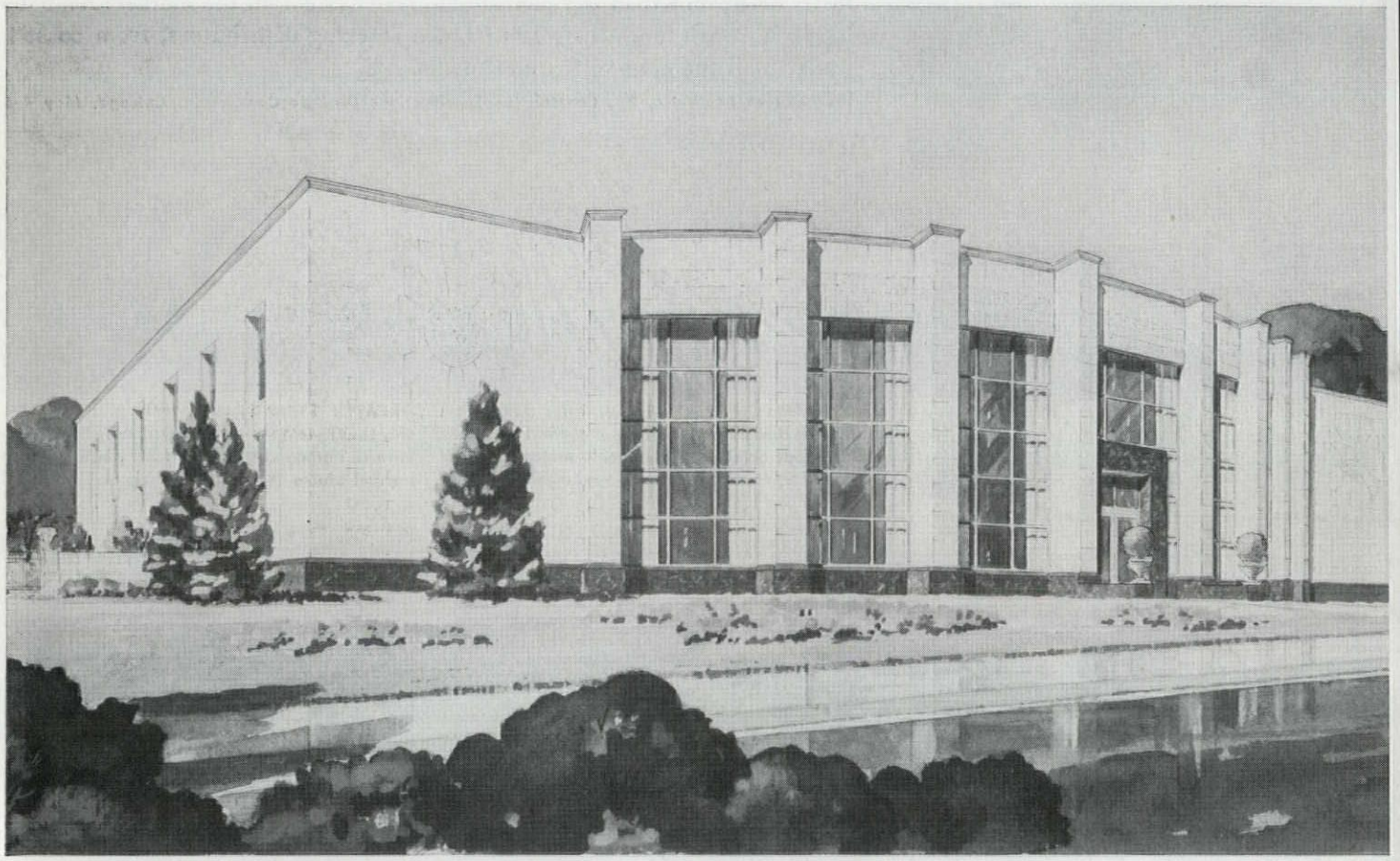

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Lee Fabian	Project Architect
Al Visioni	Project Engineer
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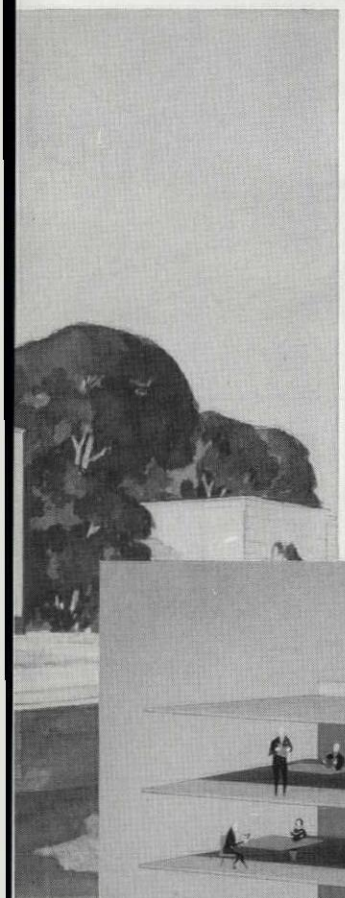

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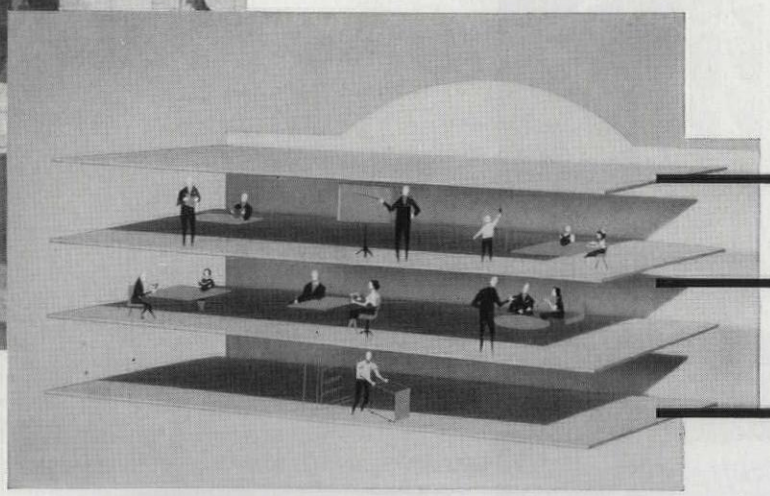

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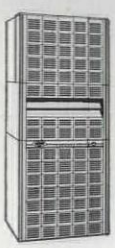
Basement—two zones
Two Landmarks (heating only) cover 14,000 sq. ft.—storage



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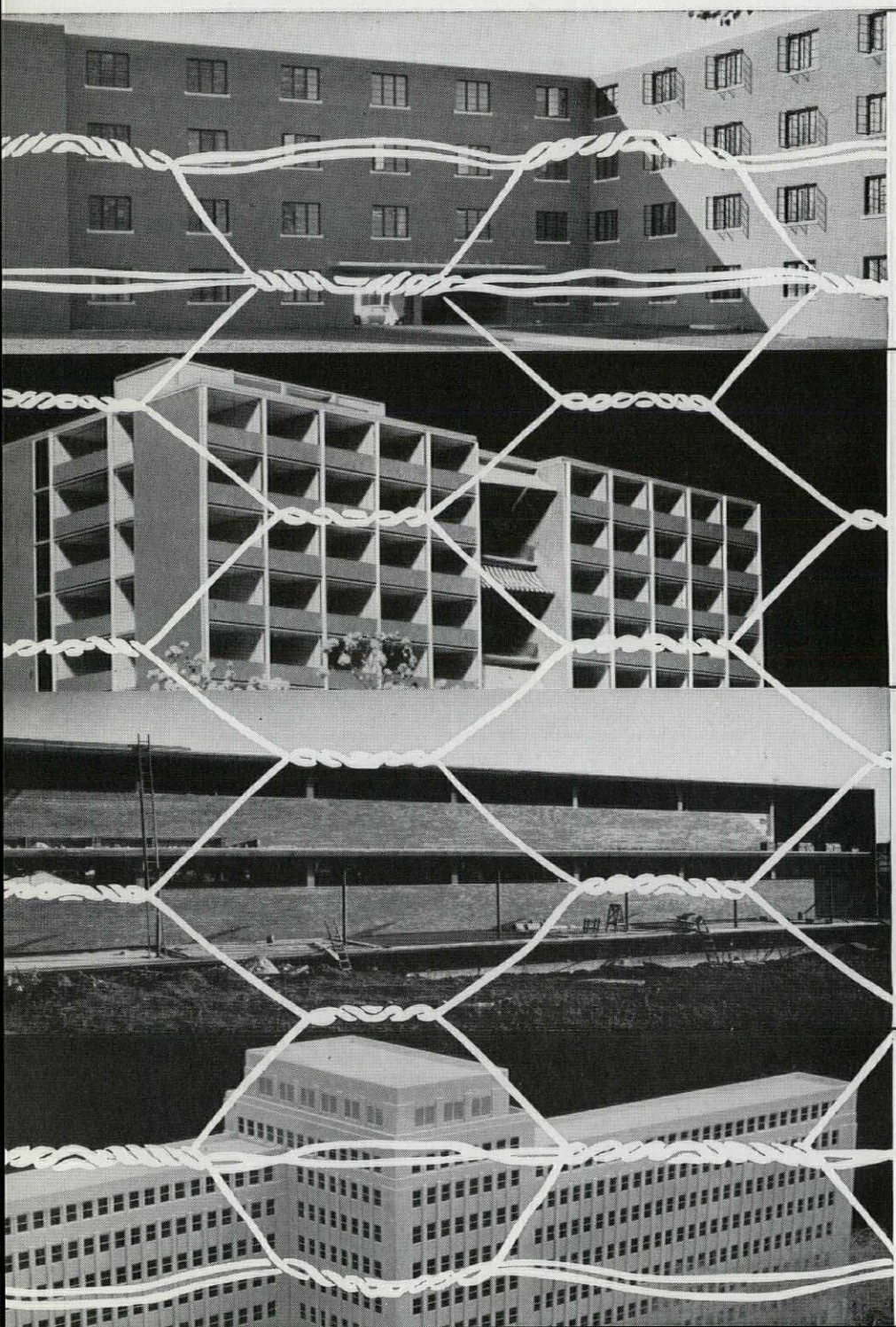
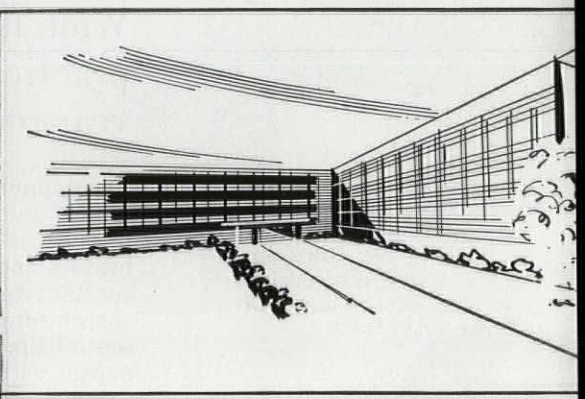
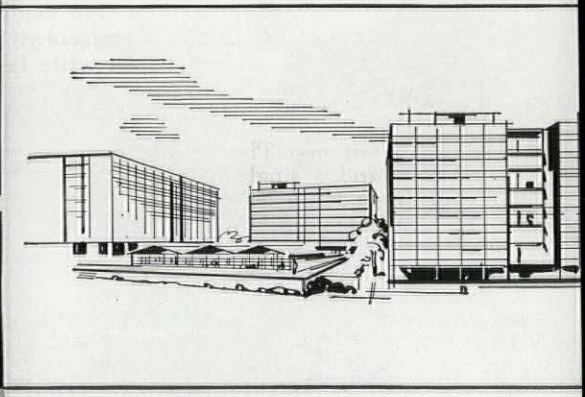
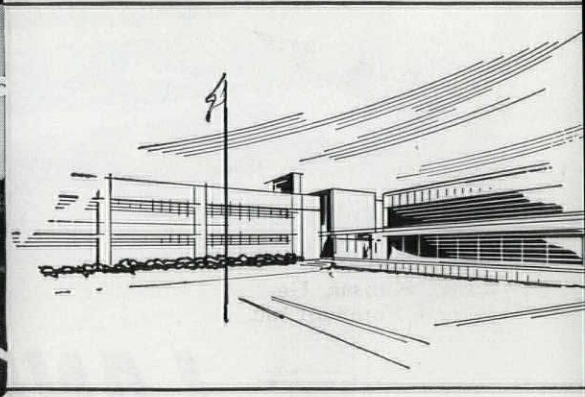
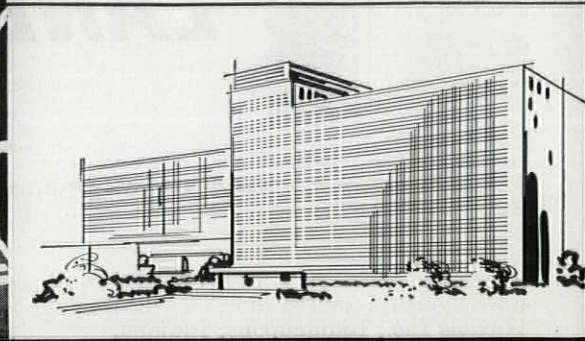










goes to college

Campus buildings are getting greater reinforcement at lower cost

Iowa

Iowa State College: Keywall masonry reinforcement approved for Helser Hall, a new men's dormitory at Iowa State College, Ames, Iowa. Architect: Brooks-Borg, Des Moines, Iowa; General Contractor: W. A. Klinger Construction Co., Sioux City, Iowa.

Missouri

University of Missouri: Three 9-story residence halls and a single cafeteria unit for women students being constructed at the University of Missouri, Columbia, Missouri. Keywall is being used in this vast project. Architect: Hellmuth, Obata and Kassabaum, St. Louis, Missouri. General Contractor: D. C. Bass & Sons, Enid, Oklahoma.

Kansas

University of Wichita: Keywall used in masonry curtain walls in the new Mathematics and Physics Building at the University of Wichita, Wichita, Kansas. Architect: W. I. Fisher & Company, Wichita, Kansas. General Contractor: Hahner & Foreman Inc., Wichita, Kan.

Indiana

Indiana University: The Elisha Ballantine Hall, a basic course classroom building at Indiana University, Bloomington, Indiana. Masonry walls are being reinforced with Keywall. Architect: A. M. Strauss Inc., Fort Wayne, Indiana. General Contractor: Huber, Hunt and Nichols Inc., Indianapolis, Indiana.

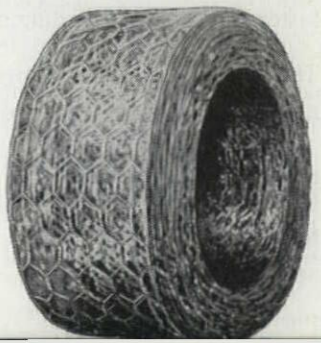
Architects accept Keywall masonry joint reinforcement for building projects at colleges and universities. Look at these new classroom buildings and residence halls at four leading universities. Masonry joints on these buildings are being reinforced with Keywall for added strength, greater crack resistance.

The ability of Keywall to increase lateral strength and reduce shrinkage cracks in masonry has been demonstrated on job after job. Recent tests confirm this superior quality. Architects know they're getting effective reinforcement at a savings.

Masons like Keywall . . . they use it as specified. They find it easy to handle and easy to adapt to a wide range of applications. Keywall can be lapped at corners without adding thickness to joints. Full embedment and a complete bond are assured.

Galvanized Keywall can be stored any place without rusting. No wonder Keywall wins wide acceptance among builders and architects!

Keywall is made for the following wall thicknesses: 4″, 6″, 8″, 10″ and 12″.



KEYSTONE STEEL & WIRE CO.

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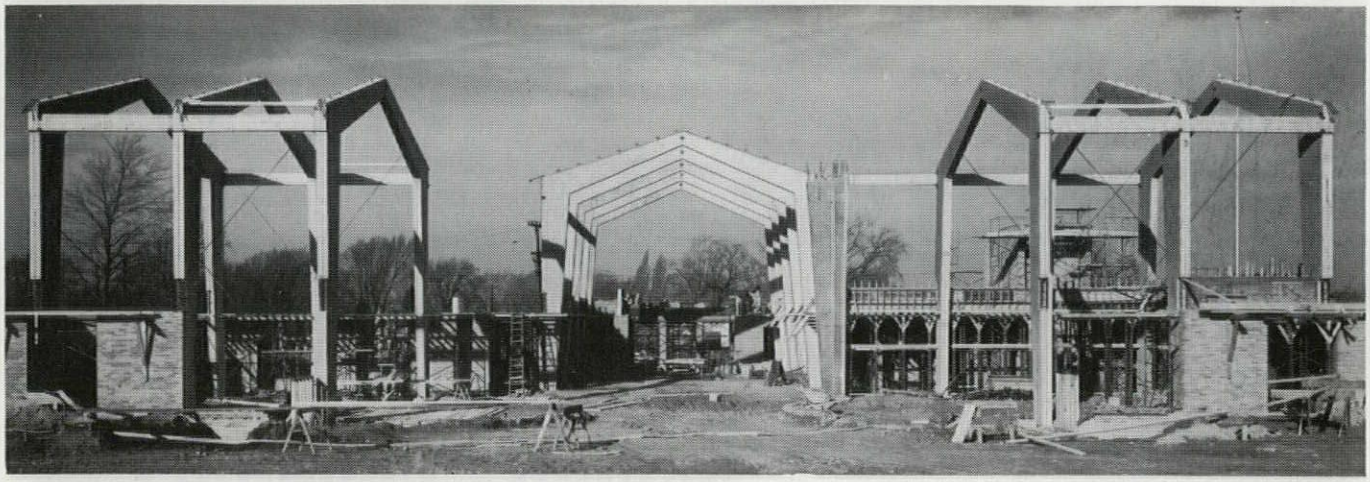
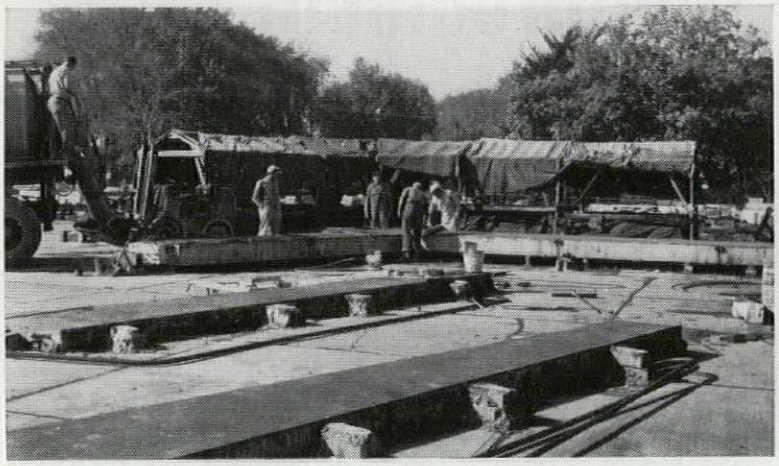
Keywall • Keycorner • Keymesh®
Keystrip • Welded Wire Fabric

These soaring two-unit precast concrete arches are 36′ high at mid-point and 42′ wide.



PRECAST CONCRETE ARCHES

form basic structure for new church



Lehigh Early Strength Cement concrete is poured in arch form at Goodstone Mfg. Co. yard. Completed arches were trucked 5 miles to job site.

Three of the four cranes required to position the arches. Note two workmen securing joint between 11½ ton arch halves.

• The new St. Ambrose Roman Catholic Church of Rochester, N. Y., with its eleven precast structural concrete arches, is another example of the growing trend toward precast concrete in modern construction.

The arches, each higher than a 3-story building and weighing 23 tons, were cast in two sections at the Goodstone Mfg. Co. plant.

In precasting these arch units, the manufacturer used Lehigh Early Strength Cement for maximum efficiency and economy. For example, forms were stripped and ready for reuse in 18 to 24 hours. And a faster production schedule cut labor costs an estimated 30%.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

Architect: Sanford Shanley, New York, N.Y.

Associate Architect: Raymond Ashley, Rochester, N.Y.

Consulting Engineers: Severud-Elstad-Krueger & Assoc., New York, N.Y.

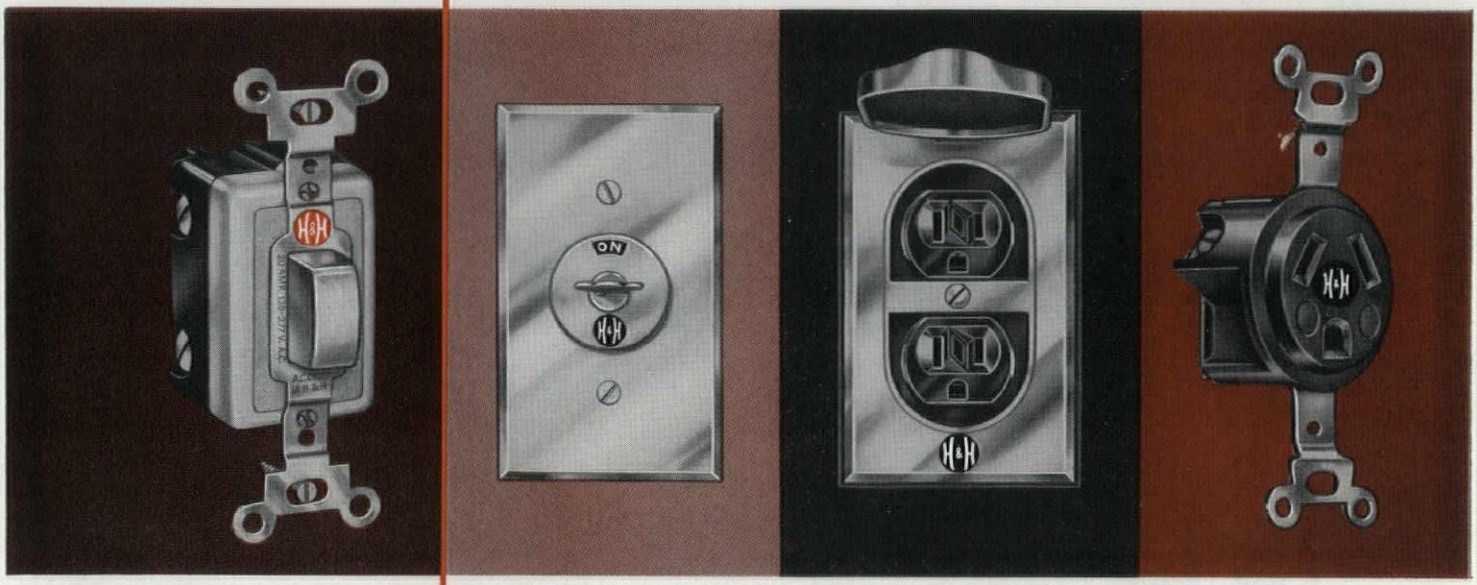
General Contractor: Frank G. Maggio & Bros., Rochester, N.Y.

Manufacturer of Precast Arches: Goodstone Mfg. Co., Rochester, N.Y.

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA.

- **LEHIGH EARLY STRENGTH CEMENT**
- **LEHIGH MORTAR CEMENT**
- **LEHIGH PORTLAND CEMENT**
- **LEHIGH AIR-ENTRAINING CEMENT**

THIS TRADE-MARK



a. b. c. d.

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Of equal importance to the selection of specification grade material is the follow-through that assures your client the quality you specified was installed. Arrow-Hart simplifies this problem by marking *all* wiring devices in its Specification Grade Line with the well-known H&H. Only Arrow-Hart's highest quality wiring devices carry this trade-mark—a trade-mark you can count on . . . a trade-mark you should look for.

Write for the H&H Specification Index Chart—designed to simplify your specification problems to: The Arrow-Hart & Hegeman Electric Company, Dept. PA, 103 Hawthorn St., Hartford 6, Connecticut.

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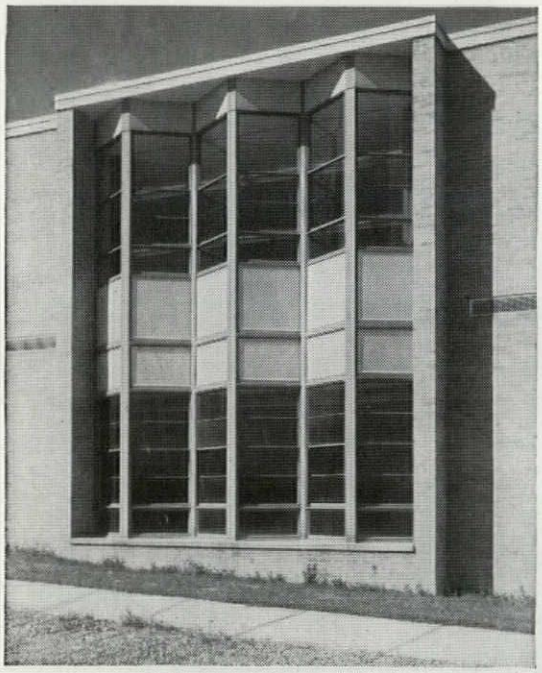
a. QUIETTE TAP ACTION SWITCH 2891-I
15 amp., 120-277 V.
b. CORBIN ROTARY LOCK 1281
Flush Type with plate
10 amp., 125 V.; 5 amp., 250 V.
c. DUPLEX WEATHERPROOF
GROUNDING TYPE RECEPTACLE 5262-WP
15 amp., 125 V.
d. GROUNDING TYPE RECEPTACLE 7621
20 amp., 277 V.

WHEN YOU THINK OF WIRING DEVICES, THINK OF ARROW-HART

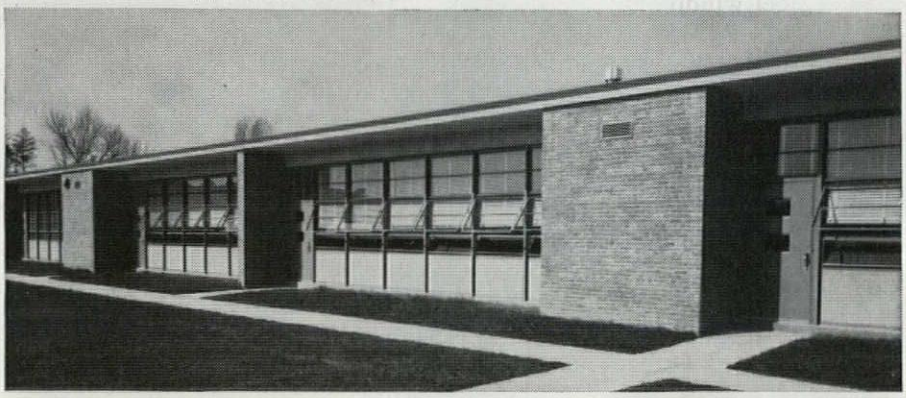


The Newer Schools

TRUSCON'S Fast, Economical

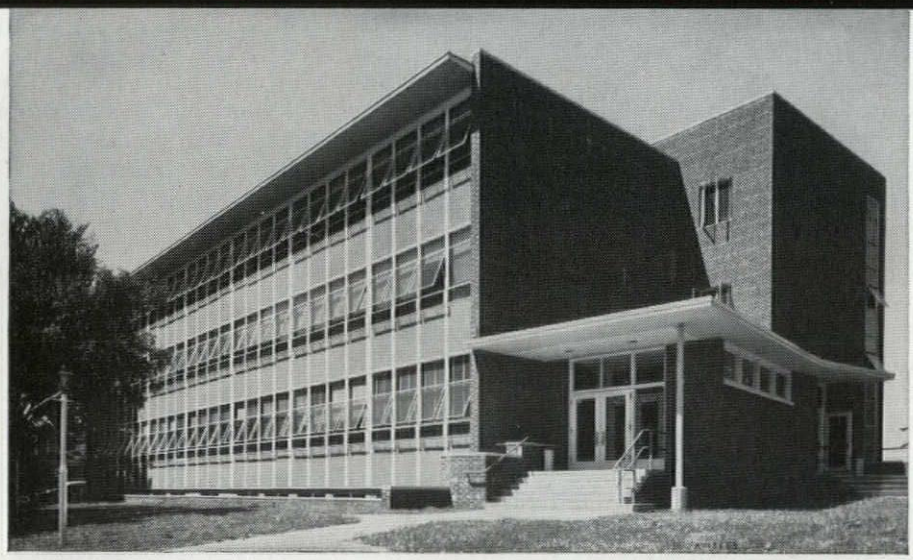
HIGH SCHOOL

Chardon High School, Chardon, Ohio.
A. E. Isdells, Architect.
Hambden Construction Co., Contractor.



PAROCHIAL SCHOOL

St. Jude's, Wheaton, Md.
Johnson and Boutin, Architects.
Victor R. Beauchamp Associates, Inc., Contractor.



ELEMENTARY SCHOOL

Bon Air School, Kokomo, Ind.
Perkins and Will, Architects.
Glaser and Glaser, Inc., Contractor.

COLLEGE

Farleigh Dickinson College, Teaneck, N. J.
Engineering Science Building
Fellheimer and Wagner, Architects.
Frank W. Bogert, Contractor.

go VISION-VENT...

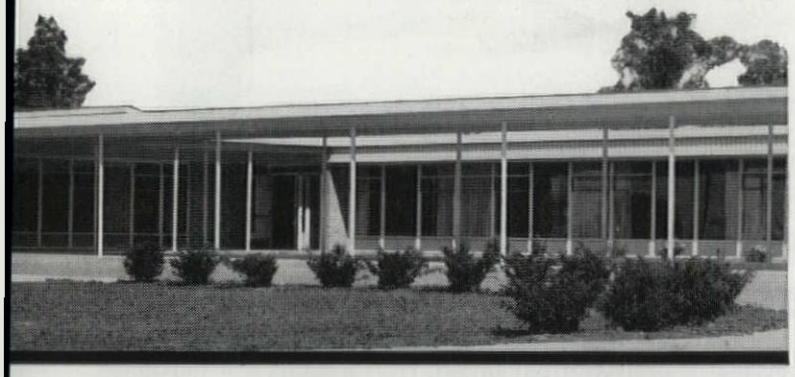
Window Wall Construction

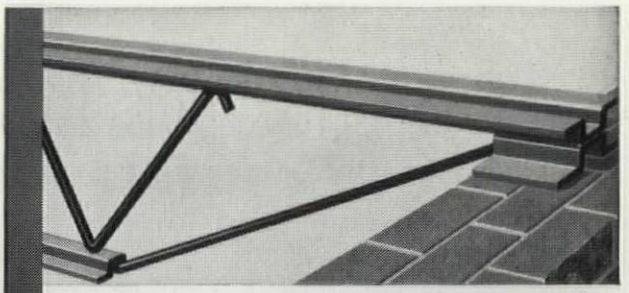
Big feature of Truscon's Vision-Vent Window Wall is its complete *flexibility.* You can select practically any type of window—double-hung, architectural projected, intermediate projected, you name it. Arrangement of fixed lights, operating lights, insulated panels is completely interchangeable. Choose either steel or aluminum.

Truscon's new Supercoat Finish also available in colors. Supercoat is the amazing factory-applied painted surface that eliminates all field painting of steel window walls, staves off maintenance painting for many a year.

Good insulating value, fire-resistance, economy, ease and speed of erection, superior daylighting and ventilation are other Vision-Vent® advantages. And, Vision-Vent blends beautifully with all other construction materials.

Where you are faced with too-high costs and too-low budgets, consider building around Vision-Vent. Send coupon for facts.

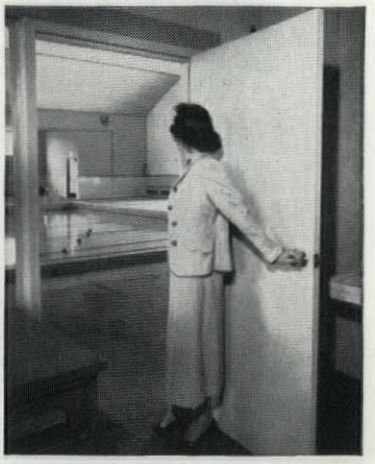




New, stronger, more versatile Truscon "O-T" Open Truss® Steel Joist now designed and engineered to 20,000 psi working stress. Balances with all other structural components. Certified by the Steel Joint Institute. Send coupon for facts.

Republic Steel Lockers now Bonderized to take and to keep a finer enameled finish. Made by Republic's Berger Division, these high-quality school lockers will retain their good looks in spite of generations of exuberant high-schoolers. All locker sizes, styles. New, improved handle. Complete planning, engineering, installation service. Send coupon.

Truscon Hollow Metal Doors for most satisfactory service in high-traffic school locations. Bonderized to take and hold a fine painted finish. Can't warp, swell, sag, shrink. Smooth, modern, flush design. Sizes and styles for every interior, exterior application. Complete with frames, choice of hardware. Send coupon.



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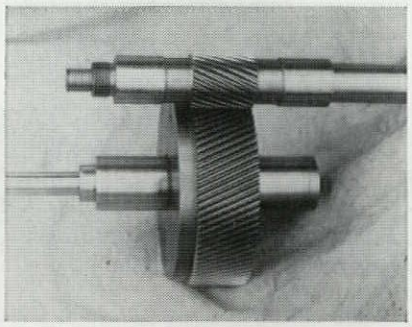
Look Inside THE FIRST 100% PACKAGED CENTRIFUGAL WATER COOLING SYSTEM

Look Inside

...The York Borg-Warner Power Transmission



Engineered in the BORG-WARNER tradition of quality power transmissions... famous for efficient, trouble-free performance for many years.

Exclusive YORK Turbopak Is 50% Smaller, 35% Lighter

Factory engineered-and-packaged, that's YORK's hermetic TURBOPAK. Contains the most nearly hermetic centrifugal compressor yet made. Lighter and smaller than any other, too. It's a fact...because no other packaged water cooling system has the built-in world-famous BORG-WARNER transmission gear. Means quiet, vibration-free performance in any location. One-piece, rigid base construction simplifies engineering layout, requires less space, and completely eliminates field assembly. Decoratively styled to include fully wired electronic control center for precise, automatic capacity control.

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Aetnapak® in-stock steel doors and frames

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completely flush hollow metal door (no visible seams)
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fully insulated
fully reinforced (continuous interlocking vertical stiffener bars)
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frames with adjustable floor anchors and removable spreaders
complete U-L service including "A" labels with single-point locks

These and many other custom-quality features are built into Aetnapak* in-stock steel doors and frames. **Avoid custom engineering delay;** choose from a variety of cataloged door and frame types ready for shipment from inventory within 48 hours. Write for your catalog today.

Other Aetna products: Aetnawall® Movable Metal Partitioning Systems; Aetna Custom Hollow Metal Doors and Frames.

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DOW | **FROM CHEMISTRY: *entire new spectrum of building materials***

Years ago, architects had to restrict their selection of building materials to what was available locally in the way of wood, masonry and glass. Today's architect can choose discriminately from thousands of types of traditional materials plus a whole new storehouse of man-made building products. These are creations of modern chemistry—specialized, uniformly high-quality materials that suggest a host of new design ideas. A few of the newest and most newsworthy are discussed briefly on these two pages.

ROOFMATE*. . . NEW ROOF INSULATION RESISTS MOISTURE, REDUCES LEAKS

Introduced early this year, Roofmate promises many valuable advantages. It's a new insulation developed by Dow for built-up roofs.

The building industry recently greeted a new roof insulation that forms its own moisture barrier, has permanent low thermal conductivity, takes hot bitumens and won't flake, crumble or deteriorate with age. This new Dow insulation for built-up roofs has the same unyielding resistance to water and water vapor as its older cousin, Styrofoam®. Thus, Roofmate helps prevent vapor build-up and resulting "blistering" and leaks—built-up roofs last years longer.

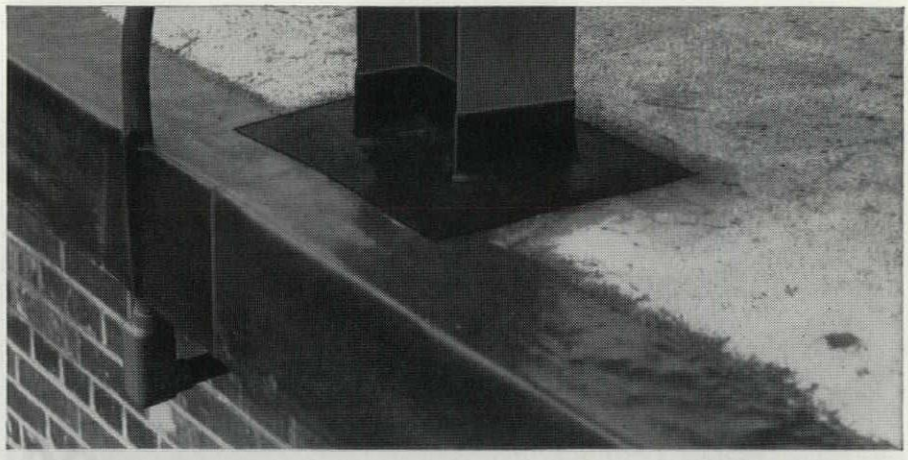
Lightweight Roofmate arrives on the job site ready for business. It's prefabricated in standard roofing sizes, unpackaged but bundled in easy-to-handle 38 lb. lots. Roofmate is easy to cut and fit around vent pipes and other obstructions. It can accommodate the weight of workmen and normal roofing equipment with plenty of compressive strength to spare.

It all adds up to a high-quality, durable roof insulation that saves time, effort and money in any installation.

*TRADEMARK OF THE DOW CHEMICAL COMPANY

New weather resistant flashing—
SARALOY® 400

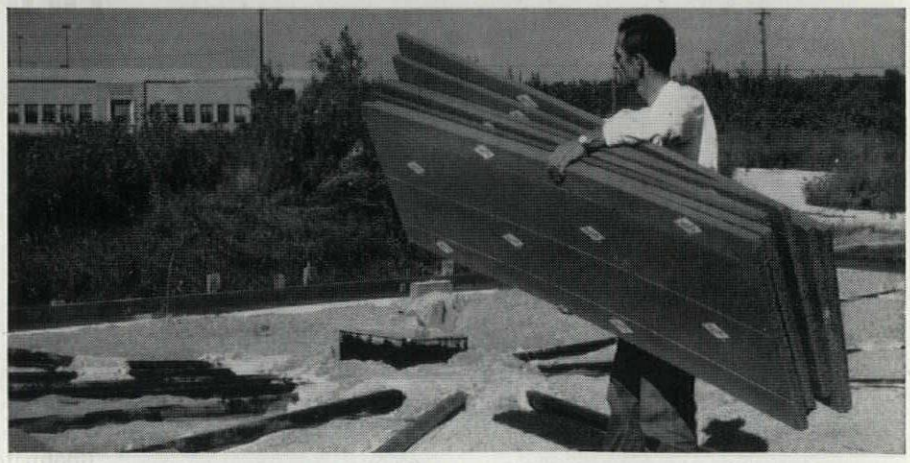
Here's a new flexible flashing material that "gives" in all the right places and lasts a lifetime. It's Saraloy 400, a tough, elastic thermoplastic with built-in resistance to water and weather. Saraloy 400 can be fabricated right on the job . . . shaped to conform to every contour. It can be bonded to most building materials, painted with ordinary exterior oil-based paints. And it's durable — won't corrode, check, crack or peel—stays tight and effective long after expansion and contraction would have destroyed ordinary flashings!

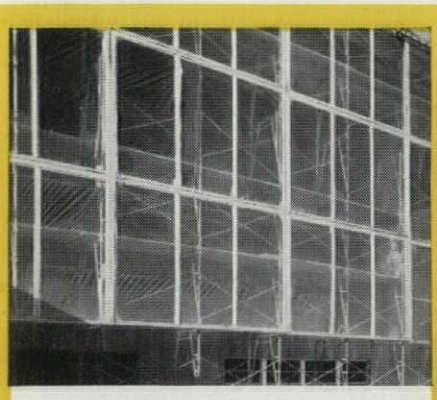


SCORBORD®
installs in an instant—lasts a lifetime

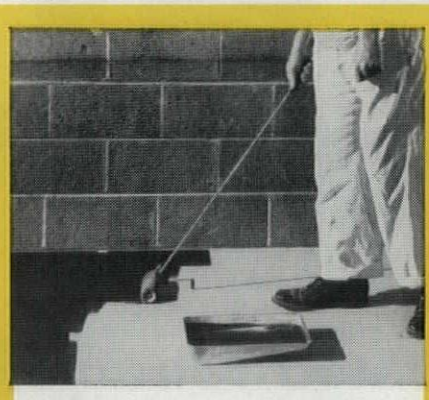
Insulating foundations and perimeter heating ducts is a job that's only done once, so it should be done well. That's why more and more architects choose Scorbord, the insulation with permanent efficiency. Scorbord† keeps moisture out, heat in—resists mold and decay. These big 2′ x 8′ pre-scored boards save up to 80% on installation time, too. Scorbord is easy to cut and fit around pipes and other irregular shapes — has plenty of compressive strength to take a concrete slab. An F.H.A. materials release has been issued.

†PATENT APPLIED FOR





POLYFILM. A top quality Dow building product with 1,000 construction uses. Ideal for temporary enclosure or moisture barrier. Supplied in convenient new dispenser box.



LATEX. New latex paints for concrete floors wash easily and are long-wearing. Seals, eliminates concrete dust, makes an attractive surface. Can be tiled over!

STYROFOAM *makes ideal panel core. Permanent low "K" factor means long-term insulating efficiency. Panels cored with rigid Styrofoam need no special reinforcement.*

VERSATILE NEW MATERIALS like these are typical of the extensive Dow Building Products line. Most of these products are new but all are tested and proved. Write today for more information on any of them. THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1602EB4.

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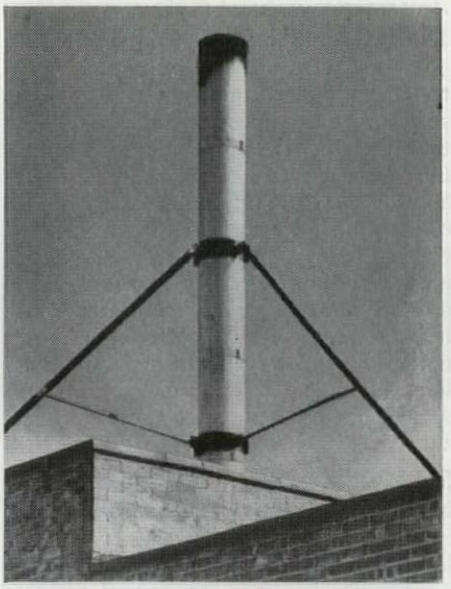
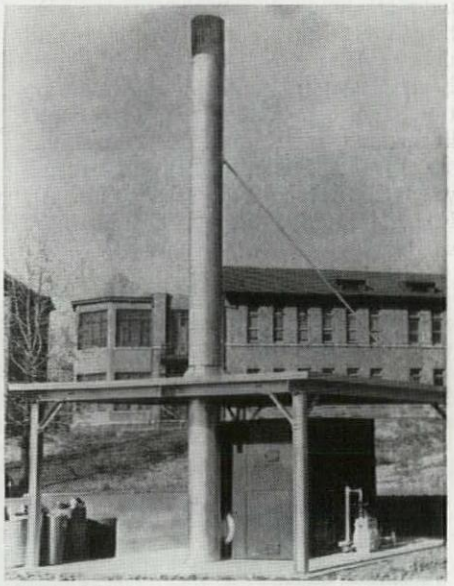
ROOFMATE* • STYROFOAM* • SCORBORD* (Pat. applied for)
SARALOY* 400 • POLYFILM* • LATEX
*TRADEMARK

THE DOW CHEMICAL COMPANY, Midland, Michigan

DOW



Van-Packer Stack, made up of Standard Sections, handles boilers and furnaces.



With Hi-Temp Sections, stack handles incinerator flue temperatures to 2000°F.

Prefabricated refractory stack goes up in a day, outlasts steel by 3 times

Van-Packer Industrial Stacks are comparable in cost with steel stacks, yet average three times greater life because they are made of special refractory material that won't corrode. The stack is available with Standard Sections for boilers and furnaces, or with Hi-Temp Sections for incinerators.

Van-Packer Stack sections are cast in three-foot lengths for easy installation. Sections have corrosion-resistant metal jacket which eliminates maintenance. Eight diameters, from 10-inch ID to 36-inch ID are available. Sections are cemented one atop another with high temperature acidproof cement, then secured with draw-up type bands.

Van-Packer Stacks are available through local Van-Packer Jobbers and Special Representatives. See "Smoke Stacks" or "Chimneys—Prefabricated" in the yellow pages of your classified telephone directory for the name of your nearest Van-Packer distributor.

Write for Bulletin IS-32- 53

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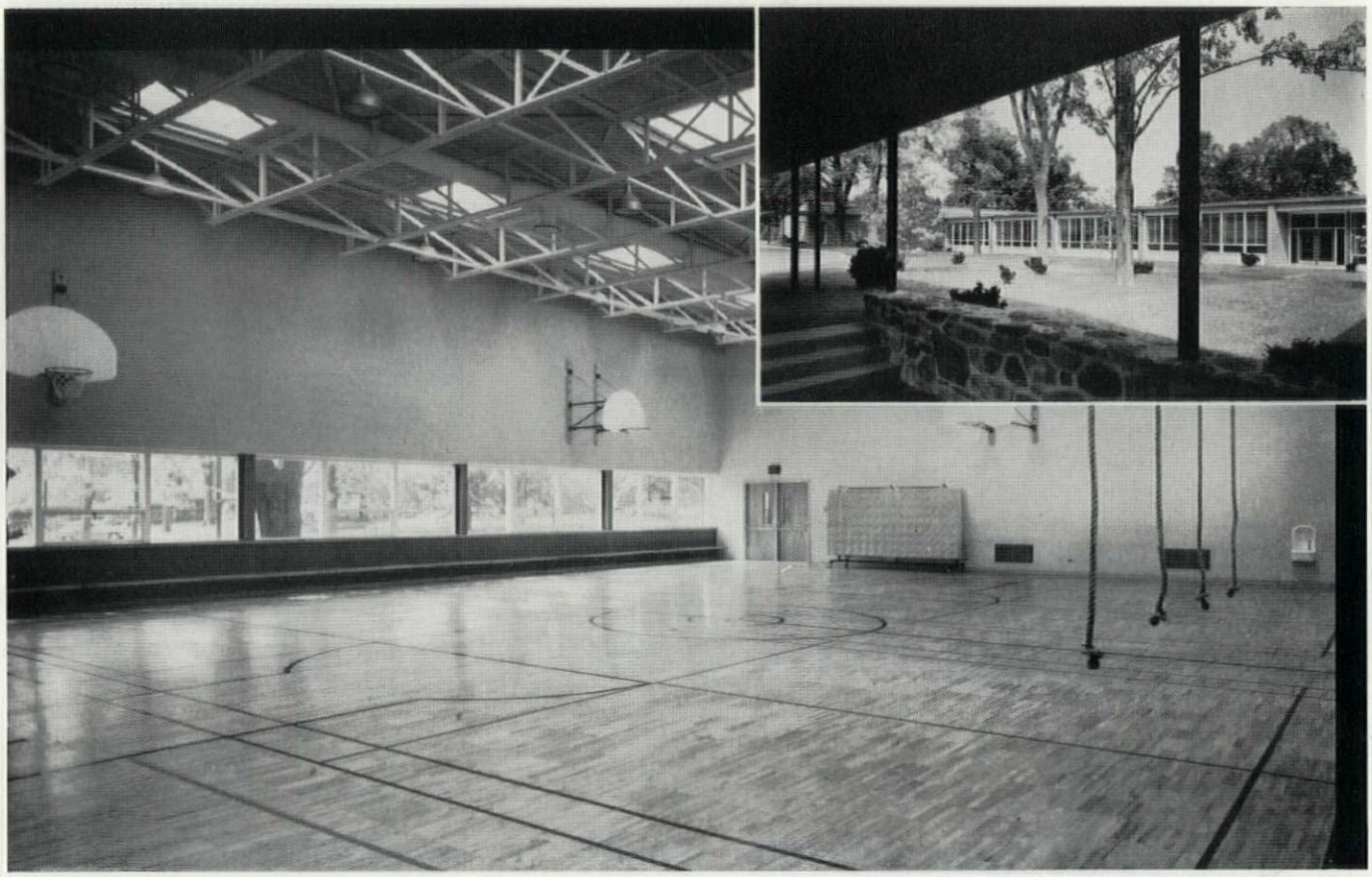


Floor of Northern Hard Maple, Patterned Design. Veterans Park Elementary School, Ridgefield, Conn. Sherwood, Mills and Smith, Architects, Stamford, Conn. Photographs: Courtesy Ezra Stoller.

ARCHITECTURALLY
EDUCATIONALLY
CIVICALLY—

a consensus that makes sense

Thoughtful schoolmen and architects, more and more, are insisting on lifetime floors of Northern Hard Maple for *elementary* school gymnasiums and multi-purpose rooms. Today's concept calls for using school facilities for broader community service. Schools formerly closed in summer now are open for health classes, neighborhood meetings, lectures, athletic events. Supervised roller skating, on easily-maintained floors of Northern Hard Maple, brings welcome revenue, and wholesome recreation. No other floor provides the resilience, the warmth, the foot-friendly comfort and over-all economy, of true *Northern Hard Maple. The MFMA mark guarantees grade, species and accuracy. Specify it—in standard strips or in patterns laid in mastic. Write for new listing of MFMA-approved finishing products, tested under revised specifications in the public interest.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
583 Pure Oil Bldg., 35 E. Wacker Dr., Chicago 1, Ill.

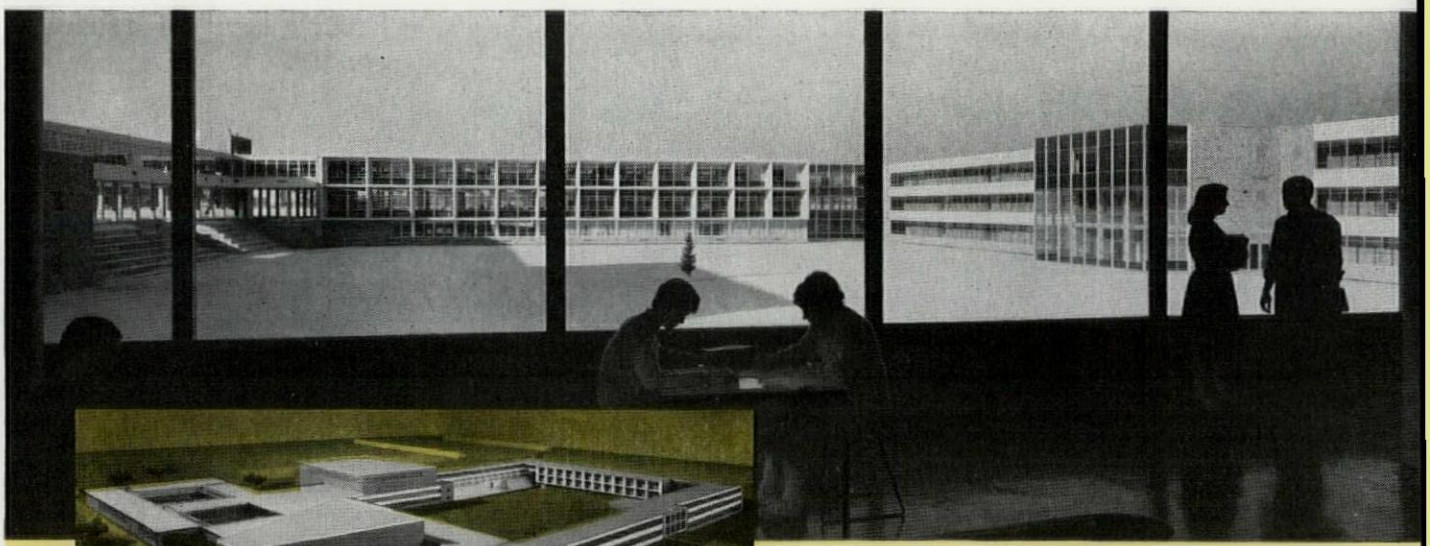
—and answers the
"anti-frill fanatics"

the finest floor that grows

*Acer Saccharum

SEE SWEET'S
(13j-MA) for full official technical data.

Northern **HARD MAPLE**



FERNDALE HIGH SCHOOL in Suburban Detroit

Above: Main court, photo taken from study hall and cafeteria area in photo below.

Architects and Engineers
JAHR, ANDERSON, MACHIDA and ASSOCIATES, Detroit, Mich.
Mechanical Contractor
PAGE PLUMBING & HEATING COMPANY, Detroit, Mich.

POWERS Temperature Control Regulates Climate for Learning in this 320,000 sq. ft., 2850 student high school

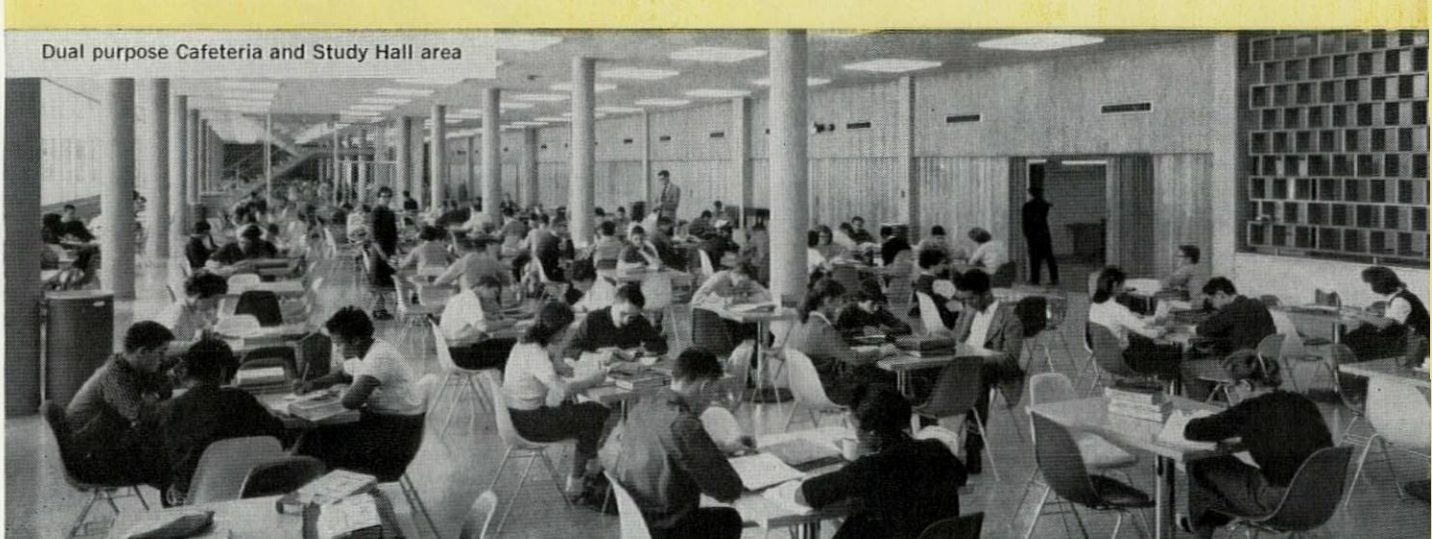
GREATER SIMPLICITY and year after year reliability of a Powers Pneumatic Control System will give Ferndale's taxpayers these money-saving benefits:

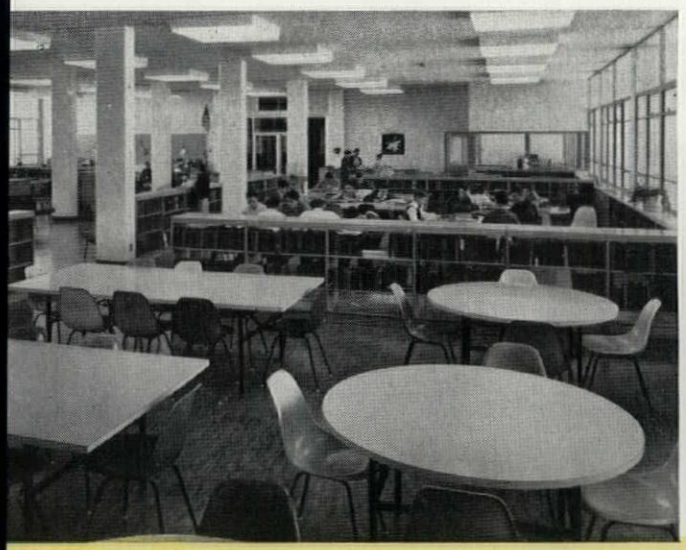
Thermal Comfort helps retain good teachers, increases their efficiency, fewer absent with colds, protects health of students, helps keep them alert. **Lower Heating Costs**—Powers accurate control prevents waste of fuel in over-heated and unoccupied rooms. Fuel savings alone soon pay back its cost.

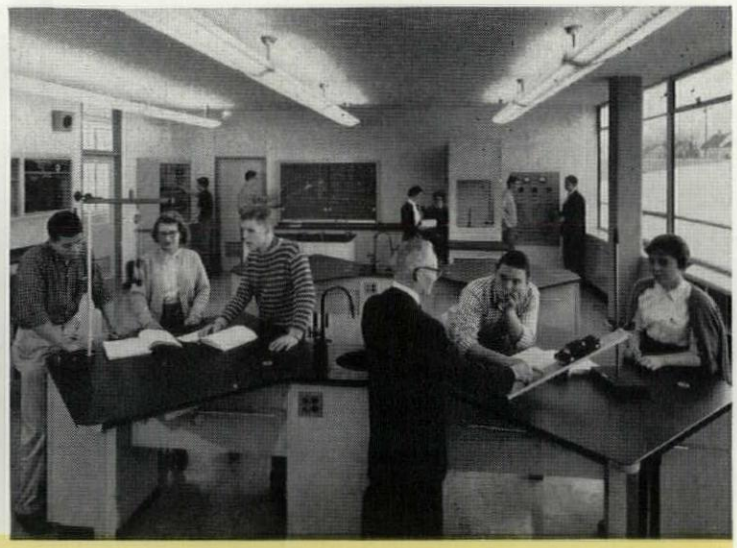
Lower Maintenance Cost—25 to 40 years of dependable control with a minimum of repairs are often reported by Powers users. Ten miles from Ferndale in the old Central High School Building in Detroit, Powers thermostats are still in operation after more than 50 years of service.

Powers Complete Responsibility—for a correctly engineered control system, proper installation, continuous successful operation and SERVICE when required from offices in 85 cities.

Dual purpose Cafeteria and Study Hall area

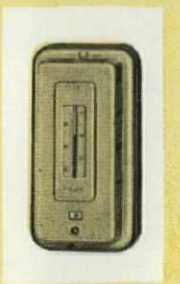






Above: Modern Library and Science laboratory.

Below: Three of the 12 booths in the Language Laboratory, one of the first of its kind in the United States. Earphones, microphones, tape recorders and phonographs play an important role in teaching foreign languages.



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For Every School Activity
Insures Utmost Comfort and Fuel Savings

225 Thermostats are used here. The forced hot-water heating system has indoor-outdoor control in zones, 124 unit ventilators in classrooms have independent day control. Larger areas are supplied by 18 different fan systems. The building is divided into 8 temperature control zones, each with a control panel for manual or automatic selection of control cycles.

Low Cost Maintenance is assured by 225 Powers PACKLESS Control Valves used here on unit ventilators and convectors. They're labor savers. They banish packing maintenance and prevent damage from water leakage.

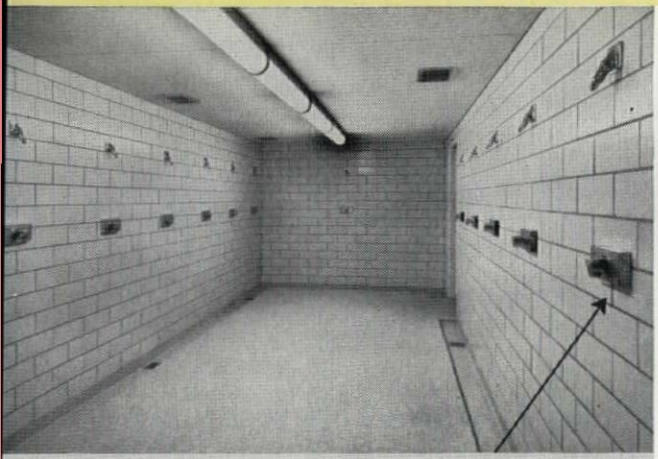
In Your New School—make sure taxpayers get the biggest return from their temperature control dollars. Ask your architect or engineer to include a time-proven Powers Quality System of Control.

Below: Band Practice Room.

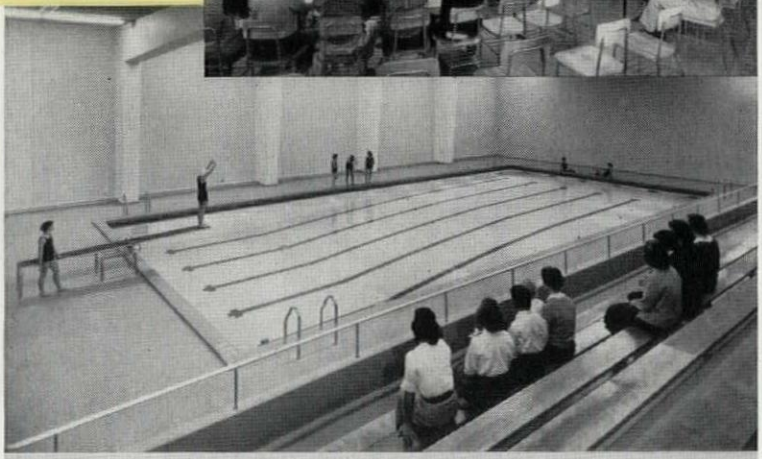
THE POWERS REGULATOR COMPANY

Skokie, Ill. • Offices in 85 Cities in U.S. and Canada

65 Years of Automatic Temperature and Humidity Control



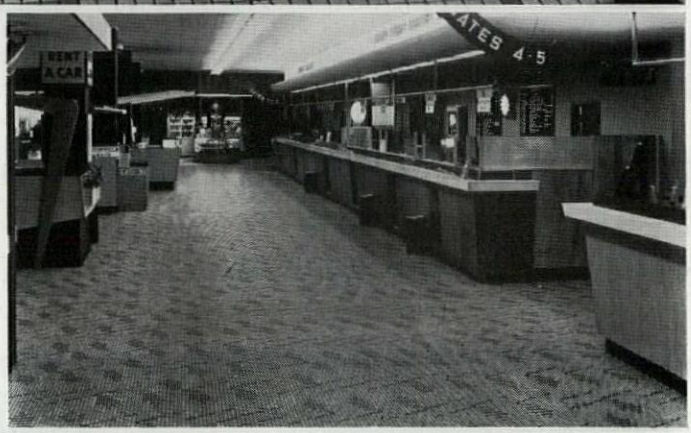
Some of the modern SAFE SHOWERS with Powers HYDROGUARD thermostatic controls.



One of the two large swimming pools. (D-7)

Suntile at work...

"This Airline Terminal Floor Paid for Itself in One Year"



Here's what Byron Dickey, Manager of Greater Cincinnati Airport, says about his modernization of the terminal floor with ceramic Suntile—

"We installed Suntile two years ago, applying it with adhesive right over the existing synthetic tile floor.

"Even though approximately 3 million people pass through the terminal each year, this floor shows no signs of wear. And it saves so much in cleaning costs that it paid for itself in one year. We save on labor, wax, stripper, and buffing equipment.

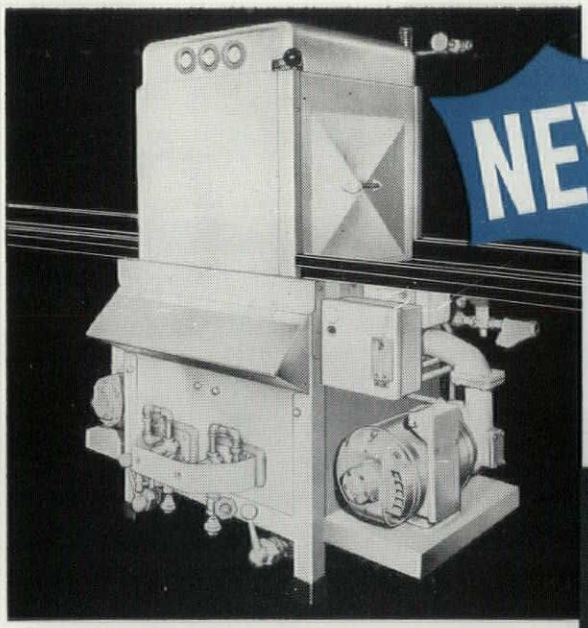
"Also, there hasn't been one reported accident from slipping since Suntile was installed. Before, accidental falls were numerous."

When you want *both* style and practicality for floors and walls—call your Suntile dealer . . . You'll like the functionally balanced Suntile colors... And for special designs in Suntile, the services of our staff of trained ceramic artists are always available to you at no cost.

Now, Suntile is more economical than ever with new Setfast method of installation. Write for details. Address Dept. PA-49.

THE CAMBRIDGE TILE MFG. CO.

P.O. Box 71, Cincinnati 15, Ohio



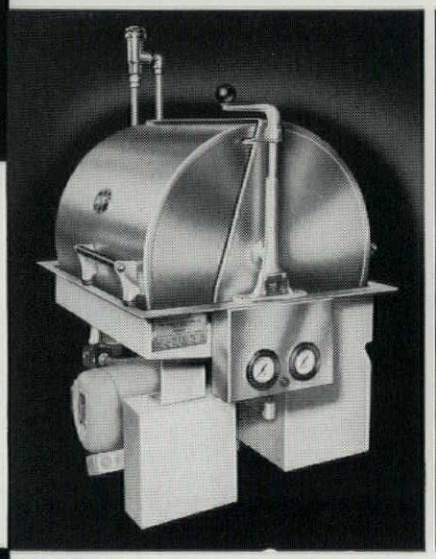
NEW

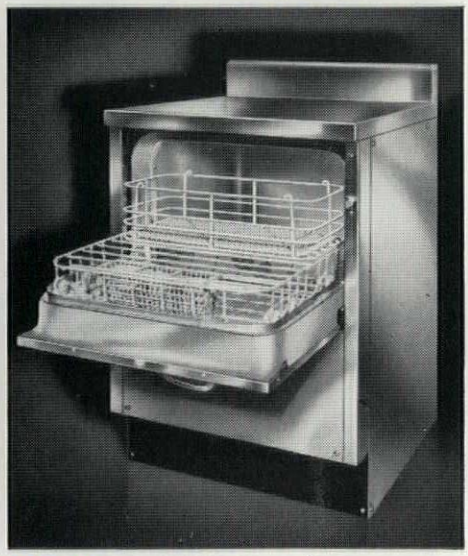
DISHWASHER DEVELOPMENTS by Hobart

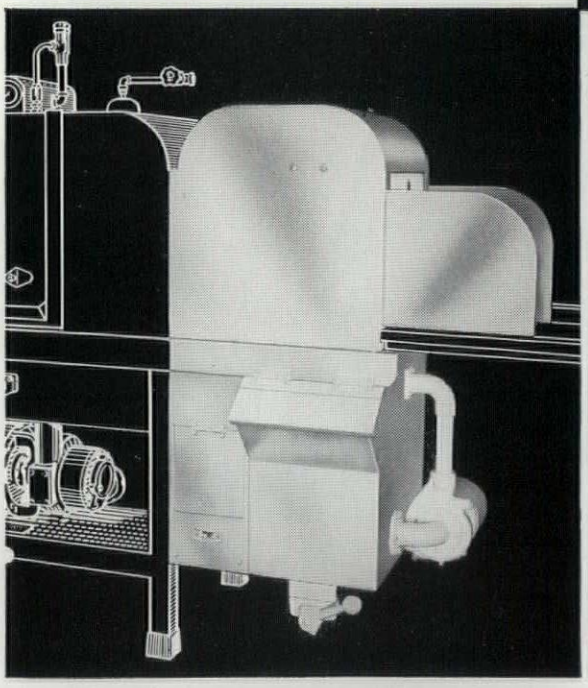
Space...speed...savings...sanitation. These are the areas where Hobart research is constantly improving the performance of the industry's most complete line of quality dishwashing machines. Here are the latest of these developments—each designed to make a specific dishwashing operation more efficient for your commercial kitchen layouts.

NEW two-tank machine in space of one-tank type

Another industry-first by Hobart. Now you can have all the improved sanitation and efficiency of a two-tank machine with power wash, separate recirculating power rinse, and final fresh-water rinse—all in a machine with the same between-tables dimensions as our popular AM series single-tank machines. The unique design of the Hobart AM-77 dishwasher features two separate Hobart-built motors and pumps.







NEW timed countertop dishwasher

A favorite straight-line machine for smaller operations, the SM series of machines now offers improved automatic-timed control for power wash and rinse cycles...is more compact, simplified. Single control for timed operations. "On-off" pilot light indicates machine operation. Another important feature: manual rinse for glasses always available.

NEW stainless steel... inside and out

The exclusive Hobart undercounter or free-standing dishwasher now features all interior and exterior surfaces of durable, easily cleaned stainless steel. Ideal for convenient yet out-of-the-way installation in bars, drugstores, snack bars, diet kitchens, rest homes and as a glass-washer unit in higher volume kitchens. Capacity, 600 glasses an hour.

NEW compact power scrapper...saves water

This newest addition gives Hobart the most complete scrapper line. The Model RS gives power recirculated scrapping advantages in space of 22 inches —using overflow wash water from the dishwasher, saves water and reduces operating costs. Many new features such as front-removable scrap trays.

It is good insurance for you to specify machines that can be depended upon to guarantee the efficiency of the kitchens you design. As an architect you'll readily appreciate the performance and dependability that are synonymous with kitchen machines bearing the Hobart name. You'll appreciate the flexibility of choice offered by the complete line of Hobart equipment.

Check Sweet's Architectural File for complete specifications on all Hobart kitchen and dishwashing machines. Or send in the coupon.

Hobart

Hobart machines

A complete line by the World's Oldest and Largest Manufacturer of Food Store, Bakery, Kitchen and Dishwashing Machines

The Hobart Manufacturing Co., Dept. HPA,
Troy, Ohio

☐ Please send information on dishwashers.
☐ Please send information on other kitchen machines.

Name of Firm.....

My Name.....

Address.....

City.....*Zone*.....*State*.....

1st National Bank Building, Tulsa, Okla., is equipped with B&G Monoflo Fittings. Carson and Lundin, Architects.

NEVER HAS A PROPERLY DESIGNED B&G *MONOFLO*® SYSTEM FAILED!

From small residence to the largest conceivable installation, B&G Monoflo Fittings assure a correctly balanced one-pipe forced hot water system.

B&G Monoflo Fittings enable you to design a one-pipe forced hot water heating system of any size with assurance that it will be correctly and efficiently circulated. That's because the Monoflo Fitting is an *engineered* device—not just a "scoop' or "choke."

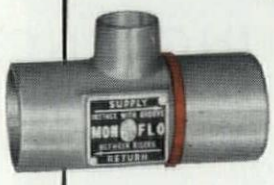
These Fittings are designed to handle definite radiator sizes, maintain proper temperature drops and permit the use of economical riser sizes. They provide adequate diversion under average conditions *without introducing excessive resistance.*

An exclusive feature of B&G Monoflo Fittings is that there is virtually no limit to the number which can be installed in any circuit of a one-pipe forced hot water system. Design problems which otherwise occur are eliminated.

Complete design procedure for B&G Monoflo heating systems is found in the B&G Handbook.

Heat in this residence is properly distributed by B&G Monoflo Fittings

NEW "RED-RING" COPPER MONOFLO®

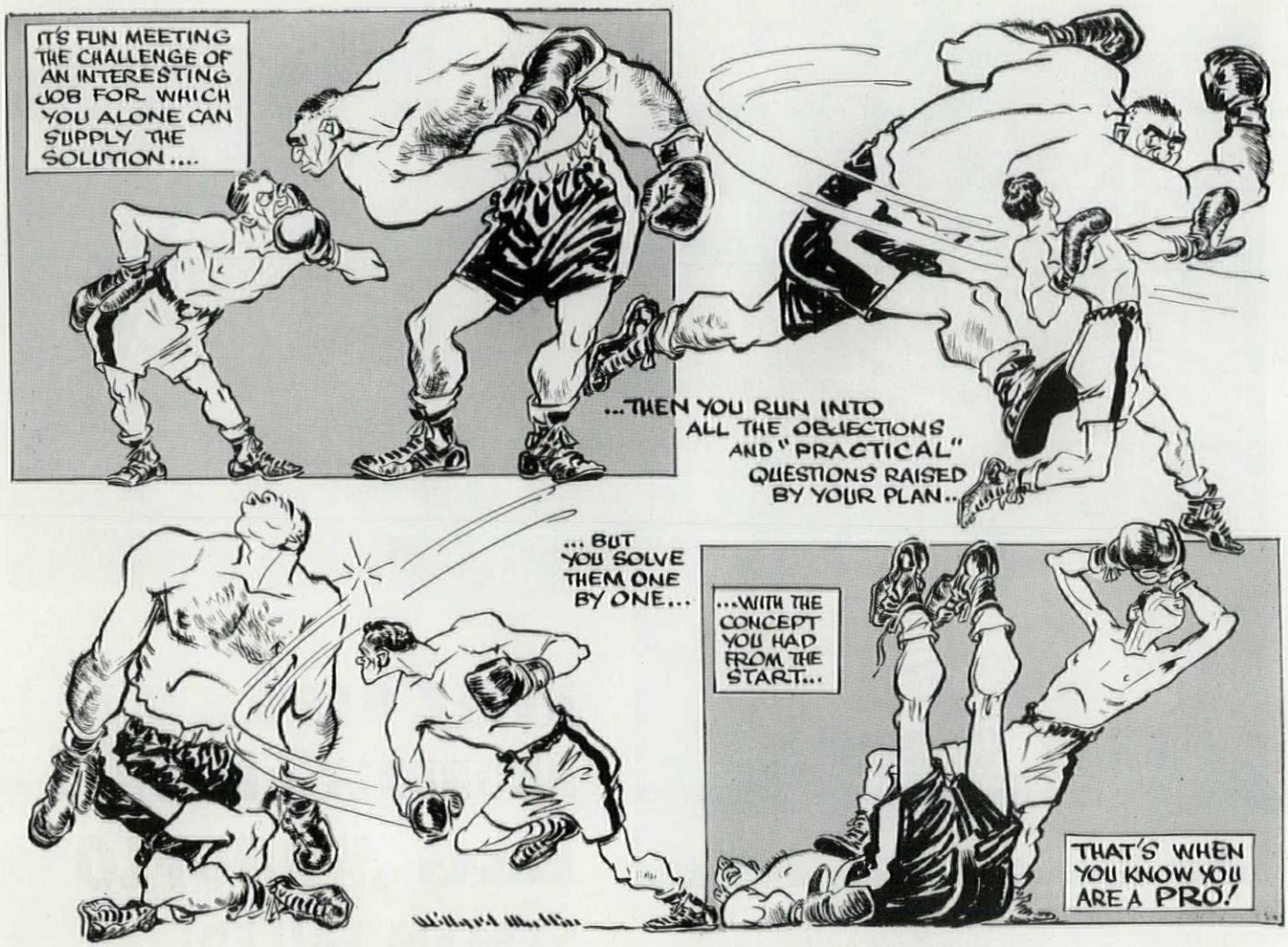


Made in 1" and 1¼" sizes, the "Red-Ring" can be used for up-feed, down-feed, supply, return, one or two-fitting installations. Just keep the "red-ring" *between* the risers.

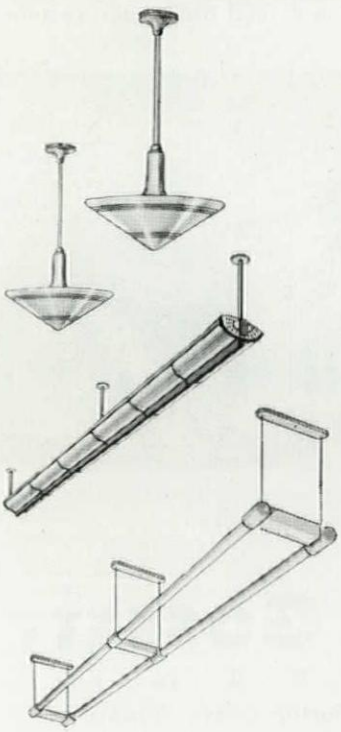
Reg. U.S. Pat. Off.

BELL & GOSSETT
COMPANY
Dept. FR-37, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario



THE PLANNER'S PRIVATE FIGHT....



As Willard Mullen, noted sports cartoonist sees it, getting a soundly conceived job completed isn't always easy for men with creative responsibilities.

To make certain that all their projects function *reliably*, architects naturally insist on dependable equipment.

But, in lighting, the most exacting practitioners look for two additional benefits from their equipment. They expect their fixtures to *light their rooms graciously* and *add an attractive design element* to today's streamlined interiors.

That's the reason so many "old pro's" specify Ainsworth for their most challenging lighting jobs.

AINSWORTH LIGHTING, INC.

38-10 29TH STREET, LONG ISLAND CITY 1, N. Y.

High Quality Lighting Since 1920

THE VAST MAJORITY OF THE NATION'S FINE BUILDINGS ARE SLOAN EQUIPPED

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plumbing wholesaler
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New Home Office
Medusa Portland Cement Company
CLEVELAND HEIGHTS, OHIO

COMPANY PRODUCTS GLAMORIZE NEW MEDUSA HOME

• Dramatic use of Portland Cement enhances the beauty of Medusa's praiseworthy new home office building. In its curved design to meet the adjoining boulevard, curtain walls are of precast Portland-terrazzo panels, hung from floor slabs. Building-high grids of aluminum join the panels and form window frames. Separating two large office areas in the main unit is a two-story high central lobby, part of which is a lounge overlooking a pool and landscaping. The lobby flooring is Portland-terrazzo in three shades of green and the patterned walls are of white cement with small white marble aggregates. Private offices line the north wall and executive offices are in the penthouse. Here the walls are similar to those in the lobby while the curved roof of thin-shell concrete demonstrates another use of the company's versatile product. Accounting, mailing and other facilities are in a one-story wing and the entire project is air conditioned. Installed in all washrooms on all floors are SLOAN *Flush* VALVES, most favored of all.

SLOAN *Flush* VALVES
FAMOUS FOR EFFICIENCY, DURABILITY, ECONOMY
SLOAN VALVE COMPANY • CHICAGO • ILLINOIS

Another achievement in efficiency, endurance and economy is the SLOAN *Act-O-Matic* SHOWER HEAD, which is automatically self-cleaning each time it is used! No clogging. No dripping. Architects and Engineers specify, and Wholesalers and Master Plumbers recommend the *Act-O-Matic*—the better shower head for better bathing.

Write for completely descriptive catalog


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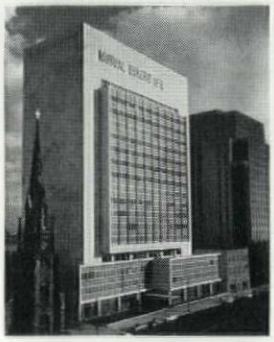

Architects: Eggers & Higgins, New York City, N. Y.
Contractor: George A. Fuller Co., New York City, N. Y.

Venerable age . . . dynamic youth stand side by side

IN THE ILLUSTRATION HERE, the happy juxtaposition of a house of worship and the new home office building of the Mutual Benefit Life Insurance Company in Newark, New Jersey, underscores a proud architectural heritage and the dynamism of today's creations.

It is with good reason that glass is playing an important role in contemporary structures. And this impressive modern building is an outstanding example of the increasing use of Pittsburgh Glass as a basic material in the planning of structures of all kinds.

Pittsburgh's SPANDRELITE® glass in color is utilized in this building for the spandrel areas; Pittsburgh Polished Plate Glass for the vision areas; HERCULITE® Tempered Plate Glass Doors, equipped with PITTCOMATIC® automatic door openers; SOLEX® Heat-Absorbing Plate Glass for more comfortable interiors; quality PENNVERNON® Window Glass for openings where sun-heat is not a problem; Heavy Plate Glass for room dividers and other interior applications; Pittsburgh Mirrors in the rest rooms. All of these *Pittsburgh* products helped to create a structure which is at once both beautiful and functional.

In planning new buildings, or in remodeling existing structures, we suggest that you give prime thought to Pittsburgh Glass. It will help you design them *better*. For assistance on specific glass problems, contact your nearest Pittsburgh branch for the name of the architectural representative serving your area. There is no obligation on your part.

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. . . the basic architectural material

Paints · Glass · Chemicals · Brushes · Plastics · Fiber Glass

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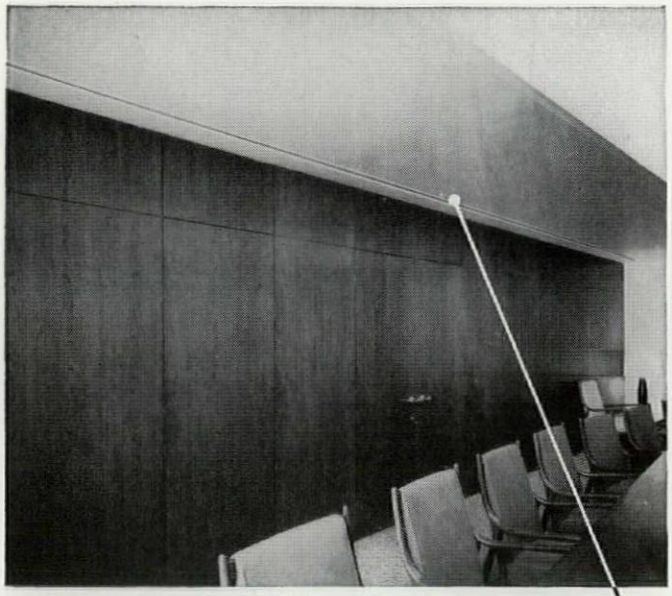

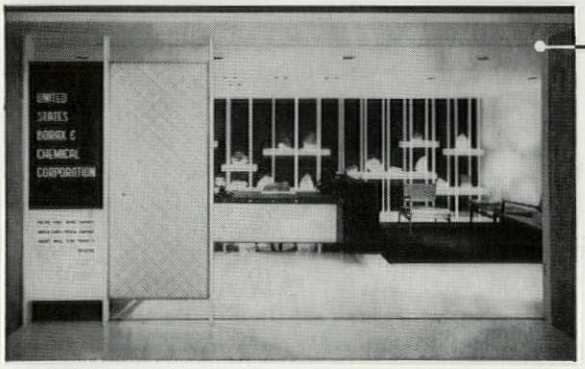

Designer:
Maria Bergson Associates

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Distinctive SLOT TYPE Diffusers

Look around . . . you'll see STRIPLINE by AGITAIR everywhere. And no wonder. STRIPLINE combines the best features of both slots and efficient air diffusers to provide equalized air flow throughout its entire length.

Slender, inconspicuous, practical and versatile . . . STRIPLINE slot diffusers can be located in walls, ceilings, coves, moulds, window reveals, stools . . . yes anywhere to suit interior design.

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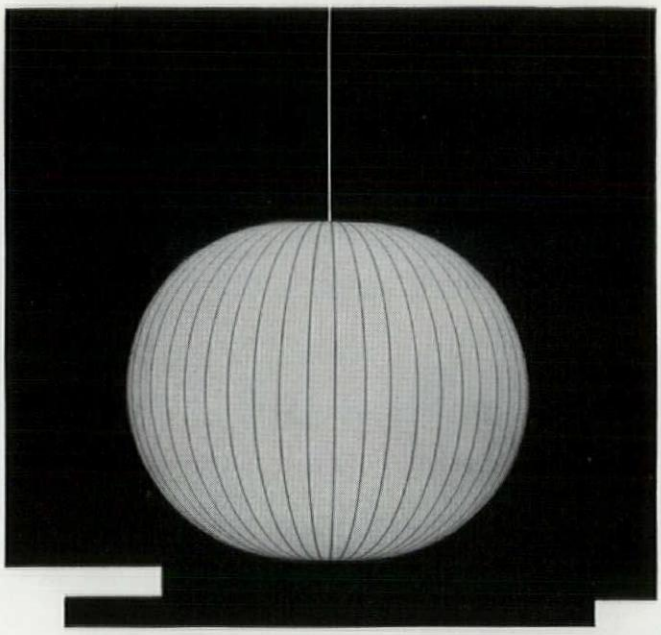

THESE ARE THE ORIGINAL BUBBLE LAMPS . . . DESIGNED BY GEORGE NELSON

TRULY A TWENTIETH CENTURY CONCEPT IN GLAREFREE ENJOYABLE LIGHTING

HOWARD MILLER CLOCK CO., ZEELAND, MICH.

NATIONAL DISTRIB.: RICHARDS-MORGENTHAU, 225 FIFTH AVENUE, N. Y. C.

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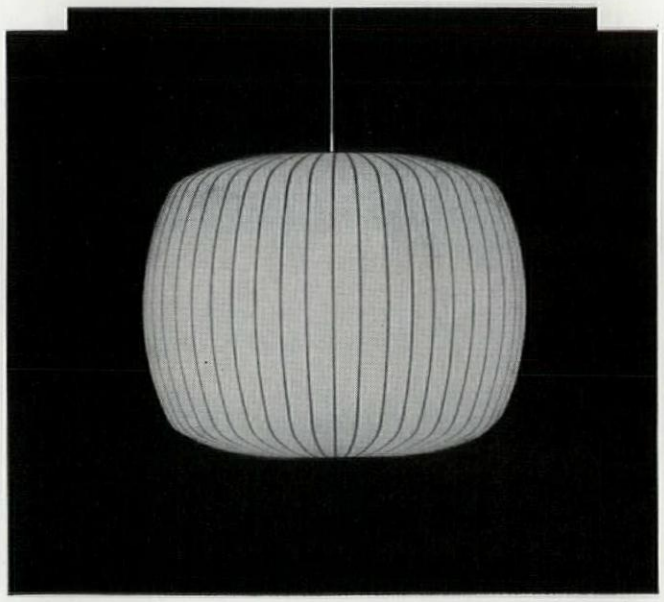


BRIGGS
B E A U T Y W A R E

the style leader in plumbing fixtures

CONVENT AND ACADEMY of the SACRED HEART, Bloomfield Hills, Mich. Architects: Smith, Hinchman & Grylls Associates. Plumbing Contractors: Harrigan & Reed Heating & Plumbing Co.

New Academy of the Sacred Heart features the compatible color of Briggs Beautyware

Briggs Milton Lavatories specified for Sacred Heart Academy are of fine vitreous china in two sizes, 24″x20″ and 20″x18″, for 8″ combination fittings. 4 colors were used.

Briggs Jupiter Fountains for the Academy are vitreous china wall-hung models, in 3 Beautyware colors.

Briggs Tot Water Closets, vitreous china syphon-action models, 10″ high, used in the Academy kindergarten.

Balanced design, functional superiority, the modern beauty of color! The architectural firm of Smith, Hinchman and Grylls Associates found that Briggs Beautyware met each demand in their design for the Academy and Convent of the Sacred Heart. For the girls' academy the architects specified Briggs Beautyware fixtures, many of them in color. For your own commercial and institutional work, you'll find that Briggs Beautyware commercial fixtures offer decided advantages. Specify from a complete easy-to-work-with line of well-balanced designs, created by Harley Earl, Incorporated, for Briggs, in fine high-density vitreous china. Rigid quality controls insure that Briggs fixtures meet every specification, as well as every test of the designer's eye.

BRIGGS
B E A U T Y W A R E

An example of Tectum 1″ suspended ceiling board in WEST HILLS ELEMENTARY SCHOOL, Pendleton, Oregon. Tectum 2″ and 2½″ roof deck materials were used for the roof deck. *Architect: Warren Weber. Contractor: McCormack Construction Company.*

Tectum® Roof Decks:

Larger, Safer, Quieter Schools—Within Appropriated Funds.

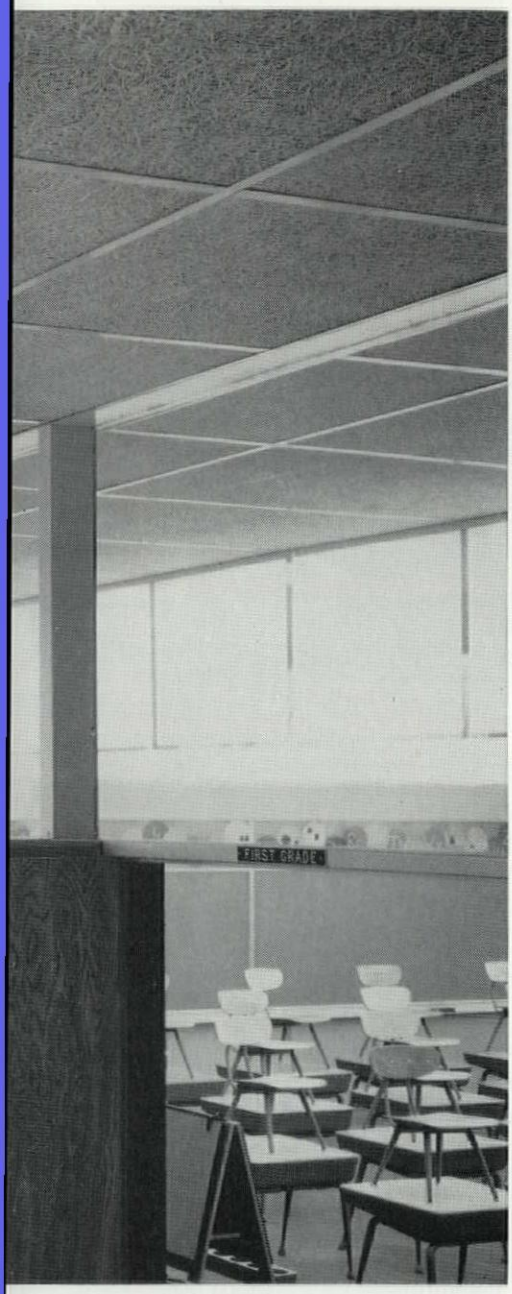
It's true. Tectum roof decks over beam or joist, save on material and labor costs. The large photo above is an unusual application of Tectum 1″ acoustical board, suspended from the framing system beneath the Tectum roof decks. Low ceilings, with double insulation benefits from Tectum deck and suspended ceiling, fits the specification for this electrically heated school. Safer, too; Tectum will not support combustion.

A QUALITY BOARD WITH MANY FEATURES

Tectum possesses excellent insulating, acoustical and fire resistant qualities. It is a structural board that withstands roof loading of 200 psf. It has great impact strength and withstands normal abuse with little depreciation. Its off-white textured surface makes an attractive ceiling surface — normally, does not require painting. It is rot, fungus and termite resistant.

MORE SCHOOL FOR THE MONEY

Tectum saves on structural framing. Its light weight permits economical spans and these savings are sizeable in large buildings. It is also rated noncombustible; favorable insurance rates are available in most communities. Savings in the elimination of extra materials, in labor charges, in time consumed can all be converted into other needed

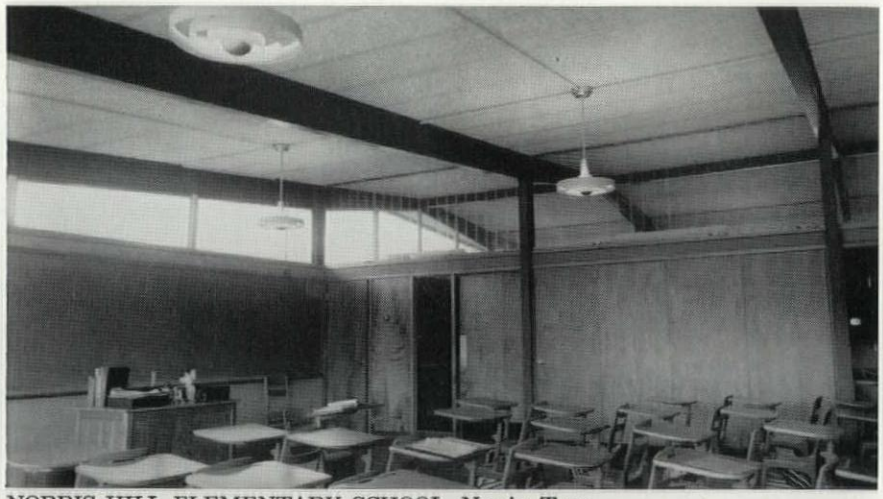


Schools

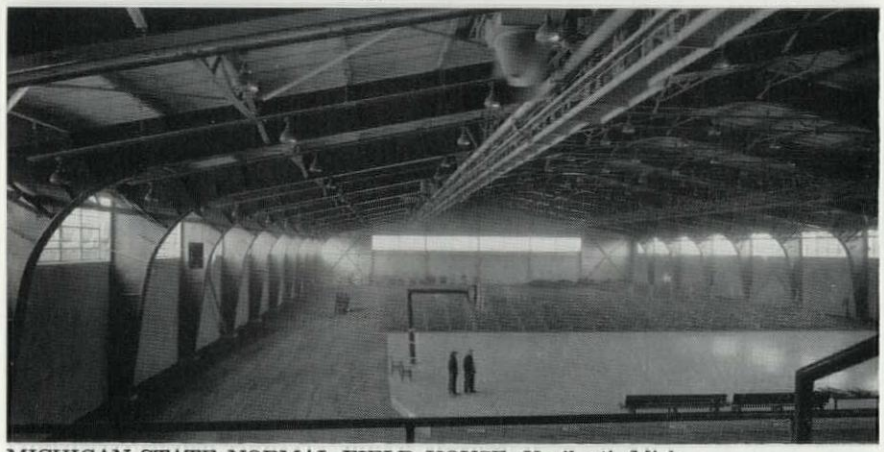
school features. Tectum goes down dry — down fast — saves time.

HAVE YOU INVESTIGATED versatile Tectum for elementary, secondary, university or recreational buildings? See your Tectum representative for complete details or write Tectum Corporation, Newark, Ohio. Plants in Newark, Ohio and Arkadelphia, Arkansas. Regional offices in Atlanta, Philadelphia, Columbus, Chicago, Dallas, Beverly Hills, Seattle and Toronto, Canada. Distributors in all leading areas.

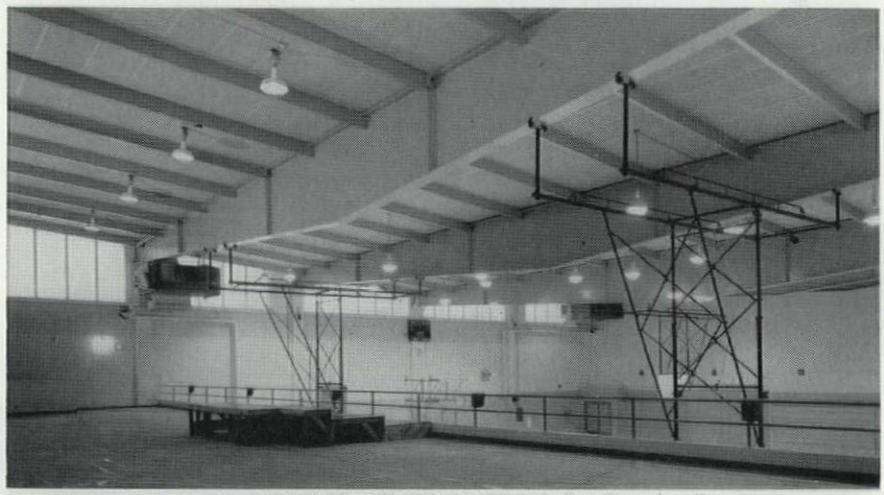
QUALITY • INTEGRITY • SERVICE 9-5



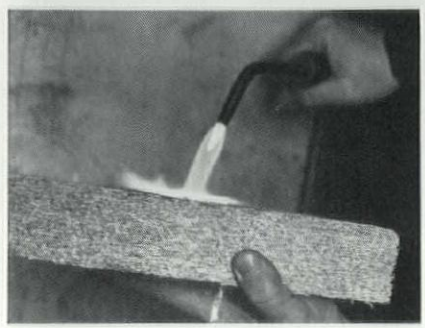
NORRIS HILL ELEMENTARY SCHOOL, Norris, Tenn.
Architect: Painter, Weeks & McCarty, Knoxville. *Contractor:* Lay & McKamey, Inc.



MICHIGAN STATE NORMAL FIELD HOUSE, Ypsilanti, Mich.
Architect: Giffels & Rossetti, Detroit. *Associate:* R. S. Gerganoff, Ypsilanti.
Contractor: Kurtz Building Co., Ann Arbor.

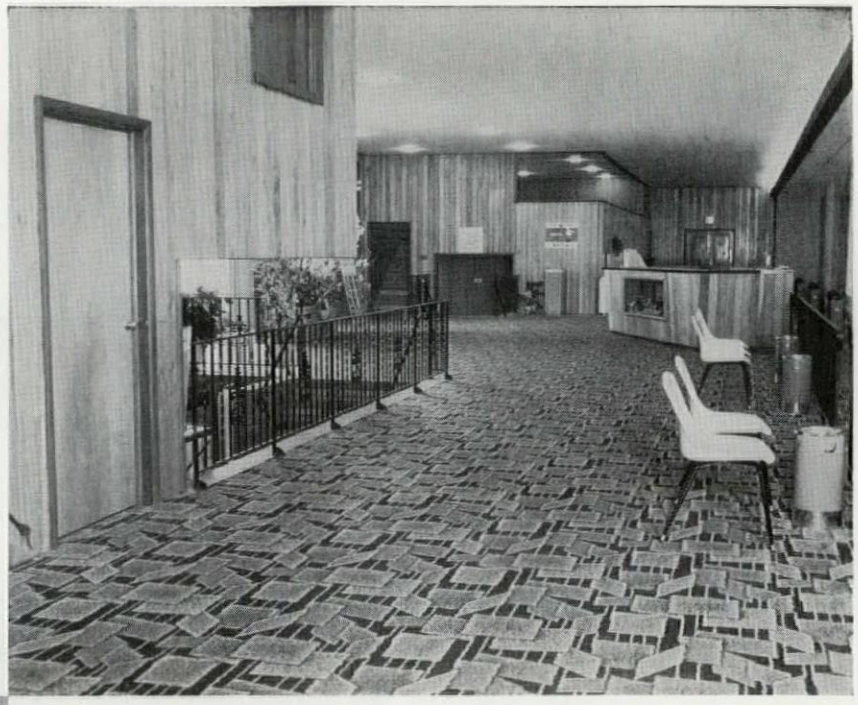


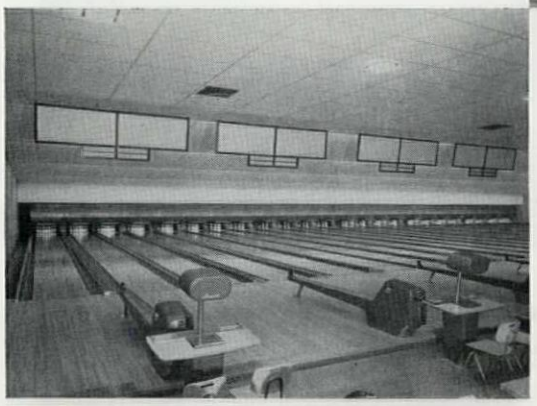
EASTERN OREGON COLLEGE OF EDUCATION, La Grande, Oregon
Architect: Hayslip, Tuft, Hewlitt & Jamison. *Contractor: Bechtel Bros., Construction Co.*



TECTUM . . . A SPECIFICATION FOR FIRESAFE SCHOOL CONSTRUCTION.
Tectum roof deck materials are listed noncombustible by Underwriter's Laboratories, Inc. The picture at left illustrates the simple test that proves this fact. A slab of Tectum may be exposed to the intense heat of a gas torch as shown in this illustration. During manufacture, Tectum's tightly compressed wood fibers are treated with a hydraulic binder making them noncombustible.

Archibald Holmes & Son





Beautiful Holmes

CONTRACT CARPETS GUARANTEED MOTHPROOF

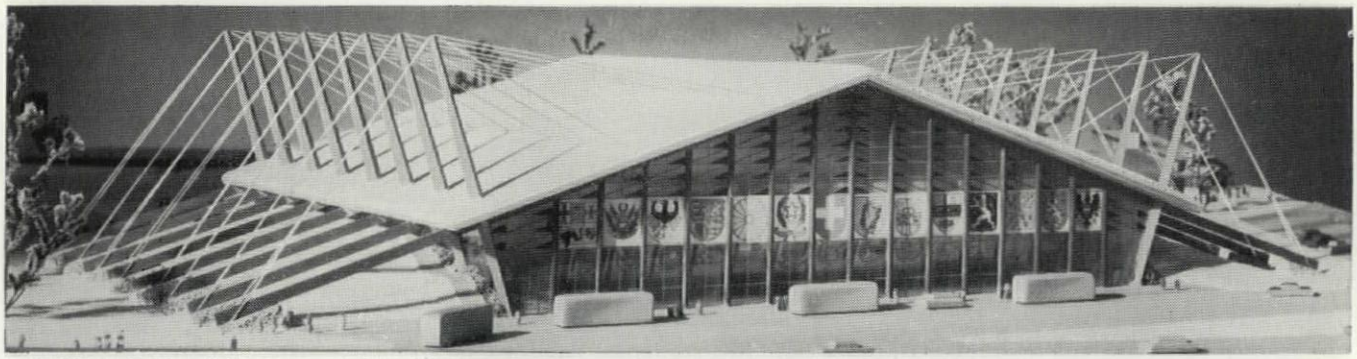
your identity in carpet . . .

Del Ennis, famous St. Louis outfielder, gave his personal approval of Beautiful Holmes pattern 6057, color 845, for his newly opened bowling lanes in the Huntingdon Valley Shopping Center in suburban Philadelphia. The vivid, cheerful pattern, basically brown with accents of orange, turquoise and grey, lends just the right note of bright informality to the Del Ennis Lanes . . . the ultimate aim of designers and decorators wanting to create a "family" atmosphere for this increasingly popular "family" sport. (With the hidden assets of easy maintenance, sound-absorbency, and the ability to take a whale of a lot of hard wear!)

Here's another case where Holmes Contract Division . . . famous in the field for doing a job expertly, efficiently and on time . . . worked closely with the architect-designer to provide the perfect solution for a contract carpet problem. Beautiful Holmes carpets are unbeatable, quality-wise . . . the service is absolutely the best . . . the prices are competitive. Keep these facts in mind, and let Holmes Contract Carpet be *your* byword when a contract carpet problem arises! For the name of your nearest contractor, call or write Archibald Holmes & Son, Erie Avenue and K Street, Philadelphia 24, Pa. *Now in our second century of fine carpet weaving.*

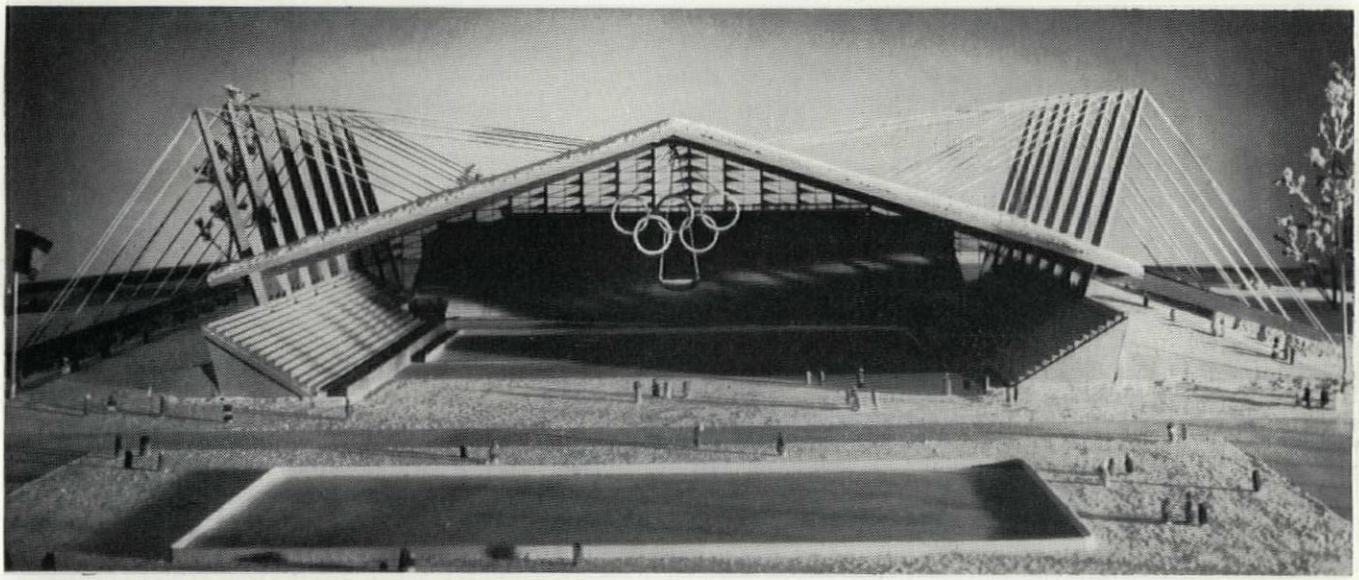
Architect for interior and exterior of Del Ennis Lanes, Richard B. Dill of Folsom, Pennsylvania. Installation by Jerrehian Bros., Philadelphia.

New Suspended Roof Ice Arena for 1960 Olympics



Architects: Corlett & Spackman, A.I.A., Kitchen & Hunt, A.I.A. • Structural Engineer: H. J. Brunnier • General Contractor: Diversified Builders • Steel Subcontractor: Pittsburgh-Des Moines Steel Company

"...a marvelous sense of bigness"



Architects' model of arena, showing dramatic open southern side.

In Squaw Valley, California, work is currently under way on the 1960 Winter Olympics Ice Arena. Unique in many respects, this soaring structure has a 300 ft clear span suspended roof, supported by 96 pieces of 2¼ in Roebling prestretched galvanized bridge strand. This strand was furnished socketed with no provision for take-up at the construction site. Each piece was fabricated to *exact* dimensions at the mill.

The main frame, providing the 300 ft clear span, consists of tapered steel columns, tapered steel box girders, and the inclined cable tension members, on 32 ft centers. Each half of this frame acts independently—in somewhat the same manner as a guy derrick, with the roof girder functioning as the boom, the column as the mast, and the inclined cables as the guys. Rolled steel beam purlins on 11 ft 4 in centers span the 32 ft between main frame girders and support the cellular steel deck roof.

Many factors had to be considered before design recommendations of any kind could be made; valley topography, snowfall, cost, specific needs of competing countries in the Olympics, etc. The suspended roof principle most fully met all requirements, both aesthetically and practically. Most interesting is the arena's open southern side which permits an unobstructed view of the valley with its speed skating rink and ski jumps. During activities in the arena, the open end will be partially closed by movable bleacher sections mounted on portable tracks.

The frequency with which architects, designers and engineers are utilizing the suspended roof principle for transportation terminals, gymnasia, convention halls, etc., is indicative of the beauty and economy of this method.

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p/a views

revived interest in the architect's education

Dear Editor: With our recent correspondence I considered the attempt to revive reader interest in my article on the architect's education a closed subject. It was therefore a pleasant surprise to read Sidney Katz's comments on the article in FEBRUARY P/A.

This spurred me on to send you copies of two letters addressed to me, from which you might care to publish excerpts in coming issues of P/A.

LOUIS AXELBANK, ME, PE
New York, N. Y.

•

Dear Mr. Axelbank: Recently I read for the second time the splendid article which you wrote in MAY 1958 P/A on the subject of the education of architects in mechanical equipment. I have given a copy of this to Dean Grossi with recommendation for increased instruction in mechanical equipment. We have long needed additional credits in this subject, and I hope that your article may help us in adding this item.

WILLIAM J. McGUINNESS
Chairman, Dept. of Structural Design
Pratt Institute
Brooklyn, N. Y.

•

Dear Mr. Axelbank: A copy of your article, "The Architect's Education in Mechanical and Electrical Services of Buildings," was forwarded to our office.

Let me first congratulate you on a thoughtful and well written article which brings into focus a problem of which we have all been aware for some time but about which little has been done to date. It is this type of provocative article, written with the authority of your own extensive background in the architect-engineering field, that will inspire all members of the profession to constructive thinking along the lines you have indicated.

As you have pointed out, it is unrealistic to consider including detailed engineering courses as part of an architect's education. The phenomenal number of subjects that a student must learn in today's course in architecture precludes the study of all but a smattering of the engineering subjects. Therefore, it is important that the "smattering" of subjects be intelligently chosen. The specific recommendations made in your article are excellent ones and should provide the architect with sufficient basic information for him to appreciate the requirements of the mechanical and electrical trades. This appreciation will enable the architect to allocate proper space and to properly consider the types of mechanical systems which can be accommodated within his architectural schemes.

In light of present day developments, it is neither surprising nor objectionable for the architect to depend to an increasing degree upon the recommendations of his engineer. Due to the tremendous progress in the various engineering fields, the present trend is toward more of a joint architecture-engineering approach to a project. In our own office we are aware of this and are constantly taking steps to better co-ordinate the planning of the architecture and engineering from the initial conception of the project to final completion.

We would like to make one suggestion which might be helpful. I think we would all agree that a great deal of our education really begins only after we have left the universities. Too many of us are inclined to restrict our thinking and study, after leaving school, to our own particular specialty. It is quite amazing how many men have been exposed to other fields of their own profession or to allied professions in their daily work

(Continued on page 68)

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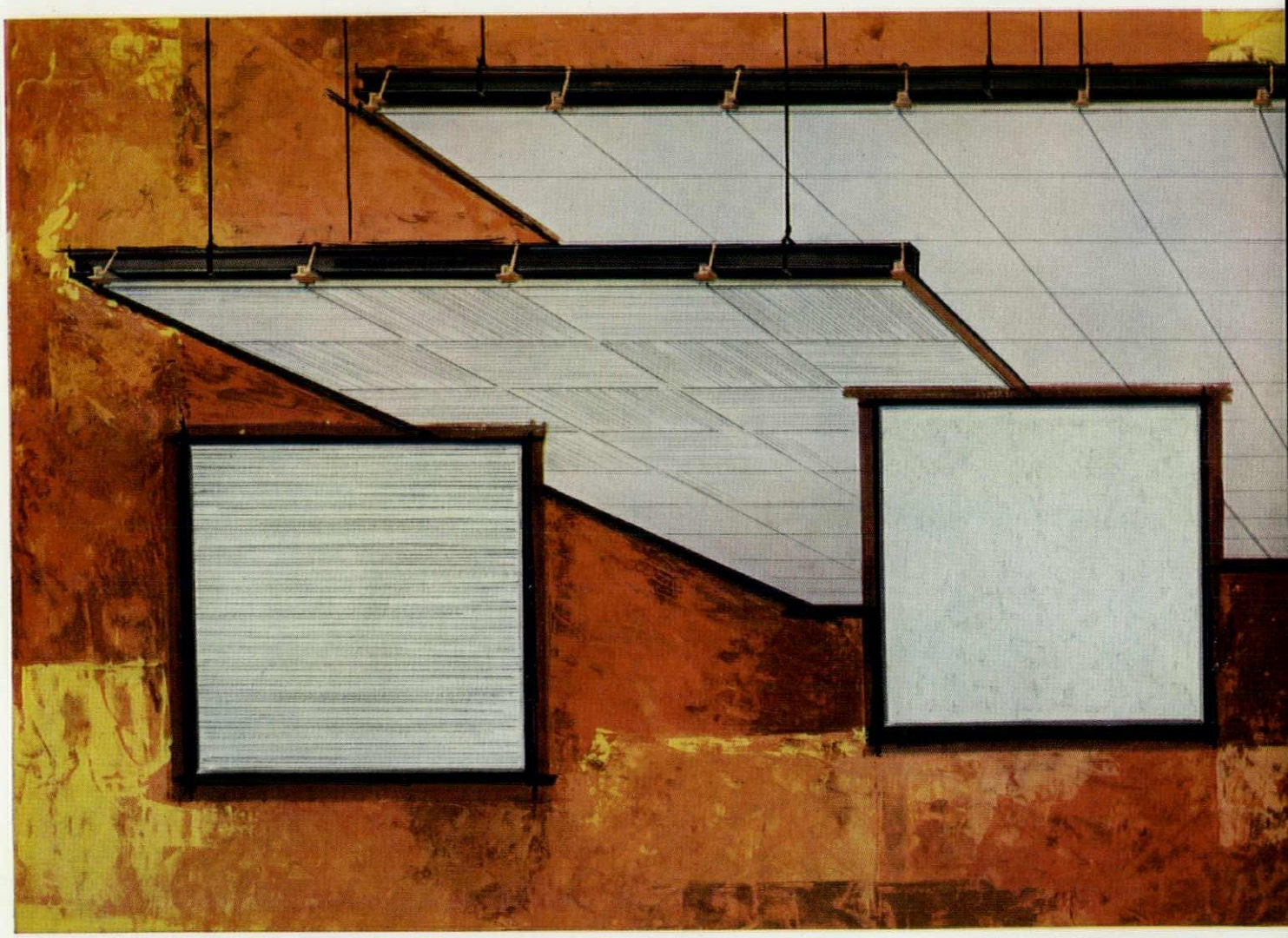

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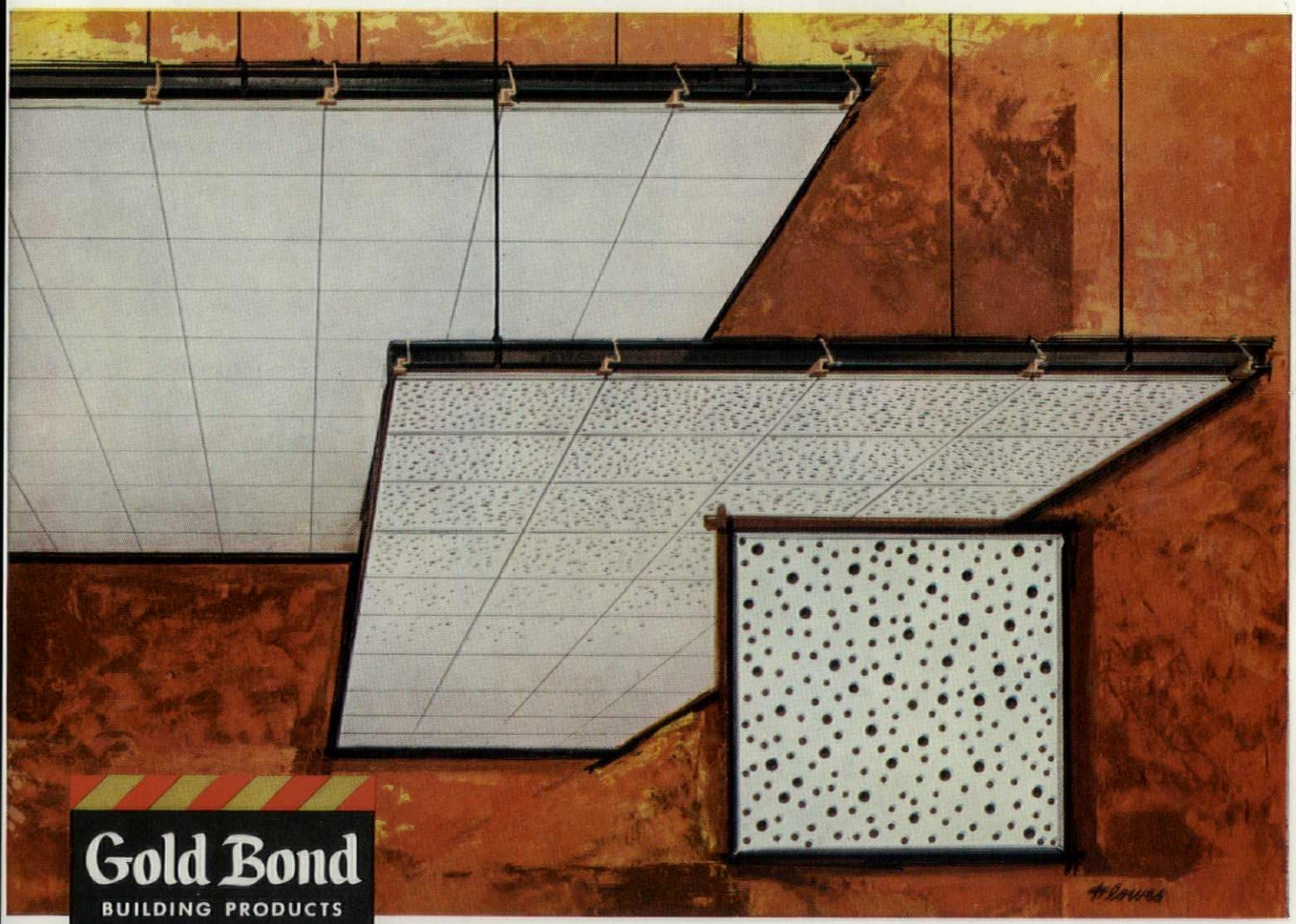

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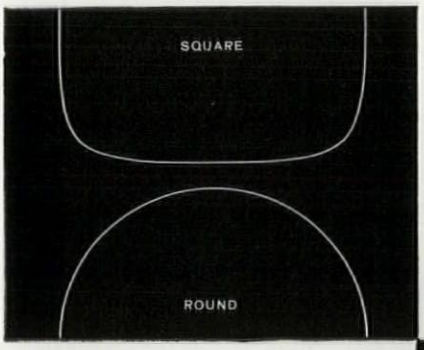
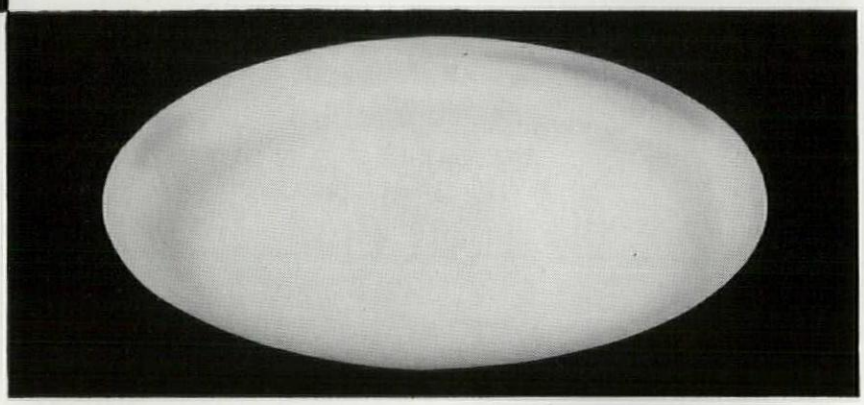


sculpture in light



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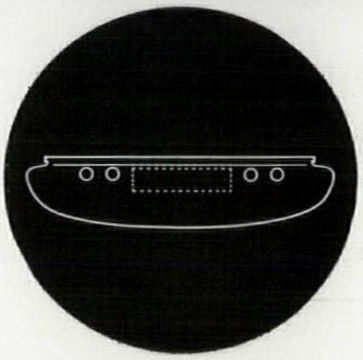

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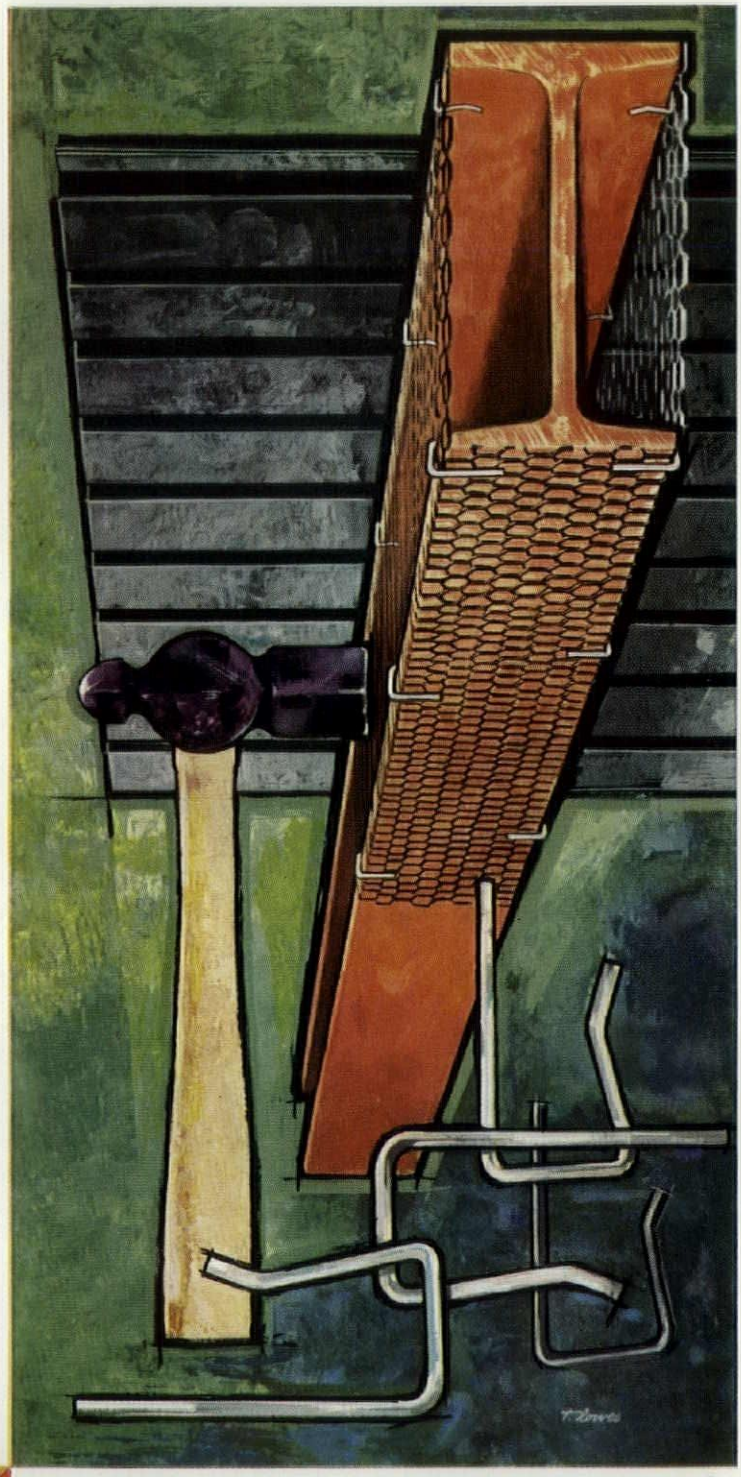

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(Continued from page 62)

without absorbing even basic fundamentals of the other fields. I believe this is almost entirely a matter of attitude. A greater awareness and interest in the over-all project plus the use of some of the wonderful literature and interesting texts that are available will greatly increase the knowledge of the architect for the engineers' problems and vice versa. This would undoubtedly result in more understanding, greater cooperation, and naturally a finer finished product.

As architects-engineers we wish to express our appreciation for your interest and efforts to improve our profession and once again to congratulate you on a job well done.

WILLIAM SLAVIN, PE
Fellheimer & Wagner
New York, N. Y.

more building case histories needed

Dear Editor: Joshua Lowenfish, chief of the Bureau of Architectural Research, of New York state, has claimed exception (FEBRUARY 1959 P/A) to some of my recent remarks pertaining to the role played by architects, engineers, public officials, etc., as related to more adequately insulated building and therefore more economically operated buildings. He included with his remarks a copy of a report titled, *Research Study in the Cost of Housing*, June 1958, which is a summary of a series of conferences held over a period of two or three years and which apparently was intended to illustrate that someone is interested in the problem and is doing something about it. To this extent, I congratulate Lowenfish and anyone else so interested.

In fact, I want Lowenfish to understand that my rather broad and general remarks pertaining to public officials (and others) was a well calculated attempt to smoke out some of this type of information. As a result, I have received some rather interesting information of value. However, I wish to point out that public housing is but one segment of the industry and represents a class of occupancy far different than other classes of buildings. We already have, through years of research and experience, a tremendous wealth of information on the various methods of heating and the optimum and minimum levels of wall, ceiling, and glass construction for comfort and condensation control. More information is always useful but in this case it is not wanting. Other types of buildings, however, are not so fortunate. We have practically no co-ordinated information on the effects of insulation and construction methods as related to heating and cooling design and cost of operation for such as schools, churches, office buildings, and other fairly large and important structures. I am not saying that each building is not carefully considered by each designer to the best of his ability, but I am saying that the information available with which the designer has to work is very meager. Due to this fact alone, the natural tendency is to accept the results as being inevitable and a necessary evil of architectural and engineering practice.

We do not need any more tests to de-

(Continued on page 72)

p/a views

(Continued from page 72)

sive heat loss. Since those days, the picture has been drastically revised by the general addition of summer cooling to the typical new commercial and institutional structure; and it would probably be safe to say that today a large building of the sort analyzed in my 1952 piece could amortize the costs of insulation and double glazing in a year or so—if that long. The waste of power in cooling an unprotected building is considerably greater, engineers agree, than is the waste of fuel in heating such a structure.

I am rather surprised to find that Joshua Lowenfish, in his letter published in FEBRUARY 1959 P/A, does not even mention the summer cooling problem. Admitted that public housing will not, in the foreseeable future, go in for central air conditioning, it would nevertheless have been worthwhile for Lowenfish to have considered the advisability of discussing public housing design for summer comfort (and, perhaps, *individual* air-conditioning unit operating economy), as well as winter-heating economy. As in 1952, I am still bewildered by the "winter-centeredness" of so many engineers and architects. Whether they like it or not, air conditioning is here to stay, and will become an increasingly essential part of most building types in the near future where it has not already done so. Therefore, it is to be hoped that Lowenfish's "experimental shed" will also include sun control devices, special roof treatments, and other methods for reducing cooling load, so that it can be used for testing for summer cooling economies as well as for winter heat savings.

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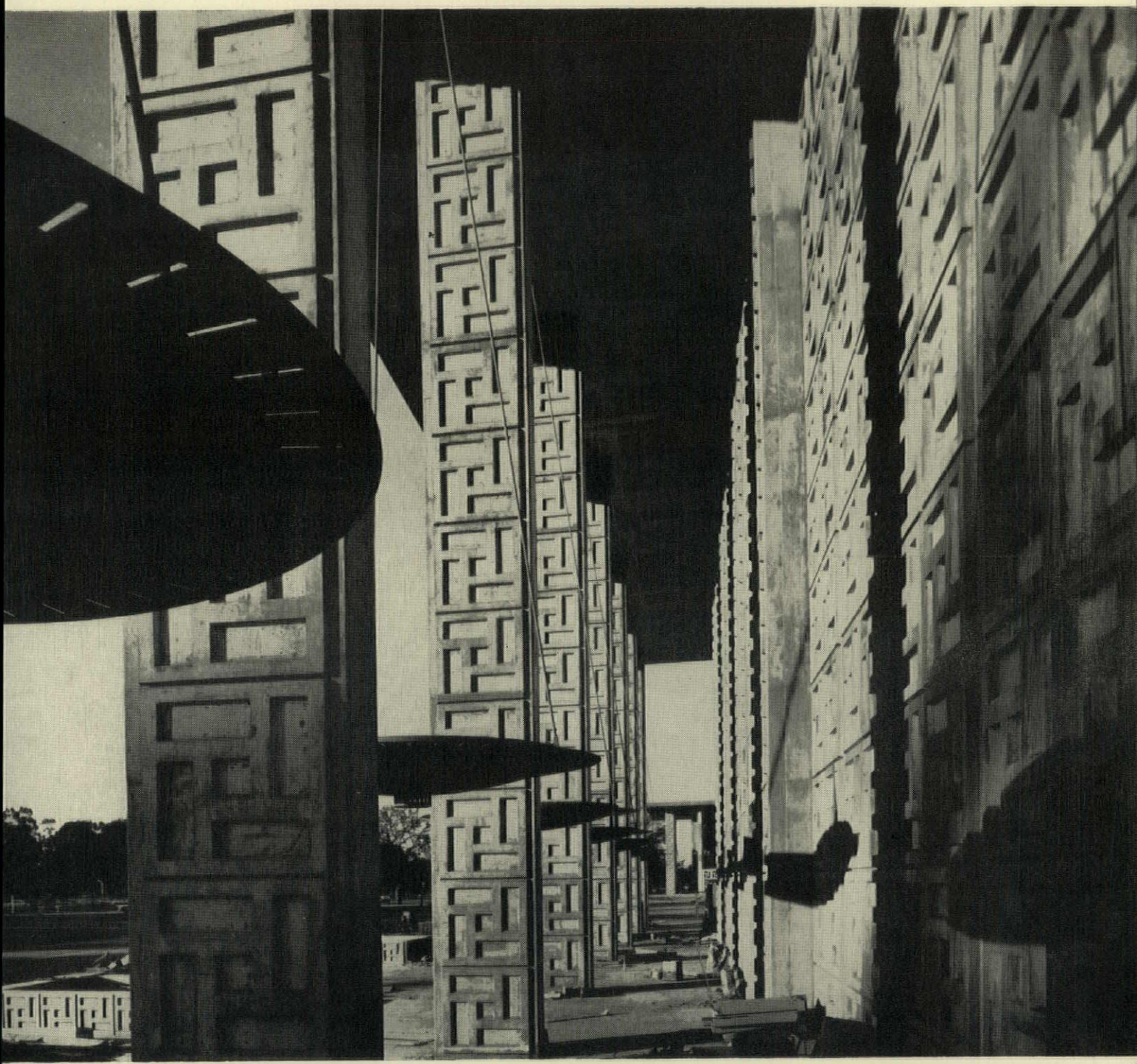

- Stone's "Garden Hospital" Approaches Completion (above)
- Diversity of Forms Marks New Italian Resort
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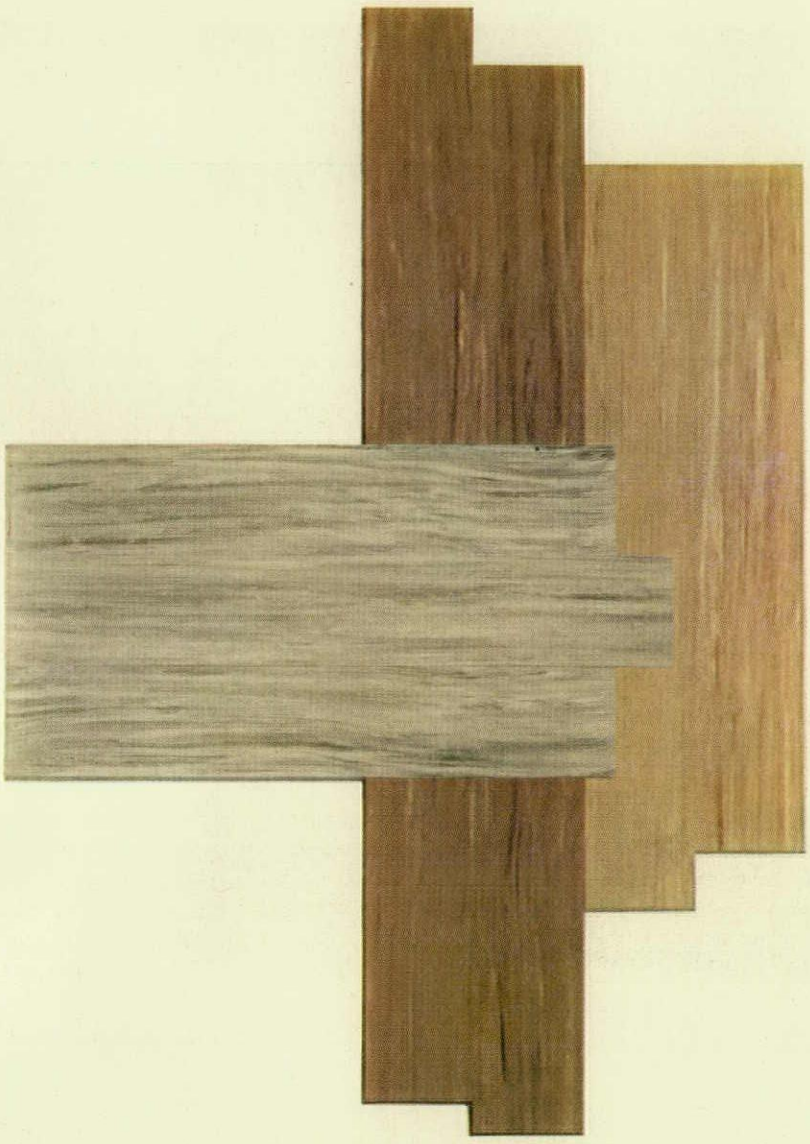

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Response to the first three issues has been most gratifying. Many complimentary letters have been received, as well as the more measurable return of thousands of requests for additional information about the new products, manufacturers' data, and advertisements featured in P/A News Report - conveniently keyed on the return card in each issue. Inquiries totalled 16,730 from the January issue alone!

Building-product manufacturers also have shown great interest in this new P/A feature. In the first three issues, you have had messages from the following important advertisers: American Radiator & Standard Sanitary Corporation, Anemostat Corporation of America, Armstrong Cork Company, Azrock Floor Products Division, BullDog Electric Products Company, Consoweld Corporation, Dow Chemical Company, Facing Tile Institute, Flintkote Company, Glidden Company, Harrington & King Perforating Company, Johnson Service Company, Kawneer Company, Keasby & Mattison, Kentile, Inc., Kerrigan Iron Works, Michael Flynn Manufacturing Company, New Castle Products, Inc., Pass & Seymour, Pittsburgh Corning Corporation, Red Cedar Shingle Bureau, Rilco Laminated Products, Robbins Flooring Company, Seven Arts Book Society, Solux Corporation, U. S. Ceramic Tile Company, U. S. Plywood Corporation, Ware Laboratories, Inc., Wasco Products, Inc., Wayne Iron Works, Yale & Towne Manufacturing Company (Norton Door Closers), Youngstown Sheet & Tube Company, Zonolite Company.

You will be interested to know that P/A News Report is received by the largest professional audience in the history of architectural publishing. In addition to serving our circulation of 42,000 in the pages of PROGRESSIVE ARCHITECTURE, the section is reprinted and sent to an additional distribution, enabling us to reach every registered architect in the U. S. plus an outstanding selection of the engineers who are their consultants.

We would like to add your opinion to the ones we already have on file. Why not drop a note and let us know what you think of P/A News Report? And, more important, tell us news of yourself, your practice, and what is going on in your area, as soon as you know about it! Write to:

James T. Burns, Jr.

James T. Burns, Jr.
News Editor

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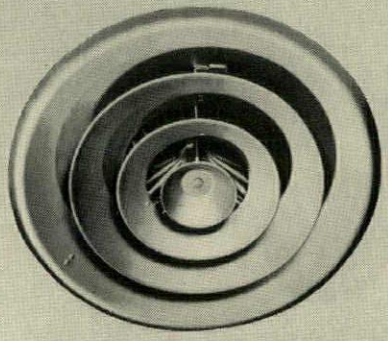

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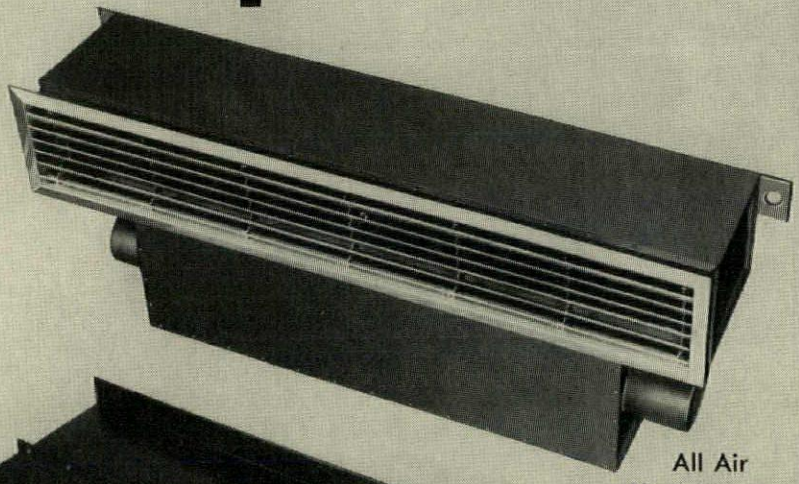

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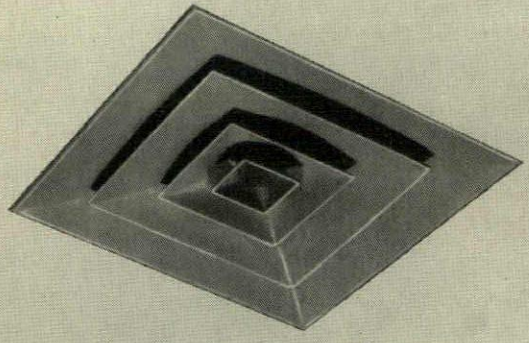

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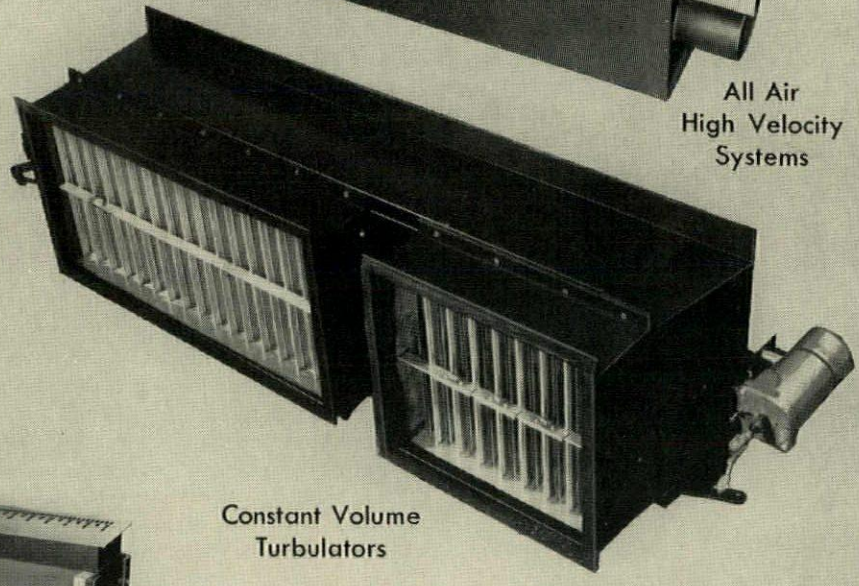

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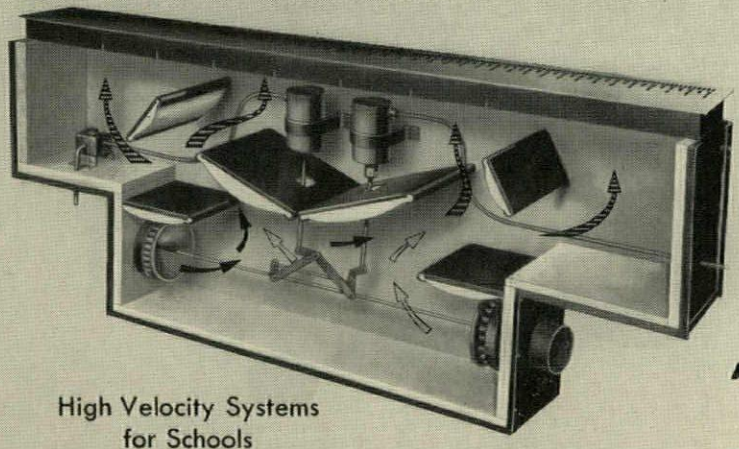

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"No Air Conditioning System Is Better Than Its Air Distribution"

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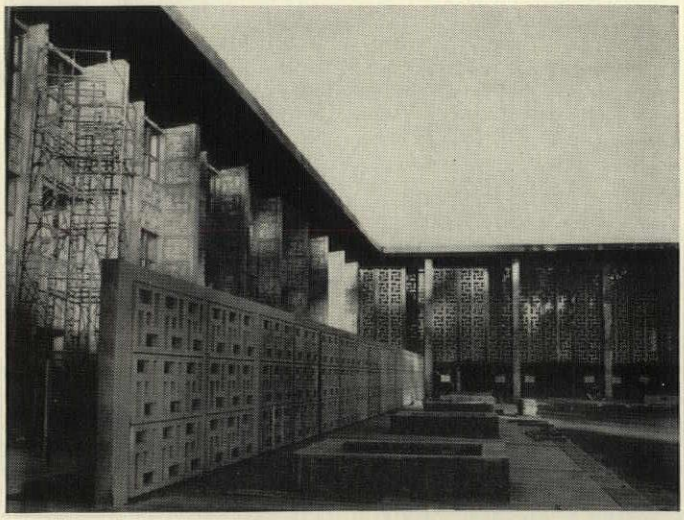
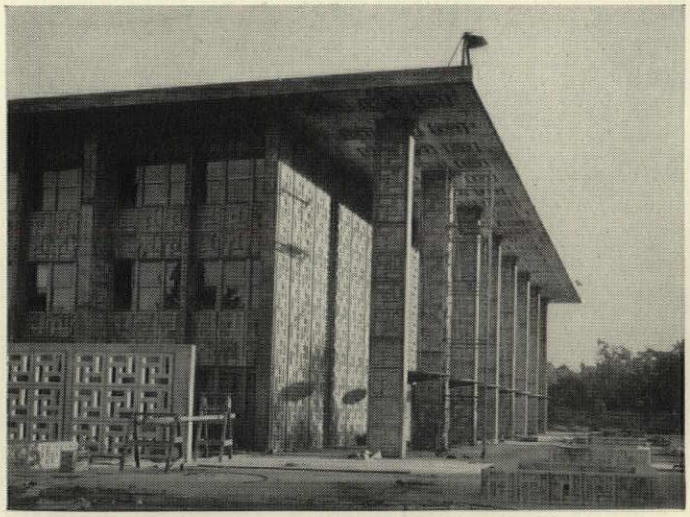




STONE'S "GARDEN HOSPITAL" APPROACHES COMPLETION

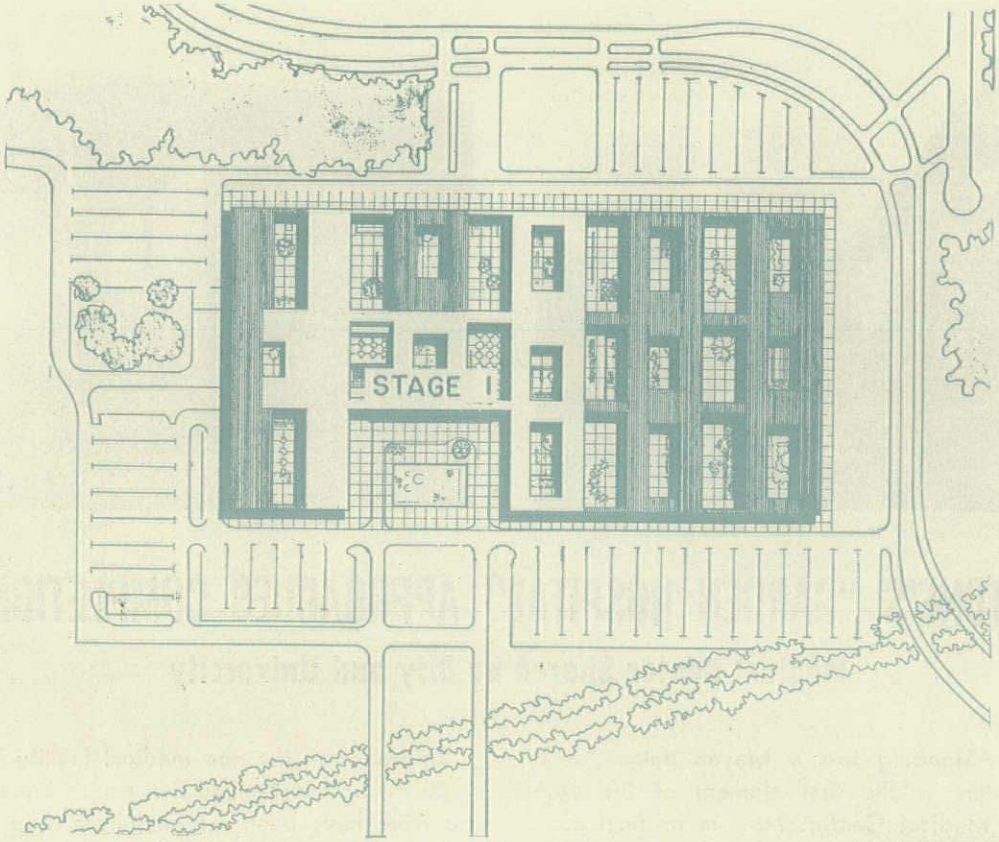
Medical Center Shared by City and University

PALO ALTO, CALIF.—Standing like a Mayan palace in a eucalyptus grove here is the first element of the vast Stanford-Palo Alto Medical Center. Now in its final construction stages, the Center will soon echo to the soft murmur of the fountains in its large, sunny courts.

Lavish use of pierced-stone grills and screens distinguishes the Center as the work of Architect Edward Durell Stone. The square motif of the screens is repeated throughout the structure on the cast-concrete surfaces of columns, spandrels, and walls. The entire effect emerges as one of richness and "delight."

Approach to the new medical facility is made through a 1200-ft-long court called Governor's Square. Lofty eucalyptus trees have been retained here, and the area will also be enhanced by additional planting and large fountains. The central element of the structure contains the outpatient clinic for Stanford University, clinic offices, and laboratories. The left wing encloses the 225-bed Palo Alto Pavilion and the 212-bed Stanford Pavilion, which share a common "core" containing surgeries, delivery suite, X-ray, clinical laboratories, pediatric beds, general services, and administration. Stanford Pavilion will also include an obste-

Photos: Joe Munroe

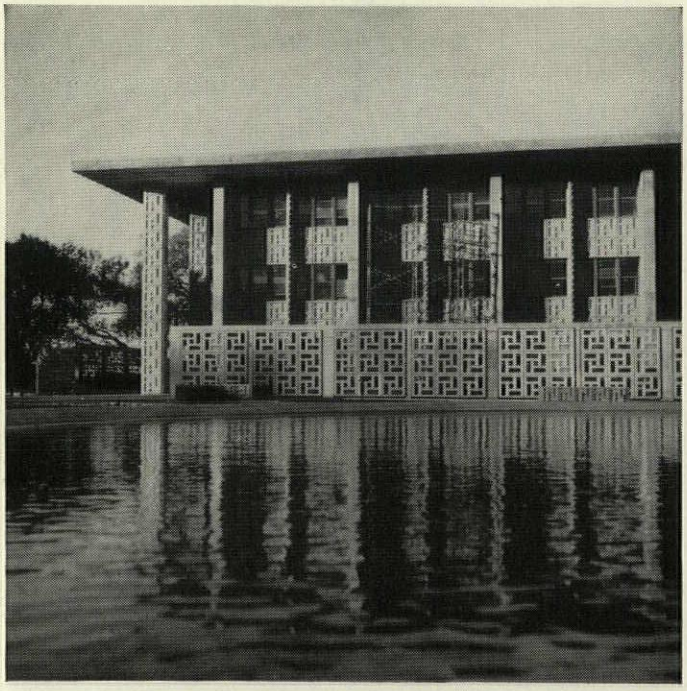


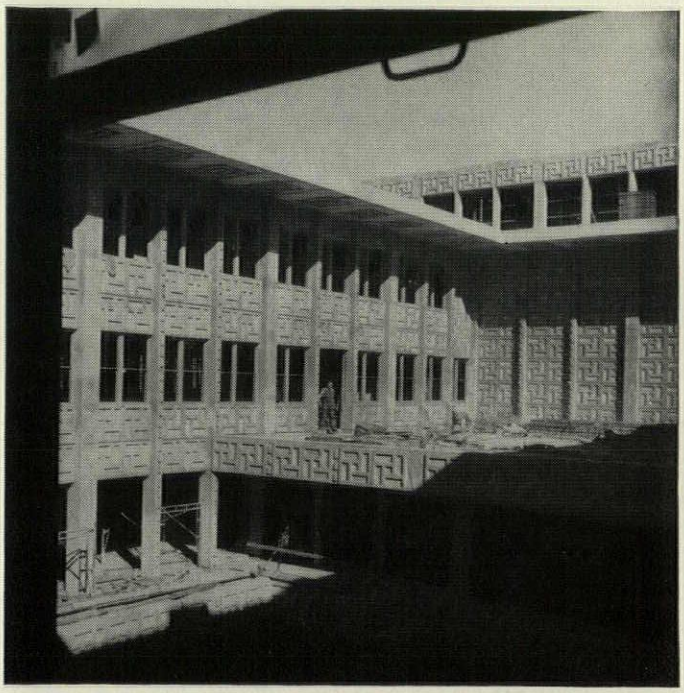
trics nursery. The right wing contains Stanford Rehabilitation Center, library, teaching laboratories, classrooms, and basic science laboratories. Future elements (as shaded, above) will include another medical science unit, and units for preclinical departments of the Stanford University Medical School: anatomy, bacteriology, and physiology.

The exterior of the Center soon will be painted beige, and glints of gold leaf will appear in the central squares on the columns and spandrels. First-floor patients will enjoy the use of planted areas adjoining their rooms, separated from the outside by pierced screen walls.

Site of the Stanford-Palo Alto Medical Center is a 56-acre campus tract adjacent to the university's science quadrangle, museum, and chemistry buildings. The Stanford School of Medicine will be moved here from antiquated quarters in San Francisco; the city's major medical facilities will be moved from a Palo Alto hospital built in 1930.

Associated with Architect Stone on the Medical Center are: Pregnoff & Matheu, Structural Engineers; Keller & Gannon, Mechanical Engineers; Thomas D. Church & Associates, Landscape Architects; Wagner & Martinez, Managers of Construction; and Maurice Sands, Director.





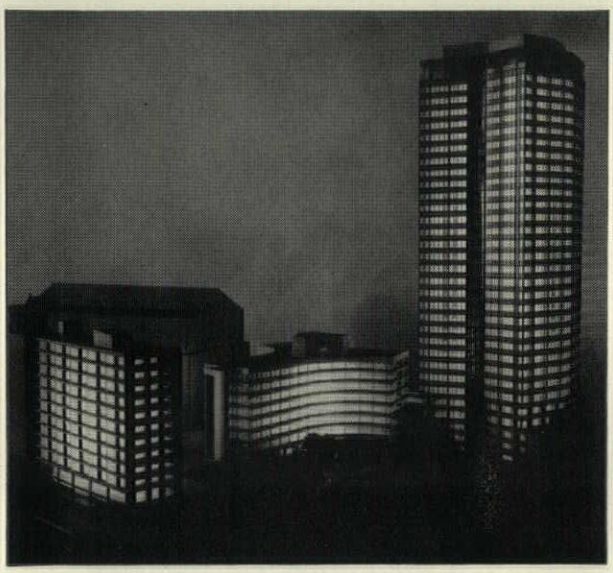
ARCHITECTURAL BULLETINS

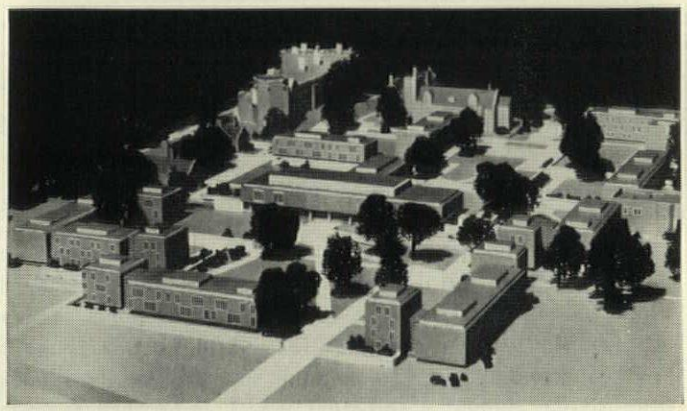
● Executive office, laboratory, and shop-facilities building for Core Laboratories, Inc., Dallas, Texas, will feature a 50-ft long entrance wall comprised of test cores selected from the company's field operations. Two-story building will surround a court containing a stairway to second floor. Architects: Harwood K. Smith & Associates, Dallas.

● Great Lakes Regional Conference of AIA takes place in Ann Arbor, Mich., Apr. 23-25; theme of meeting, "Education and Research for the Professional Practice of Architecture." . . . U.S. Consulting Engineers Council meets in New York, Apr. 28-May 1. . . . American Institute of Decorators holds 28th Annual Conference at New York's Plaza Hotel, Apr. 26-May 1. . . . Third Annual National Convention of Construction Specifications Institute will be in Chicago, May 4-6—P/A Editor Creighton will be speaker at annual banquet, when awards will be announced for outstanding specifications writing. . . . Illuminating Engineering Society's new recommended levels of lighting for buildings will be examined at conference conducted by Building Research Institute, in Cleveland, May 20-21. . . . MIT will offer summer course in "Esthetics of Surfaces" July 20-31, given by Prof. Richard Filipowski and members of School of Architecture & Planning.

● Wachovia Bank Building, Charlotte, N. C., is said to be first tall building with skin of precast-concrete units. Prisms measuring 5'-6" x 6'-0" x 0'-2½" cover most of the face of 15-story building. Architects: Harrison & Abramovitz; Associated Architects: A. G. Odell, Jr. & Associates.

● Redevelopment of 3½-acre site in Westminster section of London will include highest office building in Britain. Scheme proposes a 31-story office tower, an 8-story Y-shaped office building, and an 11-story residential block. Gardens and courtyards will create pleasing, open effects. Structure will be reinforced concrete, and office blocks will be cladded with specially developed prefabricated curtain wall. Architects: Ronald Ward & Partners.





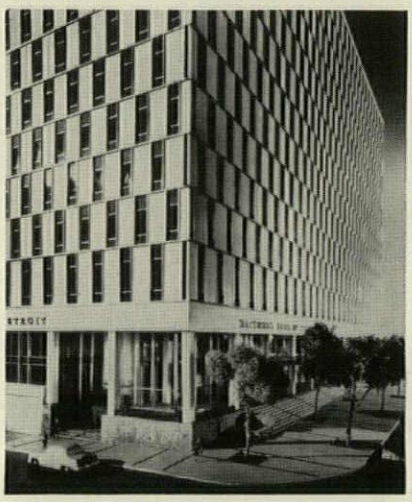
● New $4-millions quadrangle at Princeton University will be built in two phases. First, to be ready in 1960, will include five dormitories and a central social building. Second stage will consist of from three to five additional dormitories. Architects Sherwood, Mills & Smith plan an entry system which will give each suite direct access to outside courtyards. Suites will consist of from three to seven bedrooms plus bath and toilet. Design will blend with older Princeton buildings through use of favored local stone, brick, and limestone.

● Dr. Walter Gropius will receive 1959 Gold Medal of AIA at National Convention in New Orleans, June 22-26. . . . Ritchie Lawrie, Jr., of Harrisburg, Pa., firm of Lawrie & Green, received annual award from Americans for Competitive Enterprise System. . . . Architect Kenneth Franzheim, Houston, died March 13 in Mexico City. . . . New

officers of Oregon Chapter, AIA, are: Pres. Albert W. Hilgers; Vice-Pres. Robert C. Douglas; Sec. Everett B. Franks. . . . New York Sculptor Albino Manca won competition for design of Henry Hering Medal of National Sculpture Society.

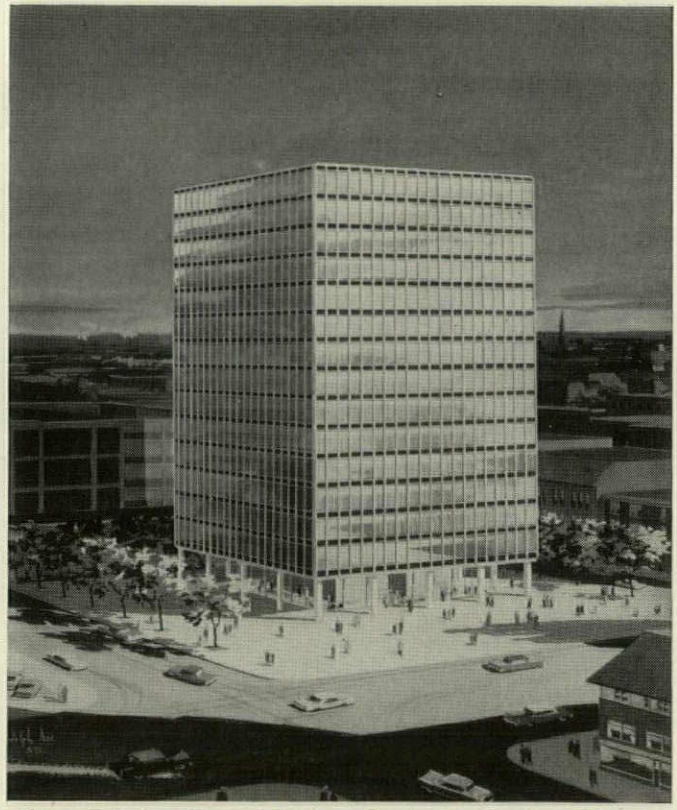
● ACTION (American Council to Improve Our Neighborhoods) will initiate two-week Executive Seminar on American City with May 4-6 session in Newark, N. J., at which Adlai Stevenson "will discuss role decision-makers of country can play in ensuring orderly renewal and development of urban areas." Group will then study redevelopment conditions in Baltimore, Detroit, and New Haven.

● National Bank of Detroit will have a 40-ft-wide plaza on one of the city's main commercial streets. White-marble



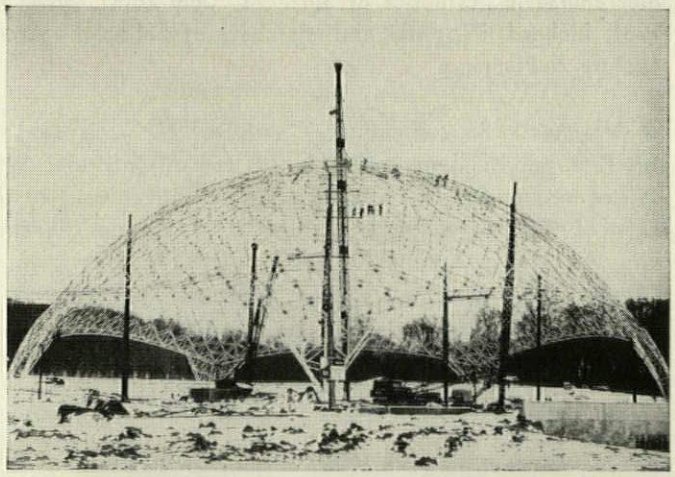
panels will alternate with windows on façade; spandrels above and below windows will be porcelainized metal in Royal Umber. Designed by Albert Kahn Associated Architects & Engineers, Inc. Interiors by W. B. Ford Design Associates, Inc.

● Twin buildings will house (demountable) U. S. exhibit at 1959 Tokyo International Trade Fair. One will contain scientific exhibits of U. S. Atomic Energy Commission, the other will hold exhibits of Department of Commerce. Plans are to ship exhibits to other fairs, after Tokyo. Buildings are described as huge, aluminum, space frames suspended from single aluminum-and-steel masts rising 118 ft above ground. Walls of buildings will be interchangeable panels of plywood and glass. Total area of buildings will be more than 24,500 ft. Architects: Welton Becket & Associates.



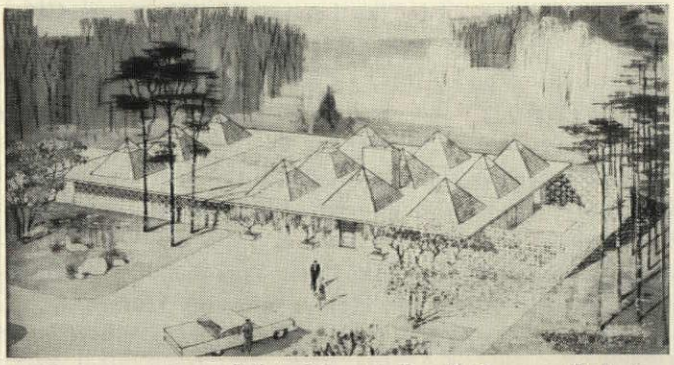
● New Toledo office of Libbey-Owens-Ford Glass Company will rise 14 stories from a landscaped plaza. Emphasizing company's products, entire exterior skin will be of glass framed in extruded-aluminum mullions on 6-ft module. Architects: Skidmore, Owings & Merrill.

● American Society for Metals headquarters near Cleveland will stand partially under this open-work geodesic dome. Dome is 250 ft in diameter and 103 ft high. Headquarters building will be semicircular, and will open onto



a court beneath the dome which will feature a "mineral garden" displaying native ores and unusual minerals. Building designed by Architect John Terrence Kelly, who was associated with R. Buckminster Fuller in design of dome.

● A plea for more and better co-ordinated architectural research was made at a conference on the subject at Ann Arbor, Mich. Conference was sponsored by AIA with a grant from National Science Foundation. Architect Herbert H. Swinburne, Philadelphia, suggested establishing a 10-man research study at a leading university to co-ordinate architectural research and make research contracts.



● "Celanese House" by Edward Durell Stone will feature plastic-topped roof pyramids to admit light into rooms below. Designed as a display house for building materials and house furnishings of Celanese Corporation of America, the structure will be built in New Canaan, Conn., and will be shown by special invitation during June. Front and rear façades will be a continuous trelliswork of white-painted wood slats, set out from shingled exterior walls. Sliding window walls open from all main rooms.

● Eero Saarinen was awarded Michigan Society of Architects Gold Medal for 1959 at Society's recent Annual Awards Dinner. . . . Howard S. Eichenbaum of Little Rock firm of Erhart, Eichenbaum, Rauch & Blass, was among 12 alumni honored at Founders' Day ceremonies at Washington University, St. Louis.

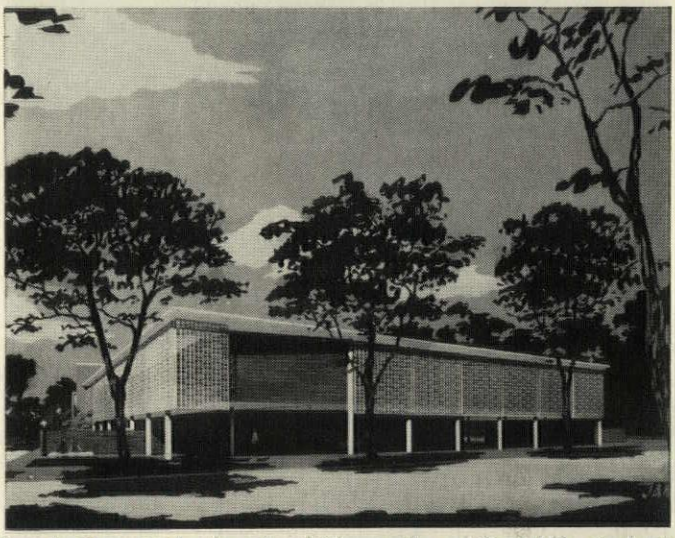
● Theme of Fourth Annual Visual Communications Conference of Art Directors Club of New York was "Symbology —The Use of Symbols in Visual Communication." Among the speakers was Architect-Designer George Nelson, who told how "A Designer Scans the World of Images."

● Two major suppliers' organizations have been formed since first of the year: The National Insulation Manufacturers Association; and The Store Front and Entrance Division, of National Association of Architectural Metal Manufacturers. E. H. Luchs of Mundet Cork Company is president of NIMA, and Norman Bienenfeld of The Alumiline Corporation is chairman of the storefront and entrance group.

● When completed, the Redondo-Torrance (Calif.) Church of Religious Science will have a tower of anodized-bronzed aluminum featuring a series of bells and clustered lights. The church will be built in three stages: temporary sanctuary, Sunday school, administration offices and combined waiting room-library—permanent sanctuary and entrance plaza—and permanent administration areas, nursery, tower, and conversion of first-stage elements into chapel and social hall. Architects: Risley & Gould, Los Angeles.

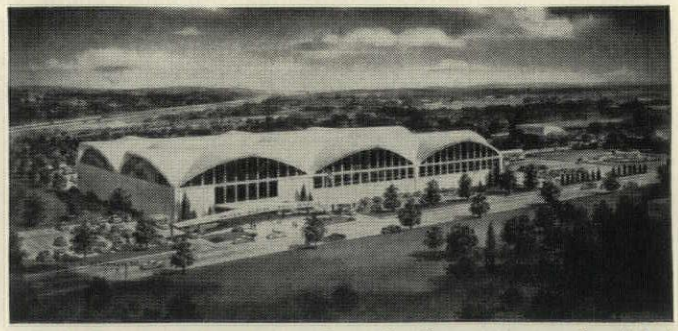
● Architectural criticism of a somewhat emphatic nature took place in Cambridge, England, when nearly 200 students staged a protest march against a contemporary building at the University's Emanuel College. The students laid a coffin near the new building and another at the gates of the college. The unwelcomed structure contains dining hall, kitchens, and living quarters.

● The Loeb Drama Center for Harvard University and Radcliffe College, designed by Architects Hugh A. Stubbins & Associates of Cambridge, Mass., will undoubtedly



fare better at the hands of Harvard and Radcliffe students than did the Cambridge, England, structure. Primarily an educational building, the Center will contain a working library and classrooms. Main theater will seat 515 students, and an experimental theater will seat 100. Stubbins' design allows the main auditorium to take three forms—Elizabethan theater, proscenium stage, and theater-in-the-round.

● Nation's first fully mechanized mail-processing plant and post office will be in Providence, R. I. Post office will have 132,300 sq ft of interior space with only two supporting columns for the roof. Adjacent to the main building will



be a heliport with 8000 sq ft of landing area, and a lubritorium building. Mail-processing operations will be supervised visually and electronically from an elevated control room. Processing equipment is by Intelex Systems, Inc., a subsidiary of International Telephone & Telegraph Corporation. Charles A. Maguire & Associates of Providence are credited with the design.

● A Joint Center for Urban Studies has been formed by MIT and Harvard. Purpose of Center is to "search out basic facts in the tangled problems of big city growth in

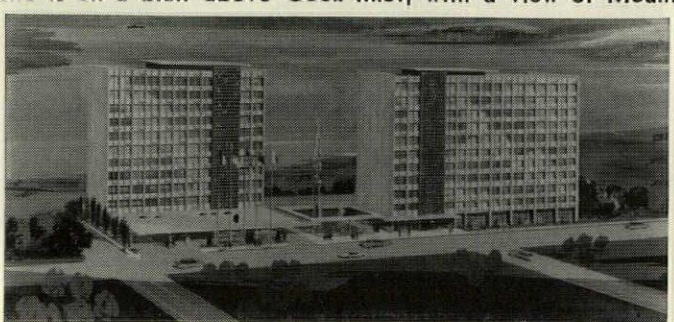
this country and abroad." Posts on administrative and faculty committees of Center will be equally shared by members of faculties of the two schools. Prof. Martin Meyerson, Director of Harvard's present Center for Urban Studies, is Director of new Joint Center, with offices at 66 Church St., Cambridge 38, Mass.

● Gloria Dei Evangelical Lutheran Church in Bethayres, Huntingdon Valley, Pa., will be constructed in four stages: classroom building and fellowship hall—expansion of class-

room facilities—main sanctuary—and small chapel for special services. Walls will be of local fieldstone; fellowship hall and sanctuary will have interiors of natural wood. Floor-to-ceiling window panels will provide natural light throughout—these windows will be tinted in the fellowship hall and sanctuary. Both buildings will be topped with undulating gable roofs. Architect: Vincent G. Kling of Philadelphia.

● Henry C. Quaritius, Jr., of Nailable Cinder-Block Corporation was elected president of National Concrete Masonry Association.

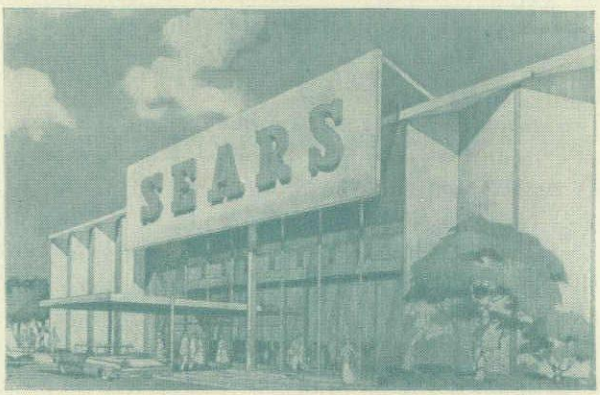
● Anchorage, Alaska, will have two new buildings similar in appearance but different in function by spring of 1960. The buildings, each 11 stories high, will be an office building and a hotel. They will be steel framed with exteriors of off-white porcelain-enamel and gold-anodized aluminum. Windows will be double-paned insulating glass. There will be an enclosed mall connecting the buildings which will feature a sculptured totem pole three stories high. The site is on a bluff above Cook Inlet, with a view of Mount



McKinley. Architects: Hedrick & Stanley, Dallas and Fort Worth, Tex.; Associated Architect: Edwin Crittenden, Anchorage.

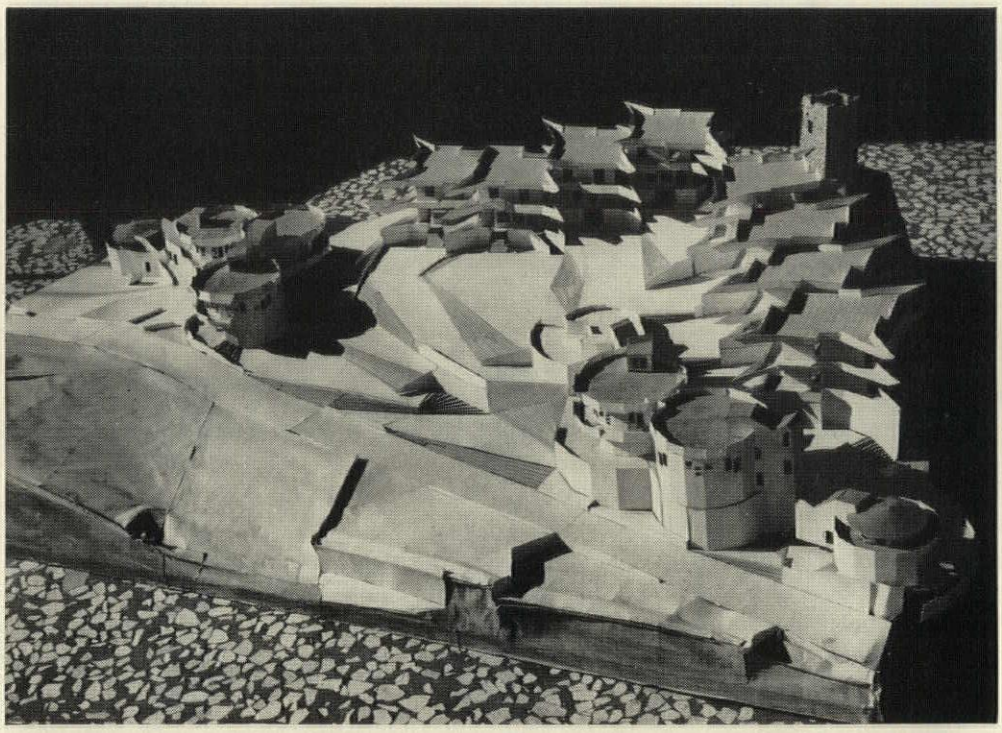
● A visit by more than 200 Italian architects and designers led by Gio Ponti, architect-designer-editor of Milan, created a stir in New York architectural circles during March. A cocktail party was given for the group at The Architectural League by the League, the New York Chapter, AIA, the three national architectural magazines, M. Singer & Sons, and America-Italy Society. Centerpiece of the refreshments table was a bronze of the legendary Roman wolf—with a difference: this locally cherished one dispensed martinis and manhattans, instead of the milk that sustained Romulus and Remus! Other parties, in addition to countless private affairs, were given by Olivetti and Italian Cultural Institute. The New York building most admired was easily Seagram House. Giovanni Muraro, Milan, reported that curtain-wall construction is gaining ground in Italy—particularly in Milan, Genoa, Rome, and Turin. He stated that "everywhere we will have to build as you are here, in 20 or 50 years." One of the highlights of the New York visit was a group foray into Connecticut, to see houses by Marcel Breuer, Eliot Noyes, and Philip Johnson. Many of the Italian group made trips to Boston and Chicago, after New York.

● Keystone of New England Shopping Center in Saugus, Mass., will be this Sears, Roebuck & Company branch store. Designed by The Architects Collaborative with Francis X. Giná as Associated Architect, the store will be a two-level building with 180,000 sq ft of floor space. Exterior of the building will be accordion-pleated walls punctuated by glass entrances rising the full 32-ft height of the wall. The entrances will provide the only exterior window space. Trees and planting will be incorporated into the building here, as in the rest of the project. All other stores in the Center will be designed by TAC.



● Milwaukee Art Center currently offers architectural exhibition co-sponsored by Center and Wisconsin Chapter, AIA. Show, titled "Architecture: Man's Space," includes work of Yamasaki, Wright, Stone, Le Corbusier, Louis Kahn, Mies, and Saarinen. Exhibit is designed as a traveling show, and is expected to tour throughout Wisconsin.

● Two new films may be borrowed for showing at professional meetings. Aluminum Company of America has just completed "A Product of the Imagination," color documentary tracing the history, production techniques, and future uses of aluminum. "Light—As You Like It," showing uses of lighting controls in homes, is sponsored by The Superior Electric Company. For the Alcoa film, contact: Motion Picture Section, Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa. For the lighting film, write: The Superior Electric Company, Dept. F-1, Bristol, Conn.



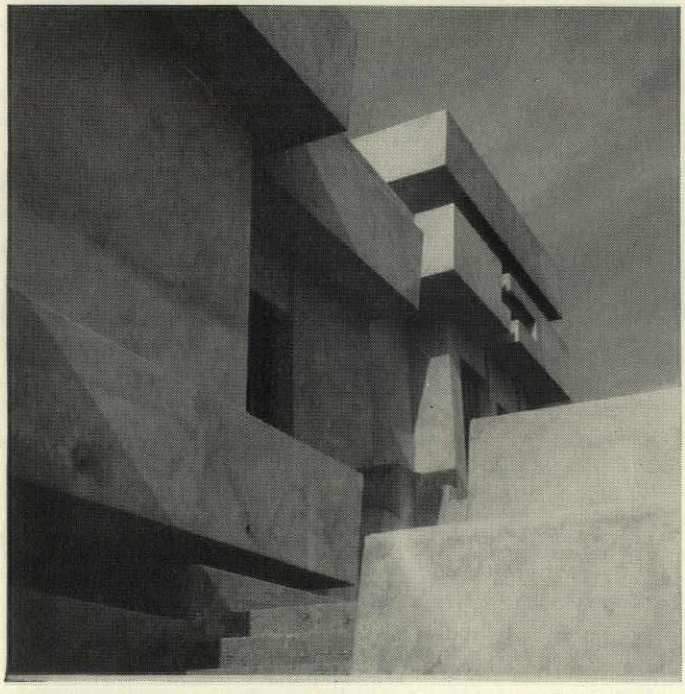
Photos: Leni Iselin

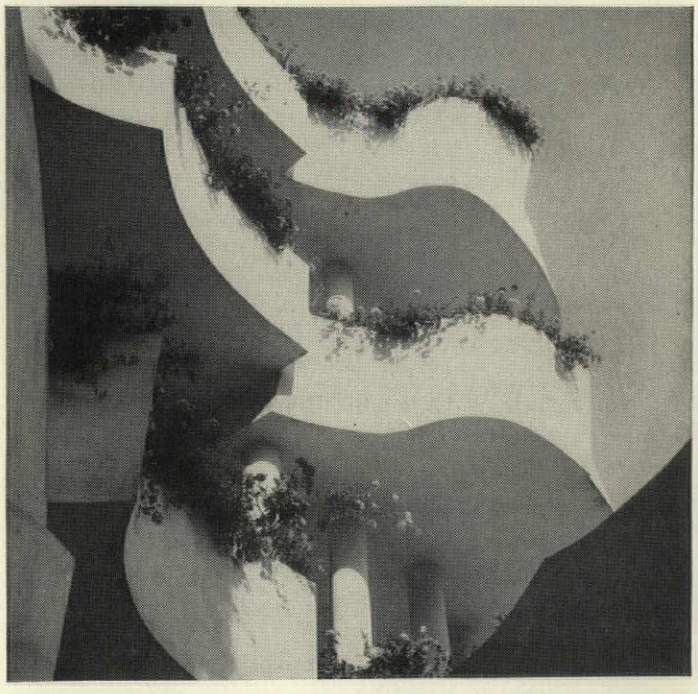
DIVERSITY OF FORMS MARKS NEW ITALIAN RESORT

TORRE DEL MARE, ITALY —An exuberant kind of architecture characterizes the small resort town of Torre del Mare, on the Ligurian Coast. On an ancient hillside, which plunges down to the beach, has been created the new town called "Tower of the Sea." Styles which range from severely rectilinear (below left) to an almost Gaudiesque quality (below right) exist side by side in the friendliest way. Effusive colors and design proclaim—Italy!

The architect—Mario Galvagni of Milan—has exploited the rugged terrain instead of bringing in bulldozers to fight it. Stairs fan out in all directions to dwellings and places of business that hug the hill on horizontal stratifications or terraced steps. The residential area consists of 300 villas and 1200 apartment units. The villas climb the hill with gardens, banks of flowers, and lavishly planted balconies giving the effect of hanging gardens. The apartments are dramatically set upon the steepest stretch of the cliff above the sea. The architect has said of designing the town, "it was necessary to see clearly . . . the lairs filled with diffuse darkness, on the white plains of the black road of Aurelia, in the voice of the sea, in the warm caves, in the hard north wind."

This town is approached via an especially widened road which curves into the center of the town and deposits the visitor on the broad piazza overlooking the sea. Bath houses painted in gay pastels line the beach below.





WASHINGTON'S PUBLIC AND PRIVATE ARCHITECTURE DEPLORED

by Frederick Gutheim

The scale of new construction in the Washington area suggests the value of stepping back from time to time to look at it in a larger way. In both private and public building, operations that a few years ago would have been sensational are now accepted as routine. We are in real danger when considering these developments as routine, and neglecting their deeper architectural potentialities.

Certainly this seems to be the case in the complex of Federal office buildings designed for a series of interconnected sites to either side of Health, Education, and Welfare Building, immediately south of National Gallery of Art. These occupy critical locations between the Southwest Washington redevelopment area and the Mall. With the exception of State Department Building, they are the largest executive office buildings now under way. East of HEW Building will stand one designed by Naramore, Bain, Brady & Johanson. West of it are three other buildings, two designed by Holabird & Root & Burgee with Carroll, Grisdale & Van Alen, and one by Faulkner, Kingsbury & Stenhouse with Chatelain, Gauger & Nolan. The buildings will generally replace temporary offices that still stand in this area. As a complex they raise important planning issues, including the reversal of the suburban trend that has prevailed here for the last 20 years; rejection of the earlier concept of Federal buildings facing the 10th Street Mall in the Southwest Washington redevelopment plan; and duplication of parking and congestion problems that are associated with the Triangle complex north across the park. But it is not with these, but with more specifically architectural issues that we should deal.

General Services Administration has prepared a model of this entire area which sufficiently indicates it is aware that the building complex is thought of as a whole. There is a suspicious uniformity of style in the buildings themselves—their massing, materials, fenestration, and general appearance. All appear to be responding to an underlying concept of what a "general purpose" office building should be, with pretty explicit standards and design specifications. The individual architects seem restive under these restraints. They fight back with fancy entrances, decorative official seals, porticoes, and grills, but these are feeble weapons. Often, such are the first victims of economy: uniformity wins out. Except for the westernmost building, which rises to nine stories and a penthouse, the most decisive characteristic of uniformity is the roofline. An impression of industrial buildings is conveyed even more mistakably than by a typical curtain-wall façade. Ever since "Mies was Pei-d" in Denver's Mile High building, there has been a definite standard for such utilitarian architecture, a reasonable and attainable standard, and it is not being reached in Washington's new Federal office buildings. Economy is not the reason for this architectural negativism, in which the spirit of bureaucracy breathes so clearly. It is a spiritual poverty, a lack of purpose, the absence of any real architectural meaning. Bad enough in individual Federal buildings scattered around the city or across the country, it is worse when wrapped together in this depressing and unrelieved complex, this expression of timidity. If this is to be the Washington of the future, I believe it will be a matter of national regret, if not of scorn or shame.

● Nor are matters much better in the realm of private enterprise. The biggest thing in sight on the private building scene is Morris Cafritz, a real-estate man and building operator whose scale and range of operations has stepped up in recent years. Cafritz emerged last month as the prime mover in a corporate structure, Town Center, Inc. (previously identified only by a local lawyer, William Hannan), which has been trying to get part of the big Southwest Washington redevelopment project away from the Zeckendorfs. This is a real battle of titans! Since 1952, the Zeckendorf firm (Webb & Knapp National, Inc.) has been systematically knocking down one obstacle after another in this vast and complicated project, and it is now ready to get wheeling. As the success of the project has become more assured, it has become more attractive to local interests who previously had shown little interest in overtures from Redevelopment Land Agency. The situation just now has Webb & Knapp on one end of long, recently concluded negotiations with the RLA, agreeing to purchase land for a shopping center for $2.50 a square foot. Obviously, this bid reflects over-all general planning work for the development as a whole, as well as the limited shopping center project. Webb & Knapp is expected to build at least four apartment buildings in the area, whose general planning they have done with I. M. Pei Associates and Harry Weese. The late arrivals, the Cafritz group, sprang their flashy and generalized offer of $3.00 a foot in a public hearing. It is very unlikely that the Cafritz power play will get anywhere at this late hour—it would be a scandalous and reprehensible sell-out.

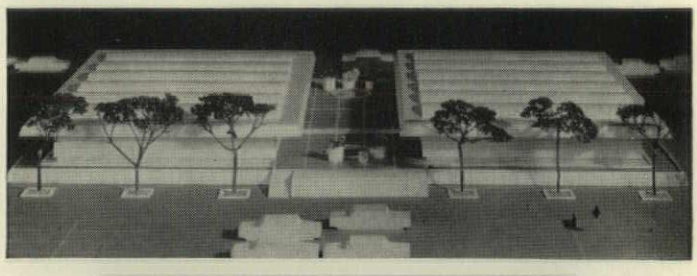
There is a second Cafritz blockbuster—three 12-story office buildings in Arlington County—across the Potomac from Washington, literally in the shadow of the Pentagon. These are currently being urged upon the local authorities as exceptions to the present 8-story height limitations. What tenants will be found for these enormous and outlying office buildings? There is a reasonably strong suspicion that much of it will be leased to Federal agencies. If this proves to be the case, it will be ironic that one Federal agency will be undoing the work of other Federal agencies struggling to preserve the area from high towers and unreasonable densities. If this $100 millions project were located in Washington it would not get to first base.

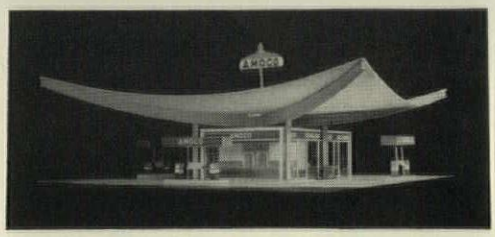
● Between General Services Administration and Operation Cafritz there is really little to choose. Together they are making Washington a sadder, but I hope a wiser city. Perhaps it won't be too late, when people wake up to what is happening here.

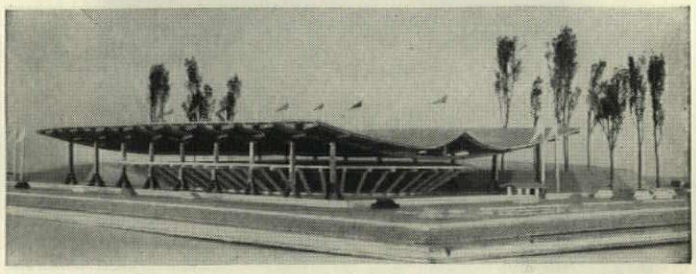
DESIGNS BY GEORGIA FIRM FEATURE STRIKING ROOFS

ATLANTA, GA.——Recent designs by Architects Toombs, Amisano & Wells have revealed several interesting roof forms employed for unusual buildings (right).

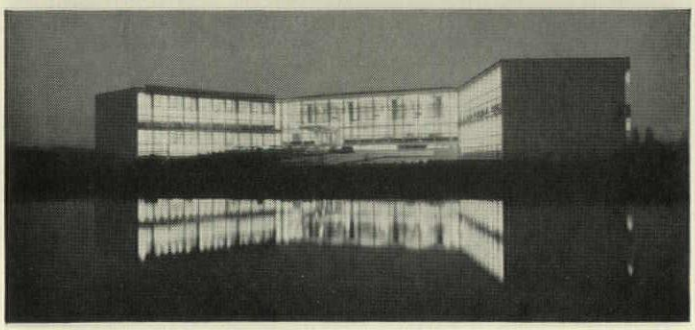
At a shopping center in Cleveland, Tenn., small office buildings have barrel-vaulted roofs. The buildings are raised off the parking area to be more clearly defined. Structurally the buildings are concrete, employing the pneumatic-concrete method, with an over-all texture applied to walls to control weathering. In the same shopping center is the Amoco Service Station. Looking as though it were wearing a tri-cornered hat, this little building has a roof created of pneumatic concrete using the "sling slab" technique. Amisano explains that "sling slab" is Southern for "catenary with a difference." He notes that the system, as used in this station, demonstrates that an 80-ft structure could be repeated with center-column supports to form any multiple of that bay size. A roof featuring a more straightforward catenary form is seen in the firm's design for a Horse Show Pavilion. This structure is of laminated wood and concrete. The pavilion will seat 5500 persons in concrete stands. Currently under consideration is a column design which would make the stands part of the lateral support. Main structural members are Queen Post trusses, with steel and laminated wood combined where punching shear, tension stresses occur.







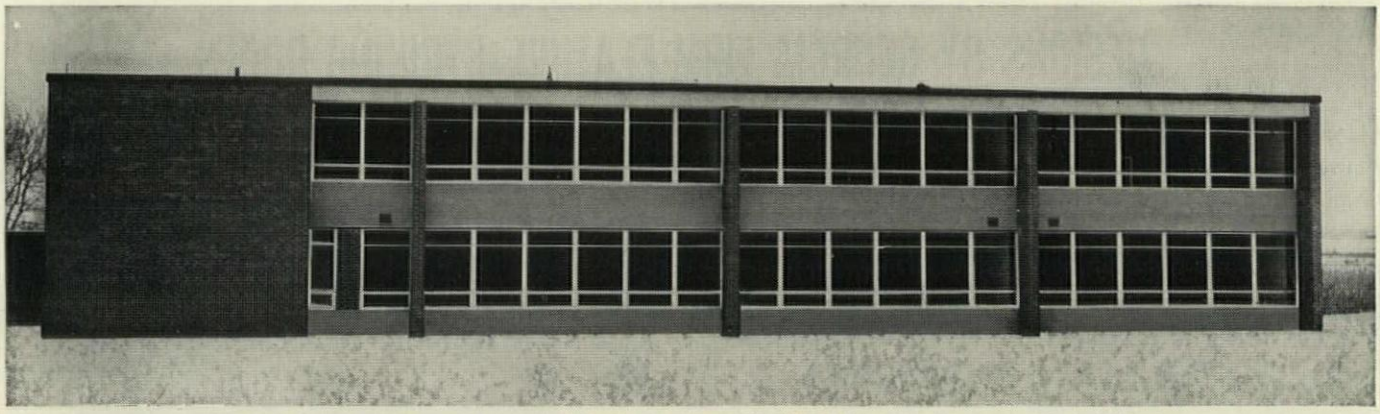
BREUER COMPLETES OFFICE BUILDING IN HOLLAND



AMSTERDAM, NETHERLANDS——The home office of Van Leer's Vatenfabrieken N. V. near here, designed by Marcel Breuer & Associates, New York, houses headquarters of a manufacturer of oil drums and other metal containers. The concrete-and-steel structure is shaped like two Y's with stems joined, and has a total floor space of approximately 80,000 sq ft. The two wings of the building are connected by the central hall, an impressive open area used for reception of guests, lobby, and exhibitions of the company's products. Halfway back, this lobby is bisected at the second floor by a second-floor bridge. Because of the angled vision afforded by the tangential wings, and because the central space is glass walled, one can see into all parts of the building from the center hall. At the rear of the hall, a covered walkway connects the office building with the employes' lounge and cafeteria.

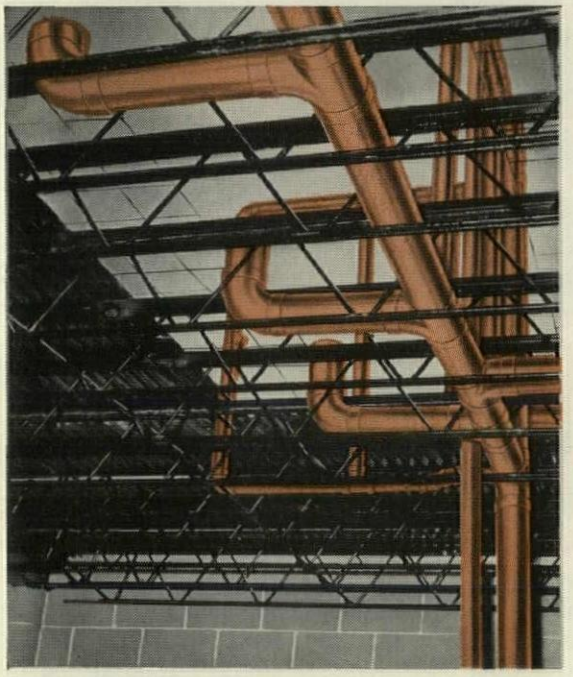
The building is approached by a private road, protected by a checking station, as the site is a large, open, fieldlike space with small streams and ponds.

The roof system of the building is an interesting combination of simplicity and complexity. The roofs of the wings are regulation flat roofs. The roof over the central hall, however, is an ingenious design of tapering columns which support concrete umbrellas asymmetrically. These umbrellas, in turn, support flat planes which lie between them. The roof of the employes' cafeteria reflects the same system, but employs shorter columns.

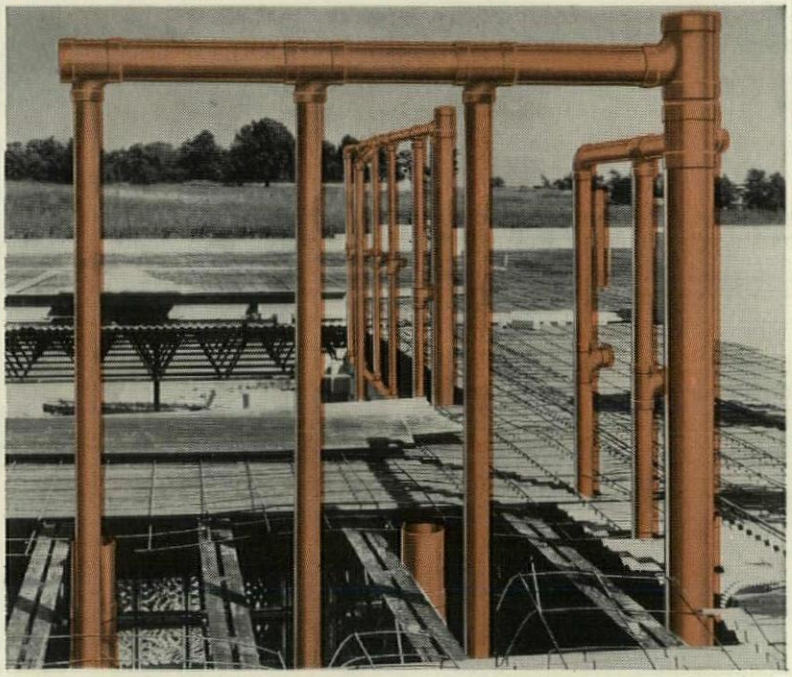


GOWER SCHOOL ADDITION, Hinsdale, Illinois. *Architect:* Wight & Schlaebitz, Downers Grove, Illinois.
Plumbing and heating contractor: Jerry & Phil's Plumbing & Heating, Inc., Brookfield, Illinois.

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.

Phil Bergeron and Jerry Wehrmeister, plumbing contractors near Chicago, have found that the installation economies with copper tube and solder-joint fittings enable them to offer all-copper plumbing—water supply *and* sanitary drainage—at a cost lower than competitive bids based on installing ferrous piping. Recent jobs awarded to them as low bidder include the Gower School, the LaGrange Township Junior High School, a church, health center, two restaurants and a store. Anaconda was used for all these jobs. Phil Bergeron says, "We specify Anaconda Copper Tube and Fittings because their consistent fine quality and close tolerances makes our work easier and keeps the job costs within our estimates."

Contractors, builders, and architects the country over are finding that they can provide long-lasting, low-maintenance all-copper plumbing at a cost competitive with ferrous piping. For information on Anaconda Copper Tube and Fittings, write for a copy of Publication C-33. Address: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

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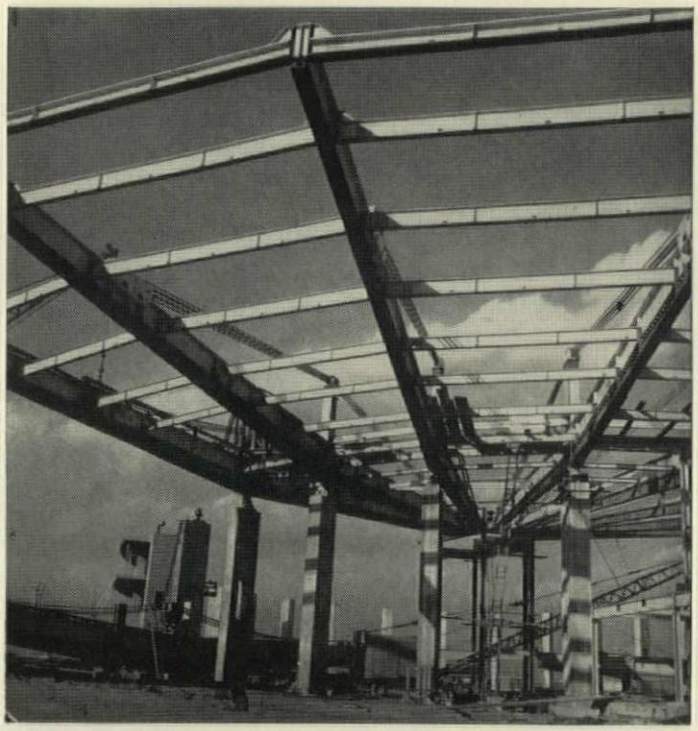
STEEL COBWEB COVERS FOUR ACRES FOR AIRLINES TERMINAL



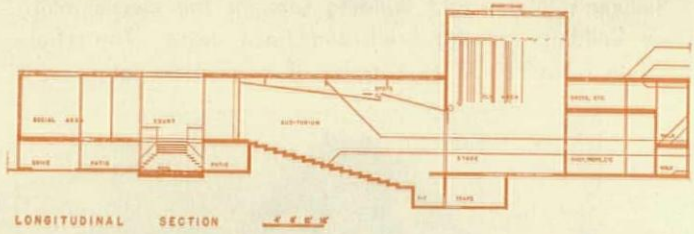
NEW YORK, N. Y.——The roof for Pan American World Airways' passenger terminal at New York International Airport is said to be the world's largest steel-supported umbrella. The roof will extend 124 ft beyond glass walls of the three-story building, creating a shelter large enough for passengers of four jet airliners.

Principal support for the canopy is provided by 32 all-welded structural-steel girders (whose length varies from 186 ft to 224 ft because of the roof's elliptical shape) framed into a central core. The ellipse described by the outer ends of the girders has a major axis of 528 ft, a minor axis of 422 ft. Inboard support for the roof girders is provided by a hexagonal ring composed of six structural-steel anchor columns and six steel girders. The canopy girders rest on 32 reinforced-concrete piers 104 ft in from their outer edge. Six 2½"-dia. galvanized-wire cables are attached to each girder. One end of each cable is attached to the outboard edge of the girder, and the other end to the inboard edge of the girder. From the top flange of the canopy girder at the pier, a 14-ft rocker column supports a cable saddle. Each cable has a minimum tensile strength of 740,000 lbs.

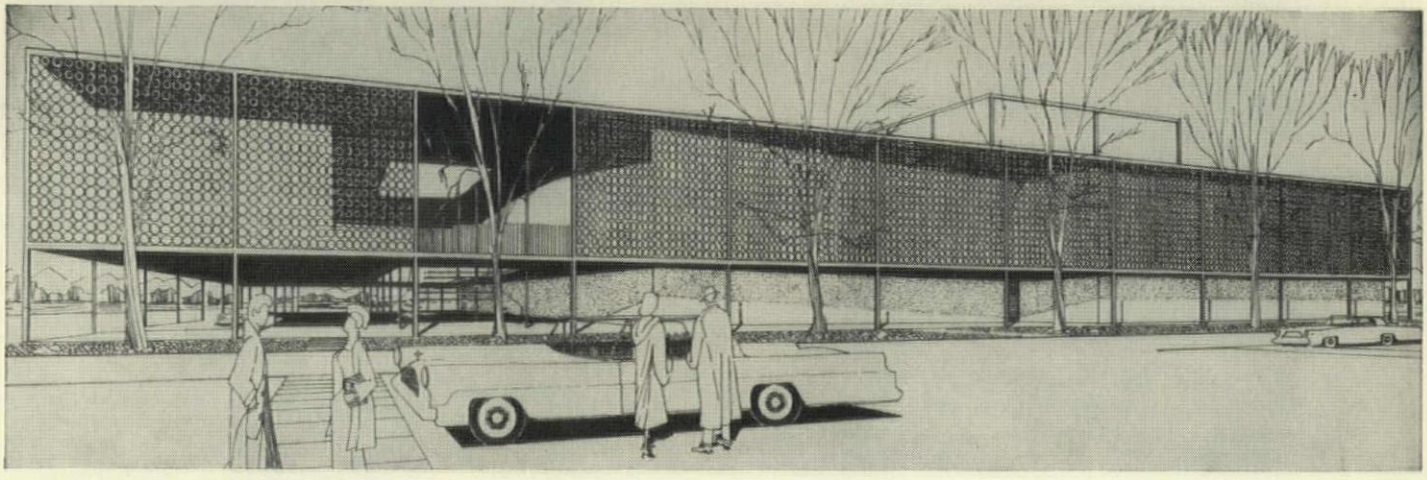
Architects-Engineers: Tippetts-Abbett-McCarthy-Stratton; Associated Architects: Ives, Turano & Gardner; Fabricators-Constructors of Steel: Lehigh Structural Steel Company; General Contractor: Turner Construction Company.

LOUISIANA CAPITAL TO GET LITTLE THEATER

BATON ROUGE, LA.——A two-level Little Theater will soon rise here, designed by Architects Short & Murrell. The ground level will be devoted, at the entrance, to a spacious patio surrounding a pool. Stairs will rise at each side of the pool to a lobby/social area with adjacent kitchen. The auditorium, built upon earth fill, to be entered from the upper level at the rear, will seat 425 patrons. Backstage, there will be dressing-rooms for 24 actors, plus a green room and toilets; over an ample ground-level area for props, scenery, and general storage.



LONGITUDINAL SECTION



CREATIVE USE OF ARCHITECTURAL MATERIALS

by Paul Rudolph

On a 13-city closed-circuit television program sponsored by Structural Clay Products Institute, men from various areas of the construction field gave their views on use of materials—particularly brick—in buildings. The panelists included Engineer Fred N. Severud; Mason-Contractor John B. Kelly; Otto L. Nelson, Vice-President in Charge of Housing, of New York Life Insurance Company; and Secretary John J. Murphy, of Bricklayers, Masons & Plasterers International Union. Of particular note were remarks by Paul Rudolph, New Haven architect and Chairman of the Architectural School at Yale University. Excerpts follow:

A recently completed shopping center outside Boston had, at last count, no less than 62 separate materials on its exterior alone. This is a far cry from Boston's Beacon Hill where a single material, brick, has been used to unify several residential blocks, creating one of the most beautiful series of streets, squares, and sequences of space to be found in the whole of the U. S. . . . There are two lessons to be learned from Beacon Hill. First, it is always the whole which is important, never the individual part; and second, great variety can be achieved by very simple means.

However, Beacon Hill is a product of a bygone day. The dramatic population upswing, the economic, political, and social changes whetted by the spirit of the times have given us new problems. . . . Skeleton frames of steel and concrete are used for multistory buildings and lightweight, infilling walls are natural companions. Glass and composite sheet materials are appropriate 30 stories above the sidewalk, but not necessarily at ground level. The lower the building, the greater the number of choices. In this sense, architectural design becomes much more difficult for one-story buildings than for multistoried ones.

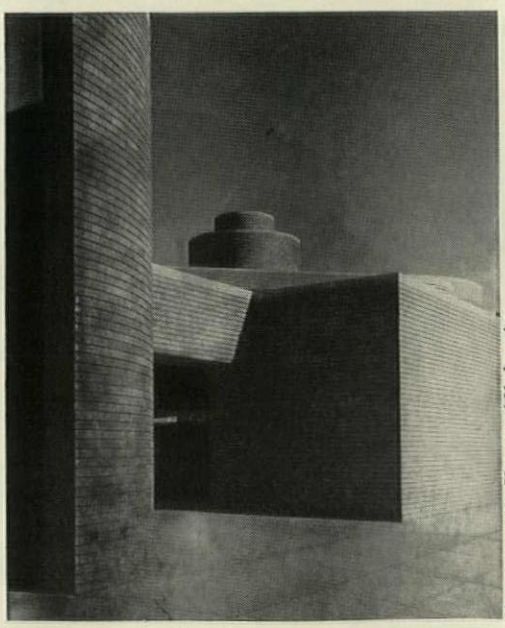
Sullivan's Wainwright Building remains the classic multistory building utilizing brick and terra cotta. The whole building is conceived as a series of brick piers set upon a stone base. The piers leap to the sky only to be terminated with one of the most original cornices in the world. It therefore follows one of the great principles of architecture: a building should have a beginning, a middle, and an end.

Le Corbusier's Villa Garches is typical of the early spirit of the so-called International Style. Masonry was covered with stucco and painted white to give an effect of lightness. Of course, such architecture did not weather well and since

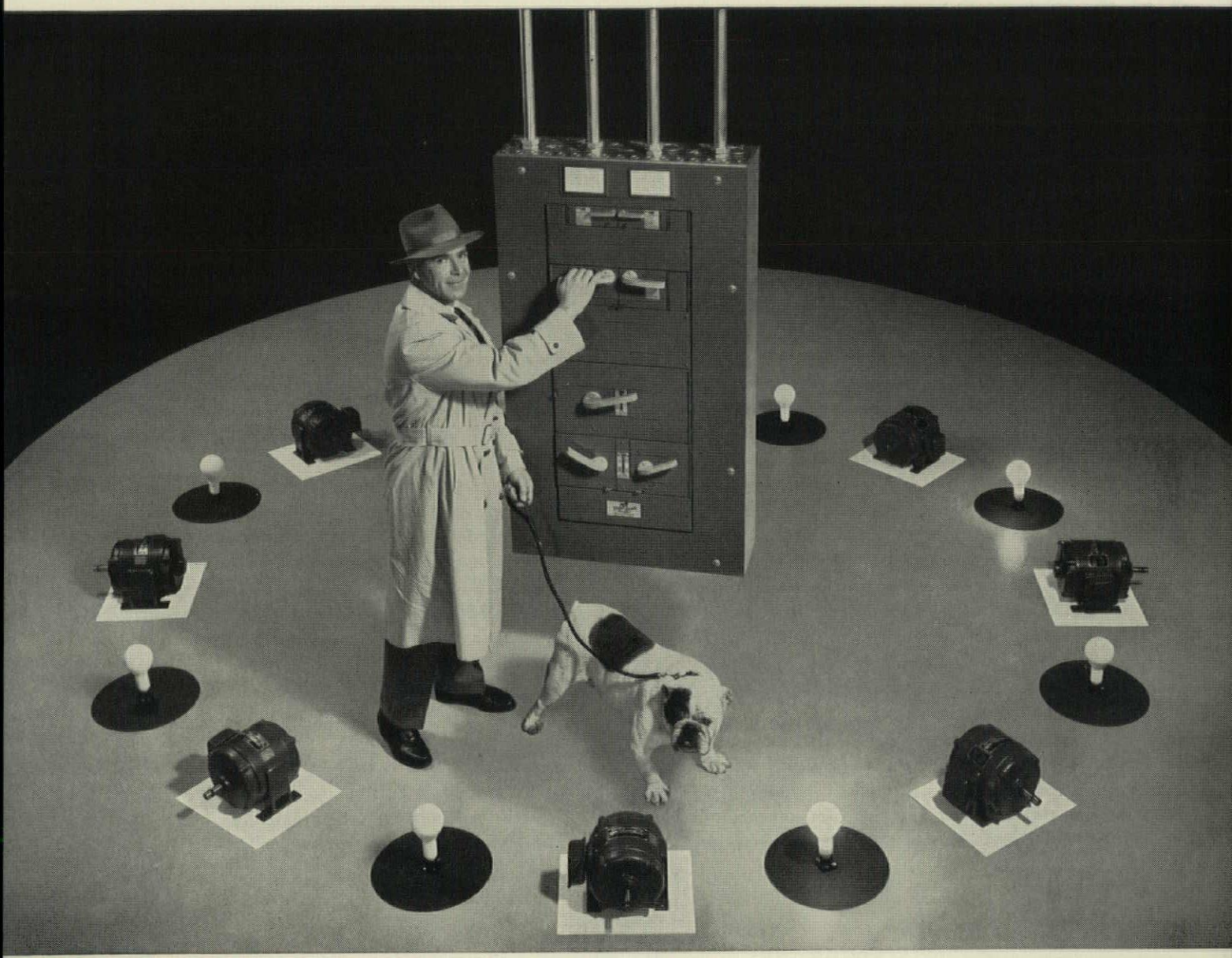
the war Le Corbusier and his school of thought have turned increasingly to a more direct use of materials of all kinds. Philosophically, we may wish to create an architecture which can be torn down every 50 years or so; but physiologically it does not work that way, for new uses [for buildings] are constantly being found to replace the old.

By contrast (to Villa Garches) Frank Lloyd Wright's Johnson Wax Building makes an attempt to express the methods of construction used and is one of his greatest creations.

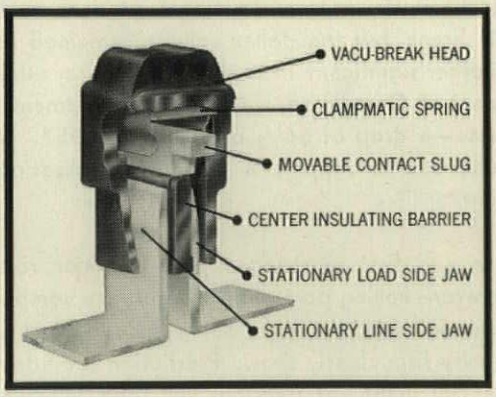
(Continued on page 94)



Photos: courtesy, Museum of Modern Art



Compact central power control—*with Vacu-Break protection*



VACU-BREAK CONTROL snuffs arcs immediately when breaking circuits under load. The enclosed head limits the oxygen available during the brief arcing period. Closeness of the head material causes the arc to cool and extinguish quickly. "Double-break" action reduces the distance the Vacu-Break head must travel before the arc is extinguished. In addition, Clampmatic action assures bolt-tight contacts, accelerates breaks.

BullDog Vacu-Break® Power Panels provide the efficient, economical way to centralize lighting and power distribution. One compact panel controls a host of lights and motors . . . saves space . . . provides real circuit flexibility.

BullDog Power Panels are prefabricated . . . switch units are quick-make, quick-break, standardized and interchangeable. Units are available from 30 to 600 amperes. It is simplicity itself to convert the panels when circuit requirements change.

Exclusive Vacu-Break control snuffs arcs quickly . . . Clampmatic® action assures bolt-tight switching connections—longer equipment life. For safety's sake—and superior performance—specify BullDog Vacu-Break Power Panels.

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Rudolph *(continued)*

Masonry walls, loadbearing walls, unique concrete piers, structural cones, and several other systems of construction are used; but it matters little, for the dynamic sun-bathed spaces created are the important thing. . . . To take [a] material and transform it, to heighten the spirit of the building, is art in its highest form. . . .

Eero Saarinen's General Motors complex utilizes highly glazed, colored brick of intense and varied hues juxtaposed to the reflecting glass surfaces of the curtain wall. Since this is a very large complex and the scale of the walls is sufficiently large, it is very successful indeed. It is rather like walking through a much enlarged stage set in which the flats have been artfully arranged and colored so the planes advance and recede. . . . It is one of the truly successful marriages of the curtain and brick walls. . . .

One of the principles of architecture is that the building must read in various ways, depending on the position of the viewer. For instance, in Gothic architecture the supports between the entrances read as a single pier from a distance, but upon coming closer it is revealed that they really are a series of clustered columns. Upon even closer inspection again, there is a wealth of sculpture, moldings, etc., to satisfy the eye. We tend today to have forgotten this lesson, for our buildings read very much the same way from every point of view. . . . This is in no way a plea to return to the old; we must find our own answers suitable for the 20th Century. However, pattern-making just for the sake of patterns never results in anything except the banal.

We find in Philip Johnson's own house . . . that he has juxtaposed the most precise kind of geometry of machine-made materials such as glass and steel and an abstract surface of plaster with a textured and rich effect of brick laid in a herringbone pattern so that the surfaces of the brick catch the light in the most subtle way. The chimney is constructed of the same material. Thus, the chimney and floor act as a kind of anchor for the great floating roof slab and [the] walls which disappear. In this case, each material is selected not only for its purely utilitarian value but more importantly because the character of each material plays an essential role in the total design. This is art.

In Edward Stone's . . . U. S. Embassy for New Delhi, he . . . utilizes a precast screen of considerable refinement which unifies the complex. . . . [The] screen seems to hover between the base of the building and the great pavilionlike roof. The roof casts shadows on portions of the screen and the screen in turn casts shadows inside the building, thereby achieving a constantly changing, ever playful series of light and shadow. In the final analysis it is atmosphere and symbolism which really count.

The architect's task is perhaps more difficult than ever before because it is possible to do almost anything. He must search for the innermost potentiality of every material and use it to make a meaningful whole.

FINANCIAL NEWS

by William Hurd Hillyer

In one of E. R. Eddison's fantastic novels, an audible but invisible entity runs around a room counter-clockwise, striving to turn back the passage of time. The frantic scurryings of dimly glimpsed authorities, political and economic, may be reversing Eddison's scene in their effort to outrun time and thus nullify its effect. The Federal Reserve Board has raised a gust of optimism, the inference being that inflation can be headed off by a tempo of economic activity exceeding the inflationary pace. Capital and manpower are available for fostering such rapid expansion, the Board declares. While admitting that unemployment is a matter for concern, FRB sees the decrease in jobs as largely caused by increased productivity. That body reasons—somewhat anomalously—that still more productivity will eventually create more jobs.

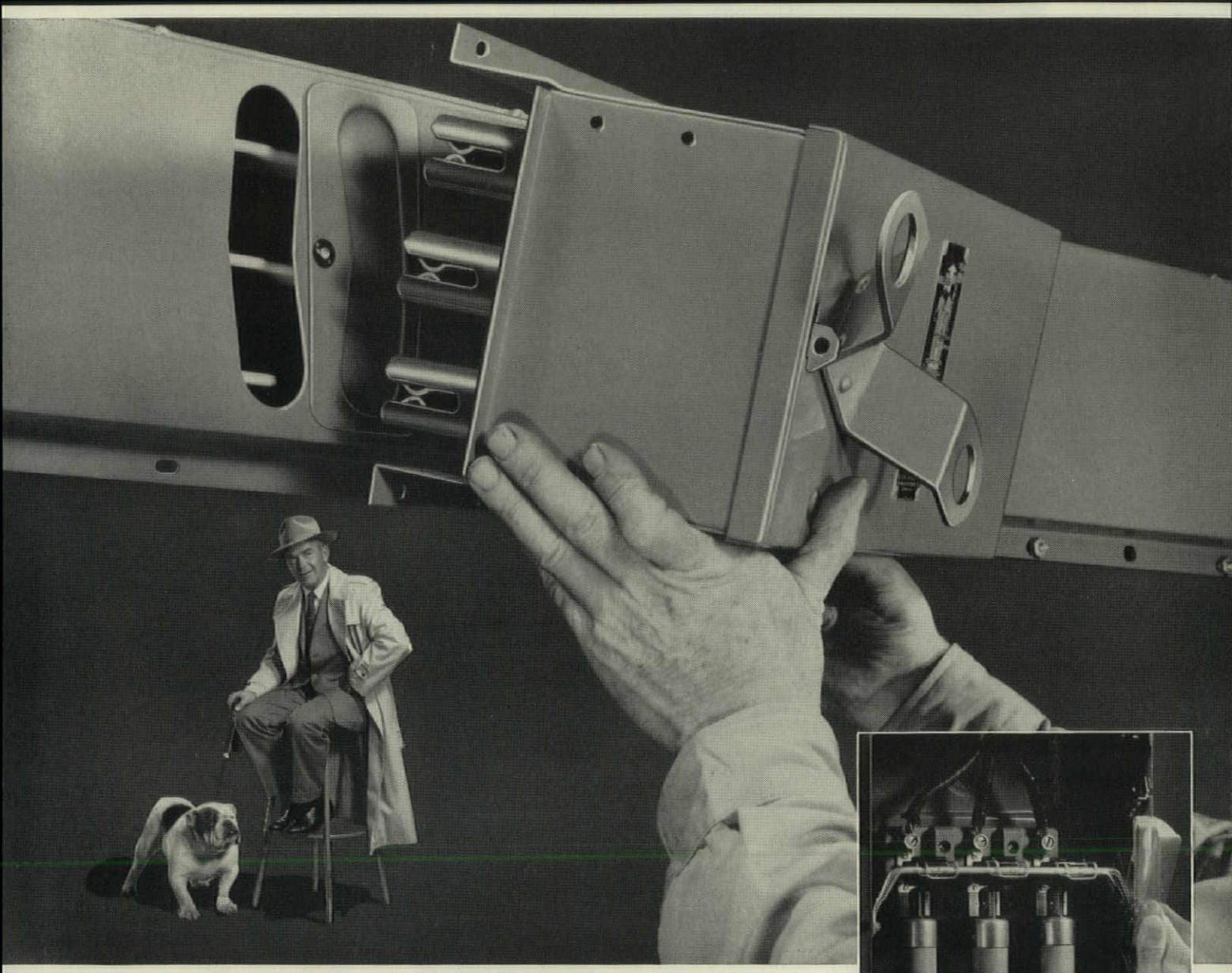
In the good news department for architects, FRB announces banks throughout the country have augmented their mortgage-loan holdings by $342 millions during the six months ending mid-February, 1959. This gain embraces credits (secured and unsecured) to insurance and mortgage companies, based on real-estate loans. A long-established New England authority discloses that investment in real estate is increasing, with the industrial-realty outlook "particularly fine."

Mortgage money, the same source reveals, is adequate in "nearly all areas" at rates approaching stability.

● The physical volume of gross national product in 1958 vis-a-vis 1957 shrank, but the dollar volume remained about the same. Another significant 1958 shrinkage, as revealed by U.S. Department of Commerce, was in fixed investment outlays by business—a drop of $6½ billions from 1957. However, the same source reports a current stabilization of such investment.

● Real estate and first mortgages play a major role at present in the ever-swelling portfolios of insurance companies and private pension funds, current surveys conducted by a top-ranking realty firm clearly show. Prediction is made that the "new financial giant" of pensions will tend to cheapen the interest yield expected by other investors on long-term realty and construction financing.

Once again, the realm presided over by architects is supporting the economy in times of stress. Insurance companies and pension funds are seemingly not held back by inflation fears from heavy investment in long-term fixed-income securities. Noteworthy in the Government area is the great activity of FHA loans, which early in the year achieved a record monthly rate of 65,700 dwelling units.



Vacu-Break chamber, shown above, smothers arcs at instant of break before they can pit or burn contacts. Dangerous flash explosion occurs at instant of "break" in open knifeblade unit shown below.

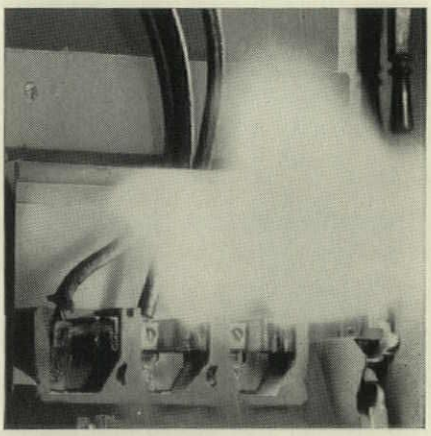
GET VACU-BREAK SAFETY IN BUS DUCT BY BULLDOG

And here's real built-in flexibility, too! Circuits plug in wherever needed with complete safety.

BullDog Plug-in Duct provides openings on 20-inch centers on either side of the duct. To tap "live" power you simply insert Vacu-Break® bus plugs. As the picture shows, reinforced fingers on all plugs insure positive pressure contact. Exclusive Vacu-Break action safeguards circuits and personnel. The enclosed arc chamber limits the oxygen supply . . . actually starves the arc before it can explode and pit or burn contacts. (The Vacu-Break bus plug has six companion plugs to meet other applications.)

Plug-in Duct is powered by Lo-X feeder duct—together they form BullDog's integrated BUStribution® system. Both ducts are available in standardized and interchangeable straight sections, elbows, tees and crosses . . . can be installed sideways, on edge, vertically or horizontally.

Do away with rewiring, downtime and costly production shutdowns! Specify *Bus Duct by BullDog.*



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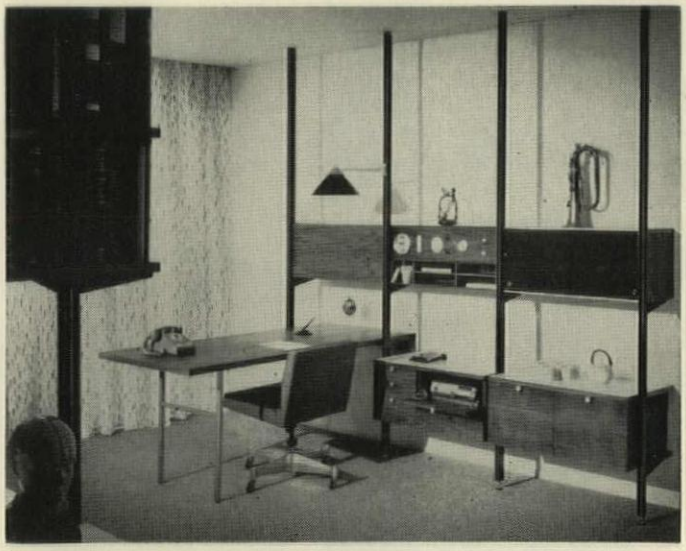


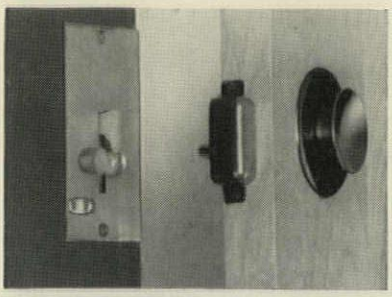
MANY ARRANGEMENTS POSSIBLE WITH STORAGE-SYSTEM COMPONENTS

Units Completely Demountable, Easily Adjusted

The popularity of storage systems for offices and homes continues with the introduction of Herman Miller's "Comprehensive Storage System." Designed by George Nelson & Company, Inc., the easily installed system is said to solve most storage problems without conventional storage furniture. The components are simple—shelves, doors, and dry assembled panels attached to poles—but the number of possible variations is great. The system can stand as a room divider, a free-standing wall (with end panels added), or against a permanent wall.

The poles are of anodized aluminum in gray- or natural-aluminum finish, and are available in 94", 106", and 126" lengths (they extend two additional feet). A spring attachment to top of pole rests against the ceiling to allow pole to stand firm as others are installed. Brackets are of steel with black finish. Desk tops are obtainable from Miller's Modern Management Group or Executive Office Group in 54", 60", 66", and 72" lengths with satin-chrome "H" legs or with pedestal. Case units include file drawer, dictaphone drawer, five-drawer unit, flip-up panel, switchboard panel, vertical organizer unit, drop-leaf desk, and sliding door panels. Conference wall components (below) include sliding, reversible chalk/tack board or hi-fi speaker screen; walnut chalk gallery; and light valance (also holds projection screen, maps, and rolled charts).

Herman Miller Furniture Company **100**



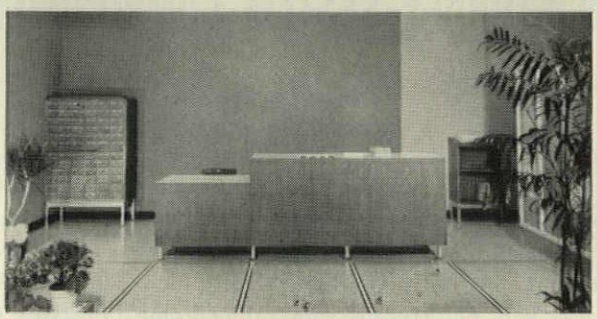
101

Easily Installed Hardware Gives Design Freedom

Hardware enables hanging of interior door over opening rather than in it, thereby providing wide range of design possibilities for door shape. No jambs or trim required. Set is composed of latch, strike, and hinges. Latch is mounted on stud and strike on door. Major parts of latch and strike are of durable, quiet nylon. Hinges provide full opening of door. Since knob does not have to be turned, but rather pulled from one side and pushed from the other, there is wide latitude of possibilities for various door pulls and push plates. Hardware is available in dull brass, brushed bronze, bright chrome and prime coat. Supplied with or without privacy lock. Serves either left- or right-hand mounted doors. Appropriate for single- and multiple-family residences, school dormitories, commercial buildings. An exterior door based on the same principle is being studied.

The Stanley Works **101**

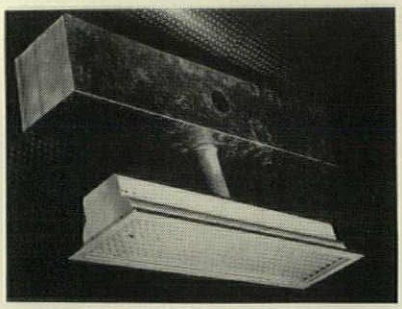
102



Designer-Created Library Furniture Introduced

Library furniture with contemporary styling is being used in New Orleans Public Library, St. Louis University Library, and Kansas City Public Library. Designed by Norman Cherner, line includes tables, chairs, catalog cases, charging desks, book-display stands, and children's tables and chairs. Supports are of anodized aluminum reinforced with steel; table tops are of birch wood, and tops of charging counters are plastic laminate. Name of group is "Designer."

Remington Rand
Division of Sperry Rand Corporation **102**



103

Light, Air Come from Single Fixture

Multi-Vent Troffer combines illumination with low-velocity air diffusion in same fixture. Unit consists of glass-bottom flush-mounted fluorescent-lighting fixture with tiny side-slots which transmit vertical air flow from low-velocity diffuser attached above. Diffuser is connected by flexible tube to central duct in drop ceiling. Lighting fixture is only part visible below.

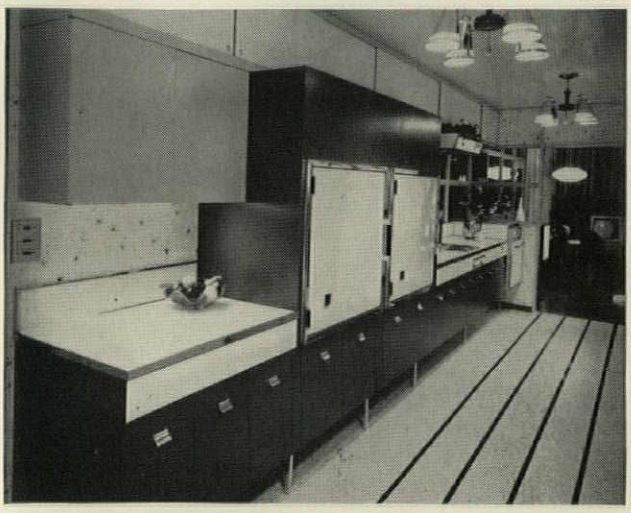
The Pyle-National Company **103**

Metal Wall Tile Has Antique Finish

Metal tile in solid copper and "Copper Glaze" (copper-tinted enameled aluminum) antique finish, offer an easy to install, durable wall tile that can be arranged to provide decorative effects by alternating grain and varying angle—suggested for trim over fireplace, along edges of book-shelves, also in bars and rumpus rooms. Solid copper tile sells for approximately $2.10 sq ft; "Copper Glaze" for $1.30 sq ft—available in 4½" x 4½" size, packaged 24 to box, or 3 sq ft.

Vikon Tile Corporation **104**

105



Clean Design Feature of Refrigerators

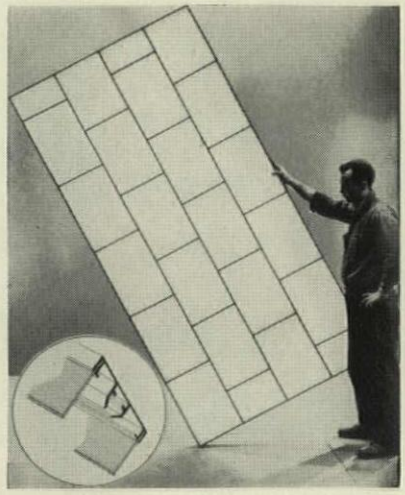
"Bilt-In" refrigeration products are notable for clean-lined appearance. Current models are Gourmet Refrigerator, Icemaker Refrigerator, Custom Freezer, Undercounter Freezer, and Undercounter Refrigerator. Gourmet and Ice-maker refrigerators shown. Available finishes are stainless steel, copper-glo, or 25 custom colors. Also available is panel kit for attaching plywood, laminated plastic, or other materials.

Revco, Inc. **105**

Translucent Panels Have Inside, Outside Uses

Building panels are made from glass-fiber-reinforced polyester skins bonded to extruded-aluminum frames and internal grids. There are three types of "Sanpan" panel: Type A has plastic skin flush with perimeter section and is appropriate for curtain walls, exterior panels, interior partitions, roof panels; Type B has integral aluminum lip protecting plastic edge along perimeter, and is suitable for above uses plus room dividers, screens, folding partitions; Type C has protective lip plus integral joint system for interlocking series of units into rapidly assembled interior partitions or exterior panel systems. Panels come in 48" width and in heights of 8', 10', 12', or 20'.

Panel Structures, Inc. **106**

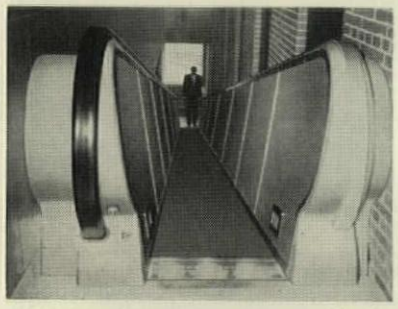


106

Passenger Conveyor Eliminates Climbing

Stair climbing is done away with by "Speedramp" passenger conveyor system. Passengers ride on a 24" wide belt up a 13½-degree incline. They travel at a rate of 125' per minute. Unit features stationary handrail on left side and moving handrail on right.

Stephens-Adamson Manufacturing Company **107**

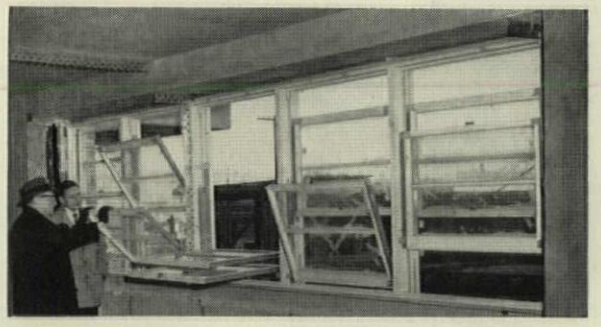


107

Windows Permit Washing from Inside

Double-hung wooden windows can be raised and lowered like conventional windows, and also tilt into room on hinges at best angles for ventilation, or horizontally for ease in cleaning outside of panes. Hardware is Galvanite, a heavy-duty, rust-resistant, galvanized strip steel. System is also being applied to larger picture windows.

Safety Window Hardware Corporation **108**



108

Factory-Assembled Snap-On Sash Saves Time

Amarlite snap-on sash with no exposed fastenings features vinyl inserts for dry-set glazing on any flat jamb or sill, provides a match for glass settings on Amarlite doors. Ready to install with preassembled clips, attachment holes, vinyl glazing bead in place, sash's unified back and base member simplifies installation and keeps out water.

American Art Metals Company **109**

Fixture Provides Several Kinds of Light

Ceiling-mounted patient-room light can provide four levels of illumination. Three-compartment, fluorescent unit gives soft, general room light or high level, visually correct reading light from head-end compartment; full, bed-length illumination for use during examinations or preparation for surgery; and a safety night light at foot-end of fixture. "Astrilite" utilizes fluorescent tubes with high-power-factor ballasts; diffuser of injection-molded plexiglas eliminates glare.

American Sterilizer Company **110**

110

School Furniture Has Contemporary Look

"Contemporary Line" of school furniture features chairs constructed of molded glass fiber in six colors. Legs are two tapered U understructures of tubular steel. Chair is manufactured in eight sizes, for kindergarten through college. Line also includes series of desks, cabinets, and tables (including new, 36"-square table).

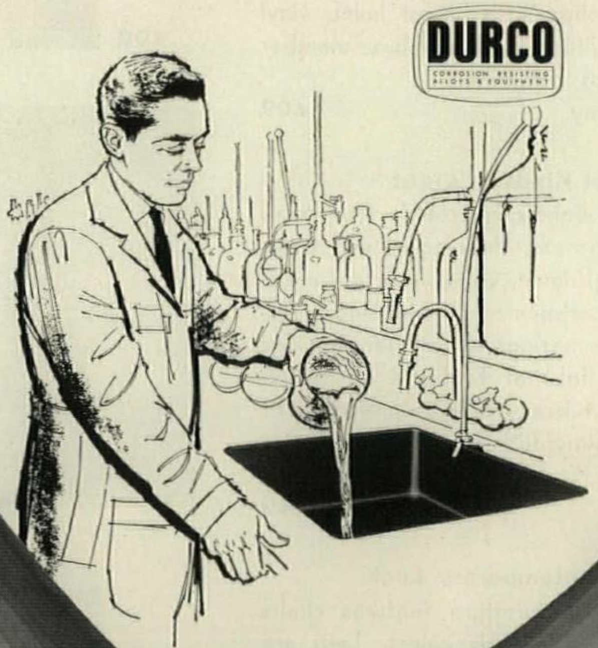
Brunswick-Balke-Collender Company **111**

111

NEW
DURCON SINKS
RUGGED, LIGHT WEIGHT, LOW COST

Now a combination of beauty and complete corrosion resistance can be obtained in laboratory sinks. New jet black DURCON blends perfectly with all types of laboratory furniture. DURCON, a modified epoxy resin, is shock-proof and resists high temperatures while maintaining dimensional stability. DURCON sinks are light in weight, inexpensive to install, and have coved corners and dished bottoms to prevent the accumulation of contaminants. DURCON sinks are available from stock in fourteen standard sizes. Write for Bulletin PF/5 or contact a recognized laboratory equipment manufacturer.

DURCO
CORROSION RESISTING ALLOYS & EQUIPMENT

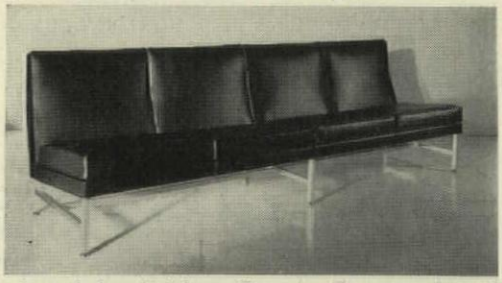


THE DURIRON COMPANY, INC. / DAYTON 1, OHIO

BRANCH OFFICES: Baltimore, Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Houston, Knoxville, Los Angeles, New York, Pensacola, Philadelphia, Pittsburgh, and St. Louis

Furniture Designed for USAF Academy Available

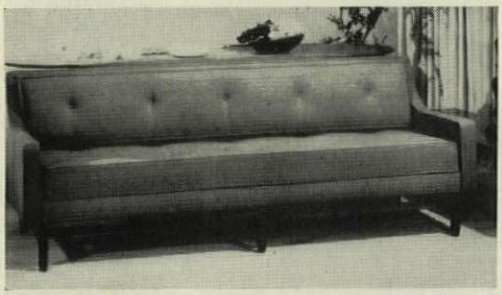
Couches, chairs, square and rectangular tables, and ottomans designed by Walter Dorwin Teague Associates for Air Force Academy now can be purchased. Seating units have loose seat cushions and anodized aluminum bases; tables have plastic tops and anodized aluminum bases. Upholstered items come as one, two, three, or four seaters, with or without arms.



Thonet Industries, Inc. **112**

Sofa-Bed Has Living-Room Look

Clean-lined sofa converts into sleeping accommodation. Mattress-seat pulls forward to make twin-size sleeping area. Inner-spring mattress is topped with foam padding and is supported by "No-Sag" springs on walnut base. Retails at approximately $199.



Simmons Company **113**

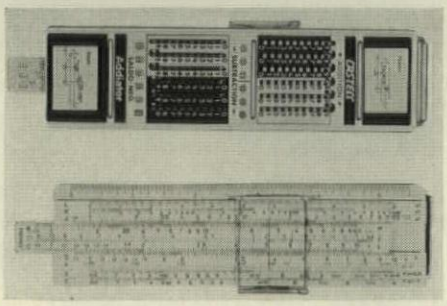
Residential, Steel, Storm Window Has Narrow Frame

Easy-to-clean slim-lined casement type storm window features maximum comfort, protection, durability. Fabricated from chrome nickel stainless steel, components include positive neoprene rubber seals between primary and storm window; die cast corners for added rigidity; vinyl weatherstripping between glass and main frame of storm window; rugged narrow frames; positive protection stainless steel locking handles, and concealed hinges.

Challenger Products, Inc. **114**

Slide Rule Is Backed by Adding Machine

Faber-Castell 13-scale slide rule is available with small precision adding machine on other side. "Addiator" adds and subtracts to 999,999. Numbers to be added are pushed with stylus, and answer appears in answer window. Instrument includes automatic credit-balance window. Comes with instruction book and carrying case at $9.95; also available with 10" scale for $18.95.



Harrison Home Products Corporation **115**

Stacking Chair Has Sculptured Appearance

Seat and back of stacking chair are made from one piece of teak. Legs are of steel. Ideal for use in cafeterias, small auditoriums, institutional buildings, homes. Imported from Denmark; designed by Micael Bloch. List price: $40.

Mills-Denmark **116**

Garage Door Rejects Fingers When Closing

Four-section steel garage door slides easily into hide-away position, has built-in nonsqueeze characteristics. Folding sections of deep-groove designed panels physically reject hand or fingers in closing. Doors are made from specially selected steel, electro-galvanized, bonderized, factory prime painted on both sides. Door comes in eight standard sizes to fit finished openings, with five-year warranty.

Steel Door Corporation **117**

Drafting Table Is Made of Sheet Steel

"Revolt" drafting table is fabricated of sheet steel to reduce oscillations and provide greater stability. Table is counter-weighted and has double-acting brake mechanism for adjustments. It has a plywood top. Suitable for use with any drafting machine and parallel guide. List price: $291.65. Designed by Friso Kramer and made in Netherlands.

Stendig, Incorporated **118**

Portable Walls Provide for Future Expansion

Exterior wall sections particularly suitable for school building provide advantage of quick relocation—time required for taking down and reassembling is less than in conventional systems. Two-story, preassembled system goes up by first attaching wall units to steel and masonry frame, adding glass. Laminated sandwich-construction Calcore panels have

(Continued on page 105)

A continuing series of distinguished schools, office buildings, churches, hospitals and industrial structures using NORTON DOOR CLOSERS

NORTON'S PROVED DEPENDABILITY DICTATED CHOICE OF DOOR CLOSERS

ARCHITECT: HARRY T. MAC DONALD, A.I.A.
CONTRACTOR: STIGLBAUER BROTHERS

New Senior High School in Downey, Calif., Has a Norton Door Closer on Every Door

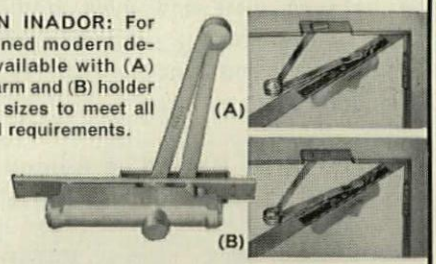
Ruggedness is a prime requisite for door closers in any school attended by over 2,000 students. This need has been satisfied in the distinctive new Senior High School at Downey, Calif. ...and also the new West Junior High School. All doors in both schools are equipped with Norton Door Closers. The choice was influenced by the fact that thousands of Norton Door Closers are still in daily use in some of America's best-known public buildings after serving continuously 30 years and longer. For fully illustrated data on these and other Norton Door Closers, including important new models, consult the current Norton catalog #57. Write for it today.

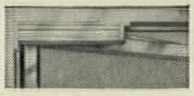
NORTON® DOOR CLOSERS

Dept. PA-49, Berrien Springs, Michigan

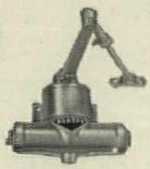
Complete Norton Line Meets Every Door Closer Need

NORTON INADOR: For streamlined modern design; available with (A) regular arm and (B) holder arm...4 sizes to meet all standard requirements.





NORTON 750: New corner design with concealed arms, for all types of doors, particularly narrow-rail doors.



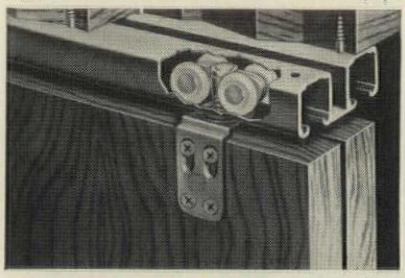
NORTON SURFACE-TYPE: For all installations where concealment is not essential.

NORTON 703-N Compact surface-mounted type... 1½ inch projection.

Foamglas core with galvanized steel back, finished in blue-green color with occasional contrasting yellow panels—may include variety of insulating materials.
Caloric Appliance Corporation **119**

Snap-On Hanger Eases Removal of Doors

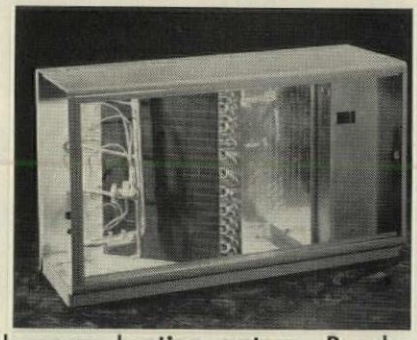
Snap-on Hanger with knee-action for by-passing doors



enables doors to be mounted and removed quickly before or after trim is in place without readjustment of hangers. Spring-loaded hangers have low-friction floating nylon wheels which automatically compensate for door warpage. Side-mounted hanger plate can be adjusted for accurate alignment of door to jamb, then snapped into place.
Kennatrack Corporation **120**

Heat Pump, Electric Strip Added to Heating

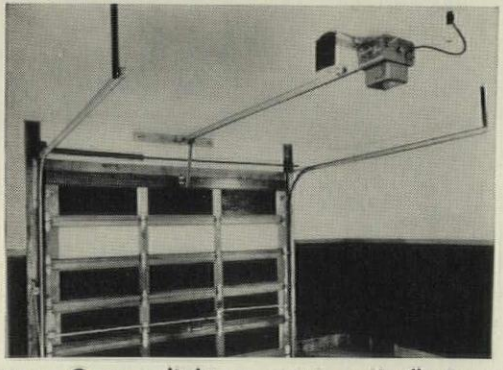
Heat pump and electric heat has been added to "Comfort



Curtain" classroom heating system. Regular 54,000 Btu heat pump coil is supplemented by four electric strip heaters of four kw each. Maximum output of electric strip unit at full capacity is approximately 54,800 Btu.
Lennox Industries, Inc. **121**

Garage Door Operator Is Self Contained

Lightweight (32 lb) automatic "Genie 400" garage door is powered by 1/3 hp motor, comes with aluminum rails and extrusions to carry door as it lifts and lowers. Device unlocks and opens, or closes and locks garage door at push



of a button. Garage lights are automatically turned on or off at same time. Both sectional and solid doors, up to 8'x20' in size, can be handled by unit.
The Alliance Manufacturing Company **122**

Coatings for Metals Eliminate Sandblasting

A phenolic/vinyl system of maintenance coatings for metals that provides protective advantages while eliminating sandblasting surface preparation, and increasing endurance—needs only wire brushing before primer and top coat are applied. Gloss retention and durability of the coats augments high corrosion resistance and adhesion of phenolic primer.
Union Carbide Plastics Company
Division of Union Carbide Corporation **123**

Plant Features Unusual Use of Glass Block

New Split Ball-bearing plant in Lebanon, N. H., utilizes "Thinlite" glass-block panels with a random scattering of

red and yellow glass blocks to create a light, colorful effect. Thinlite is a 2" thick, 12" square hollow-glass unit. Units are assembled at factory in 2'-high panels for installation on site. Architect of ball-bearing building was Carl M. Koelb & Associates.
Owens-Illinois Glass Company **124**

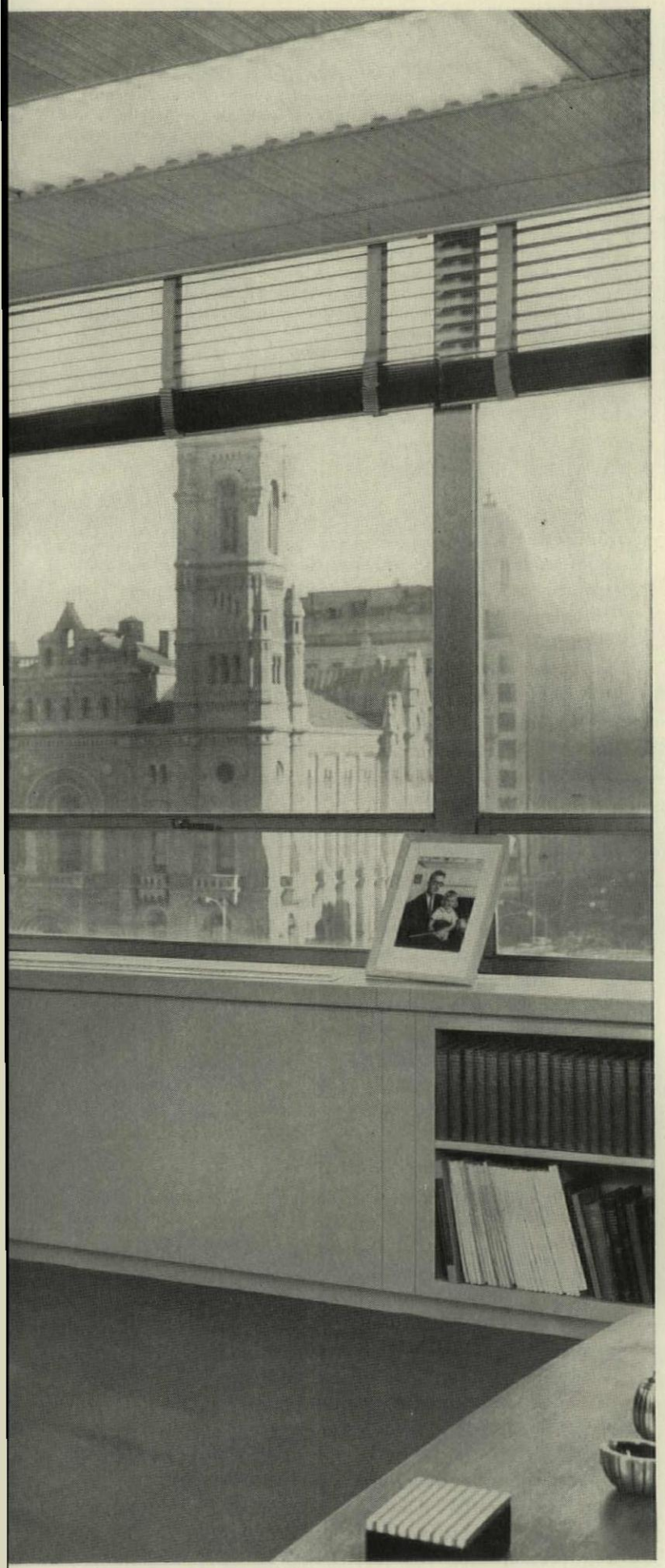
Centrifugal Wall Exhauster Introduced

Centrifugal wall exhauster provides maximum air discharge for 360-degree "jet" diffusion. Rubber-mounted ball-bearing motors are permanently lubricated in weatherproof enclosure and isolated from contaminated air stream passing through exhauster. Housing is spun aluminum. Other

features are airfoil, contoured, wheel blades, automatic backdraft dampers, epoxy-resin coating for protection against corrosive agents, external conduit arrangement for easy wiring.
Power Line Fan Company **125**

Aluminum Roof Shingles Come in Colors

Wood-grain embossed-aluminum roof shingles, described as having effective insulating value, and incorporating special four-way interlocking feature for maximum hurricane wind resistance, are offered in selection of six baked-enamel "Colorweld" permanent colors: polar white, beige, slate gray, mist green, robin's egg blue, sienna red—other colors to be made available in near future.
Reynolds Metals Company **126**



IT COOLS
IT HEATS
IT VENTILATES

New LUPTON Comfort-Conditioning* Curtain-Wall System

Now, Comfort-Conditioning units are an integral part of a LUPTON Curtain-Wall System. They're installed with the curtain walls to form a complete exterior-interior wall. And every one of these units is designed with a control panel, from which the occupant of each office can *individually* regulate temperature, fan, and exhaust for odor- or smoke-removal. This personalized Comfort-Conditioning prevents wasteful over-air-conditioning and over-heating.

Two interchangeable units

LUPTON offers two interchangeable Comfort-Conditioning units: heavy-duty for areas with a particularly heavy cooling load, and lighter-duty for average loads. Operating as heat pumps, these units are satisfactory for all heating purposes during change of season, and wherever winter design temperatures are not extreme. Also, they can be furnished with supplementary heat to take care of *all* heating requirements, regardless of winter design temperatures. LUPTON Comfort-Conditioning units have a wide separation between outside air intake and discharge. The result is faster, more efficient operation for heating or cooling.

Low-cost, flexible system

Unlike central systems, LUPTON Comfort-Conditioning requires no unsightly, expensive cooling towers, duct-work, plumbing connections, or condenser units . . . only electrical connections. Installation costs drop 40 to 60%. Nothing protrudes on the outside. There's a sill of normal depth on the inside. What's more, with all panels sized uniformly the LUPTON system can be readily re-arranged at small cost. If capacity requirements expand or decrease, you can interchange the Comfort-Conditioning units in themselves, or with storage cabinets, shelving, or bookcases. Also, the LUPTON system gives you great opportunity for variation in spandrel proportions and surface treatment.

Investigate fully LUPTON's newest advance in aluminum curtain-wall design and function. Write for more information today.

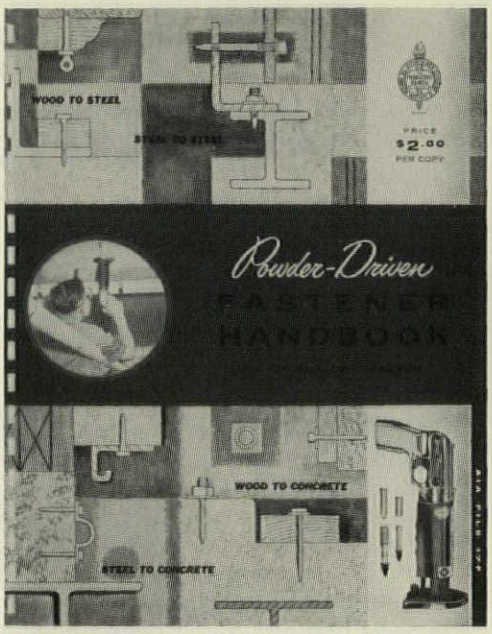
*TRADE MARK

LUPTON®

ALUMINUM CURTAIN WALLS AND WINDOWS

MICHAEL FLYNN MANUFACTURING CO.

Main Office and Plant: 700 E. Godfrey Ave., Philadelphia 24, Pa.
New York, N. Y., Chicago, Ill., Cincinnati, Ohio; Cleveland, Ohio; Los Angeles, Calif.; Stockton, Calif.; Dallas, Texas.
Representatives in other principal cities.



Information on various applications of powder-driven fasteners is provided in* Powder-Driven Fastener Handbook for Architects and Engineers. *According to book: "Fastening with powder-driven fasteners makes drilling, chipping, plugging of concrete, and drilling and bolting of steel unnecessary." Book gives general information on powder-driven fasteners; common applications; data on specifying fasteners; applications to concrete and structural steel; background of approvals and acceptances; field clearance requirements and limitations; and results of design loads and fastener tests, compiled from hundreds of tests made by independent laboratories and in the field. Copies are $2.00 directly from Olin Mathieson, or may be had on loan by architects and engineers from local Ramset dealers.
Olin Mathieson Chemical Corporation,
460 Park Avenue, New York 22, N. Y.
Ramset Fastening System (AIA 17F, 48-p.)

AIR AND TEMPERATURE CONTROL

Low-Profile Centrifugal Roof Ventilators

Brochure presents capacities, quietness levels, design and construction features of rugged low-profile American Blower roof ventilators—covers 13 basic sizes for various building environments, including 111 different motor and belt-drive combinations. Dimensions included for all models—also photographs and specifications of a typical installation. American Blower Division, American Radiator & Standard Sanitary Corporation (8-p.) **200**

Selector Guide for Surface Heating

Bulletin shows how to select heating equipment and controls for surface heating—tells how to determine type of heater, ratings for surface or platen heating, heat-up time for metallic platens, how to select thermostats and controls for controlling metal-surface temperatures—includes heater-selection tables, heat absorption in kw of material in process, platen heat losses in kw, heat absorption of platen in kw hours, table for determining thermostat temperature range. General Electric Company (Bulletin GEA-6146B, 4-p.) **201**

Conditioning Unit Handles All Air Problems

Catalog illustrates compactness and flexibility of model AC central-station type air handlers in capacities from 665 to 19,200 cfm—can be used for heating, cooling, or both—as humidifiers, dehumidifiers, or for circulating air. Performance data, specifications, dimensions are covered; also accessories such as mixing boxes, dampers, coils, other related items. Available in horizontal and vertical styles in 15 sizes.
Acme Industries, Inc. (Catalog 382A, 12-p.) **202**

Floor Air-Conditioning System Saves Space

Brochure describes compact Q-Air floor system which contains all mechanial elements for electrical distribution functions inside the floor—provides dual hot- and cold-air ducts, specially designed Aerator mixing and regulating units. Floor consists of live- and dead-load-bearing cellular-steel units—features include fast, dry construction; less material handling; quick relocation of electrical outlets; reduction of from from 12" to 16" installation space generally required. Sectional drawings and text completely detail system construction and installation. Specifications, general recommendations for use, photographs of existing installations, included.
H. H. Robertson Company (AIA 30-A, 28-p.) **203**

High-Pressure Induction Air Conditioning

Bulletin illustrates features and operation of furniture-quality Flexular series Slimline and Lowline induction circulators for picture-window, wall, ceiling-mounted installations in high-pressure induction air-conditioning systems. Selection data, unit sizes, performance ratings, gravity heating capacities, selection examples, included—also arrangement, dimensional data, special specification guide. **204**
Worthington Corporation (28-p.)

CONSTRUCTION

Laminated Panels Offer Form, Substance, Color Control

Booklet illustrates uses for laminated structural panels, described as providing practically limitless design and styling latitude—panels (insulated or noninsulated) feature wide choice of colors, facing, core materials, for selection on basis of functional and appearance requirements; are durable, corrosionproof, combine materials of various densities. Available in sizes 1" to 8" thick, widths to 4', lengths to 12'—varying shapes—can be supplied custom designed. Photographs of latest applications.
Haskelite Manufacturing Corp. (8-p.) **205**

Adhesive Bonds Over All Surfaces

File sheet describes Lion-Bond water-resistant organic adhesive for all floors or wall surfaces, as a radical departure from present latex-type ceramic-tile adhesives—needs only to be mixed with water and can be bonded to masonry,

Editor's note: Items starred (★) are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.

wallboard, or metal. Easy to mix material is odorless, nonflammable, cannot stain tile or grout, and both tile and tools can be cleaned with water alone. Packed in 25-lb waterproof sacks with bonding material to cover minimum of 100 sq ft.
The Cambridge Tile Manufacturing Company (1-p.) **206**

How and Where to Use Waterstop

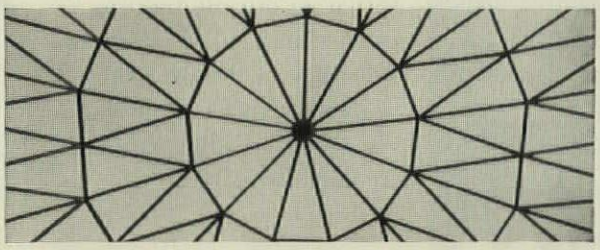
Bulletin lists characteristics of five types of Nervastral waterstop and joint spanner for use between adjacent sections of concrete. Fabricated of extruded, continuous, flexible, plastic strip of high-polymer resins; waterstop is said to be completely durable, impregnable, will not bleed, embrittle, or crack under varying temperatures; assures effective anchorage and tight bonding. Suggested specification table shows types and weights to meet requirements based on estimated concrete waterhead and compression stresses. Illustrations of applications, installation directions included.
Rubber & Plastics Compound Co., Inc. (Bulletin 128, AIA 7A1, 4-p.) **207**

Facing Tile in Modular Design Application

Handbook highlights features of faster building time and design flexibility through use of structural facing tile in 4"-modular-grid construction. Contents include discussion of physical properties, illustrations of typical wall sections, design data, specifications, quantitiy estimating table, other listings. Tiles are available glazed and unglazed in variety of shapes and sizes, in plain, mottled, speckled, manganese spot color finishes. Glazed tile is designed to be laid up in 1/4" joints; unglazed, in 1/4" or 3/8" joints.
Facing Tile Institute (AIA 10-B, 40-p.) **208**

Skylighting With Built-In Subceiling

Leaflet illustrates infinite design potentialities in application of custom-built "Super Sky" skylighting to ceiling treatments —can be made in any form or size, adapts to any design,



style, or type construction—increases insulation efficiency, solves ventilating, condensation problems (among others). Built-in subceiling permits control of natural diffused light in any quantity varying from 5% to 75%. Photographs show current applications in university and public buildings. Construction features, specifications, included.
Super-Sky Products Company (4-p.) **209**

Calking and Sealing for Heavily Stressed Areas

Data sheets describe Synthacalk heavy-duty sealant for curtain wall and larger glazed units—material contains "cold-flow" property that allows sealant to compensate for building movement—is said to stretch to four times its original dimension without tearing or breaking, providing tough elastic cushion against shock and strain—applicable to all materials, inert to weathering, corrosion-resistant. Composition and preparation data, application directions, glazing techniques, arrangement of spacers, specifications, included.
Pecora, Inc. (AIA 26-B-2, 4-p.) **210**

Structural-Steel Tubing Has Many Uses

Folder lists some of many uses for Espro structural-steel tubing (square and rectangular rigid-box structures)—range of applications includes area lighting, beams, structural columns, ductwork, stair stringers, guard rail, window mullions. Available in girths of 12" to 48", wall thicknesses of 1/8" to 1/2". Current sizes and limitations, mechanical properties, provided. All sizes can be furnished hot-dip galvanized.....
Equipment Steel Products, Division of Union Asbestos & Rubber Company (2-p.) **211**

DOORS AND WINDOWS

Aluminum Windows, Curtain Walls, and Doors

Catalog provides complete information on all types of Vampco series, extruded-aluminum, light- and heavy-duty windows for commercial, institutional building—contains detailed construction features and specification for entire line, including narrow-stile, aluminum, entrance doors. Photographs of existing installations.
Valley Metal Products Company (AIA 16-E, 60-p.) **212**

Minimum Friction and Distortion in Folding Door

Brochure illustrates construction of Foldoor fabric-covered sound-insulating folding door, incoroprating special design features providing: minimal hinge friction; absence of ceiling rub; elimination of billowing causing fabric distortion; neatness of hardware and all-around installation; narrow profile for pocket installation in wall storing. Available in sizes to fit all openings—in range of vinyl fabric textures and colors. Operation details, specifications, included.
Holcomb & Hoke Mfg. Co., Inc. (AIA 16-M, 15-p.) **213**

Steel-Window Line Includes All Types

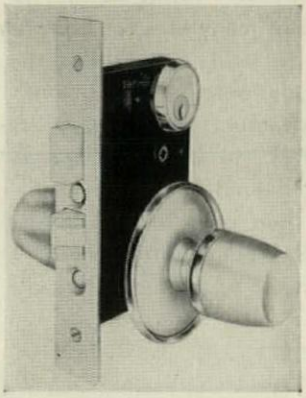
Brochure contains comprehensive data on full line of Fenestra steel windows with Fenlite process finish—said to require no maintenance protective painting, though receptive to glazing compound bond and decorative painting, if desired. Line includes commercial, industrial, institutional type windows, continuous type for top lighting in roof construction. Sectional drawing, complete specification for all windows, hardware and screens, provided. Photos show steps in treatment of framing to produce Fenlite alloy-bonded zinc surfaces.
Fenestra, Inc. (52-p.) **214**

Entrances and Storefronts

Entrance catalog includes illustrations and sectional views of complete line of aluminum flush-panel, narrow-stile, wide-stile, center-panel doors and entrance frames, special framing sections, sliding doors, and specialty custom products —design features include positive set sash construction, vinyl weathering integrated with glazing bead on door, to allow faster glazing. Storefront catalog includes sections on sash and sill, division bars, mullions and muntins, fascia, awning flaps, curtain-wall sections, and framing members.
The Alumiline Corporation (AIA 26-D & 16-E, 26-p.) **215**

Builders' Hardware Handbook

Condensed catalog of architectural hardware presents information on four major lock lines, rectangular and standard liquid type door closers, exit devices, and miscellaneous



builders hardware. Designed for easy selection of material, book features selector charts of functions and designs for Integralock, Mortise Lock, Sentrylock, and new Magnalock. Specifications, application data, product features are also included for each of the lines.
Sargent & Company (2-p.) **216**

ELECTRICAL EQUIPMENT, LIGHTING

Thrift High-Level Lighting for Classrooms

Folder offers studies of actual installations of high lighting-level acrylic plastic "Realite" unit—at lower initial, operating, and maintenance costs than previously possible. Production processes, prismatic design, permit distribution for satisfactory illumination uniformity over working areas. Sections show footcandle curves, and comparison of annual cost per footcandle for type of lighting system used.
Holophane Company, Inc. (AIA 31F2, 4-p.) **217**

Low-Bright Commercial, Institutional Lighting

File sheets guide selection in 26 fluorescent and incandescent lighting-fixture series, tailored to specific lighting requirements for schools, hospital, commercial and industrial building—type fixtures include panel and recessed luminair, recessed troffer, hinged, suspension mounting. Most fixtures come completely pre-assembled for easy installation. Detailed information relates to materials and finish, construction, photometric data, wiring and installation—coefficients of utilization, brightness values, distribution curves, total lamp lumens percentages.
Solar Light Manufacturing Company (AIA 31-F-2, 26-p.) **218**

High Intensity, Low Brightness, Controlled Illumination

Bulletin contains photometric and size data on a series of round and square prismatic Phoenix Directo lenses intended to provide accurate control of light distribution with reduced brightness measurement in critical zones. Simplicity characterizes appearance—available with plain or etched surface.
The Phoenix Glass Company (4-p.) **219**

Commercial Ceiling-Lighting Systems

Folder aids in selection of fluorescent lighting equipment—describes highlights of commercial and industrial units, recessed troffers and ceiling systems, most popular fixtures in each line. Contains complete details including photometric data, coefficients of utilization, specifications.

Smithcraft Lighting (4-p.) **220**

Engineered Lighting Equipment

Folder gives data and specifications for many types of ceiling luminaires—circular, hexagonal, square, rectangular, recessed troffers, Extrud-A-Lume troffers, lamps with hinged and rounded diffusing mediums, triangular corner fixtures. Also night lights, outdoor lanterns, and illuminated exit signs.

Solux Corporation (AIA 31F2, 4-p.) **221**

FINISHERS AND PROTECTORS

Multimaterial Sealing Compounds

Catalog presents data on Del synthetic-rubber compound in various formulations—for use as protective and weatherproofing coatings in glazing, sealing, calking of building materials (including glass, brick, any metal, concrete, wood, Transite, etc.). Features are ease of application, overnight setting up without shrinking; resilient, permanent bonding under exaggerated stress conditions—wide temperature range tolerance. Data is provided on properties, colors and types available, how supplied; photos and data on typical uses, existing applications—also information on Delseal Tape no. 1 and 2 sealers.

David E. Long Corporation (8-p.) **222**

Protective Spray Compounds

Booklet covers spray products and their industrial applications. In addition to educational presentation, it lists complete line of products which include: rust inhibitors; clear acrylic-plastic spray, inks and removers, solvents and oils, degreasers, etc.—packaged in disposable spray cans. Individual prices and quantity discounts are included.

Crown Industrial Products Co. **223**

Color Finishes Promote Decorative Uses of Wood

Publication deals with applications of Rez sealer primers and exterior and interior color wood finishes—comprehensively illustrates uses of wood: in construction, as decorative wall material, for interior furnishings (tables, cabinets, bookcases, etc.). Two-color drawings and full-color photographs emphasize range of design possibilities in use of varying color tones, grains, and surface textures of wood. Book contains diagrammatic build-it-yourself drawings, discussion of wood strengths and features for best application results, surface preparation and color finish application information.

Monsanto Chemical Company (56-p.) **224**

INSULATION

Insulation Adhesives and Sealers

Catalog guides selection of 3M Brand insulation adhesives and sealers for specific site conditions—including heat and

(Continued on page 112)

p/a manufacturers' data

(Continued from page 111)

fire hazards, and budget considerations. Illustrations demonstrate brush, spray, trowel, other methods of application. Chart includes product number, uses, temperature limits, drying rate, solvent, estimated coverages in sq ft per gallon.
Minnesota Mining and Manufacturing Company (4-p.) **225**

Insulating and Refractory Foamed-Silica Material
Booklet explains properties and uses of Foamsil, foamed-silica insulating and refractory material—applicable as linings for concrete tanks, flues for conducting acid gases and

fumes, insulation for underground piping, other high- and low-temperature services—said to be impervious to thermal shock, to have practical operating range of 450°F to 2200°F, low expansion coefficient, low density, cutting ease, low weight. Available sizes and shapes are illustrated.
Pittsburgh Corning Corporation (Booklet FS-1, 4-p.) **226**

INTERIOR FURNISHINGS

Integrated Office Planning and Furnishings
Brochure presents full-color photos of custom-decorated executive office interiors having Prestige custom-built furniture and fittings, characterized by usefulness integrated with quality, slender-lined design—in components and colors specially selected to suit individual requirements and tastes. Service includes complete interior decorating and furnishing of old and new offices.
Executive Furniture Guild Workshop (8-p.) **227**

SPECIALIZED EQUIPMENT

Metal Railings and Doors
Presentation illustrates architectural metalwork in bronze, aluminum, and stainless steel for all public-building categories—included are Fiesta-Rail, made in brilliant colors in heavy, extruded aluminum and reinforced plastic; Econo-Rail extruded-aluminum railing in wide range of shapes and sizes—sections on curtain wall, bronze doors, aluminum and bronze tablets, other products, are included—also drawings and mechanical data, photographs of existing installations.
Newman Brothers, Inc. (16-p.) **228**

Fire Retardants
File sheet deals with fire-retardant compounds applying to specific purposes: for wood, plywood, fibre board, fabric, etc.—complete spraying, immersing, coating instructions are included, along with coverage and shipping information.
Flamort Chemical Co. (AIA 25-B-28, 2-p.) **229**

(Continued on page 114)

LIFETIME TILE-LIKE WALL FINISH FOR CONCRETE BLOCK AND OTHER SURFACES

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Easy to maintain, keep clean!

GLID-TILE is a special polyester resin spray finish. Far more than a paint, GLID-TILE *upgrades* concrete, wood, metal, plaster, wallboard and masonry block surfaces. It costs only a fraction of the usual glazed or ceramic tile. The average annual cost is extremely low, too, because GLID-TILE outlasts conventional paint coatings by many years.

GLID-TILE becomes an integral part of the wall surface, and cures to a continuous, non-porous finish. This thick, tough, tile-like coating resists acids, solvents, alkaline detergents and hot water, making it ideal for operations such as food processing plants where staining and corrosion must be eliminated. GLID-TILE also withstands hard usage, mechanical abuse, impact and abrasion. For example, one minute of strong sandblasting completely destroyed a baked enamel panel while in the same test, GLID-TILE showed *no change*. In another test, a sub-surface of concrete broke under heavy impact *before* the GLID-TILE finish could be destroyed.

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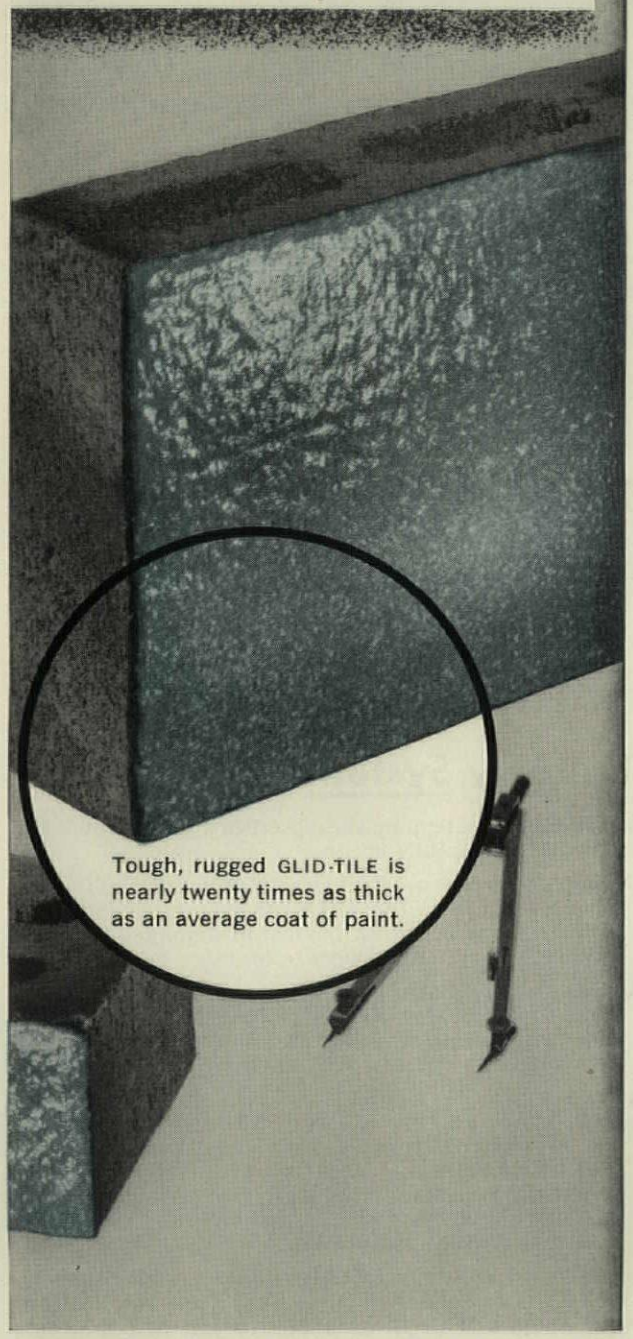

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Cleveland 14, Ohio
In Canada: The Glidden Company, Ltd., Toronto, Ontario

p/a manufacturers' data

(Continued from page 112)

Electric Water Coolers

Catalog describes line of electric water coolers (standard, compact, hot-cold, explosion proof, refrigerator storage)—includes capacity data, technical and roughing-in details, photographs showing interior construction including compressor-motors, tubing and storage compartments — also descriptions of special attachments, including the Cordley-Rac that permits wall suspension of some coolers. Selection data, installation information, provided.
Cordley & Hayes (Catalog 59, 20-p.) **230**

Kitchen-Planning Guide

Planning guide shows typical arrangements of kitchen appliances and facilities for pleasing atmosphere, as well as convenience. Full-color photos show kitchens with built-in Revco Gourmet and Custom refrigeration and freezer units in various finishes, contrasting or blending with colors or wood finishes—units, of various capacities, are available in stainless steel, copper-glo, matching wood and colors—install in side-by-side, over or under arrangements, or alone.
Revco, Inc. (16-p.) **231**

Continuous Fire-Alarm System

Folder describes advantages of advance, Type SA, fire-alarm system for schools; one being a double supervision control feature that automatically rings trouble bell in event

of any system failure or interruption, in either primary alarm or extra supervision circuit. Other features: automatic reset and fire-department summons, heat-actuated alarm devices, cadence-coded alarm signals, lighted hall feature, provisions for easy expansion of system with school additions—drawing shows components of easy-to-operate system.
The Autocall Company (4-p.) **232**

Installed Vacuum-Cleaning Systems

Bulletin cites advantages of central cleaning systems in large buildings: timesaving plug-in operation, and complete, contained carry-off of dirt. Basement-installed system consists of vacuum producer and dirt separator piped to inlets throughout building, with power switches located at desired spots—available in capacities to permit simultaneous use by any number of operators. Typical extremes in range of sizes are 3 HP units for use by a single operator, and 100 HP units for use by 50 operators.
The Spencer Turbine Company (AIA 35-J-1, 8-p.) **233**

Looking Forward to May PROGRESSIVE ARCHITECTURE

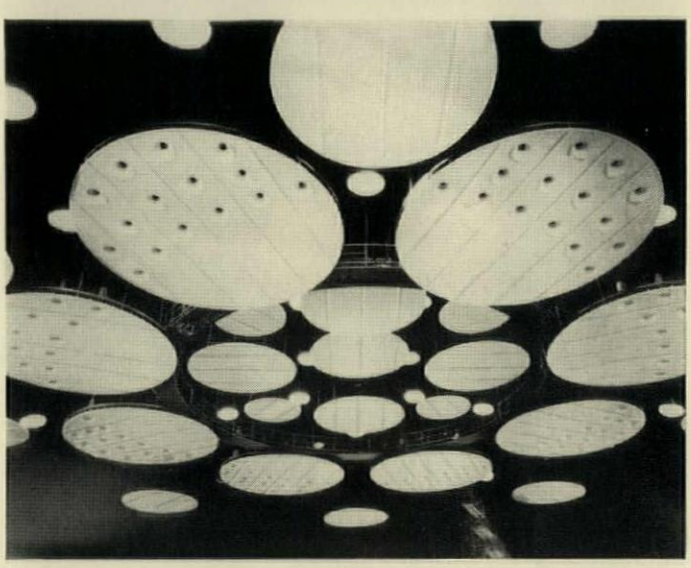
Joseph W. Molitor

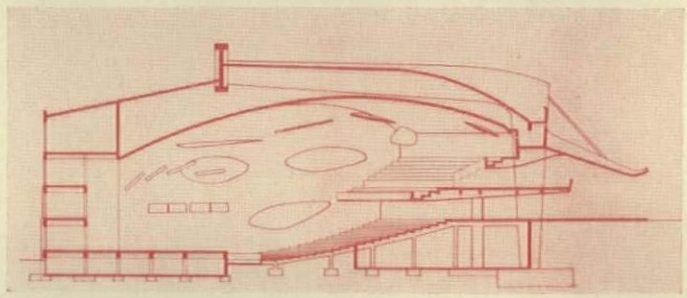
DESIGN FOR HEARING

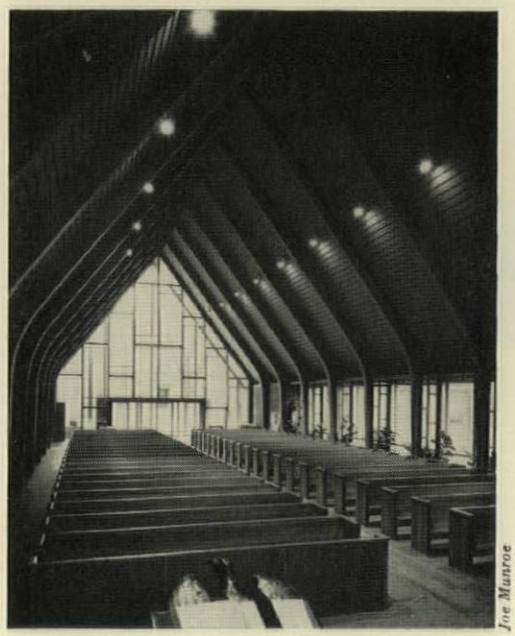
MAY P/A will be almost entirely devoted to *acoustics in architecture.* Not simply the creation of spaces usually associated with better hearing, such as auditoriums and theaters, but also the entire concept of acoustics as it affects buildings today. It is the thesis of MAY P/A that "all buildings have acoustics problems." Sound reflection, sound absorption, the transmission of sound from one space to another, isolation of sound—all factors will be minutely examined in text and illustrations.

Introduction to "Design for Hearing" will be by Robert L. Geddes of Geddes, Brecher & Qualls, award-winning Philadelphia architects. Major article of the issue will be a thorough-going technical presentation of acoustics in its many aspects, by Robert B. Newman of the internationally known firm of acoustical consultants, Bolt, Beranek & Newman, Inc. In addition, P/A has selected from hundreds of buildings of all types throughout the country some 30 examples to illustrate the diverse facets of the acoustics problem—*and* what to do about it! Schools, churches, auditoriums, office buildings, public buildings, and many other types will make apparent the universal—and compelling—nature of this topic.

Be sure to see this issue. It is the first issue of an architectural magazine to be fully devoted to acoustics. It will help you in your practice.







Joe Munroe

Julius Shulman

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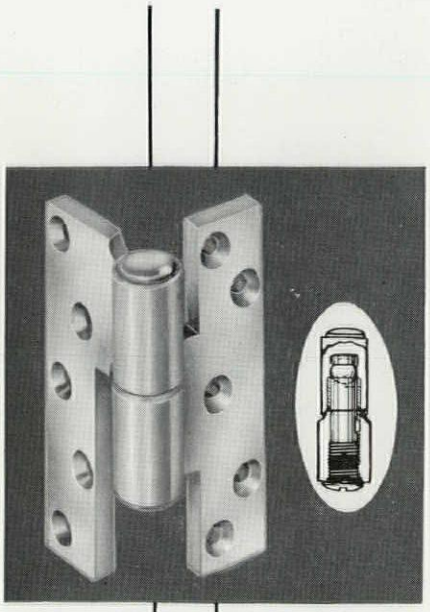

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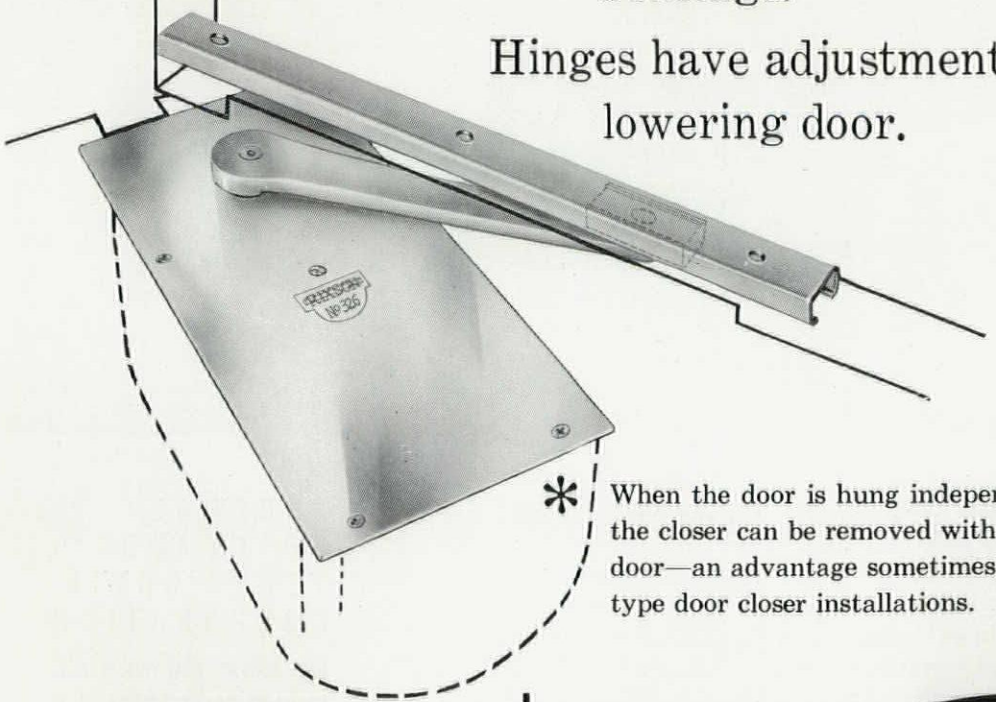

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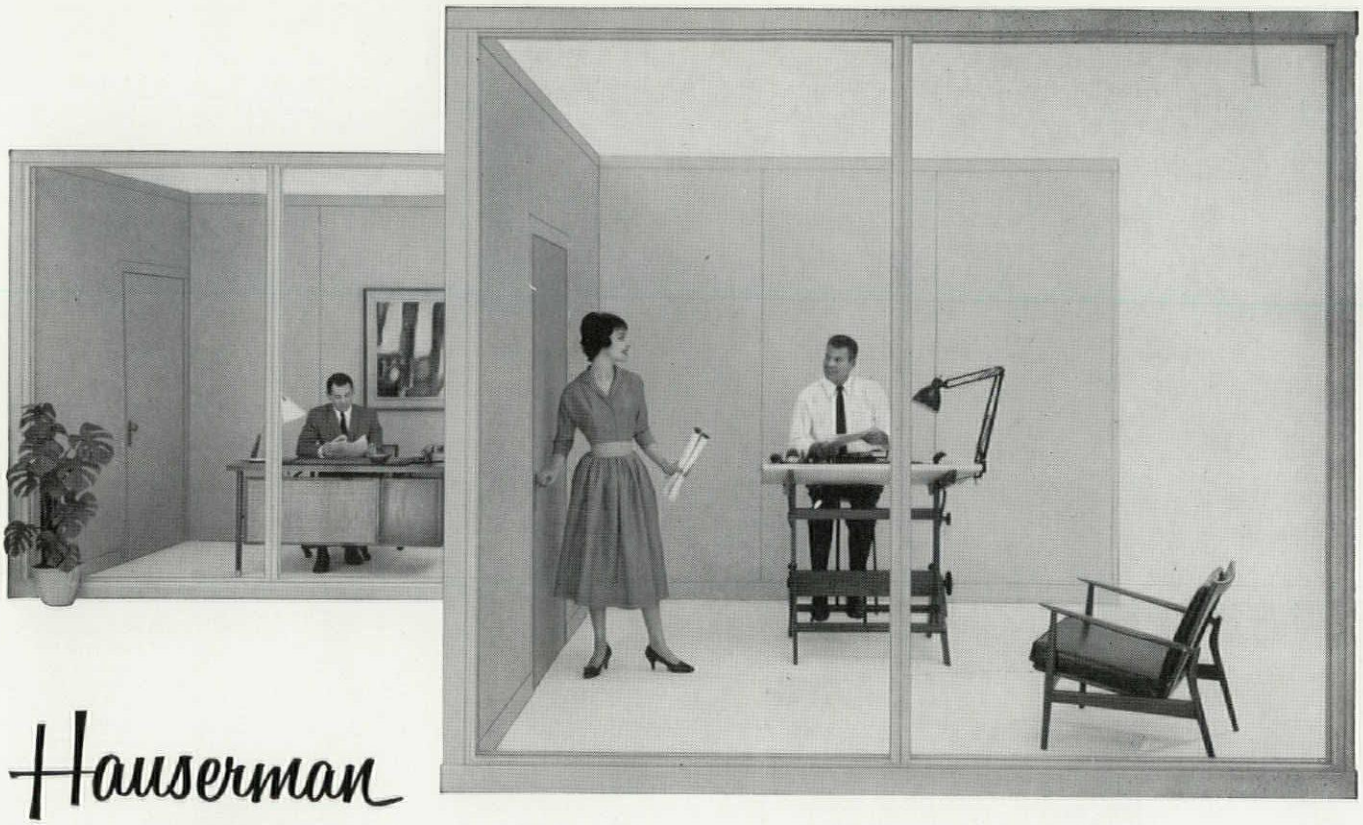

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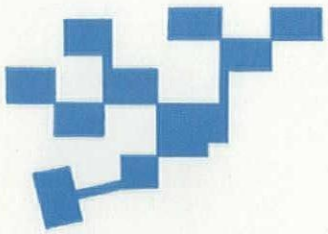
The lively discussion that follows is an exchange among architects who designed the schools. They were asked to analyze and criticize each other's work, and in turn were given the opportunity to defend their own theories. Spokesmen for the three firms were: Stanley Sharp for Ketchum, Giná & Sharp, New York, N. Y.; Charles Burchard for A. M. Kinney Associates, Cincinnati, Ohio; Carl Koch for Carl Koch & Associates, Cambridge, Mass.

round-robin critique: three elementary schools

1—Julia A. Traphagen School, Waldwick, New Jersey

Ketchum, Giná & Sharp, Architects; Morris Ketchum, Jr., Partner-in-Charge; David I. Tuckey, Staff Architect; Jay C. Van Nuys, Consulting Architect; Severud-Elstad-Krueger Associates, Consulting Structural Engineers; Tectonic Associates, Consulting Mechanical Engineers; Bolt, Beranek & Newman, Acoustic Consultants; Tregenza & Briglia, Site Consultants; Robert L. Zion, Landscape Consultant; V. Lehmann Construction Company, General Contractor.

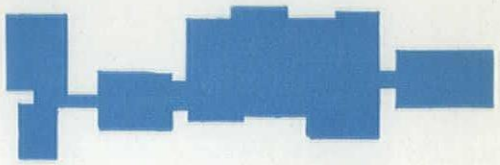


2—Clovernook Primary School, North College Hill, Ohio

A. M. Kinney Associates, Architects-Engineers; Charles Burchard, Architect-in-Charge; Al Neyer Inc., General Contractor.

3—Morse School, Cambridge, Massachusetts

Carl Koch & Associates, Architects; Frederic L. Day, Jr., Associate-in-Charge; Robert L. Mackintosh, Landscape Architect; Nisso T. Aladjem and Severud-Elstad-Krueger Associates, Structural Engineers; J. M. McCusker & Associates, Mechanical-Electrical Engineers; D. C. Loveys Co., General Contractor.



I—Julia A. Traphagen School, Waldwick, New Jersey

Requirements: **16 classrooms, kindergarten to 5th grade, for rapidly expanding community. Also multipurpose unit, administrative, and health facilities, outdoor play areas, teacher parking, parent parking, bus loading, and service traffic. Definite provisions for future expansion. Client stated preference for cluster scheme; homelike, noninstitutional character of buildings; preservation of wooded site; quiet outdoor areas apart from noisy play areas; bilateral lighting in classrooms.**

Site: **13 acres, sloping from west to east, away from vehicular traffic.**

Plan: **Cluster scheme particularly suitable for preservation of natural beauty of site. Two classrooms with central vestibule and heater space form basic building module. Multipurpose building, slightly larger, centrally located.**

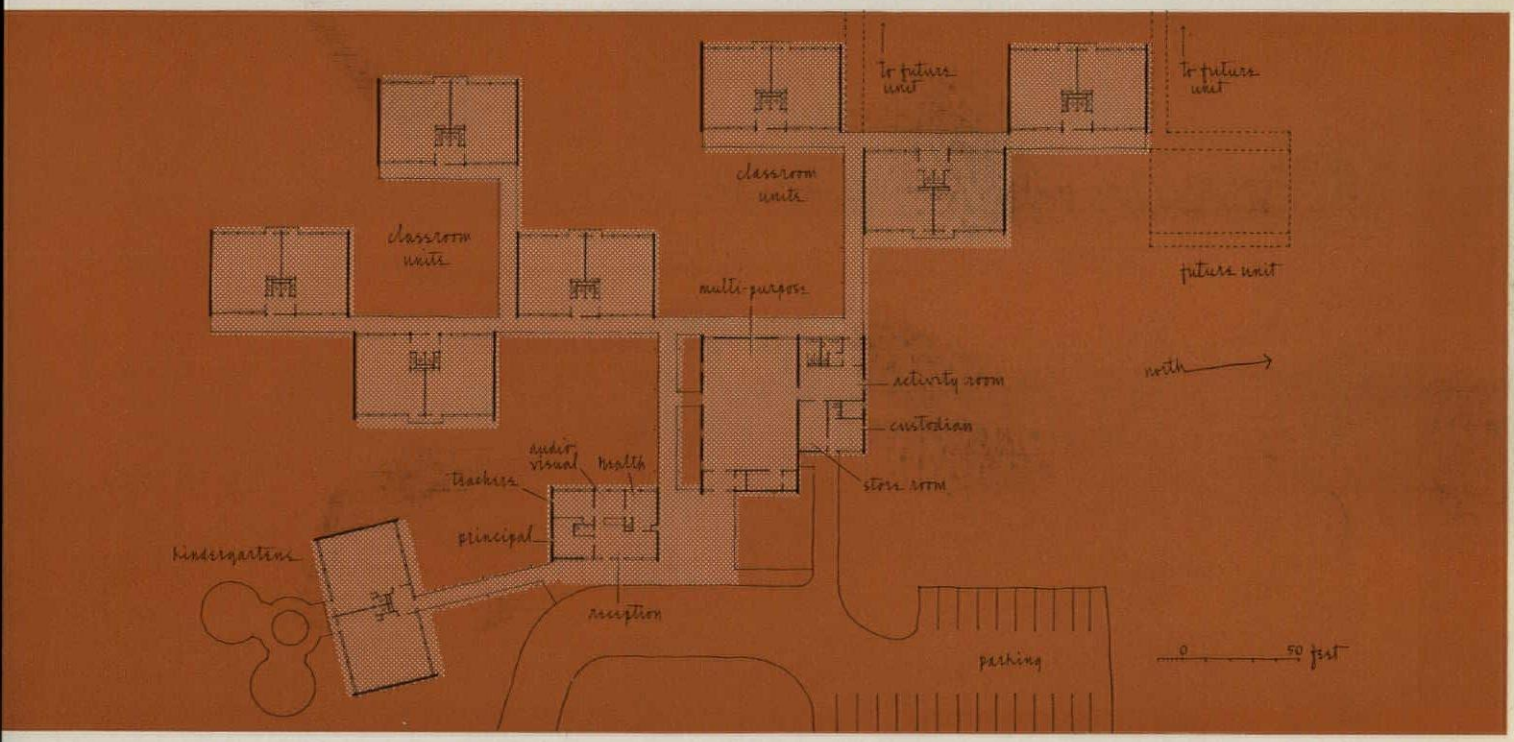
Structure: **Brick and block bearing walls. Cavity-type for exterior walls. Steel beams and long-span steel decking for roof framing and roof overhangs.**

Photos: Alexandre Georges and Ben Schnall

round-robin critique

plan and site

Koch: It appears to us that the program has been well met. It is obvious that the Waldwick School Administrators have contributed to the success of the scheme through their willingness to forego non-teaching spaces such as enclosed corridors. *Burchard:* I agree with the designer's solution of a campus plan with separate, self-contained units. Each area is well related to the multipurpose and activity rooms which are shared in common. The covered walkways are formed of building roof overhangs and separate covered links. I do not find the joining of the two types very happy or very well related architecturally. I think a more uniform solution to the covered walkway would have helped tie the scheme together architecturally, and could have provided a rainy weather play area in connection with each of the age groups. *Sharp:* We do not agree. The reason for the right angle turns and the pattern of the walks was to create a rainy day circulation system, using what we felt was the most economical approach to roofing these walks. A cantilevered overhang is the least expensive way of getting a roof (no additional footings, no extra columns). Our approach was to link these roof overhangs by means of short connecting links. From a design point of view, we felt that it was important that the roofs of these links be kept level so as not to introduce a complexity of unrelated slopes. We are willing to concede that these connecting links might have been improved by being lighter in design, perhaps even of a translucent material. We still feel that these connecting links help retain the individual feeling of each classroom unit. Lack of funds re-

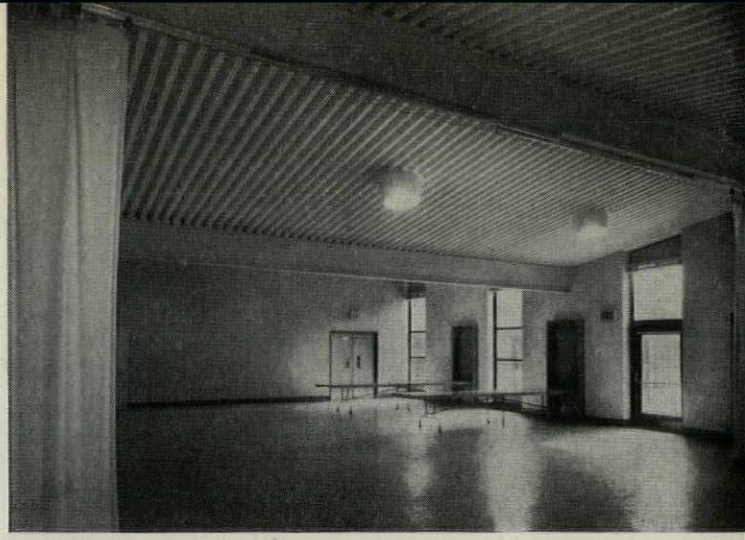


stricted us in creating secondary, informal "fair-weather" paths. We know that the children, through use, will make them, and it is our hope that funds will be found to put some paving on them once they have been defined.

Koch: We note a definite parallel pattern in the site plan except for the kindergarten building and would like to know the reason for positioning this cluster at an angle to all the other buildings. *Sharp:* Owner desired direct south light for kindergarten, and it was so oriented.

Koch: We were most enthusiastic about the finished design of the individual classroom clusters and the covered walks. If the scheme fell down as a completely integrated piece of architecture, it did so, in our opinion, in the handling of the multipurpose building and adjoining administrative area as well as in the positioning of the kindergarten cluster. This lack of unity appears to come from the treatment of the roof over the administrative area and the number of corners facing the main driveway approach to the school. The multipurpose building would be better had one of the corners not been cut out. *Sharp:* The missing corner will be filled out by a kitchen and cafeteria, planned for the future.

Burchard: I find the spaces created by the buildings and the spaces between groups of buildings to be pleasant. The roof forms provide a common denominator, which visually helps to organize the total group among the trees and ground forms. As I imagine myself walking through the exterior spaces and into some of the rooms, I feel this quality slips into an architectural untidiness in the actual solution of the many individual problems. For example, the covers or decks for the walkways are roof overhangs in some case parallel to the pitch



of the roof, in other cases perpendicular to the roof pitch so that the overhang varies as you walk along from about 9 ft in height to about 12 ft at the crown, and in still other cases they are flat-deck connecting links. This relationship seems rather awkward, and I do not feel it would be pleasant to pass from one to the other. I think a more consistent system might have been found which might also have been the means of linking more definitely the building form and ground forms. The many separate little buildings now look as though they were in danger of becoming unhitched. *Sharp:* We are very pleased to think that the buildings look as though they are about to become unhitched. We hope that there is a certain over-all continuity to the school, but feel that any device that can create a feeling of units—smaller, more childlike in scale—is a move in the right direction toward creating uninstitutional buildings. As to architectural untidiness, at just what point does informality slip into architectural untidiness? We feel, that correctly handled, changes in heights of overhangs in connecting links add interest to the building and accent the fact that each of these units are set at a different level on a sloping site.

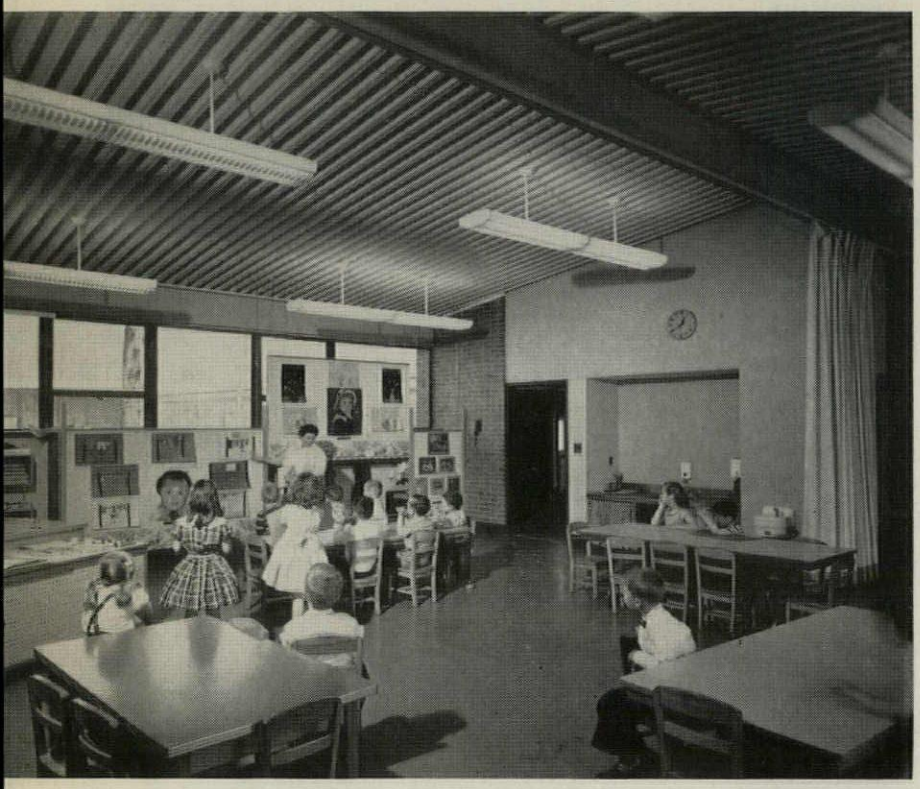
structure and materials

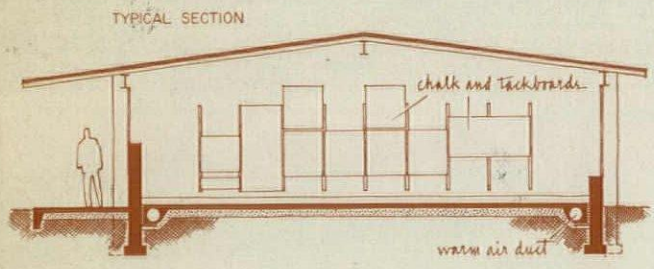
Koch: In general, the construction system is straightforward and eminently suitable. *Burchard:* The superstructure of metal deck, steel beams, and bearing walls seems a sensible system. I might say the bearing walls serve little use, as such, in the classroom buildings, receiving only three widely spaced beams. If the roofs had pitched the other way, the bearing walls could have supported the deck, eliminating two of the beams. *Sharp:* The form the roof takes is fairly

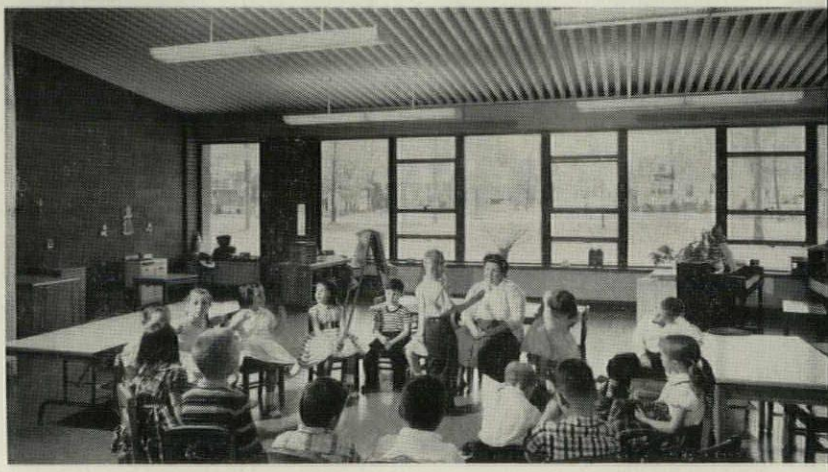
arbitrary in relation to structure, in that it is not a real gable. Agreed on this, then, the roof could slope in either direction. But, by sloping it the way we did, with one main support at the ridge and one over each window, we were able to create a covered walk, plus good sun and sky-glare control. Designed for minimum state requirements at the window wall, and sloping downward, it creates a low fascia line. We point out that the whole section—low at the window, high at the center of the rooms—was used as a device to meet the State Code for average minimum heights of classrooms.

Burchard: I agree with the designers' contention that the long-span metal deck and the painted-block walls are very economical, provide a pleasing appearance, and produce in themselves acoustic qualities which are desirable in a teaching area. The exterior brick areas provide a warm, pleasant material requiring little maintenance. The block under the window areas is a bit less costly than brick would have been—will need maintenance—but I appreciate the esthetic reason for its use in the location. A glazed block for little extra money, initially, might have eliminated some maintenance. The perforated fiberboard in the multipurpose room hardly seems needed for acoustic reasons but its use as a pegboard is an attractive idea in this space.

Koch: We had the feeling that certain walls were composed of too many materials, such as a brick-finished wall meeting a door-and-sink unit, above which the finished surface seemed to be plaster, and beyond which a painted-block wall occurred. *Sharp:* The plaster on the block wall was required to obtain 4-hour rating for heater space, which is behind plaster panel. The brick pier was purely a matter of choice.



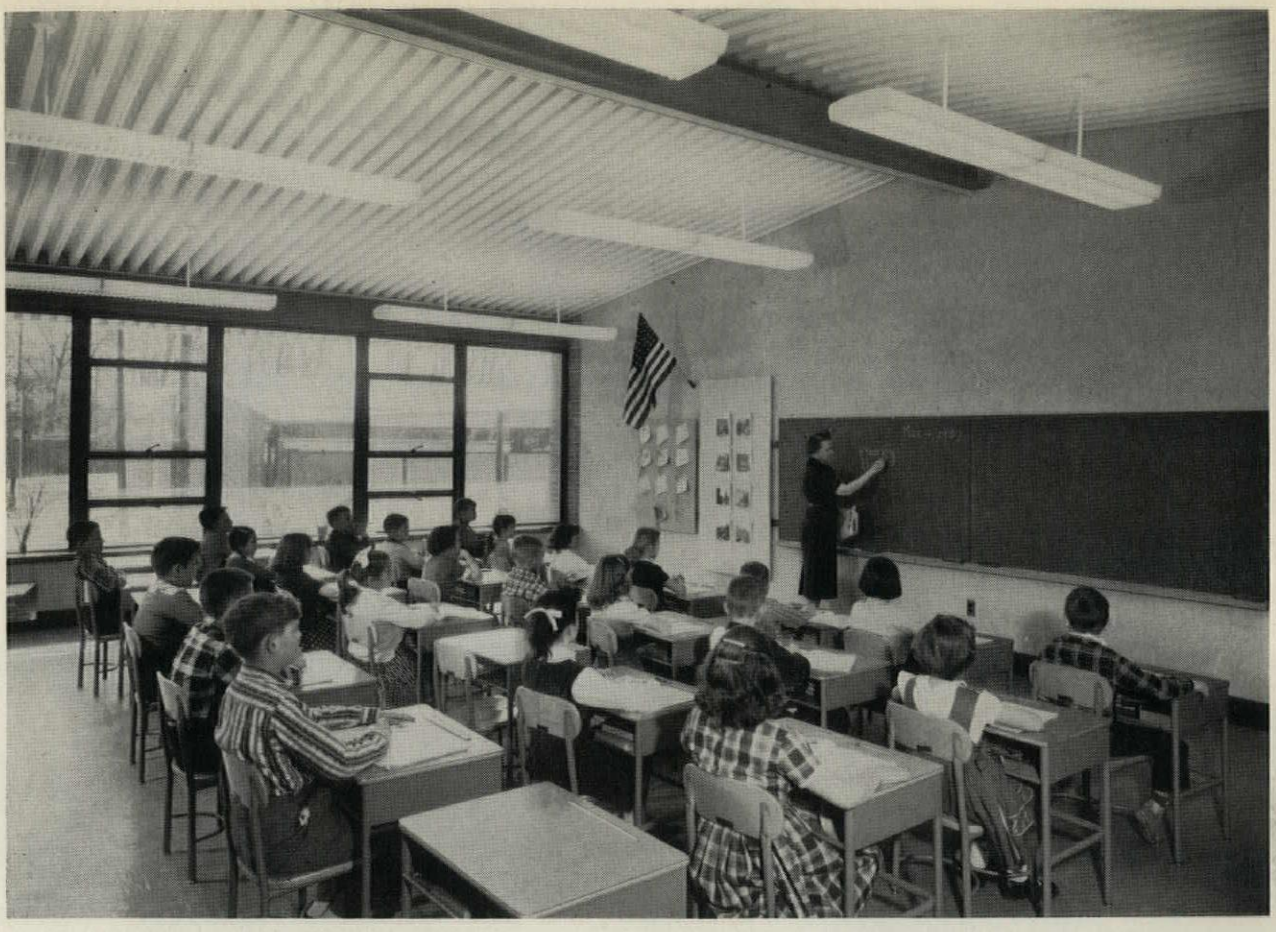


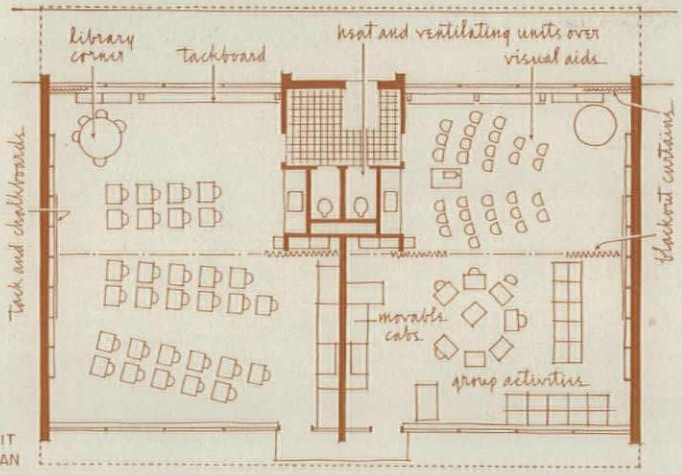


classroom planning

Burchard: The solution of the individual classrooms, I think, is excellent. They are self-contained, good in shape, ample in area, with adequate facilities and zoning to accommodate the many activities of the lively curriculum of modern teaching. The blackout curtain at the center of the room is a particularly nice idea since it permits half of the room to be blacked out for audio-visual purposes while other activities can be continued, if necessary, in the other half. I might have been inclined, in the primary grades, to furnish direct classroom access to the toilet, as was done in the kindergarten. It provides better supervision for these grades. This, however, is no great point, and the use of two toilets per room, which the actual arrangement provides, has its advantages, I will agree. Spatially the rooms seem less successful, being rather inarticulate and confused in appearance by the use of many different shapes that do not relate well to each other. I get a rather gloomy and heavy impression, quite unlike the general character of the scheme. *Sharp:* We disagree in principle, since we believe that the best classroom is informal, completely unregimented and noninstitutional in feeling. Flexibility in a workshop-type classroom takes, in our opinion, important precedence over any design done for pure spatial relationship.

Koch: The individual classrooms look spacious and adaptable to a great many teaching situations. The solution for concealing the coat hooks by lift-up tackboards seemed to us most successful, as does the handling of the black-out curtains for the showing of visual aids. The flexible arrangement of the tackboards and chalkboards looks very well. We noticed, however, that the drawings called for vertical standards, whereas the final





UNIT PLAN

solution indicated horizontal standards. We are curious about this change. *Sharp:* We preferred the vertical arrangement, but the budget forced the change to horizontal fastening.

Burchard: The location of the individual heating elements over the toilet and utility areas is sensible and well conceived. A decentralized system is well suited to the character of the scheme, and I suspect quite low in cost. (*Yes, see* MECHANICAL ENGINEERING CRITIQUE, DECEMBER 1955 P/A. *Ed.*)

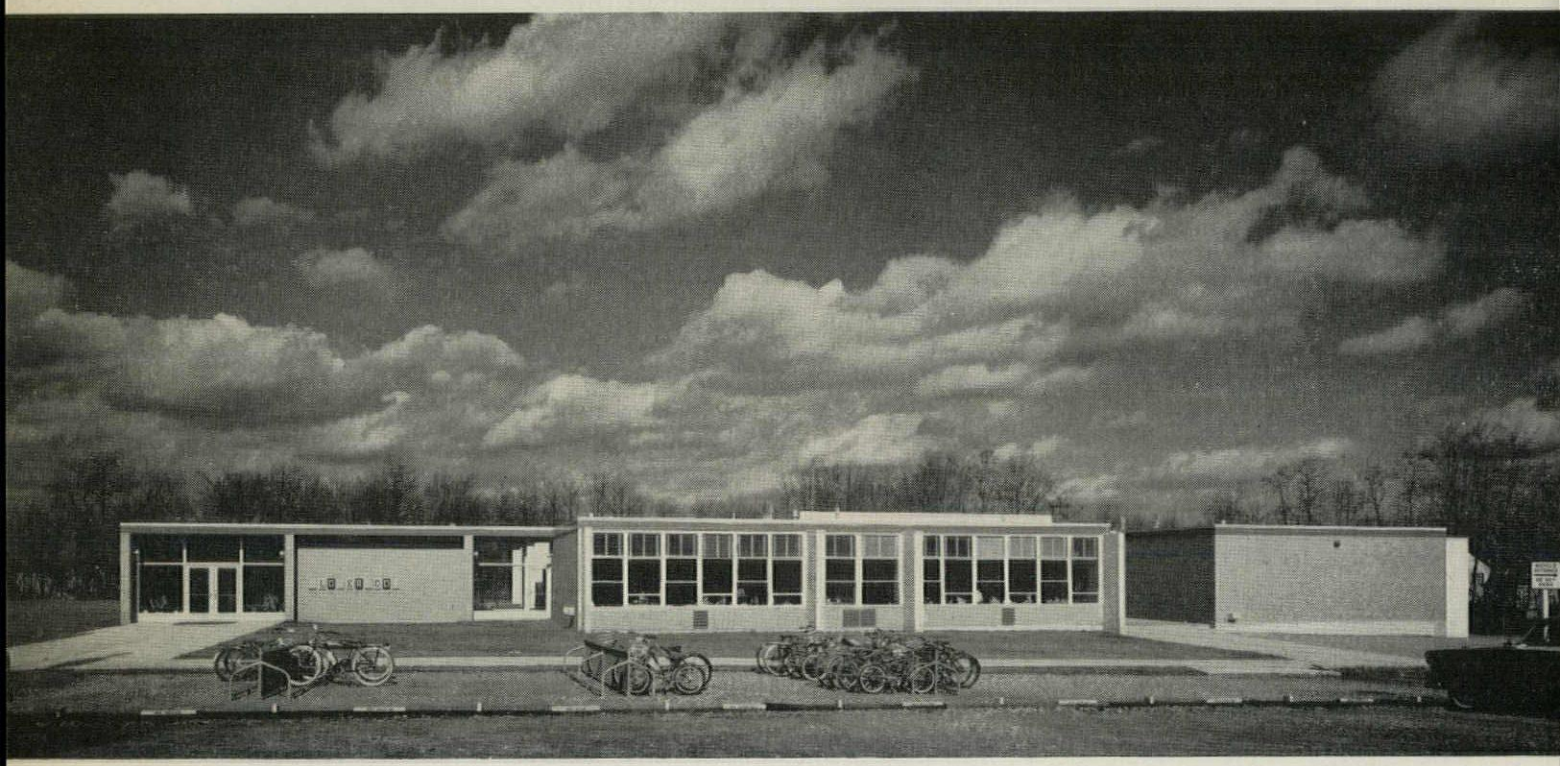
Burchard: The daylighting of these rooms, I am sure, is very good with bilateral glarefree light. The pendant fluorescent fixtures disturb me esthetically as they relate to the sloping deck, but are surely adequate to provide reasonable levels of artificial illumination. These lights, however, do not seem well positioned for good lighting on the chalkboard area at the front of the room. *Sharp:* Agreed! We certainly should have specified a specially designed escutcheon for these lights.

Burchard: We have tended to provide a washroom for the teachers in the separate classroom buildings of a campus plan, to supplement the teacher's lounge located in the administrative unit. I think this is a desirable feature, and wonder if any difficulties have been encountered in this school by not having such a provision. *Sharp:* Our experience in this and other campus schools tells us that the teachers soon find that the fixtures provided in the units are handy for all sizes of people.

Burchard: On the whole, I like this solution very much both in its basic conception and in the solution of the individual classroom. *Koch:* The school looks like the offspring of a happy marriage between a good client and good architect.

2—Clovernook Primary School, North College Hill, Ohio

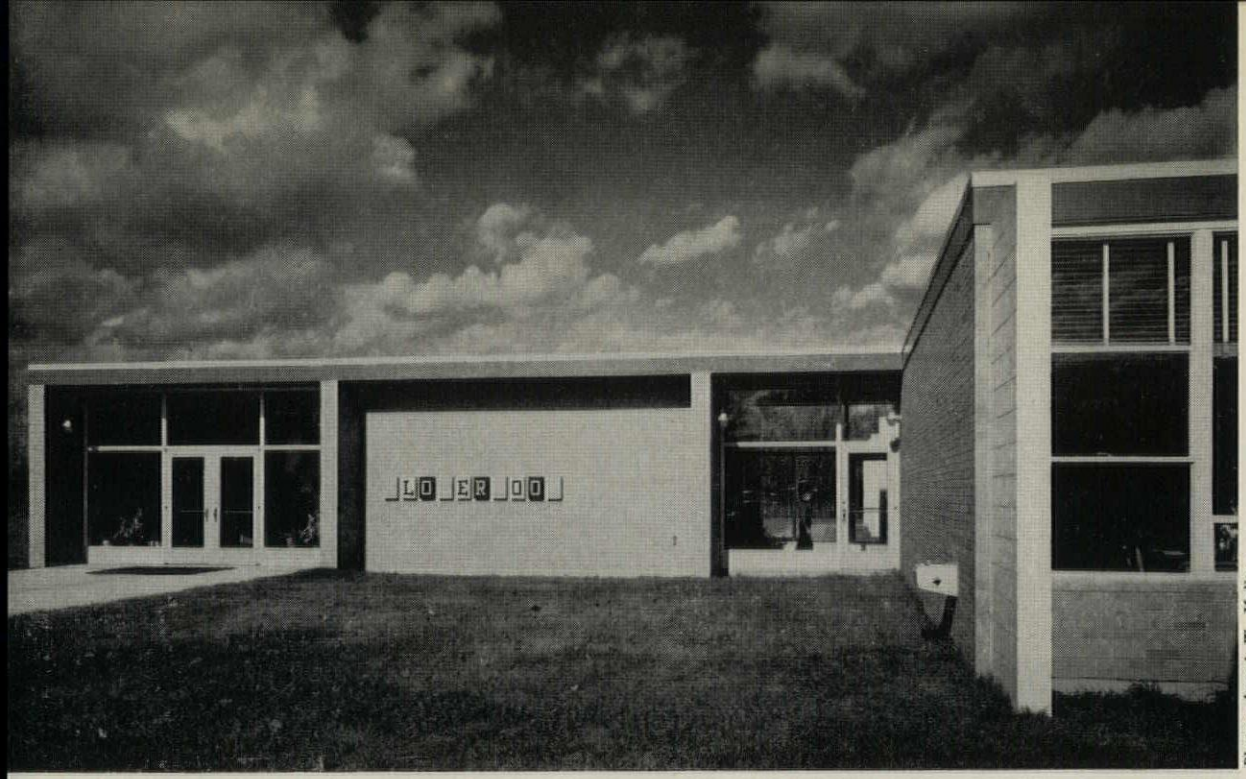
Requirements: **Two classrooms each for kindergarten through 3rd grade, multipurpose room (for lunches, visual aids, assemblies, play), administration area, clinic, and restrooms. Pupil population in state of flux, therefore flexible, expandable plan. Minimum cost. Architectural scale and order suitable for small children and residential neighborhood.**
Site: **4 level acres, access via two house lots: one used for access, house on other lot converted into offices for Board of Education.**
Plan: **Classrooms surround central multipurpose room. Vestibules serve as noise "locks." Classrooms are square (approx. 1000 sq ft) for ease of supervision and for ease of zoning into activity, quiet study, and recitation areas. Multipurpose room gained through consolidation of normal corridor space.**
Structure: **Bearing walls support long-span decking. Incombustible construction. Heating plant decentralized; individual gas-fired units above toilet/storage core.**



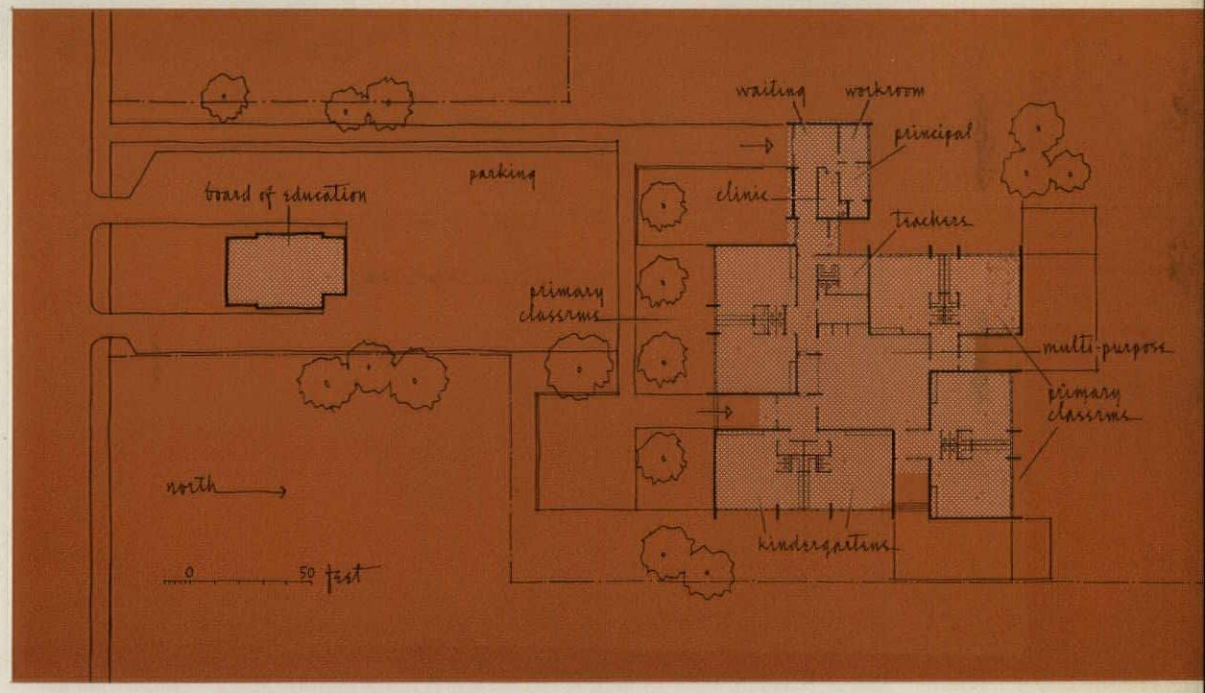
round-robin critique

plan and site

Sharp: I think the plan is a most ingenious one; separation of groups—access to double grouping of classrooms with minimum of corridors—slightly more than the most "spartan" campus or cluster plus possible interim circulation. *Koch:* We feel that this school is a much better than average architectural solution. We like the basic parti as an attempt to effect economy in circulation and therefore in building costs, as well as a means of conserving playground space without having to go to two stories. We wonder how the teachers like working in the building, and whether they have found certain circulation problems. It appears that to get from the administrative wing to six of the eight classrooms, it is necessary to cross the stage or go through the multipurpose room. Also, with four separate vestibules, we wonder if it is difficult for parents and delivery men to find their ways. *Burchard:* With self-contained classrooms, the circulation of students as a group is either out to the exterior work/play area or into the multipurpose room. With the plan as it was finally worked out, this basic circulation is no problem. It is true, however, that a teacher may find it necessary to go to the administrative area while the multipurpose room is being used by student groups. We reasoned that it was worthwhile to put the very limited funds into a multipurpose room instead of a corridor, since this would result in only minor and occasional inconveniences in circulation. According to Dr. James Bryner, Superintendent of Schools at North College Hill, it is only when the multipurpose room is being used for audio-visual purposes that a



Photos: Joseph W. Molitor

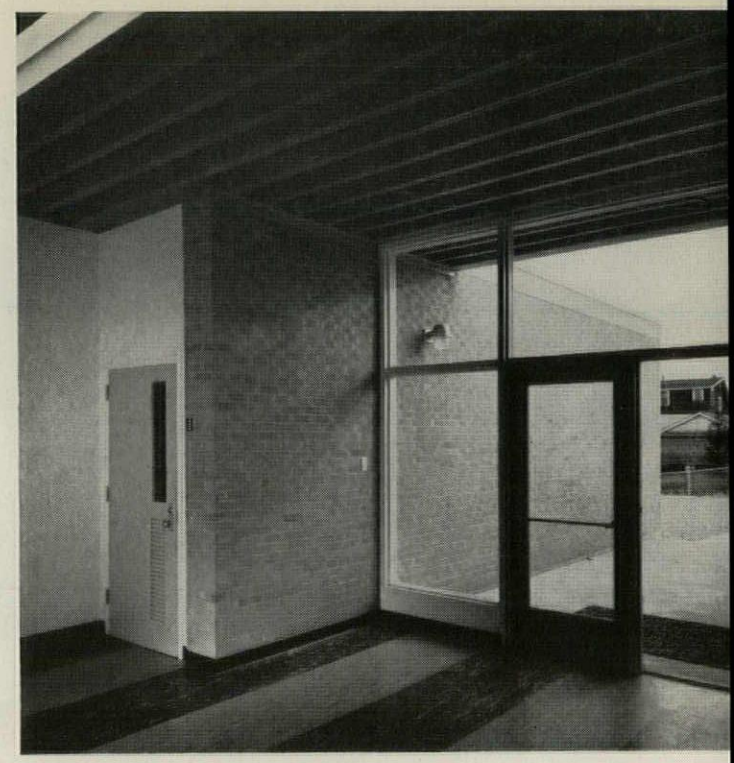


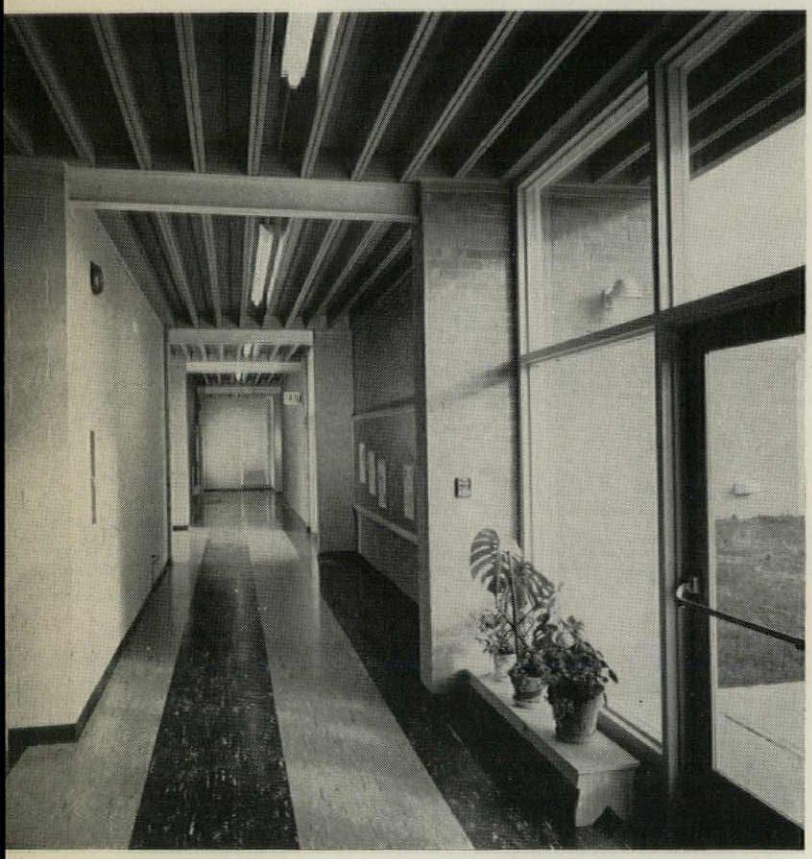
teacher has trouble passing through, and then it is just a matter of letting his or her eyes adjust for a moment to the darkness. There has never been a complaint from the teachers. They particularly like the classrooms, the general arrangement, and are very proud of the building. The four separate vestibules cause no problem to visiting parents or delivery men. There is, after all, also a main entrance, and the vestibules are primarily the separate entrances for each double grade.

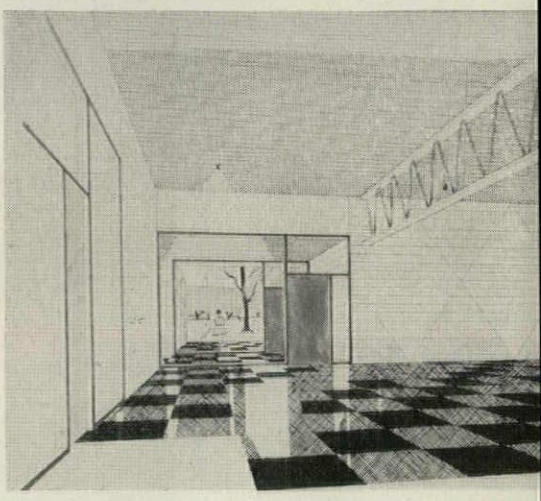
Koch: It appears that the school hugs the site nicely, but certainly would have been helped by a liberal planting allowance for new trees. *Burchard:* We did prepare a landscape plan for the school which was to be implemented by the PTA and the North College Hill Garden Club. Funds, however, were at first put to other uses, and virtually no landscape work had been undertaken at the time the photographs were made. But a bit more has now been done, and eventually the entire program will be accomplished.

structure and materials

Koch: There are certain elements in the plan which seem to have contributed to complications in the structure. We have particular reference to the framing around the alcoves: that is, the combination of the block pier at the outside wall, the inside toilet partitions, and intervening steel beams could perhaps have been handled more successfully. It seems to us that the block pier as seen from the outside misleads one as to the nature of the room inside. *Sharp:* What about the extra beam—would it have looked and "felt" better if the pier had come in more, making the activity area slightly more separate from rest of classrooms and perhaps not disturbing as much

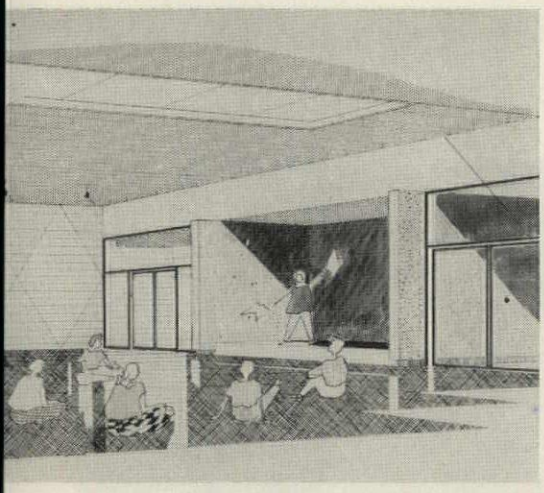




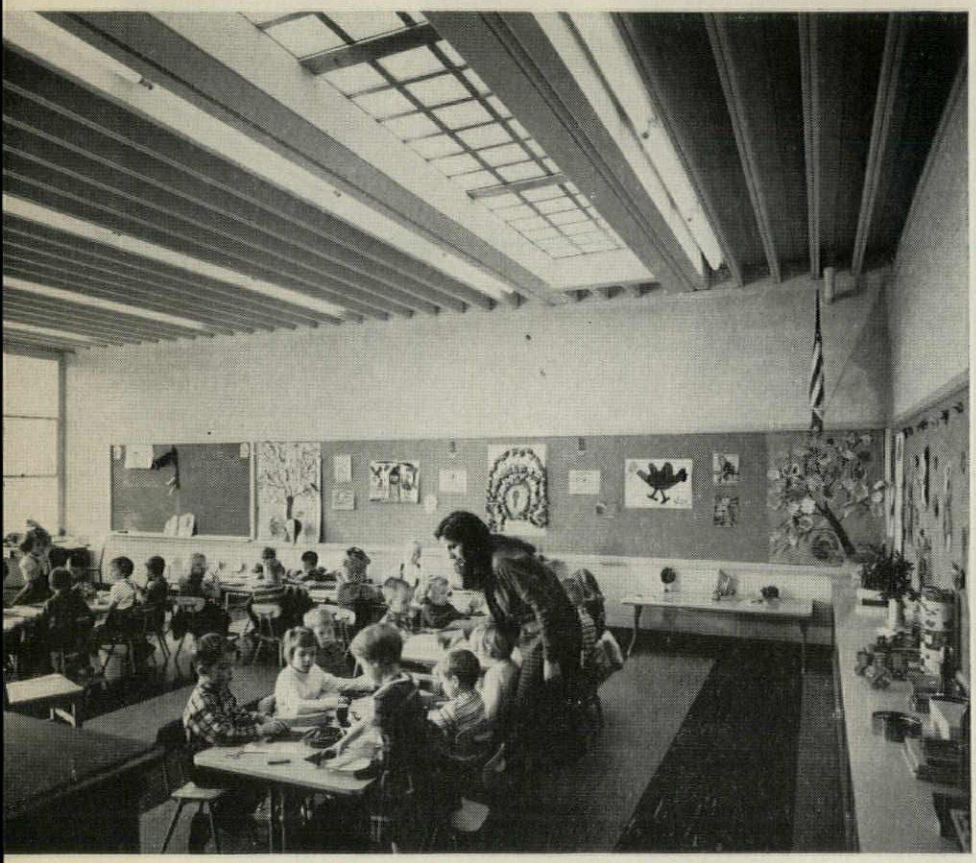


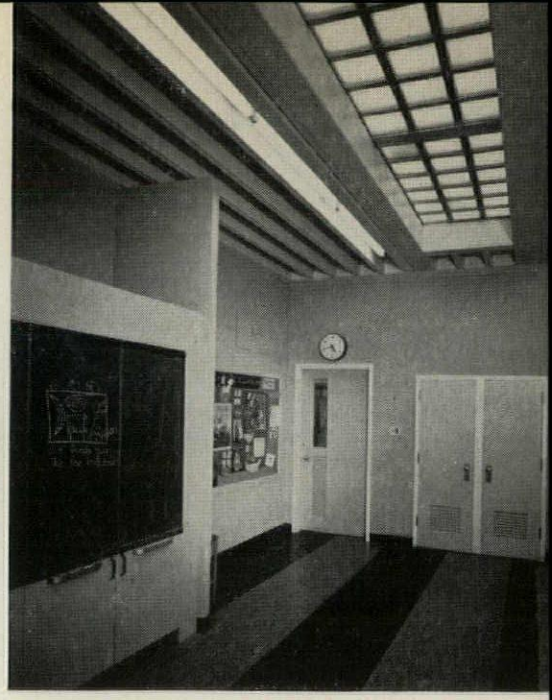
the wall-bearing structural system? (This I consider a not-too-important and rather picayune point.) *Burchard:* The beam, between classroom proper and arts and crafts alcove, permitted the use of the light-gage deck (spanning 25 ft) as a real economy. The heavy-gage deck would have cost far more and would not have offset the elimination of the beam and bearing pier. I don't think we would have wanted to close the alcove off any more than we did, because we like the continuity of space both functionally and spatially. In a similar situation, in another school, we rested the deck on the bottom flange of the beam which has a nicer appearance but is more complicated technically. We also eliminated the bearing pier and used a light steel tubular column which was incorporated in the window wall. At North College Hill, the bearing pier was used because of the general unavailability of steel at the time of the design.

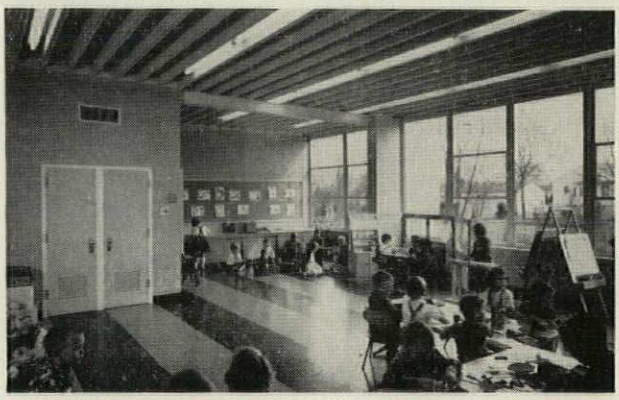
Koch: To us, the building is more successful from the outside than from the inside. We feel that the lack of natural lighting for the multipurpose room detracts from the attractiveness of the space. Also, if there were some way of articulating the central mass of the multipurpose room, both from the outside and from the inside, we think that the final result would have been more successful. *Burchard:* The multipurpose room is actually fairly well lighted by natural means through the glass walls at the vestibules. If all of the glass at each exterior vestibule were to be consolidated along one wall, it would cover the full length of the room and run from the floor line to 10 ft above the floor. We simply have it at the corners of the room instead of all in one place, and even though it is borrowed light, it is



substantial. It has the quality of light such as comes into a room from a courtyard. We did, at one time, have a liberal amount of top light in the multipurpose room *(sketch above)*. It was eliminated for reasons of economy, and for better control of the room for audio-visual uses. I have thought we may have eliminated it too easily and that it would have added to the quality of the space. The question of the articulation of the multipurpose room is more difficult for me. In my original notes, I said that with the new Ohio Code provision (which now permits a classroom to be less than 10 ft in height) I would have reduced the classroom height to about 8 ft and would have articulated the roof form of the multipurpose room to provide a more pleasing relation to the lower horizontal classroom line on the exterior. This would have improved matters from both the outside and the inside, I am sure. With the classroom height at 10 ft, however, I do not know whether the multipurpose-room roof is not more satisfactory as it is. You must remember that a fourth- to sixth-grade expansion is contemplated and this will include another multipurpose room for these grade activities. This will be a larger and more vigorous structure than the kindergarten-to-third grade room. Considering the over-all picture, I rather think the somewhat underplayed expression of the smaller one may not be bad. For the interior of this space we have relied on good colors and have articulated certain elements through the use of color. This is an attractive feature not apparent in black and white photographs. The ceiling of the stage area is blue, and cabinetwork in the room is painted a soft orange-tan as accent for a neutral wall color.





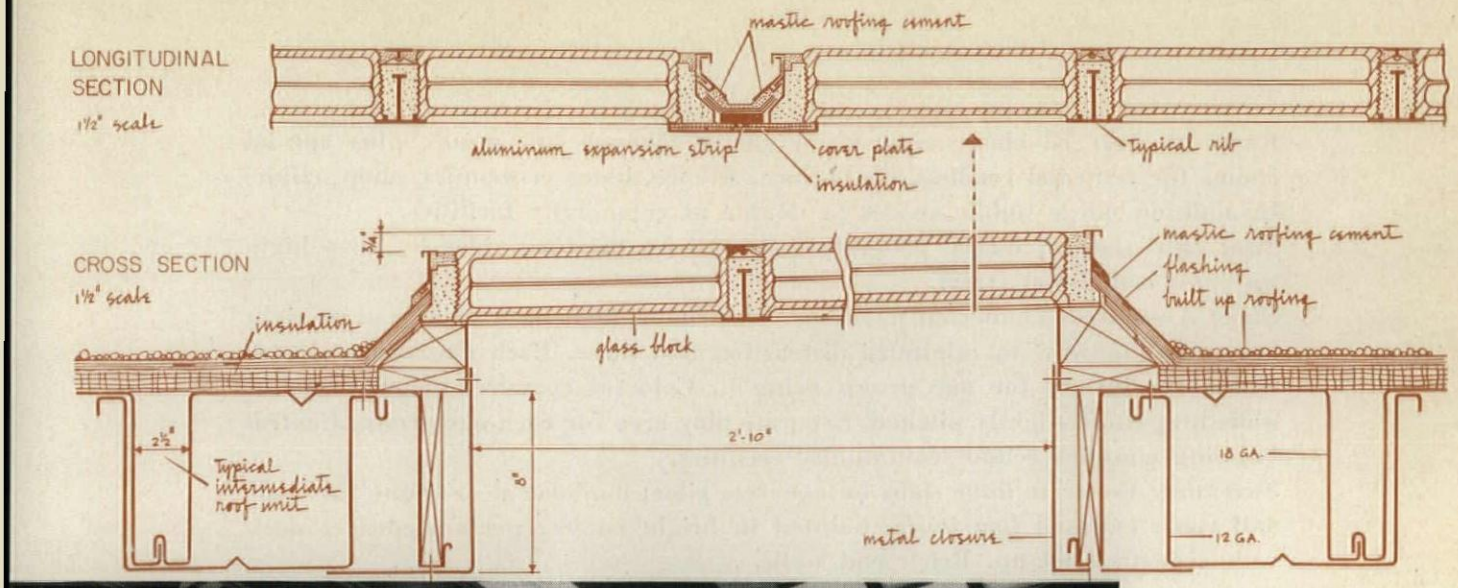


classroom planning

Koch: The architect has obviously put a great deal of thought into the details of the classrooms to achieve flexibility, balanced natural lighting, and efficient distribution of the various storage elements. Admittedly, we are biased in favor of getting a domestic and friendly quality into school architecture. Therefore, we feel that this solution is almost too straightforward and industrial in character. *Burchard:* The domestic and friendly quality in school architecture is often permitted to deteriorate into chaotic and fussy solution. The children themselves, the things they put on the walls, and the low informal furniture groupings give the classroom its scale and quality, and they are best brought into harmony, in my opinion, by a "straightforward" background as a spatial organization. The Clovernook classrooms are bright, colorful, orderly, and enjoyed by the children who use them. This does not mean another point of view is not all right, but that there is more than one way to achieve a result.

Koch: We are concerned about the lighting system in the classrooms, there being such contrast between the dark ceilings and the recessed fluorescent tubes. *Burchard:* The ceilings are painted white and the contrast between the cells with the fluorescent tubes and the rest of the deck is not great. A louver across the cell containing the lights was considered during design. We decided to try it without the louver and everyone using the school considers the solution, as is, satisfactory.

Sharp: Blinds seem to be used for light control and sun control without any overhang. I question this, particularly in the early fall and late spring. *Burchard:* The blinds have done a satisfactory job



for light and sun control. Would an overhang really be of much use in early fall or late spring with the sun at low solar altitudes most of the time?

Sharp: Room-darkening versus skylights—what provision? *Burchard:* Audio-visual activities in the classrooms are accomplished by drawing blackout draperies across the full width of the window wall. The screen is then put in the arts and crafts alcove, out of the direct light from the skylight. This has worked well in practice at Clovernook.

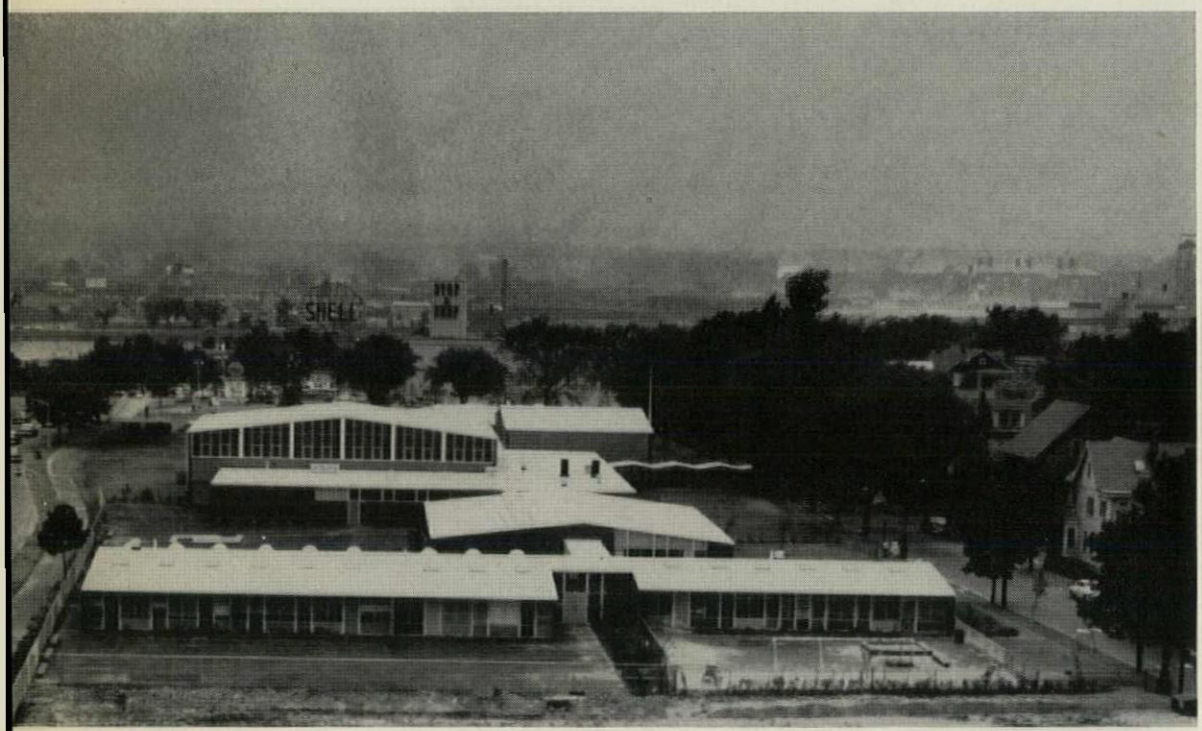
Koch: We understand the local problem with regard to skylights as expressed in the project description. However, we wonder if the framing around the glass-block skylight could not have been handled without the heavy framing, to provide a better transition from the delicate quality of the steel deck to the necessarily heavy quality of the skylight. *Burchard:* What we did was simply to invert one additional deck cell at either side of the opening forming a box beam to support the block *(detail above)*. It is quite simple in section, and, I think, less objectionable in reality than in the photographs.

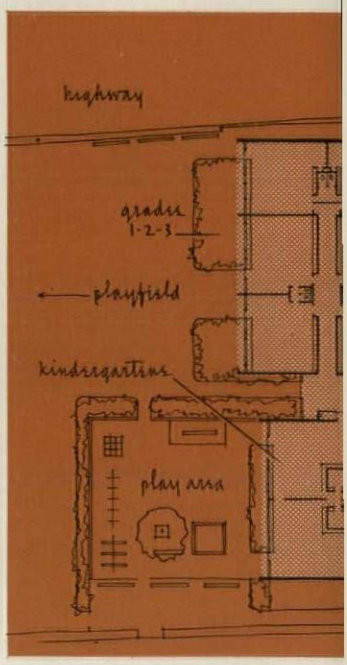
Koch: We feel that additional acoustic treatment may be required. We doubt that relying on the corrugations of the ceiling and the roughness of the block walls is adequate. *Burchard:* In fact, the acoustics are excellent. We did think, if we had trouble, we would cement glass fiber in some of the deck cells to provide acoustic benefit, but this has not been at all necessary.

Sharp: If it were our own "brainchild," we would still be slightly disappointed in the exterior. *Koch:* In our opinion, this is an imaginative parti, which could have been more successful in its execution.

3—Morse School, Cambridge, Massachusetts

Requirements: **18 classrooms, kindergarten through 8th grade, plus special rooms for remedial reading, conference, science, home economics, shop, clinic. In addition, large public spaces to double as community facilities.**
Site: **cigar-shaped, 6-acre property bordered on the long sides by busy highway and residential street.**
Plan: **A series of connected pavilions. Classrooms kept back or placed at right angles to highway, to minimize distraction and noise. Each classroom cluster scaled specifically for age group using it. Colorful spandrel panels, window walls low, roofs slightly pitched. Separate play area for each age group. Central building contains school/community facilities.**
Structure: **Concrete floor slabs on concrete piles; modular steel frame for walls and roof; exposed bar joists, painted in bright colors; perforated-steel deck with acoustic back-up. Brick end walls.**



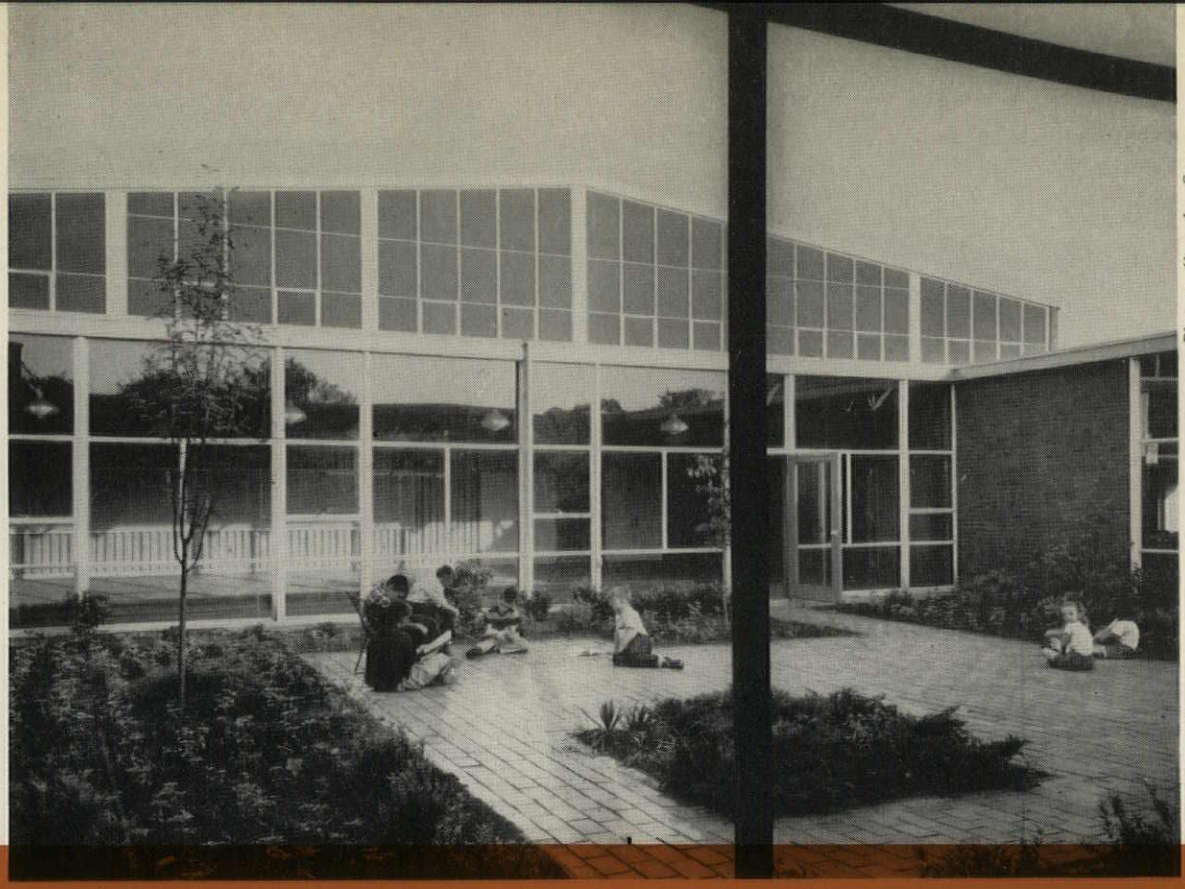


round-robin critique

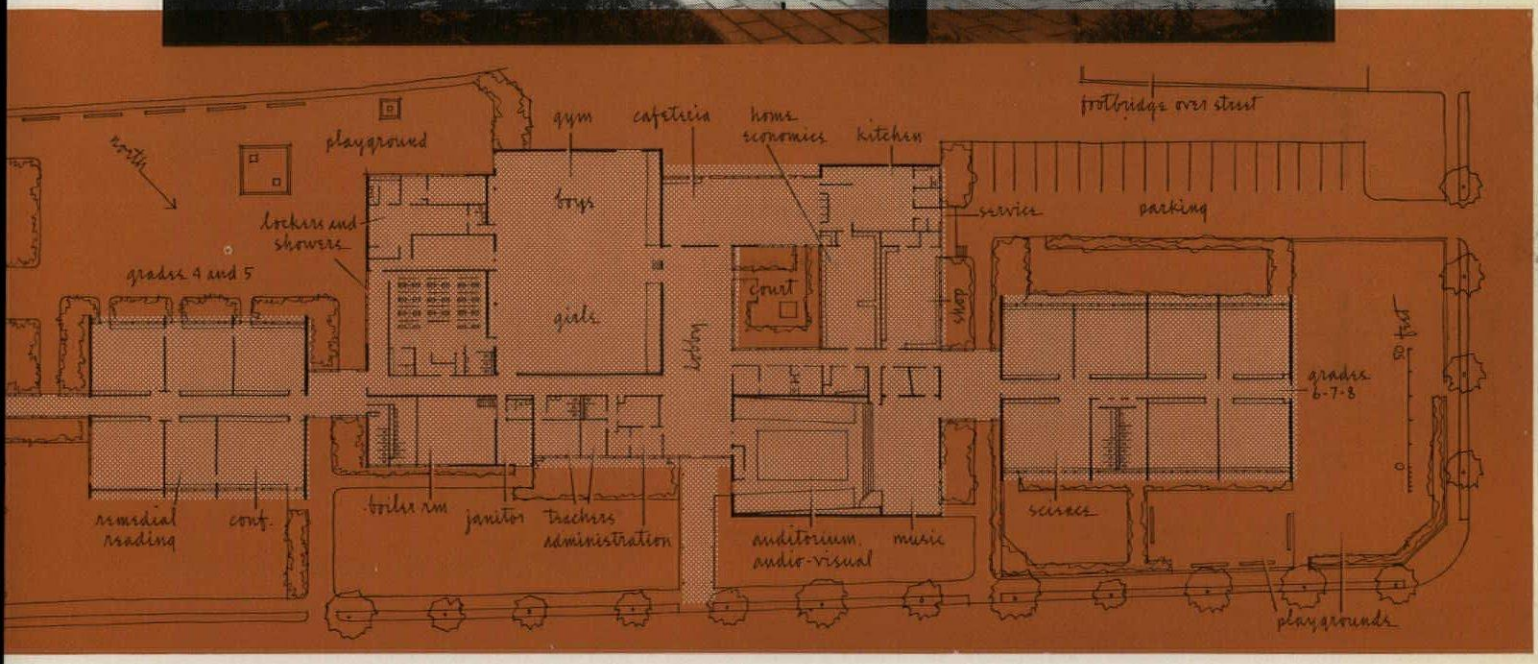
plan and site

Burchard: My first impression of the over-all plan of this school was that it didn't reflect sufficiently two factors of its site: the heavily traveled highway bordering one long side, and the neighborhood street along the other side. I thought that perhaps the community and activity buildings should have been strung against the property line at the highway, with classrooms coming out as a series of T-forms with play courts between, away from highway noise and danger. I suspect, however, that the designer found his buildings located more by property lines than by any theoretical provision. I do feel that the over-all zoning of the plan is good, with the primary and intermediate grades on either side of the activity areas. *Koch:* In our early scheme *(see sketch page 145)* we attempted to separate the classrooms from highway noise and distractions. These factors are taken into consideration in the final scheme by turning the classrooms at right angles to the highway, or setting them back. However, three other factors conditioned our final solution: (1) the requirement for locating the community facilities as far west on the site as possible; (2) southerly exposure; (3) the view across the highway to the open park and river.

Burchard: I find corridors in elementary schools rather annoying. They cost a great deal to build, the housekeeping in a corridor tends to be poorest, and they represent continuing costs to maintain them, to proctor them, to light and heat them. While the site is difficult, I certainly feel that it should have been possible to at least arrange the commons (or activity) building group in such a

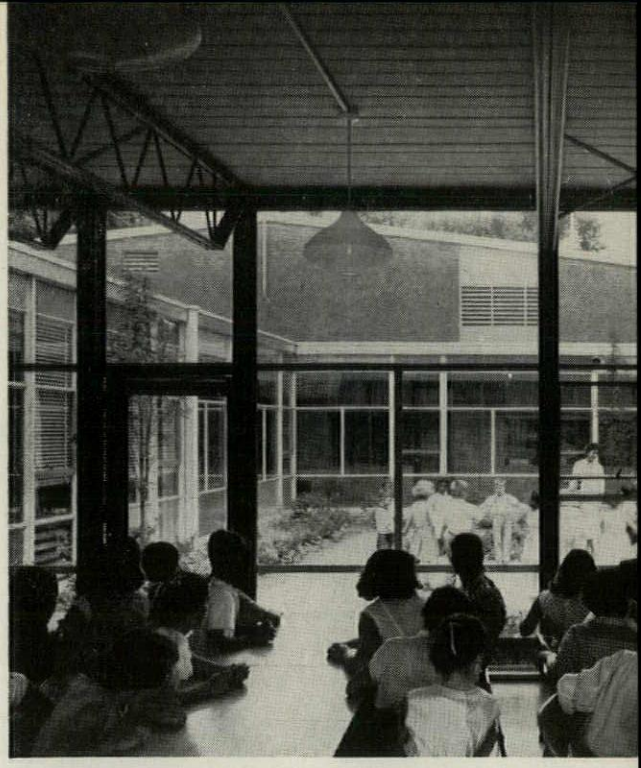


Photos: Alexandre Georges



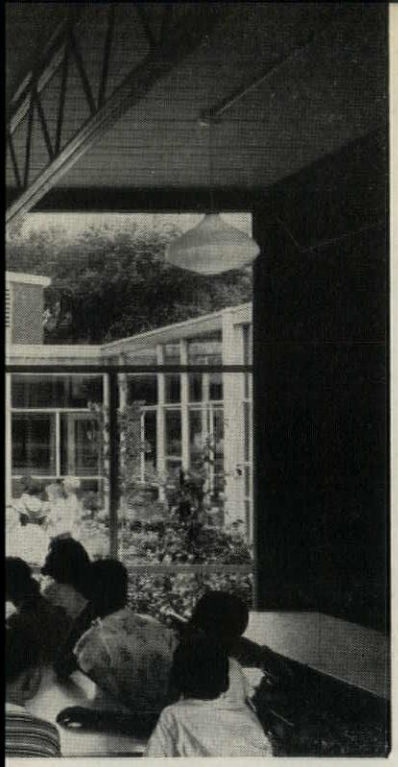
way that it didn't have to have a corridor full length in one direction, a lobby from one end of the building to the other perpendicular to the corridor, and then still another corridor feeding the boys' and girls' locker rooms. This commons building group, however, is good for community-use purposes with the gymnasium, auditorium, cafeteria, shop, and toilets all accessible from the lobby. All can be shut off from the rest of the school for evening use. *Koch:* The length of the corridor, we feel, resulted largely from the pavilion scheme on a cigar-shaped lot, plus the requirement that all spaces within the community facility area be readily accessible to the public at night. Another requirement was that all pupils and adults be kept off the gymnasium floor—this meant separate access to the lockers on one side of the gymnasium, and public access to the bleachers on the other side. The large lobby was designed to accommodate sizable crowds at night when auditorium, gymnasium, and cafeteria are all in use at the same time.

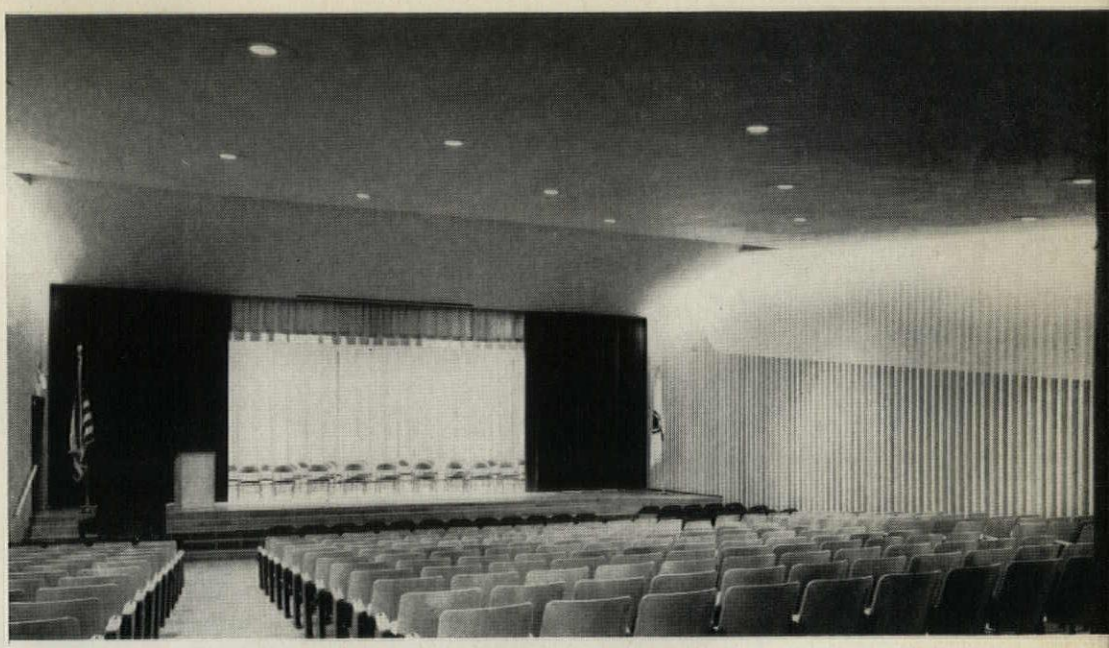
Burchard: The designer succeeded in achieving pleasant open spaces among the various building units, useful for miscellaneous outdoor activities. The outdoor space, however, for Grades 4 and 5 falls directly before the windows of Grades 2 and 3, which is unfortunate. In general, the final results are not quite as pleasant as indicated on the preliminary sketch perspective, particularly on the primary school side. This sketch indicates a more pleasant grouping with what seems to me to be a covered walkway connecting the kindergarten and lower primary grades to the rest of the school. Since these grades are self-contained, and travel to the commons buildings is restricted, I feel that such an



arrangement would have been very good and would have given these grades, in addition, a good rainy-weather play area under the covered walkway. It would have resulted in a less expensive solution and would have provided a better relation of buildings and land, both as to function and appearance. *Koch:* The outdoor space for Grades 4 and 5 facing the windows of Grades 2 and 3 is not serious in our opinion, because recesses are held jointly by these grades. The change from the preliminary sketch to the final solution regarding the primary school side were caused by a request from the owner that the entrance to the kindergarten be changed from directly off the sidewalk on Granite Street. This required us to turn the kindergarten around. Another reason for the change was the owner's desire to avoid hidden playgrounds which could not be supervised at night. Still a third requirement was that the kindergarten tot-lot be separated from the rest, and available for yearlong use by the neighborhood. In explaining the reasons for the change we should go on to say that we agree that the earlier arrangement was nicer. Incidentally, covered walks were not allowed; all vestibules and passageways had to be enclosed and heated.

Sharp: Good separation of age groups —good relation of upper grades to central facilities such as shop and auditorium. Wonder about lower grades, up to 4 and 5—do they use cafeteria?—long uninteresting trip. *Koch:* Lower grades use the cafeteria, gymnasium, and auditorium. The long trip is merely the result of the one-story pavilion scheme, which must necessarily conform to the elongated site. We hope the trip will not be too uninteresting due to the interspersal of lobbies and corridor islands.





Sharp: I feel that too much building is wasted by circulating through and past large elements; for instance, corridor is 125 ft long (not including corridor to boys' locker room) at locker room, boiler room, gym. *Koch:* We agree that the corridors are long, again this results somewhat from the shape of the site, and the desire to provide enclosed access to all elements in the school.

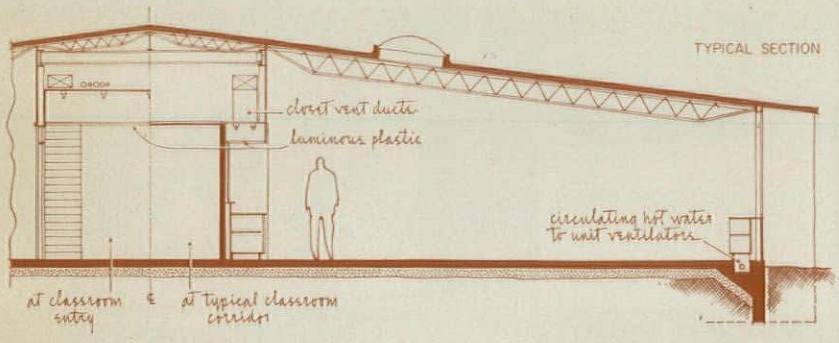
structure and materials

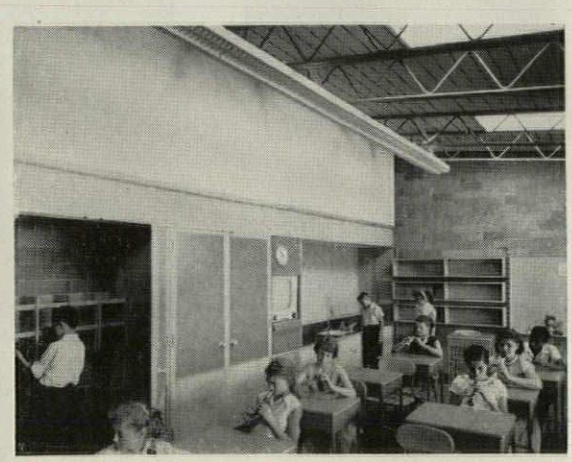
Burchard: I was unable to find the "strict module" of the steel-skeleton framework which the designer refers to. *Koch:* The module is, to us, more apparent in the classroom pavilions. However, in the community facilities the module reoccurs in the exposed structure, as in the lobby, gymnasium, shop, homemaking rooms.

Sharp: The structural system is simple. I assume the framing makes sense—allowing columns to work out to desired window pattern. *Koch:* Yes—the framing was selected because it combines a pleasant structural appearance with low cost.

Burchard: In general, materials seem to have been selected for easy maintenance, even though somewhat more costly in first cost than I would have supposed to be necessary. I am a little apprehensive of the appearance of the iron-spot block-partitions for the classrooms, which look a bit grim in the photos. *Koch:* The iron-spot block is a material which is much easier to maintain, in our opinion, than painted-concrete block. It ranges in color from light to dark tan with a touch of dusty orange. The net result is, we think, just the opposite of grim—it is one of neatness and warmth.

Sharp: Terrazzo! (Especially in view of what we feel to be pretty steep total circulation space.) *Koch:* Terrazzo in the corridors was a requirement of the city.



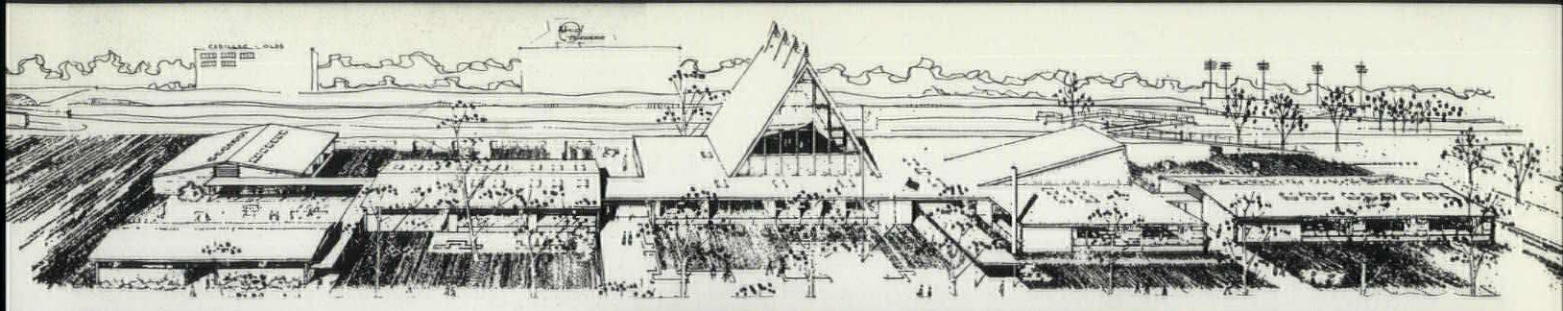


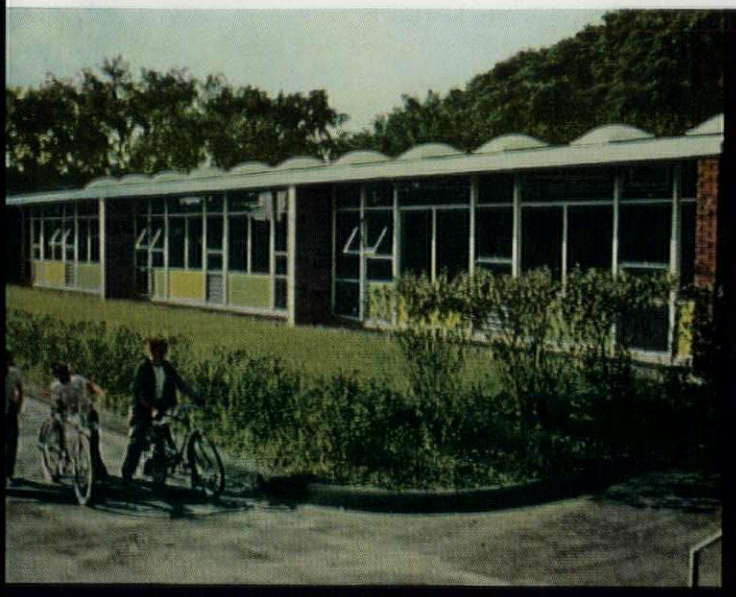
classroom planning

Burchard: While I think the individual classroom design very good, I am somewhat less impressed when I see it as a space (by means of photos). First of all I find the window sill too high. The space seems a little heavy handed, the iron-spot block partitions a little grim, and there are too many bar joists running at a slope, which all add up to a space not as pleasant as the plan would have led me to suppose. Is this impression of the space correct when seen in reality? *Koch:* The window sill height is 2′ 5½″ off the finished floor, the result of having to use unit ventilators. In our opinion, the classrooms are exceptionally pleasant spaces in all respects, in fact we have not seen any classrooms we like better to date.

Burchard: The bilateral natural light arrangement should provide uniform and reasonably high levels of illumination. I would also judge that the fluorescent strip attached to the bar joists will provide well in excess of 30 ft-c of good artificial light. I have some question about the use of unit ventilators which I find too noisy, high in cost initially, and expensive to maintain. In our schools I have found that unit-ventilator design adds 10 to 20 cents per sq ft in the electrical branch of the work. *Koch:* The State Code and the owner's own request were the main influences in our selection of the central hot-water system with unit ventilators.

Sharp: Think more attention could have been paid to control of sun and light—notice all the interim classroom pictures have blinds pulled up. How is sun and light controlled in south-facing playroom windows—bad glare plus heat gain? *Koch:* There is a generous overhang at all classroom windows. Control of early morning and late afternoon sun is achieved





by means of venetian blinds rather than outside screens because the school department wished to be able to black out every classroom for showing of visual aids. Consequently, all southerly facing classrooms have venetian blinds; all classrooms are provided with skyshades. All of the gymnasium windows use heat-absorbing, glare-reducing wire glass which has been amazingly effective in preventing sun glare. To date, we have had no complaints about heat gain in this space. However, one must be careful in using this material to reduce all exterior reveals and overhangs to a minimum so that the glass is not subjected to shadow lines because of the high expansion and contraction under different temperatures.

Burchard: If the commons building group had been more cohesive as a volume, I think it would have been an organization point around which the classroom pavilions could harmoniously group. Instead, this building breaks down into "two more cars of the train" and the higher roofs of the gymnasium and auditorium fail to give this building the "zing" it needs to help hold the scheme together. *Koch:* We feel that the early solution (sketch above) to the gymnasium roof had the "zing" necessary to hold the scheme together.

Burchard: As a final comment I would say the "pluses" of good zoning, separation of age groups, good scale, a well-planned classroom unit, all add up to a school that is very good; outweighing by far the few negative impressions of mine.

Sharp: I like "as-built" solution *(see aerial photo)* better than earlier solution before budget took effect. *Koch:* The change was not so much one of budget as one of esthetic disagreement. We still prefer the earlier scheme.

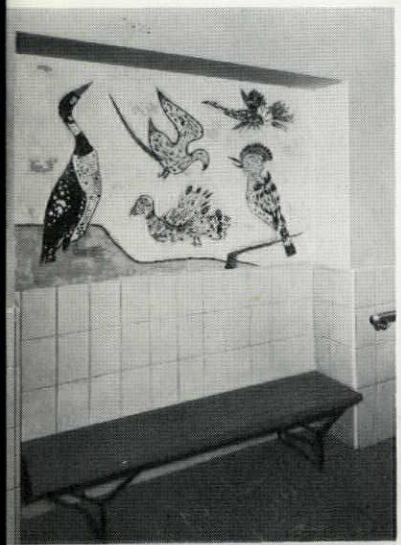
tokens of art in city schools

For the past five years, works of art have been commissioned for a great many of the new schools constructed by the Board of Education of the City of New York. Several among the most successful ones resulting from collaboration between architect and artist are shown here. These mosaics and sculptures contribute an element of vitality to their architectural and urban environment; they are tentative beginnings—tokens of art—which can lead to significant architectural enrichment.

Designed by the Board of Education's architectural department, directed by Michael L. Radoslovich, or by private architectural firms working with that office, the new buildings—for elementary, junior-high, and high-school students—are located in many parts of the city, in every borough, and often in bleak, dismal, depressing slum neighborhoods.

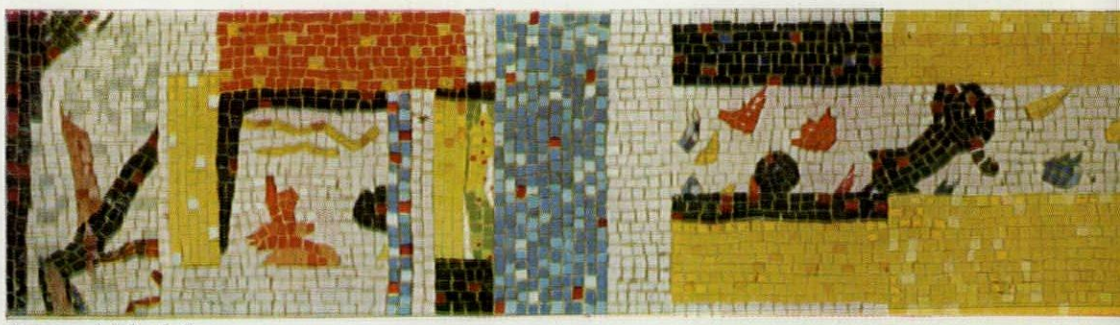
In the midst of urban ugliness or industrial desolation, such a new school is outstanding, an isolated and solitary structure, the most attractive feature in the area. To the child, it is probably the

Max Spivak



Bernard Liebman

Max Spivak's sparkling mosaic panels of playfully stylized birds enliven corridors, above places where students—children with cerebral palsy—may stop and rest. Public School 48, Richmond; Michael L. Radoslovich, Architect.

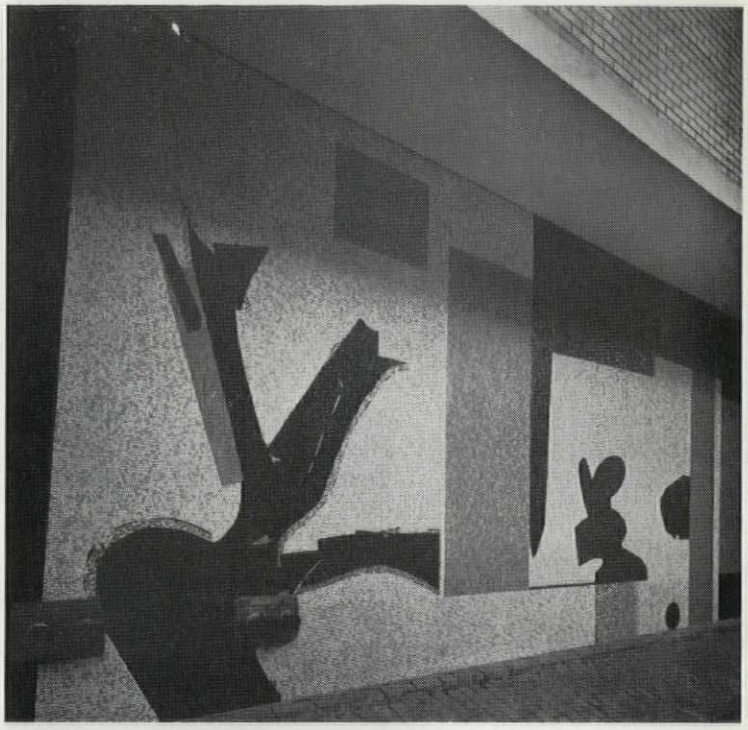


Courtesy of Kelly & Gruzen

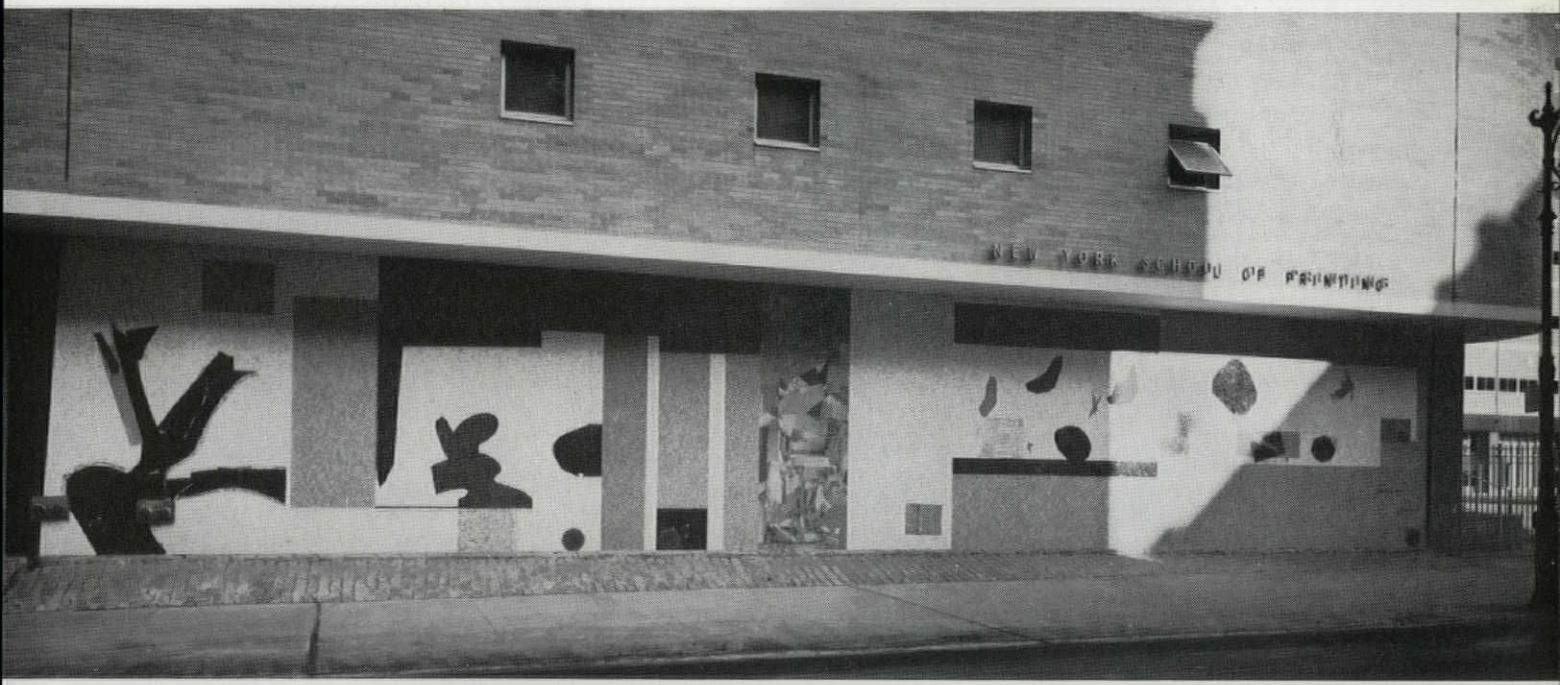
The New York Times

Contractor as well as creator and craftsman, Valerie Clarebout installs mosaic-and-aluminum wire mural with the help of two assistants. Seven panels, made by "direct method" in the artists's studio, fill a 10'x25' wall in main lobby with "Underwater Ballet," a theme evoking the ocean nearby. Public School 180, Queens; Knappe & Johnson, Architects.

Photos (except as noted): Joseph W. Molitor

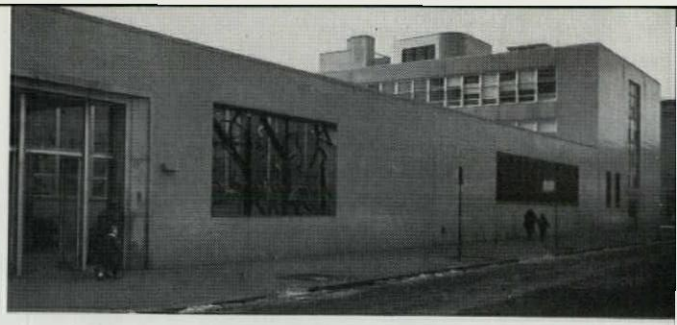


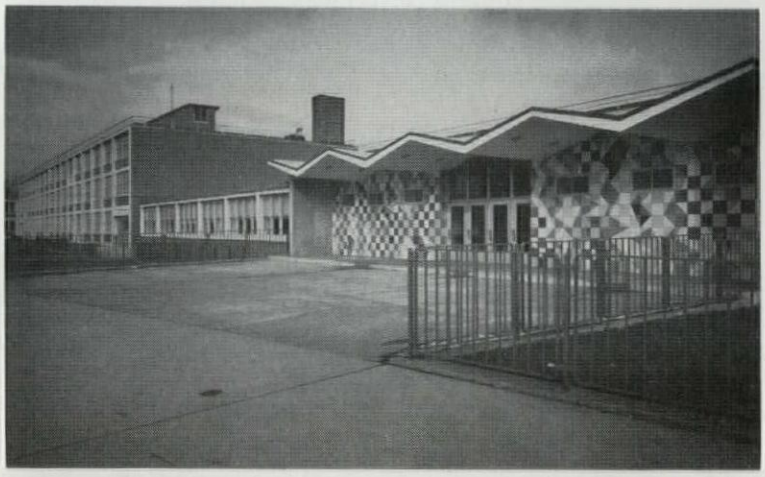
Hans Hofmann's mosaic wall (model acrosspage) *is a vibrant note on a depressing street, but the finished 11'x60' mural* (below) *has lost certain excellent qualities. Though the bold arrangement of forms—printer's symbols—is enlarged, their rigid, ruler-sharp edges sacrifice spontaneity and interest. Detail* (right) *shows flat surface mechanically executed by workmen. New York School of Printing, Manhattan; Kelly & Gruzen, Architects-Engineers.*



most decent place in his environment; and the art in it, the only art he knows.

Art is included in the school buildings as part of the city's enlightened educational program as well as for esthetic and social reasons. Faced, last winter, with charges of "waste and extravagance" on "lavish embellishments," the Board of Education declared its worthy and honorable intentions. Art is installed in schools "to offset the severity of straightforward, structural design," to form a counterpoint to the architecture. Art contributes to an environment suitable for the student's daily activities, providing—when it is successful—a note of gaiety, sparkle, a more human and less institutional atmosphere. It contributes to the children's "sense of ownership and pride." One artist who visited a junior-high school asked a student the meaning of the sculpture prominent on its façade; he was answered, with dignity and astonishment at the adult's question, "This is



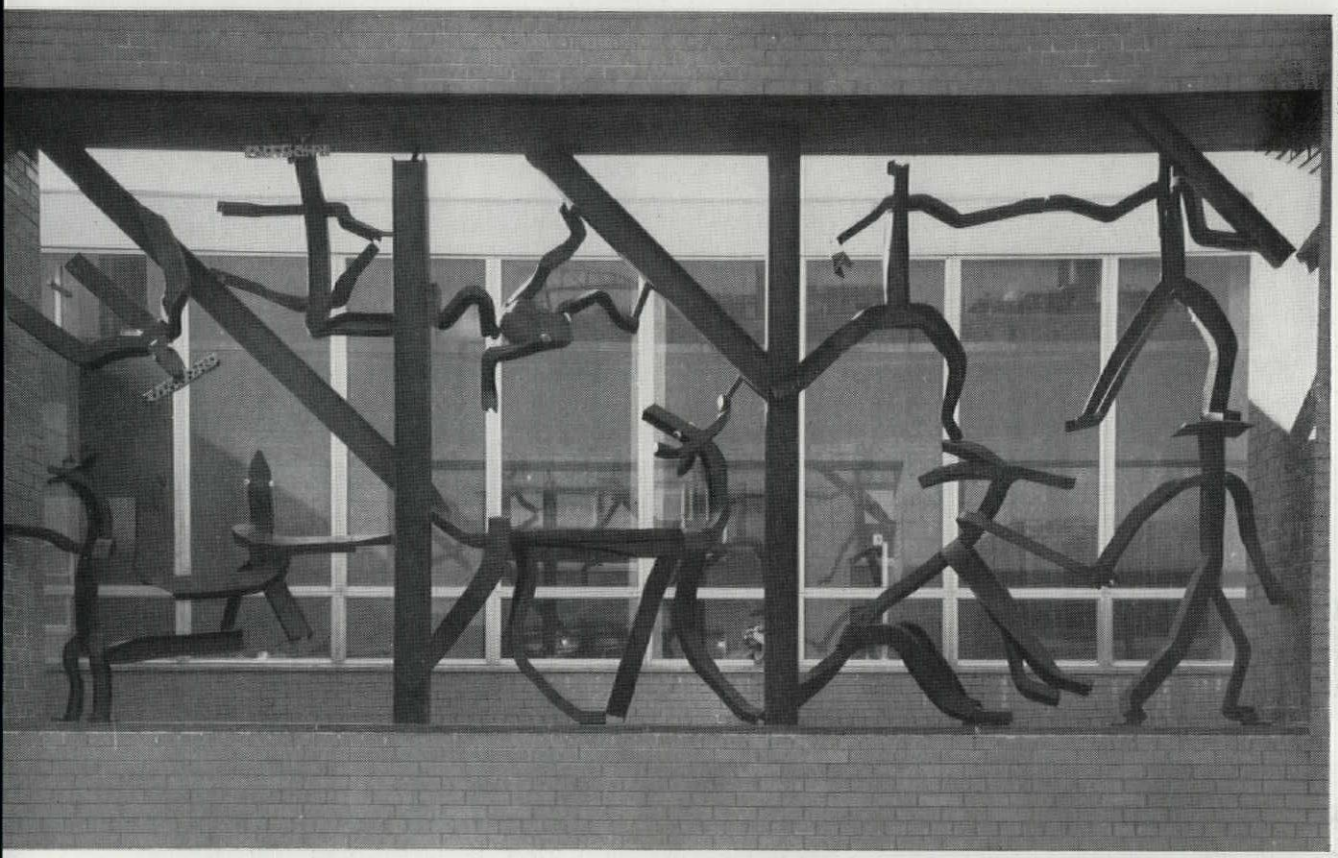


This 63-ft-long mural by Samuel G. Wiener, Jr., marks the entrance loggia and distinguishes it from the rest of the building. Attractive, bright terra cotta tiles in an asymmetrical abstract pattern grace the approach with cheerful informality. Rather than creating a monotonous or drab expanse, the artist has used durable architectural surfacing to make the wall a gay and pleasant asset. Public School 142, Bronx; Michael L. Radoslovich, Architect.

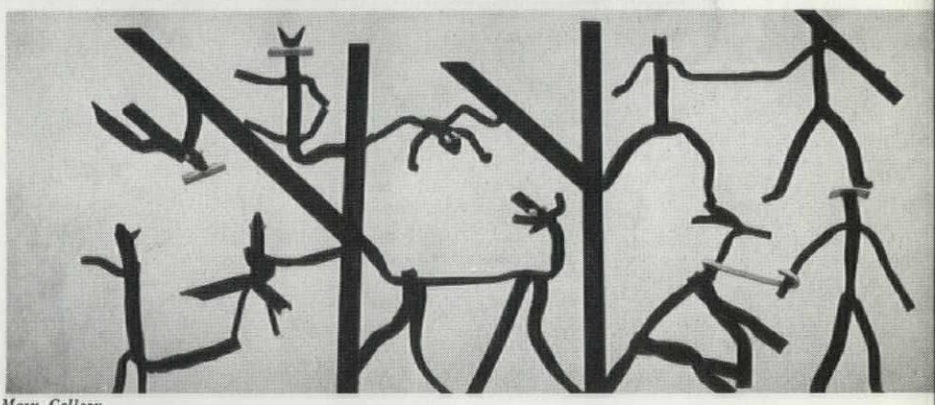
a *school*." That sense of pride and identity is no small gain in a city plagued by delinquency and gang violence—behavior patterns of group conformity, psychologists tell us, which are chaotic, rebellious attempts at self-assertion. There actually does seem to be improved student behavior and less vandalism in the new schools.

Despite the charges of "extravagance on lavish embellishments," very little of the Board of Education's building budget has been set aside for murals and sculpture. While the Federal Government allots one in ten dollars for art, less than one cent in ten dollars has been spent on the art installed in New York's schools. And, too often, a skimpy budget results in the failures—a touch of art badly scaled to its setting, a meager gesture that was an afterthought. Adequate funds would allow more comprehensive projects, ones which achieve effectiveness in size and scale.

Even when enough money is provided, the art installed in the schools is not solely the result of free collaboration between architect and artist. Every building on City property and the art for it must be approved by the Art Commission of the City of New York, an advisory group appointed by the Mayor and composed of prominent lay members as well as professional members nominated by the local Fine Arts Federation. Though this group is presumably sincere and independent, its esthetic decisions—and they are final, the judgments of established authority—are often open to



Adolph Studly



Mary Callery

A delightful embellishment set in a long brick wall (acrosspage top), *Mary Callery's steel sculpture representing three of La Fontaine's fables. This 7'x20' screen between enclosed garden and street is a joy to climbing youngsters. The lively calligraphic rhythm seen in the working model* (right) *unfortunately competes with elements of the building itself. Public School 34, Manhattan; Harrison & Abramovitz, Architects.*

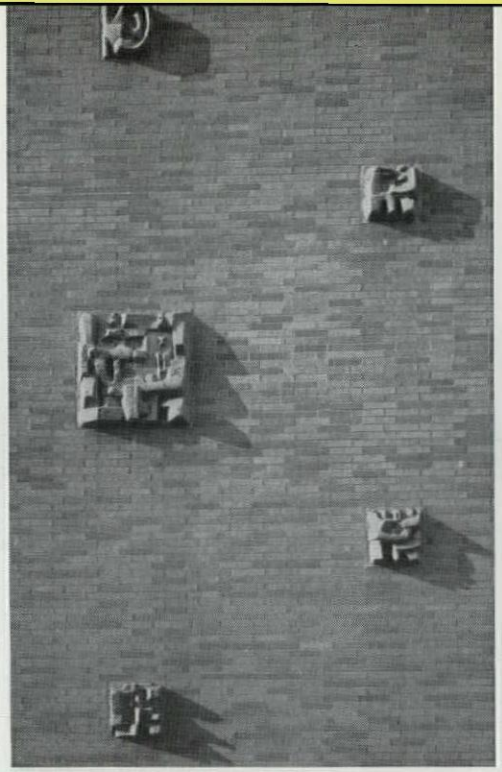
question by artists and critics.

The professional members serving on the Commission—sculptor, painter, landscape architect, architect—are established, successful practitioners in their individual fields; trained in the traditional methods and academic concepts embodied in their own work, they are not always sympathetic—to state it mildly—to the creative, experimental efforts of younger artists, exploring the possibilities of a new language of forms in new mediums.

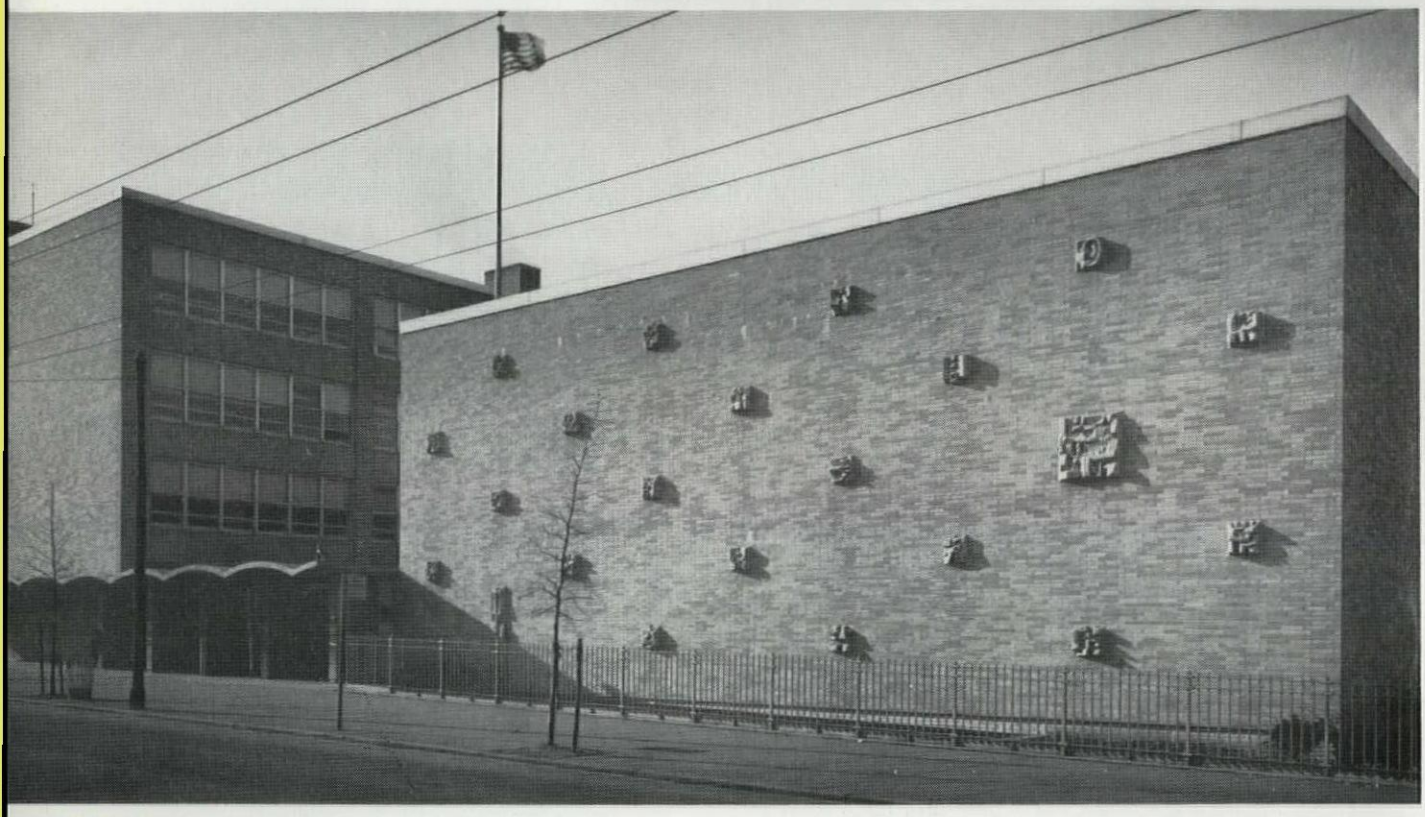
Once the artist, having worked out his design with the architect's approval, has submitted a photograph of his sculpture model or a mural sketch with a description of the project, it is considered by the Commission with photographs of the building model. Deliberations, discussions, critiques ensue behind closed doors. The artist is told only the verdict: approved or disapproved. Occasionally a project is approved on condition that certain changes be made; in one instance, colors had to be toned down because they were judged too bright.

The Commission, instead of functioning as blank censor passing arbitrary judgment, might open its doors to the artists whose work is being discussed. As one artist pointed out, such sessions could become forums for constructive criticism; even a face-to-face exchange of aims in the particular esthetic solution.

With ultimate responsibility for the sculpture or mural elements as well as for the total building, the architect, public or private, chooses the artist. The



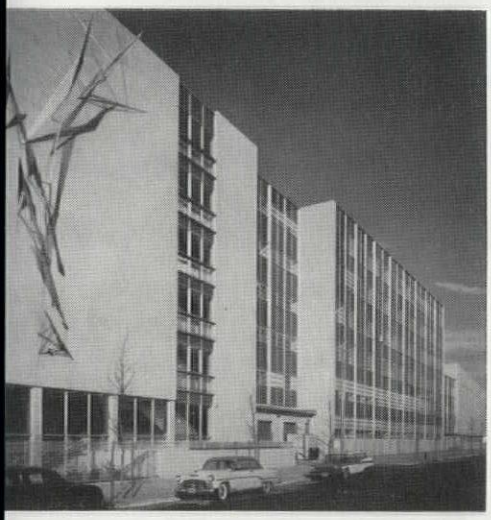
Costantino Nivola's sculptured concrete bosses transform a dull brick plane into a surface enlivened by the changing play of light and shadow. Cast in sand molds, each projecting boss is a unique, inventive relief sculpture, a needed reminder of imagination and individuality. Public School 33, Brooklyn; Frederick G. Frost, Architect.

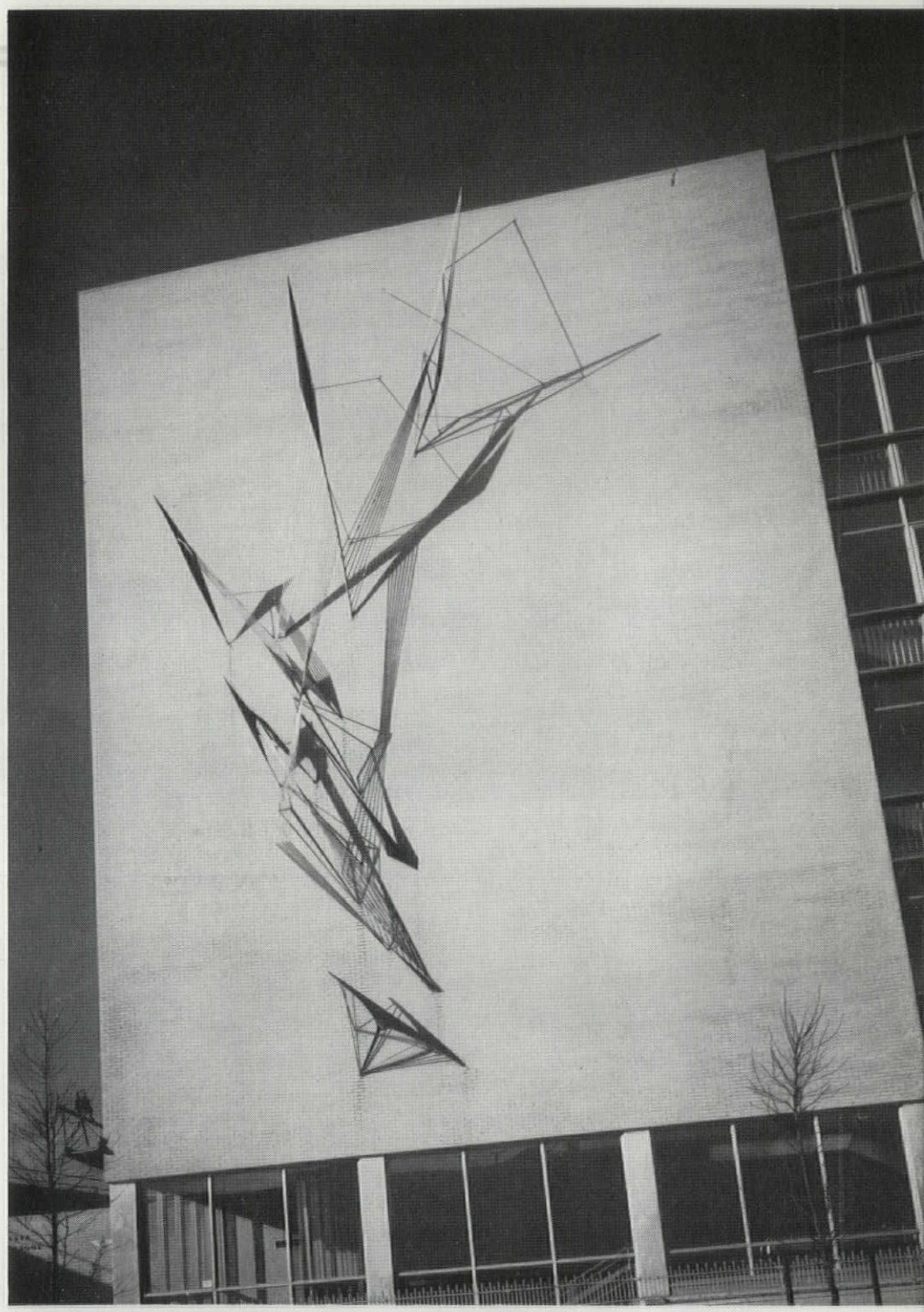


architect decides where he will provide a space in or on the building for enrichment by art or crafts work. On the school exterior, the space is usually a focal point near the entrance. Or, within the building, art is used to emphasize the most public areas, the lobby, main stair, or auditorium. The mosaic panel designed by Max Spivak to highlight an ordinary corridor constantly used by students is unusual. The architect decides how much space, and therefore what scope, may be given to the artist. He decides, of course, whether he will choose a painter or sculptor.

These preliminary choices, if determined before the artist and architect come together, can doom or at least cripple the completed work. When the architect's plans are completed, and he then, as an afterthought, finds a minimum commission for an artist, the art can become more than unimpressive decoration, a self-contained element added to, but unrelated to the building.

The artist is responsible for the visual effect within the narrow space assigned to him though not for the total effectiveness of a work of architectural art. Spivak's mosaics, for example, sparkling decorations in corridor niches, float—poorly placed—above tile walls, too high for students to easily touch and enjoy. Mary Callery's black sculptural screen is delightful in itself but unrelated to the building: the heavy black steel forms and the glazed brick, aluminum, glass elements of the building do not live happily; even more disturbing are the





Gwen Lux's dynamic steel sculpture, "Vapor Trails," surging upward away from its wall, represents—and admirably expresses—the speed and movement, the spirit of flight. Excellently scaled to the building, the 4-story-high work is of corrosion-resistant stainless steel, the material of jets. Aviation High School, Queens; Chapman, Evans & Delahanty, Architects.

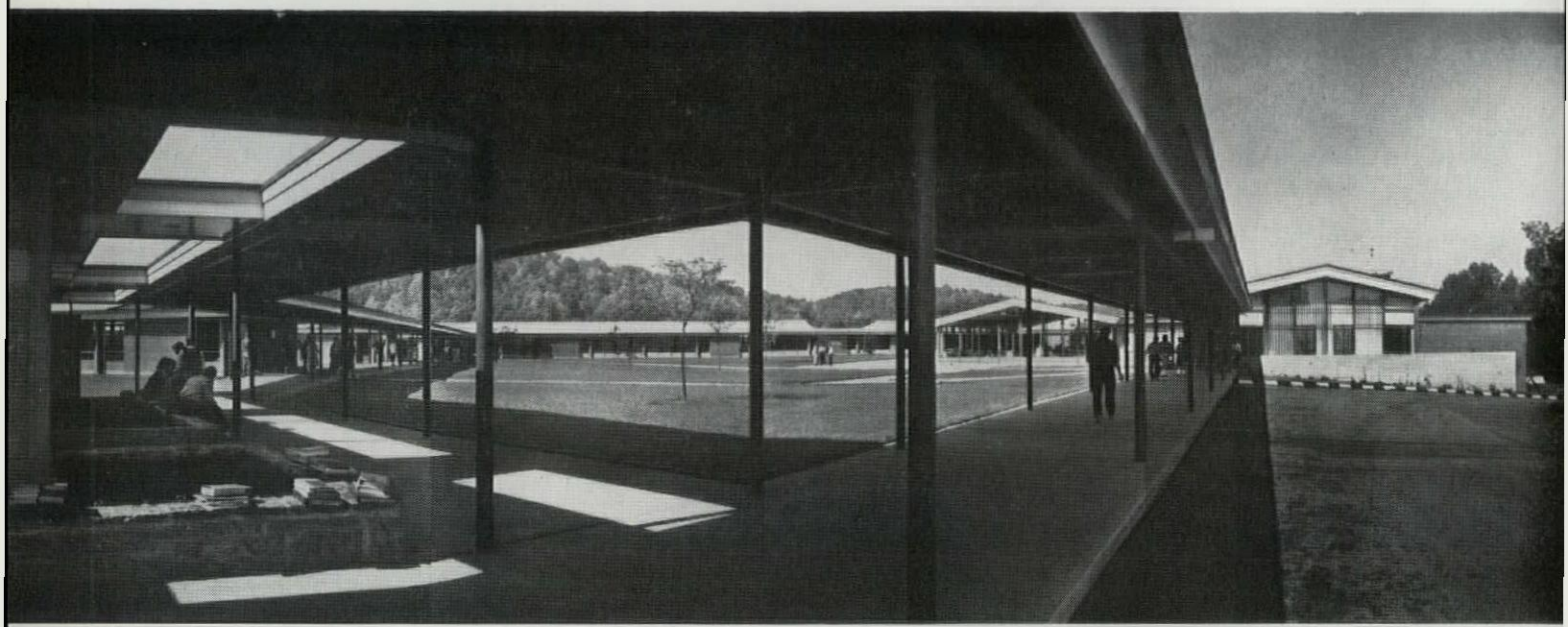
intrusive reflections from the building itself.

There is hope, however, for true and fruitful collaboration between architect and artist. When the artist is consulted at an early stage in the planning, he can make a valuable contribution. An interior mural becomes more than pictorial wall decoration when the artist is consulted about the total space in which it will exist. If he is given the opportunity to relate it to its surroundings, to consider surfacing and color of adjoining walls, ceiling, flooring, the art and the entire space will come alive. In an exterior work, and particularly sculpture, which must resist wind and weather, the problem of outdoor scale is an imposing one. All too often the work is a bit of random sculpture added to the corner of a wall. Much more successful are the two contrasting solution shown in the works by Costantino Nivola and Gwen Lux. They are indications that a work of art *effective in* its architectural setting—in size, scale, placement, materials, and color—can be designed when architect and artist are willing to listen to and learn from one another.

Responsible for the New York school building program are: Charles J. Bensley, Chairman, Committee on Buildings and Sites for Board of Education; Dr. David H. Moskowitz, Associate Superintendent, Division of Housing for Superintendent of Schools; William H. Correale, Superintendent of School Buildings, Design and Construction; Michael L. Radoslovich, Director of Architecture.

a comparative analysis of two high schools

Perkins & Will, Architects



Chappaqua, New York

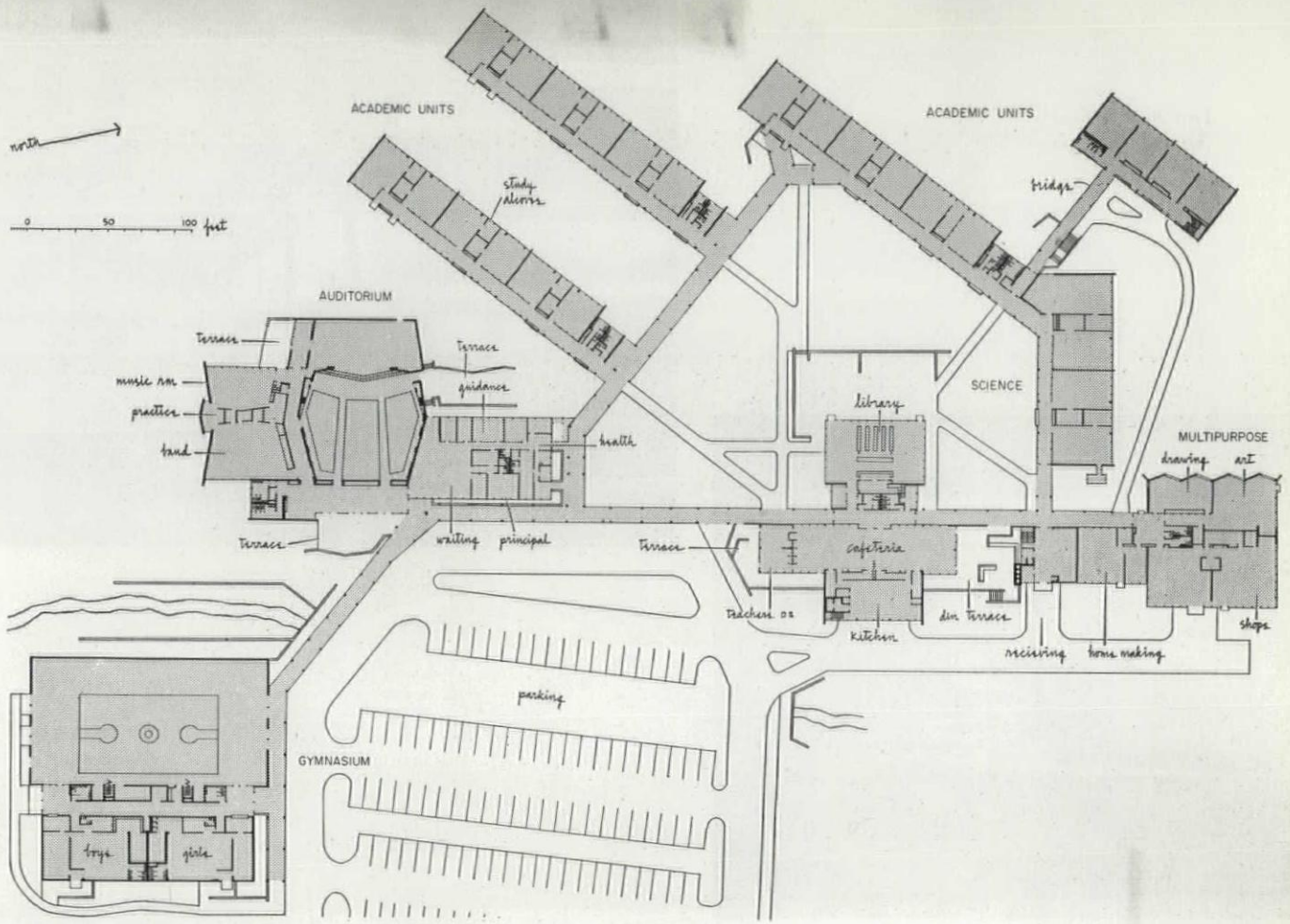
The Tarrytowns, New York

Photos (except as noted): James H. Karales

Chappaqua, New York, is mainly a residential community, a large number of whose citizens commute to New York to work. It has an exceptionally high per-capita income; and nothing in the way of heavy industry. The Tarrytowns—Tarrytown and North Tarrytown, New York—by contrast, have a much broader economic base, and, in addition to a large commuting population, have a heavy industrial conventration, with at least one large plant that employs 5000 persons.

These distinctions are, to a degree, reflected in the two schools compared in this issue—Horace Greeley High School in Chappaqua, and Sleepy Hollow High School serving the Tarrytowns. While both schools prepare students for college, Chappaqua is *primarily* a college preparatory school, and the 9′x12′ study alcoves adjoining classrooms are provided for teaching flexibility. The prominent central placement of the school library is a further architectural echo of the main purpose of the school.

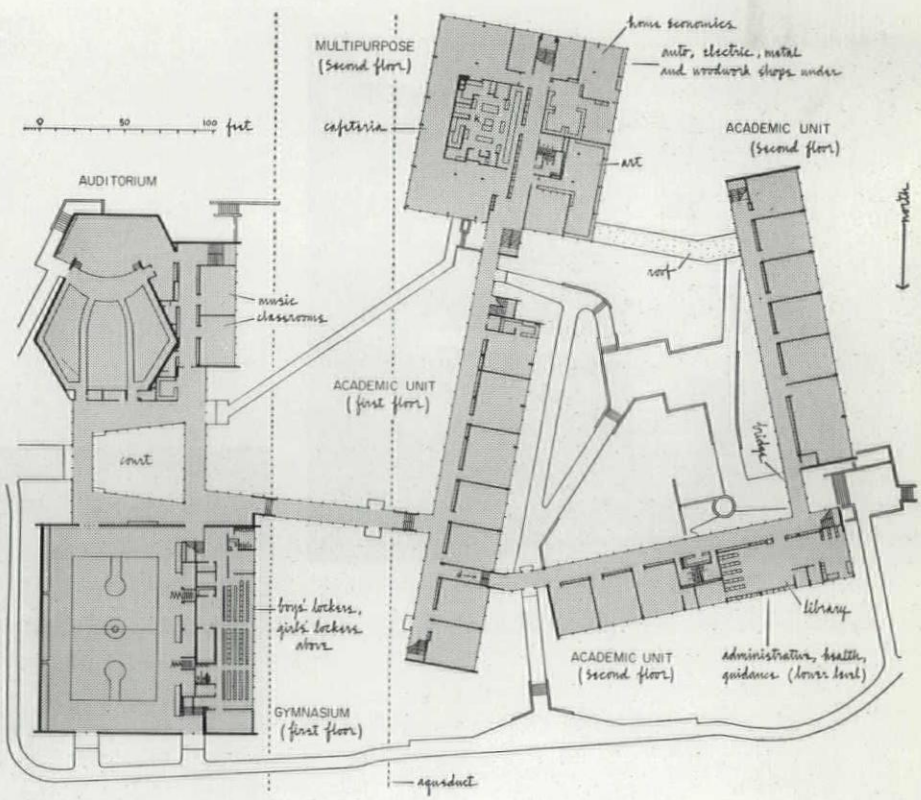
From the Tarrytown school a great many of the students also proceed to col-



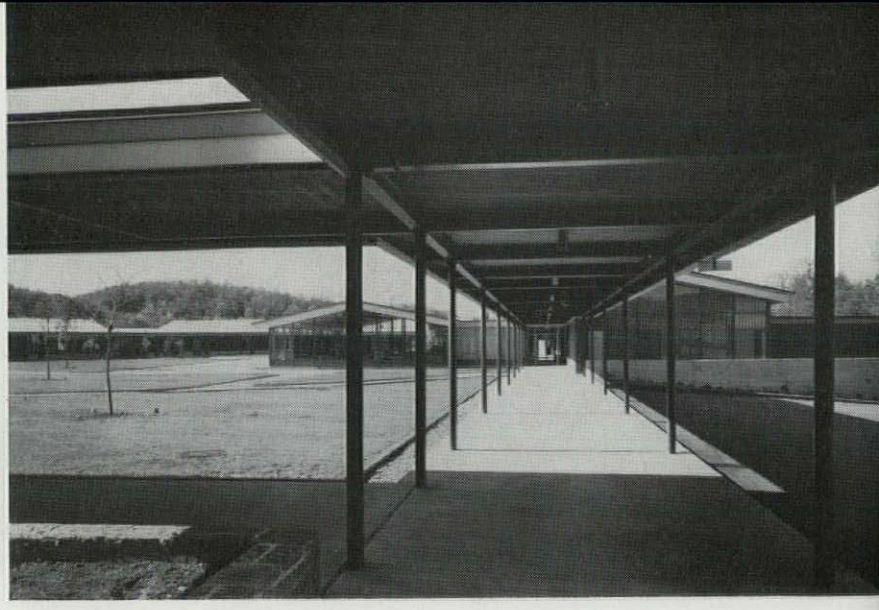
lege, and full facilities are provided for their training. On the other hand, a number receive their terminal education here and go directly from high school to work. A personal-guidance program helps to direct students to the most advantageous activities, depending on their future plans. Better to serve this latter group, greater emphasis (than at Chappaqua) is given to shops for vocational trades training, business education departments, etc.

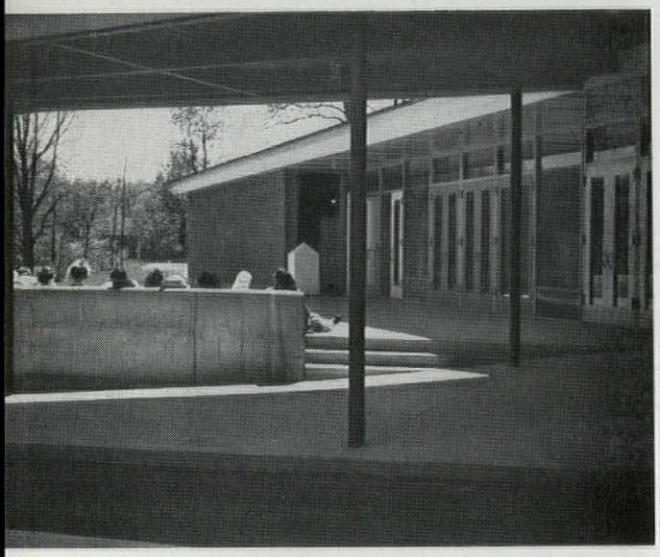
Similarities in the over-all design of the two schools are measurable. Both are organized campus fashion around central pedestrian areas. Basic facilities are parallel. Chappaqua has a student enrollment of 850; Tarrytown serves 1000. As the programs have so much in common, we shall attempt to discover why the schools are so different in design.

For both schools, Jaros, Baum & Bolles were Mechanical Engineers; Severud-Elstad-Krueger Associates, Structural Engineers; Bolt, Beranek & Newman, Inc., Acoustical Consultants; and Stewart M. Muller, Inc., General Contractor.



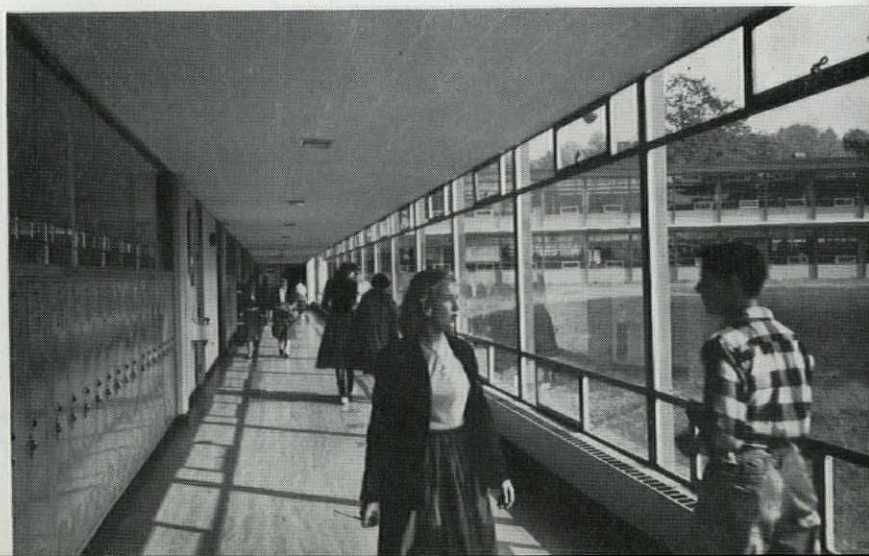
two high schools

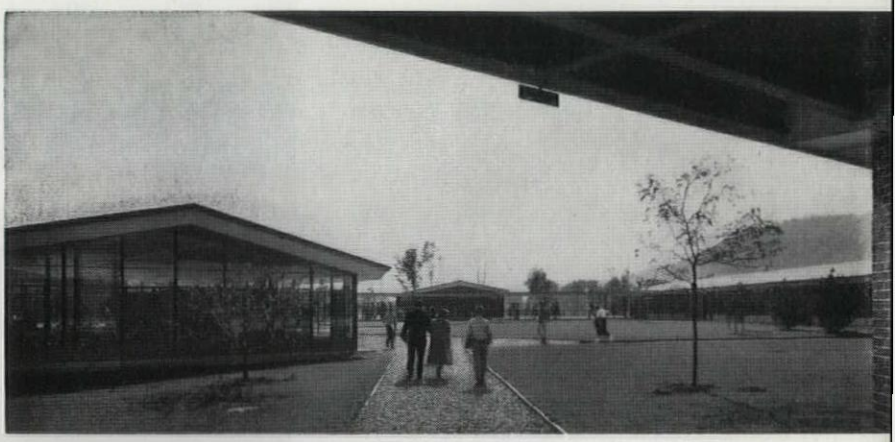


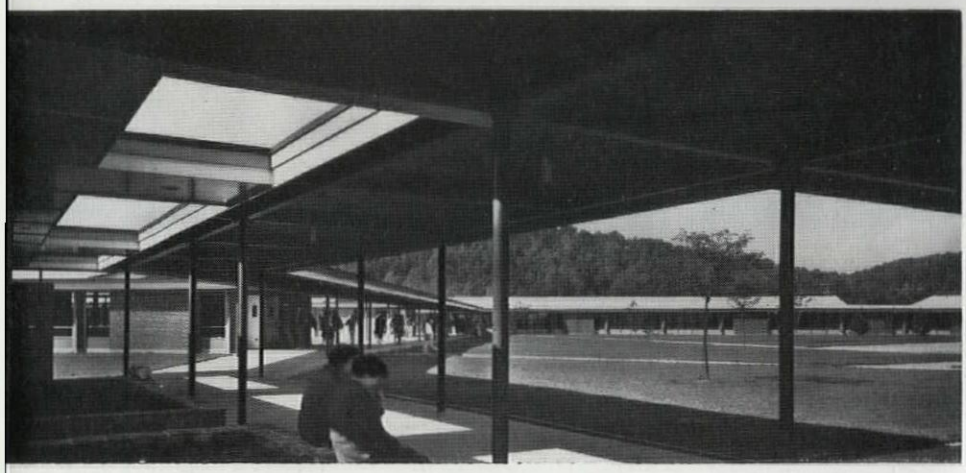


Chappaqua

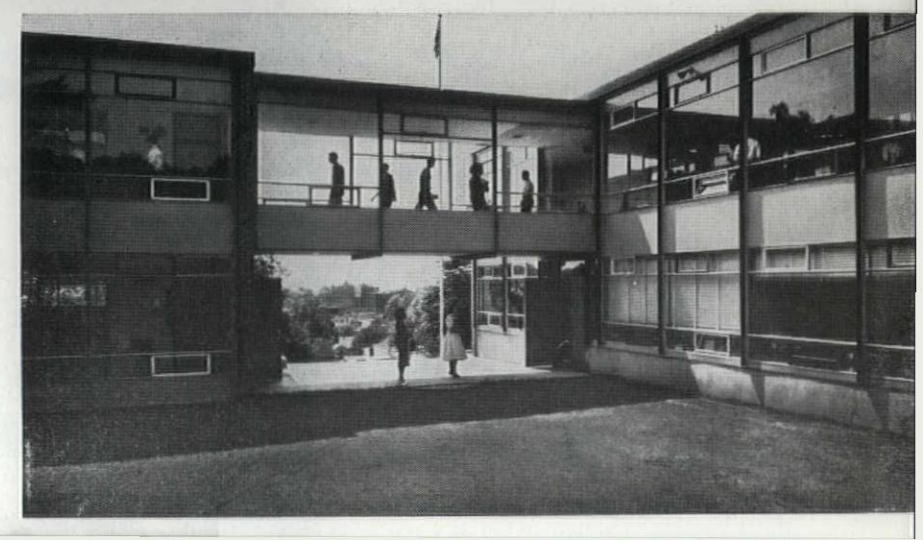
The Tarrytowns







Differences in the two sites were instrumental in determining both the general grouping of buildings and their structural systems. On the 27-acre Chappaqua site, a relatively level area of high land allowed a spread-out, mainly one-story scheme. The 30 acres of the Tarrytown site are irregular and rocky and slope sharply down to the west. In addition, an old stone aqueduct slices across the site. Result: a more compact grouping of buildings, mostly of two stories. For the Chappaqua buildings, steel framing was selected as most economical, with pitched roofs of academic units supported on prefabricated steel bents. At Tarrytown, reinforced concrete (supplemented in certain public-use areas by steel) was chosen, not only for economy in the two-story, flat-roofed units, but also to simplify construction details and to provide good fire protection. Exterior walls at Chappaqua are brick or insulated, painted, steel spandrels beneath steel sash; Tarrytown has walls either of brick or steel curtain walls containing porcelain-enameled panels. At Chappaqua, covered walks provide the most economical circulation between units; enclosed passages serve the more closely knit buildings at Tarrytown school.

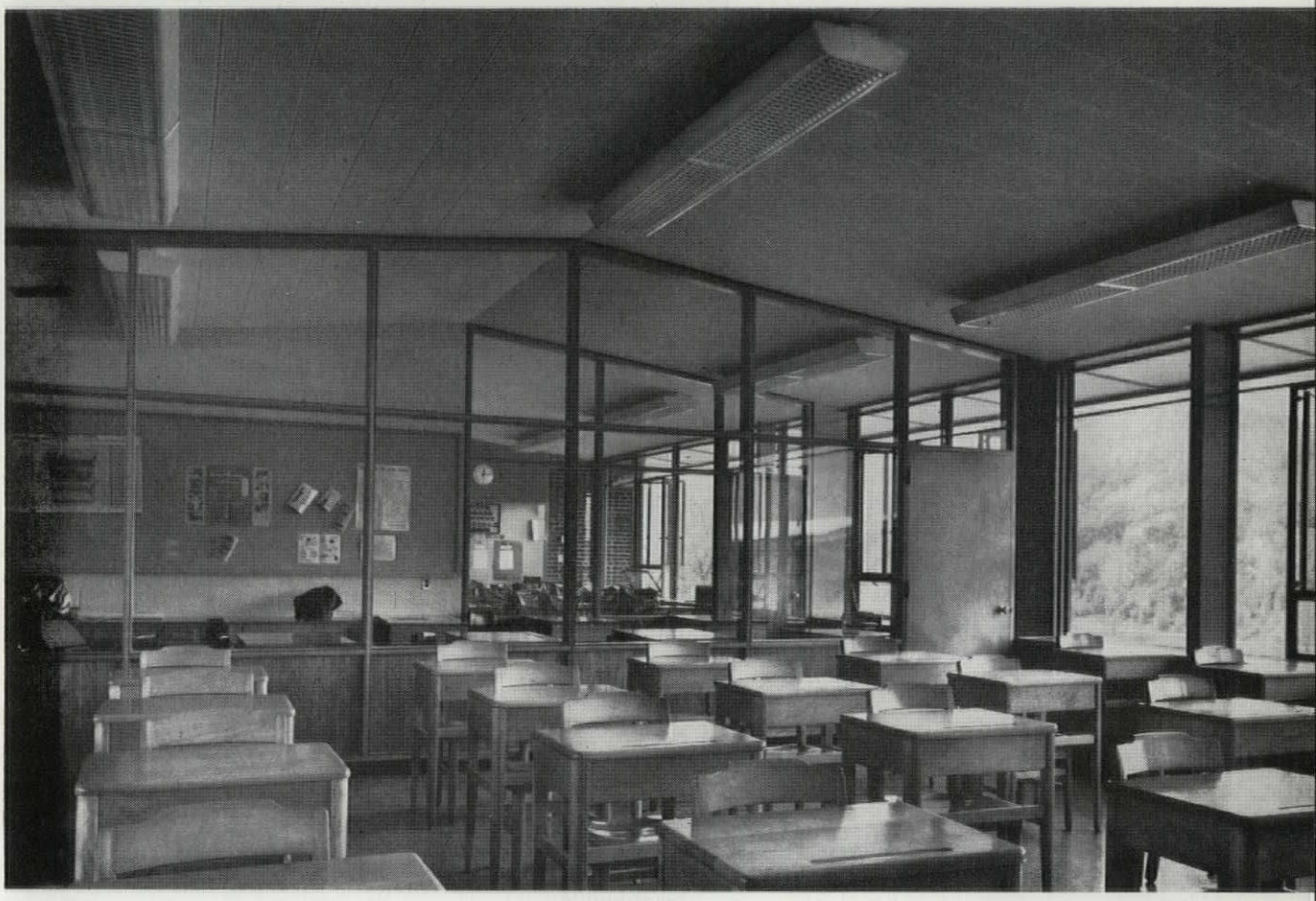


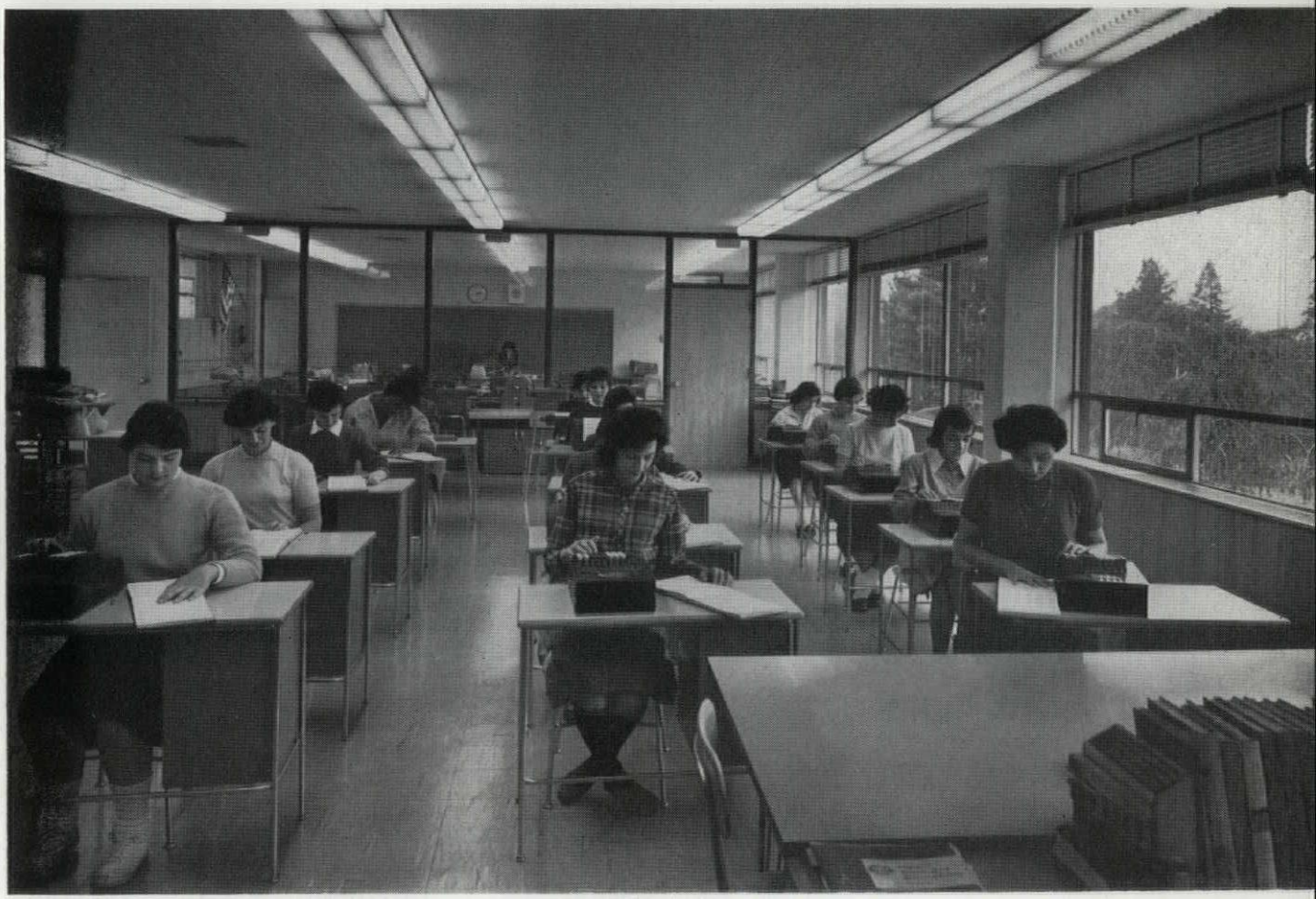
Chappaqua

The Tarrytowns

Hedrich-Blessing

With exception of the study alcoves that adjoin the classrooms at the Chappaqua school, the typical classrooms at the two schools are very similar, both in size and general organization. Rooms of both schools are off single-loaded corridors and are bilaterally lighted. In the Chappaqua school, glazing in wood frames on the corridor side extends from 2'-6" above the floor to the ceiling; coat lockers are provided in niches at either side of the corridors—at the ends of the study alcoves and in masonry niches in the exterior wall. At Tarrytown, in the three academic units—one of which contains the library and administrative offices—the single-loaded corridors provide bilateral classroom lighting by means of glazing that occurs above coat lockers to the ceiling. Teaching areas in both schools have acoustical-tile ceilings and fluorescent artificial lighting. Partitions in the Chappaqua school are either glass or wood stud, surfaced with birch veneer panels, while painted concrete block is the main partitioning at Tarrytown, with some glass partitions between closely related instruction areas. Acrosspage are the typing and secretarial practice rooms in the Chappaqua school *(top)* and general business education room at Tarrytown *(bottom)*.

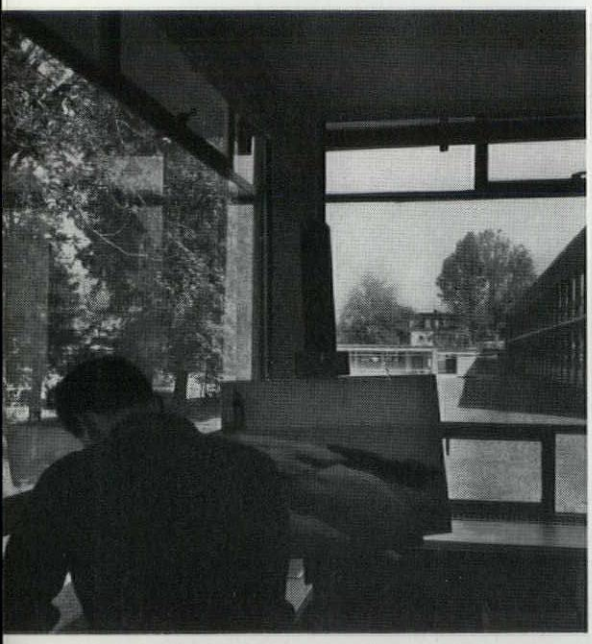




two high schools

At both the Chappaqua and Tarrytown schools, art instruction and home economics departments, and shops occupy buildings set somewhat apart from the academic units. At Chappaqua, the art department occupies the northwest corner of this multipurpose building; at Tarrytown, the space is on the upper level of a two-story building and overlooks the central courtyard of the school to the north. The school library at the Chappaqua school, a wing off the cafeteria building, is very prominently located and is, indeed, the only unit of the school to occupy a portion of the central-campus courtyard. At Tarrytown, the library occupies the northwest corner of the upper level of one of the three academic buildings. The heating of both schools is handled by a combination system using both steam and hot-water units.

Chappaqua

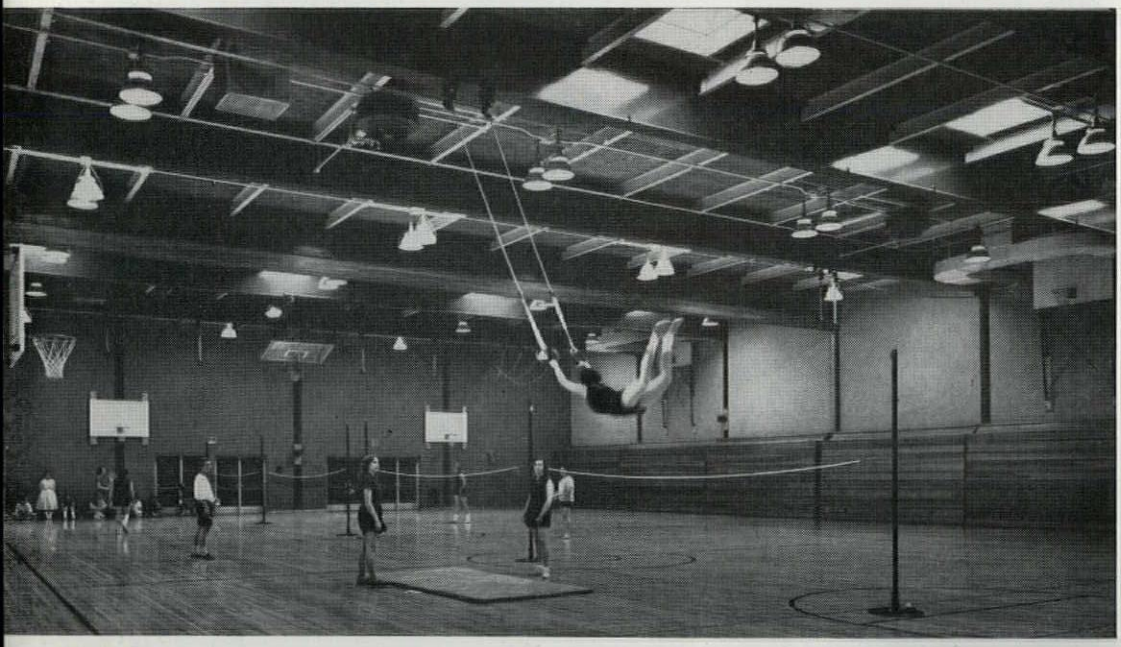


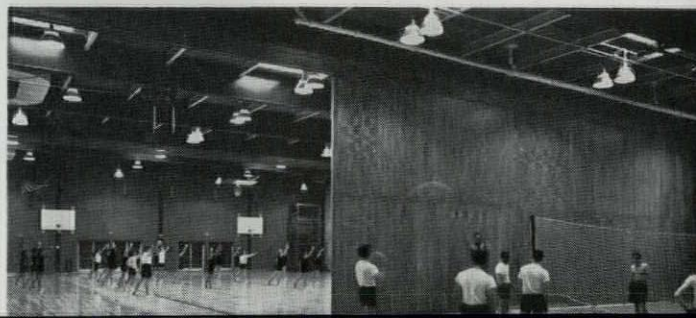
The Tarrytowns

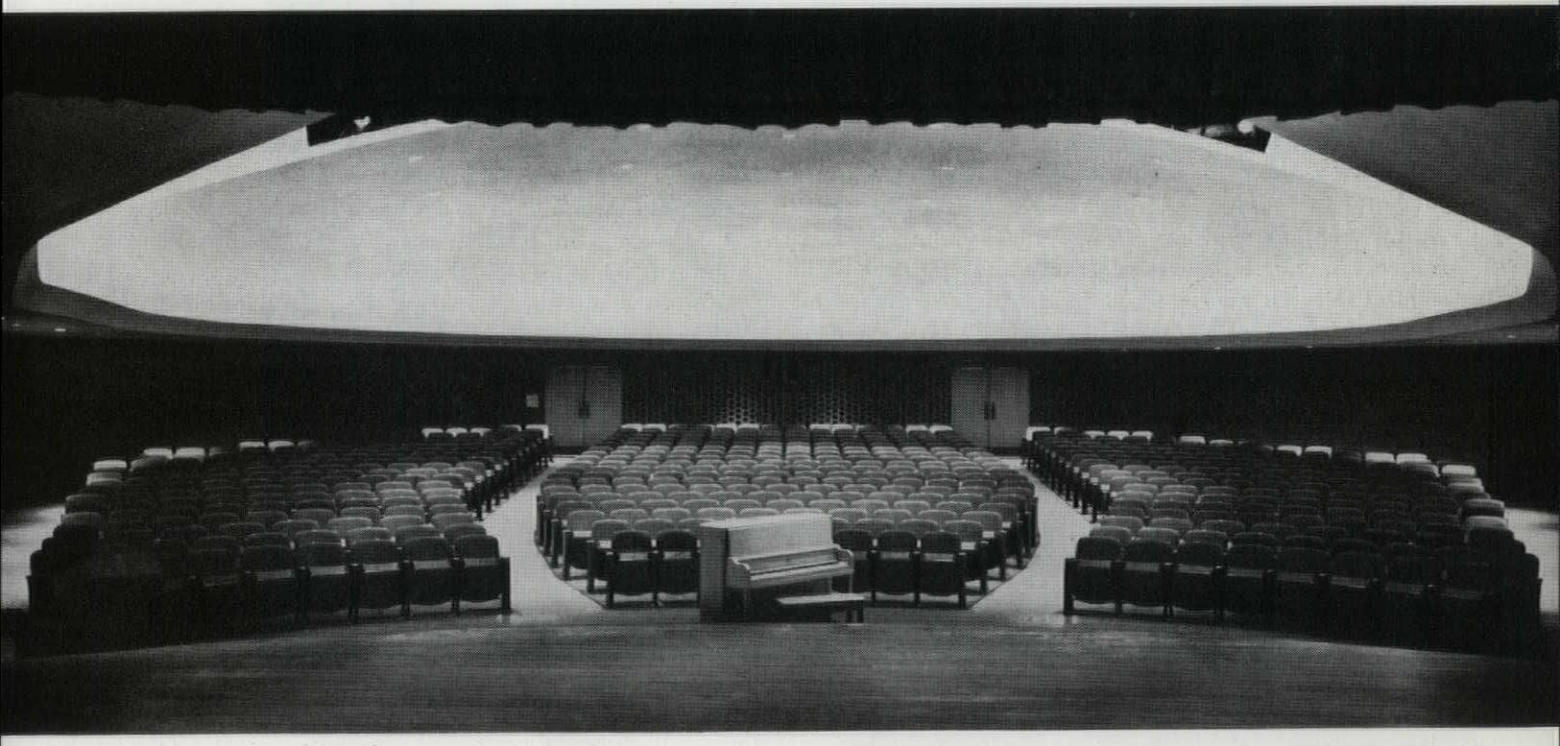
A sampling of general-use rooms at the two schools is shown here—the cafeteria and auditorium at Chappaqua; the gymnasium and auditorium at Tarrytown. In design of the Chappaqua auditorium, first assumptions were that a 400-capacity hall would be sufficient, assuming that students would go to assemblies in two shifts. However, the community needed something larger, and it was recommended that an auditorium with 700 seats be provided. This was finally resolved with a 574-seat auditorium. At the Tarrytown school, initial thinking was that an auditorium should be provided for the full student body of 1000—a provision that is seldom required unless community needs demand it. In this case, in another school there was a large auditorium; so this auditorium accommodates 600. In both schools the large gymnasiums are planned so that, by means of folding partitions, they may be divided into three separate practice courts or other exercise areas. As in so many other comparative respects, costs of the two schools were remarkably parallel. Cost per pupil for the Chappaqua school came to $2693; cost per pupil in the Tarrytowns: $2691.

Chappaqua

The Tarrytowns







modular co-ordination research for schools*

It is generally conceded that worthwhile architecture is a direct product of the particular social character and technology of the times: and that, coincident with this concept beauty and imagination, as well as esthetics and utility, or function, are best served by the technical aids advanced by this technology.

A fundamental element of this technique today is the modular-co-ordination complex. Extension of this correlated system of modulation is inevitable. Failure to pursue and exploit this possibility would be to deny architecture a great technique of its day and of the foreseeable future. Failure to extend the usefulness of a co-ordinated system of dimensional reference, in an ever-increasing mechanized environment, would be to stultify the usefulness of industrial and technological advancements and limit the scope of design techniques in present-day architecture.

Tomorrow, the number and range of material components will be extended and innovated by the producer. It is mandatory that these building materials be carefully studied in collaboration between the architect or designer and the producer to insure their acceptability esthetically and functionally, and to insure that their range and variety correlates with a recognized system for dimensional co-ordination. This effort will exclude any tendency either to restrict design, result in sterility, or allow the production of a series of materials not fully co-ordinated.

Recognizing the import of such a workable, correlated modular system applicable to schoolhouse construction, the U. S. Office of Education and the Texas Education Agency are jointly sponsoring a co-operative research program to develop this system.

The U. S. Office of Education is providing most of the funds for this study. The Texas Education Agency is providing staff time and has engaged the Building Research Staff of Southwest Research Institute to furnish the architectural research services. A statewide Advisory Committee, composed of school administrators, schoolboard members, architects, engineers, contractors, material and component manufacturers and distributors, and insurance representatives, is assisting the Agency in formulating policies and directing the study. Special consultants in the fields of school architecture and education, selected on a nationwide basis, are assisting the research staff.

The objective of this Research Study is to achieve the development of a co-ordinated modular system for school building design and construction. This system must be applicable to the entire school-building program and must be of practical use at each step along the development of such a program. To accomplish this end, this system must allow for the wide variety of competitive materials and equipment components to be produced and selected for use interchangeably according to the architect's particular solution to the program. Therefore, this study emphatically must not seek to develop a program of prefabricated or standardized school buildings, nor must it seek to accomplish the product design necessary for component manufacture.

It must, however, develop a co-ordinated modular system utilizing a series of tools or means which, when employed by the various individuals or groups responsible for the school-building program, will assist in the creation of the desired space for the school environment. This co-ordinated modular system is envisioned as comprising dimensional frames of reference correlated by number patterns, etc., appropriate for use by the educators and administrators, the architect and his staff, the fabricators of material parts and components, and the contractor's construction personnel.

Modular co-ordination is broad in concept. It touches all phases of the architectural solution. Space planning and building design can be modulated according to the requirements of a specific educational program. Architectural design and detailing can be modulated during the development of appropriate esthetic and functional solutions which meet the criteria for each particular educational environment. The forming and fashioning of material parts and components can be modulated to accommodate the architectural requirements of design and assembly. It is paramount, then, that in order to attain true modulation and to achieve modular co-ordination, the various aspects of an architectural solution (design, fabrication, and installation) must be compatible with the modulation system devised. All elements of the modular system must be dimensionally sympathetic and commensurable with each other and with the whole.

To explain further the term "co-ordinated modular system" or the "dimensional reference correlations," it would be well to indicate an analogy. Perhaps the field of music offers this, where the frames of reference are the scales with the notes, chords, etc., as components. The composer within these established frames and with the range of components translates his design concepts, which suit the program, into a completed composition. The variations and combinations are limitless. The scale and key or its numerical relationship pattern of the musical complex have in no way hampered or restricted the development of compositions. In fact, the condition is quite the reverse. By a simplification of the means, the composer is able to devote his full efforts toward the solution of the problem, the final composition, rather than having to divide his efforts or attenuate in the interest of more wearisome tasks.

Such is the case in architecture. The establishment of co-ordinated dimensional reference systems does not in any way lead to standardization or design restriction in the end product, the building. On the contrary, it is the means

(Continued on page 194)

* *This bulletin, of special interest in connection with school design and construction, has been received from Southwest Research Institute, San Antonio, Tex.*

research report: glass/air-conditioning ratio

by M. J. Wilson*

Cooling loads of commercial office buildings today are measurably affected by orientation, by sun-shading devices, and by glass-to-wall ratios. As sun-shading devices are generally lacking and maximum use of costly urban sites usually limits orientation, glass-to-wall ratios are of prime importance.

Many large and attractive commercial office buildings have been erected during the past decade. Some of more recent design have large expanses of glass in which either the clear or the heat-absorbing type have been employed. Glass ratios in a few of the new modern buildings are in excess of 75 percent (glass exceeds 75 percent of wall area).

The air-conditioning sensible cooling load in a typical peripheral commercial office consists of four major components: *i.e.* (1) solar radiation, (2) transmission, (3) lights and other electrical equipment, and (4) people. Solar radiation and transmission are external sources of heat. Their effect on the cooling load varies, approximately, in direct ratio to the glass area.

Solar or direct radiation is the largest single heat gain to the office area, consequently, many methods for reducing the sun's radiant heat have been utilized. Specifically, various types of external shading devices, heat-absorbing glass sections, internal shading devices and combinations of these have been used to minimize this excessive heat gain.

This study indicates the effect of glass areas on the air-conditioning room sensible cooling load and, as a consequence, the change in first cost, operating cost, and over-all owning and operating costs.

Figures 1, 2, and 3 show a peripheral-area floor plan in a commercial office building with a bay dimension of 20′ x 17′ and a 9′6″ floor height. A typical peripheral office in this bay may be 10′ x 13′. This is the module size used in this study for comparison of the relative air-conditioning loads which result from changing glass areas. In all modules the glass section is assumed to be ¼″ thickness clear plate with inside venetian blinds, the internal lighting load at 3-w per sq ft, and the people density at 100 sq ft per person. The glass height in Figures 1, 2, and 3 is 5′. The stool height for these three modules is 2′6″. Glass ratio for Figure 1 is 24.5 percent, Figure 2—46.5 percent, and Figure 3—52.5 percent. The

* *Carrier Corporation, Syracuse, N. Y.*

Peripheral-area unit plans, from a typical commercial office building (below), *indicate walls—with varying percentages of glass—which have been studied for comparative air-conditioning loads.*

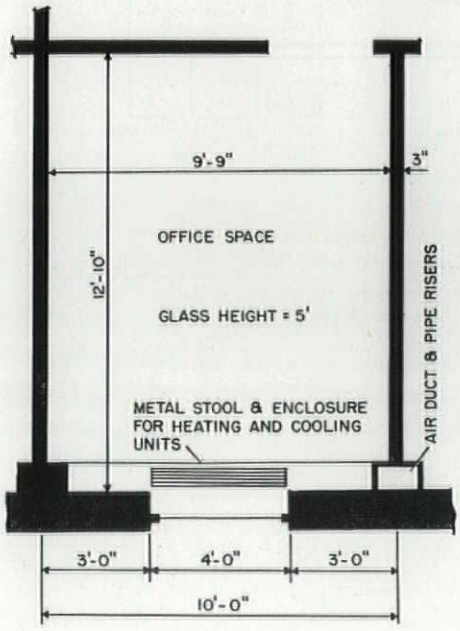


FIG. 1 OFFICE SPACE WITH 24.5 GLASS RATIO (%)

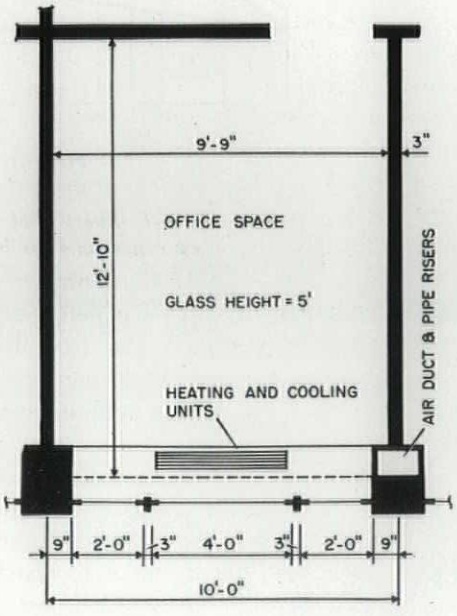


FIG. 2 OFFICE SPACE WITH 46.5 GLASS RATIO (%)

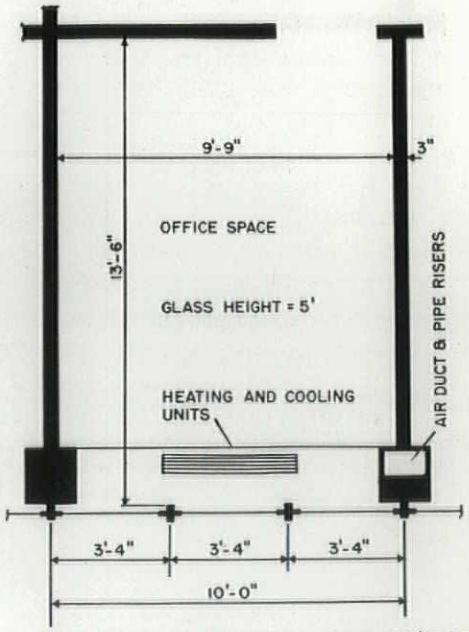


FIG. 3 OFFICE SPACE WITH 52.5 GLASS RATIO (%)

glass height in Figure 4 is 7′, and the stool height is 1′. The glass ratio in this module is 74 percent.

Chart 1 shows a breakdown of the air-conditioning sensible cooling load at design and also a summation of the components of this load. These values are for the modules shown in Figures 1, 2, 3, and 4, when oriented for a west exposure and at 4:00 p.m. of a design summer day in latitude 40 degrees north. It should be noted from this chart that the solar radiant heat and conducted, or transmitted, heat through the glass increases appreciably with increase in glass area. It is approximately 60 percent of the total sensible heat gain to the module shown in Figure 1 and approximately 80 percent of the total heat gain to the module shown in Figure 4.

The percent-glass ratio for the four modules is the abscissa on Chart 1. Intersection of the vertical glass ratio lines with the sloping lines showing the major components of the load will indicate the magnitude of each for the various office modules. These data have been tabulated in Table I.

An analysis of the data shown in Table I will indicate a ratio between Figures 1 and 4 for the solar-radiation component of the sensible load of approximately 300 percent: i.e., 15.1 to 45.8 (Column 3). For the office modules under consideration, the difference in over-all design room sensible load of offices similar to Figure 1 and Figure 4 is approximately 200 percent: i.e., 33 to 68 (Column 7). This means that an office similar to Figure 4 will require twice as much air if an "all-air" type system is used, or units of double the capacity if an "air-water" type system is installed.

Table II is a tabulation of the percentage change in first cost, operating cost,

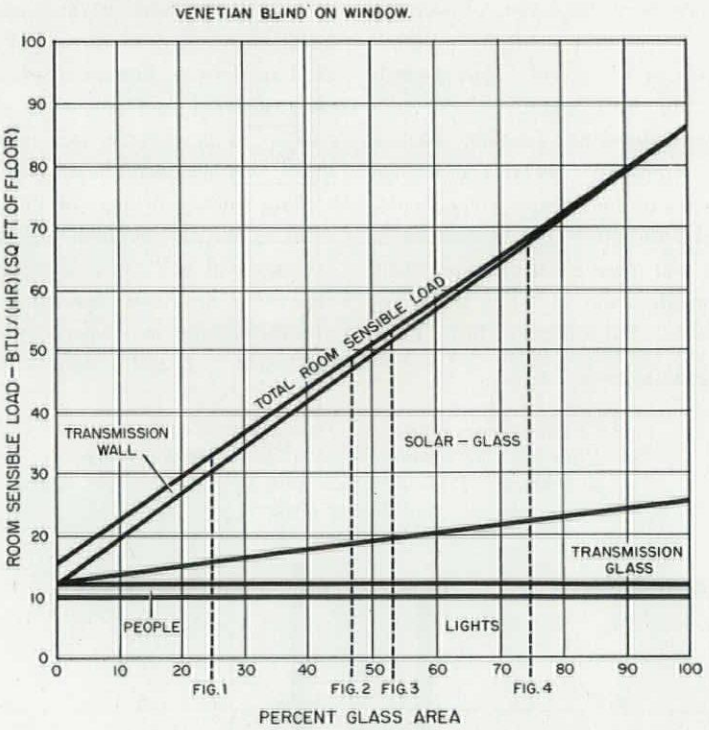


Chart 1—Room load vs. percent-glass area. West exposure, 40°N latitude, 4:00 p.m., 95 F dry bulb out and 75 F dry bulb in. Room dimensions: 15 deep, 9′9″ wide, 8′10″ high. White venetian blind on window.

Fourth wall condition for study of comparative air-conditioning loads (below).

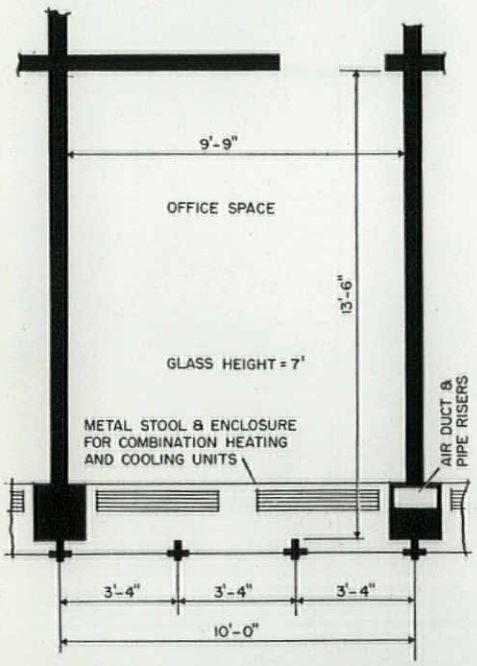


FIG. 4 OFFICE SPACE WITH 74.0 GLASS RATIO (%)

and total owning and operating costs with change in glass areas. Assuming the module shown in Figure 1 as the base (100 percent), then the first cost for an air-conditioning system for Figure 2 is approximately 13 percent more, for office areas as shown in Figure 3 approximately 17 percent more, and for a typical office as shown in Figure 4 with 74 percent glass area, approximately 33 percent more. These ratios are shown in Column 3. Operating costs increase appreciably as a result of the greater cooling requirements as shown in Column 4 of Table II. The significant figure is the percentage increase in owning and operating cost as shown in Column 5. Again, assuming module as shown in Figure 1 as the base (100 percent), the increase in owning and operating costs of air conditioning for an office as shown in Figure 2 is approximately 13 percent, for Figure 3 approximately 17 percent, and for an office having glass ratio of 74 percent, as shown in Figure 4, approximately 30 percent.

Table II also shows the approximate costs in dollars for installation of air conditioning (Column 6), the resultant fixed charges (Column 7), the operating cost (Column 8), and the total owning and operating cost (Column 9). These are average costs for metropolitan areas in the North. They are also the average cost for certain types of air-conditioning systems most often used in the large multistory, multiroom type building.

The study shows only the variation in the sensible cooling load which results from changes in glass area and for which there is a definite correlation. Such is not the case for heating, consequently the heating cost variation has been excluded. Specifically, the solar-radiation effect, which is the major variable, is substantially the same for latitudes 30 degrees

Table I

Type	Glass ratio (%)	Design cooling load Btu/hr/ft² (flr)					Design cooling capacity (room) (%)
		Solar	Trans.	Peo.	Lights	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fig. 1	24.5	15.1	6.0	1.7	10.2	33	100
Fig. 2	46.5	29.5	7.6	1.7	10.2	49	149
Fig. 3	52.5	33.0	8.1	1.7	10.2	53	153
Fig. 4	74.0	45.8	10.3	1.7	10.2	68	205

Table II

Type	Glass ratio (%)	First cost ratio (%)	Operating cost ratio (%)	Total owning and operating cost ratio (%)	First cost $	Fixed charges $	Operating cost $	Total owning and operating cost $
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Fig. 1	24.5	100	100	100	4.10	0.315	0.190	0.505
Fig. 2	46.5	113	112	113	4.65	0.360	0.213	0.573
Fig. 3	52.5	117	115	117	4.80	0.372	0.220	0.592
Fig. 4	74.0	133	126	130	5.45	0.420	0.240	0.660

north to 40 degrees north, or for the entire United States. Heating costs are more directly related to areas of the country or latitudes, hence for buildings of similar type and size, the cost variation between southern and northern latitudes is appreciable. It follows, therefore, that heating costs are affected to a considerable degree by the winter outside design temperature as well as glass area. Cost of heating for commercial office buildings of similar design may vary from a low of $\$0.03/ft^2/yr$ for the south, to $\$0.13/ft^2/yr$ for those in the northern section of the United States.

Chart 2 shows the variation in costs with changes in the design sensible cooling load (change in glass ratio) for an "air-water" system and an "all-air" system.

An "air-water" type system, basically, is one in which these two media are used for the extraction from, or the addition to, the conditioned space of both sensible and latent heat. An "all-air" type system is one in which only air is used to perform the above functions. More specifically, an "air-water" type system may be an induction unit system with the induction units located under the windows as shown in Figures 1 through 4, or a fan-unit system with supplementary primary air and the units similarly located. An "all-air" type system may be the double-duct type with air blender located under the window and the two air-supply ducts in riser chases in similar manner to that shown.

This chart shows the relative costs of these two basic systems. For example, the "all-air" type system will require more usable space or cubage for the air-treating assembly and for distribution to the conditioned areas. The operating costs will be higher at higher loadings (larger

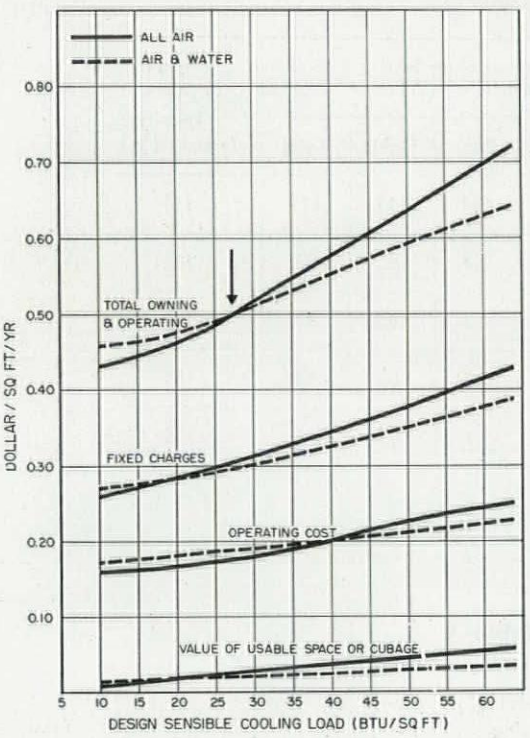


Chart 2—Total costs. Air-water and all-air systems vs. design room-cooling sensible load per sq ft.

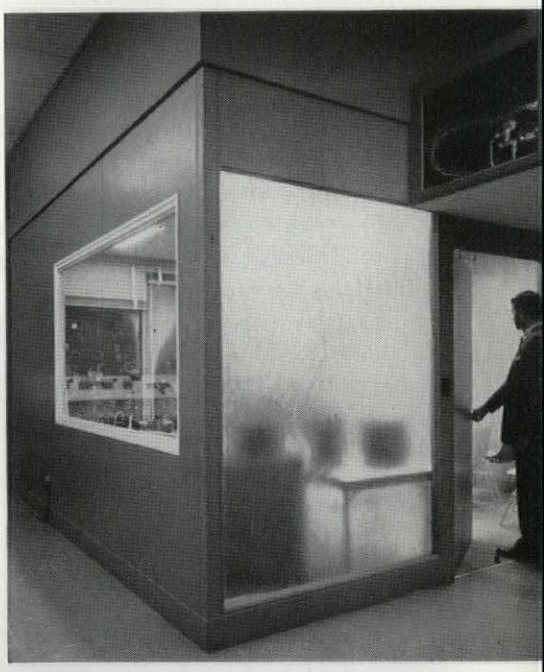
Smoke test in environmental room of laboratory, used for this study, shows downdraft from window on a typical cold winter day when there is no air conditioning (above). *Under conditions shown, cold air slides down inside window surface and across floor at speeds up to 100 ft/min.*

Effect of air conditioning on a cold winter day (acrosspage). *Air rising from modular air-conditioning unit mixes with cool air from window and flows toward ceiling as indicated. It then moves across ceiling and down opposite wall.*

glass areas), because of the large volumes of air required to absorb the sensible heat, and the fixed charges will be higher because of the greater initial investment.

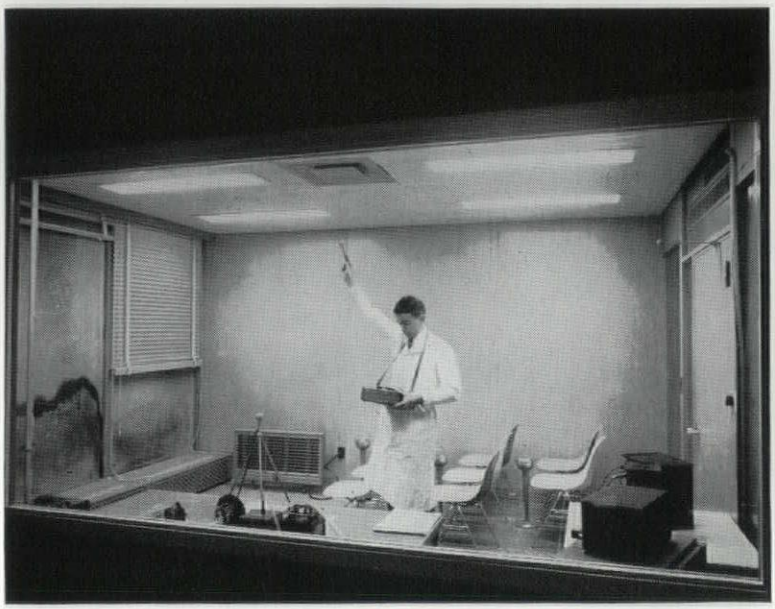
Total owning and operating cost data from Table II is an average for various types of systems, while data shown in chart 2 is for two specific types of air conditioning. The fixed charges, operating cost and over-all cost figures, therefore, are not exactly comparable. An office module similar to that of Figure 3, with a design sensible cooling load of 53 Btu/ft²/hr, will have a total owning cost of $.60 per sq ft per year with an "air-water" type system, and a total owning cost of $.65 per sq ft per year if an "all-air" type system is installed.

In summary, therefore, it may be stated that the larger the glass area, the greater the air-conditioning load and, as a consequence, the higher the first cost for air conditioning as well as the operating cost. Specifically, for the four modules as shown in Figures 1, 2, 3, and 4, the difference in owning and operating costs for the air-conditioning system, exclusive of heating costs, is approximately 30 percent.



Demonstration module has flexible sides and adjustable ceiling to duplicate rooms of commercial buildings, hotels, or hospitals. Six different central systems plus radiant heating can be compared.

Outside temperatures from 0 F to 120 F can be created and interior heat loads—caused by sun, lights, machines, and people—simulated. Effects of venetian blinds, draperies, or other ceiling arrangements on air distribution can be checked. Engineer observes velocity of air from overhead diffuser.



simplified dome design by Perry W. Etkes*

In today's technical literature, there exists very little about the practical mode of design for a spherical dome. For that reason, the author suggests in the following article a convenient method for rapid investigation and design of such domes.

Stability of a dome, briefly stated, depends on the equilibrium of the forces acting along the meridian and circle of latitude (or hoop). At any level, these meridian and latitude forces are proportional to the weight of the segment of shell, and any other load supported above this level *(Figure 1)*. The meridian stress, therefore, is maximum at the support and zero at the crown; hence, there is no thrust at the crown and it may be removed without disturbing stability in any way. In a dome, it is the upper part that tends to fall in and the lower part to thrust out. Where this change in forces takes place is denoted as the point of contraflexture. In spherical domes, there are no moments to resist and the existing compressive stresses are so small, comparatively, that thin shells may be employed—especially with high-strength concrete—to produce a lightweight dome. The point of contraflexture in a spherical dome of uniform shell thickness on the meridian makes an angle of 51°48′ with the axis. However, if there is a load on the crown, or if the shell thickness varies, this angle will change—as illustrated in the following examples.

In this design analysis, the following formulas—based on sound theory—will be employed for forces at any point on the meridians, or surface of the dome *(Figure 2)*. To simplify the formulas, coefficients are introduced and tabulated for values of angles most likely to be checked *(see Table)*. For other angles, values may be interpolated and computed from the formulas.

formulas

A) For uniform shell thickness and no load on crown:

T = thrust along meridian,
H = thrust along circumference, r = radius, w = weight

$$T = w\ r \left[\frac{1-\cos\Phi}{\sin^2\Phi}\right] \quad \text{or} \quad T = w\ r\ K_1 \qquad (1)$$

$$H = w\ r \left[\frac{1-\cos\Phi-\cos^2\Phi}{1+\cos\Phi}\right] \quad \text{or} \quad H = w\ r\ K_2 \qquad (2)$$

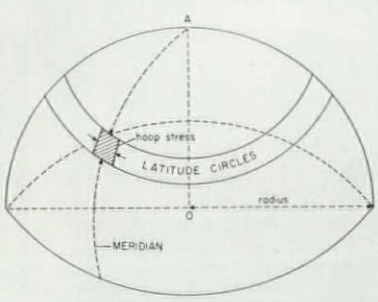


FIG. 1

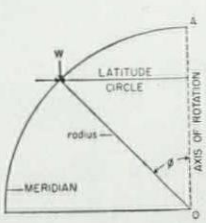


FIG. 2

B) For uniform shell thickness and with load (W) on crown:

$$T = \frac{W}{r}\left[\frac{1}{2\pi\sin^2\Phi}\right] \quad \text{or} \quad T = \frac{W}{r}K_3 \qquad (3)$$

$$H = \frac{W}{r}\left[\frac{1}{\pi}\cos\text{ec}^2\Phi\right] \quad \text{or} \quad H = \frac{W}{r}K_4 \qquad (4)$$

C) For shell of varying thickness:

w = weight at crown
w_1 = increase in w per radian as angle Φ increases

$$T = w\ r\left[\frac{1-\cos\Phi}{\sin^2\Phi}\right] + w_1\ r\left[\frac{\sin\Phi-\Phi\cos\Phi}{\sin^2\Phi}\right]$$
$$= w\ r\ K_5 + w_1\ r\ K_6 \qquad (5)$$

$$H = w\ r\left[\frac{1-\cos\Phi-\cos^2\Phi}{1+\cos\Phi}\right] + w_1\ r\left[\frac{\sin\Phi-\Phi\cos\Phi\ \ (1+\sin^2\Phi)}{\sin^2\Phi}\right]$$
$$= w\ r\ K_7 + w_1\ r\ K_8 \qquad (6)$$

examples

Note: These examples are presented only as a guide to the use of this method; actual design must take into account the strength of concrete and steel, as well as climatic conditions.

A) For uniform shell thickness and no load on crown:

Assume a radius of 50′, a thickness of 6″, and wind and snow load of 42 psf. To take care of temperature and shrinkage, the entire surface area is reinforced in both directions (0.18 percent of the cross-sectional area) in addition to the tension steel required. In this instance, the extra steel would amount to: 0.0018 x 6 x 12 = 0.13 sq in./ft.

w = 6 × 12 + 42 = 114 lb; since r = 50′, wr = 5700.

H and T are obtained by multiplying 5700 by the applicable coefficients *(from Table)*. Now, check for angles 25, 40, 75, and 90 degrees.

For 25°:

T = 5700 × 0.525 = 2993 lb/ft;
$\frac{2993}{6 \times 12}$ = 41.5 lb/sq in.

H = 5700 × −0.381 = −2172 lb/ft;
$\frac{2172}{72}$ = 30.4 lb/sq in. compression

For 40°:

T = 5700 × 0.566 = 3226 lb/ft;
$\frac{3226}{6 \times 12}$ = 44.8 lb/sq in.

H = 5700 × −0.20 = −1140 lb/ft;
$\frac{1140}{72}$ = 15.9 lb/sq in. compression

For 75°:

T = 5700 × 0.795 = 4532 lb/ft; $\frac{4532}{72}$ = 63 lb/sq in.

H = 5700 × 0.536 = 3055 lb/ft;
$\frac{3055}{72}$ = 42.5 lb/sq in. tension

*Consulting Engineer, New York, N. Y.

Table of Coefficients K for Spherical Dome Design

Angle Φ in degrees		0°	5°	10°	25°	40°	51°–48′	60°	75°	90°
Uniform shell thickness, no load on crown	K_1 for T	0.5	0.5	0.505	0.525	0.566	0.618	0.667	0.795	1.00
	K_2 for H	—0.5	—0.496	—0.48	—0.381	—0.20	0	+0.167	+0.536	+1.00
Load W on crown	K_3 & K_4 for T & H	Inf.	21.0	5.3	0.9	0.38	0.26	0.21	0.175	0.16
Varying shell thickness no load on crown	K_5 for T	0.5	0.5	0.505	0.525	0.566	—	0.667	0.795	1.00
	K_6	0	0	0.055	0.148	0.25	—	0.455	0.672	1.00
	K_7 for H	—0.5	—0.496	—0.48	—0.381	—0.20	—	+0.167	+0.536	+1.0
	K_8	—0	—0.11	—0.13	—0.255	—0.30	—	—0.07	+0.335	+1.0

For 90°:

$T = 5700 \times 1.0 = 5700$ lb/ft; $\frac{5700}{72} = 79.2$ lb/sq in.

H in this case equals T = 79.2 lb/sq in.
tension at supports
Reinforcement required, 5700/18,000 = 0.316 sq in./ft.

B) For uniform shell thickness and load W on crown (in shape of lantern, for example):

Let W, less weight of shell over an area 10′ diameter, be 12 kips. The angle with the vertical axis made by the latitude circle of W is, for the dome in the previous example, $5/50 \times 180/\pi = 5°44'$.

At this point

$T = H = W/2\pi r \sin^2\Phi$

$= 12{,}000/2 \times 3.1416 \times 50 \times (0.0999)^2$

$= 3820$ lb/ft; $\frac{3820}{6 \times 12} = 53$ lb/sq in.

Now examine the points at levels made by angles 25, 75, and 90 degrees.

For 25°:

$T = H = \frac{12{,}000}{50} \times 0.9 = 216$ lb/ft

For 75°:

$T = H = \frac{12{,}000}{50} \times 0.175 = 42$ lb/ft

For 90°:

$T = H = \frac{12{,}000}{50} \times 0.16 = 38.4$ lb/ft

These additional load stresses are to be added to the stresses for the shell in the previous example with due care to kind of stress—above or below the point of contraflexture. Here it may be found by equating the H thrust to zero and solving for the angle. In this case it is 51°10′.

C) For varying shell thickness with no load on the crown:

Assume a hemispherical dome shell of 50′ radius varying in thickness from 2″ at crown to 6″ at support; weight of concrete 144 lb/cu ft. With allowance of 46 lb for snow and wind, w = 24 + 46 = 70 psf at crown; at support, 72 + 46 = 118 psf. Hence, $w_1 = \frac{118 - 70}{\frac{\pi}{2}}$

= 30.6 lb/radian.

For 25°:

$T = r\ (w\ K_5 + w_1 K_6) = 50\ (70 \times 0.525 + 30.6 \times 0.148)$
$= 2064$ lb/ft

At this level shell thickness = 2″ + 4 (25/90) = 3.11″

$H = w\ r\ K_7 + w_1\ r\ K_8$
$= 70 \times 50\ (-0.381) + 30.6 \times 50\ (-0.255)$
$= 1724$ lb/ft

The unit stresses for this level is:

$f_T = \frac{2064}{12 \times 3.11} = 55.3$ lb/sq in.;

$f_H = \frac{1724}{12 \times 3.11} = -46.2$ lb/sq in.

For 40°:

$T = 50\ (70 \times 0.566 + 30.6 \times 0.25) = 2364$ lb/ft
$H = 70 \times 50 \times -0.2 + 30.6 \times 50 \times -0.3$
$= 1159$ lb/ft compression

Shell thickness at this level = 2″ + 4 (40/90) = 3.78″

Unit stresses at this level:

$f_T = \frac{2364}{12 \times 3.78} = 52.2$ lb/sq in.

$f_H = \frac{1159}{12 \times 3.78} = 25.5$ lb/sq in.

For 75°:

$T = 50\ (70 \times 0.795 + 30.6 \times 0.672) = 3810$ lb/ft
$H = 70 \times 50 \times 0.536 + 50 \times 30.6 \times 0.335 = 2389$ lb/ft

Shell thickness at this level = 2″ + 4 (75/90) = 5.33″

Unit stresses at this level:

$f_T = \frac{3810}{12 \times 5.33} = 60$ lb/sq in.

$f_H = \frac{2389}{12 \times 5.33} = 37.2$ lb/sq in.

For 90°:

At this level the coefficients are equal to one and the thrust T equals the hoop tension H.

$T = H = 50 \times 70 + 30.6 \times 50 = 5030$ lb/ft

Shell thickness = 6″; unit stresses are:

$f_T = f_H = \frac{5030}{12 \times 6} = 69.9$ lb/sq in.

Required steel: $A_s = \frac{5030}{18{,}000} = 0.28$ sq in./ft for tension plus $0.0018 \times 6 \times 12 = 0.13$ sq in. for temperature and shrinkage.

Where there is to be an additional load W on the crown, in such a dome the computations will follow Example B, and stresses resulting from W added to the normal stresses.

pre-testing curtain-wall systems

by Jack A. Mozur and Eugene F. Coffman*

Since satisfactory performance of curtain walls is mandatory, advanced knowledge of how they will function during adverse weather is desirable. This discussion reveals the method one manufacturer developed to test complete wall and window assemblies under the most severe simulated climatic conditions.

Proper performance of metal curtain walls and windows under adverse weather conditions is regarded as mandatory not only by architects and engineers—but by fabricators as well.

To gain closer control over performance, our company has inaugurated new routines of pretesting, using a large test cell just completed in its Architectural Division plant. This cell is large enough to hold complete wall and window assemblies—rather than individual units only—under conditions similar to those that prevail after erection. Samples as large as 12′ wide and 17′4″ high, supported by anchorage as detailed for actual job conditions, can be tested.

The cell is constructed in two halves, with the sample assembly mounted between pressure and collection chambers. After mounting is completed, the halves are brought together and joined with an airtight seal. Air is introduced into the pressure chamber by a blower with capacity of 300 cu ft/min under 20 lb/ft² back pressure. A static loading of 100 lb/ft² can be achieved, or any intermediate loading.

* *General Manager and Chief, respectively, Research & Development, Architectural Division, Benson Mfg. Company.*

The pressure chamber is also equipped with a self-contained water system and spray-bar assemblies. Water can be sprayed on the test sample in a volume equivalent to many times that of the highest recorded rate of rainfall, or enough to produce an unbroken film of water over the entire test sample simultaneously.

Tests may also be set up in cycles, with air pressure and water delivery fluctuating to exceed gusty conditions of the most severe storms.

To maintain a controlled back pressure in the collection chamber, an assembly of five orifices is incorporated into the rear wall. Any one of these orifices, which range in diameter from ⅜″ to 2½″ can be made operational. The volume of air discharge has been established for each orifice under a complete set of values for air pressure in the collection chamber. This gives the amount of air forced through the test sample.

The instrument cabinet adjacent to the test cell is equipped with two inclined manometers, six vertical manometers, three micromanometers, and a mercury barometer (*Figure* 1). The lower inclined manometer is connected to both the pressure and collection chambers, and indicates directly the pressure differential. It is graduated by .2 lb/ft². This instrument is duplicated by micromanometers #1 and #2 (*left pair on counter, Figure* 1), mounted on a beam balance which shows 11½ grams for each .2 lb/ft². However, the capacity of the balance extends to a pressure differential equivalent to a gale of 50 mph. For greater values, the micromanometers must be disconnected and readings taken from the manometer above.

Within the range of its capacity, the scale can be set to balance at any desired pressure differential, and the damper on the blower adjusted until balance is achieved.

The upper inclined manometer indicates pressure in the collection chamber, on a scale graduated by .05 lb/ft². This manometer, in turn, is duplicated by micromanometer #3, which shows 2.8 grams for each .05 lb/ft². The sensitivity of this instrument is accurate to .0087 lb/ft², and it reads from .00174 to 3.5 lb/ft². For any value greater than 3.5, the micromanometer must be disconnected and readings taken from the manometer above.

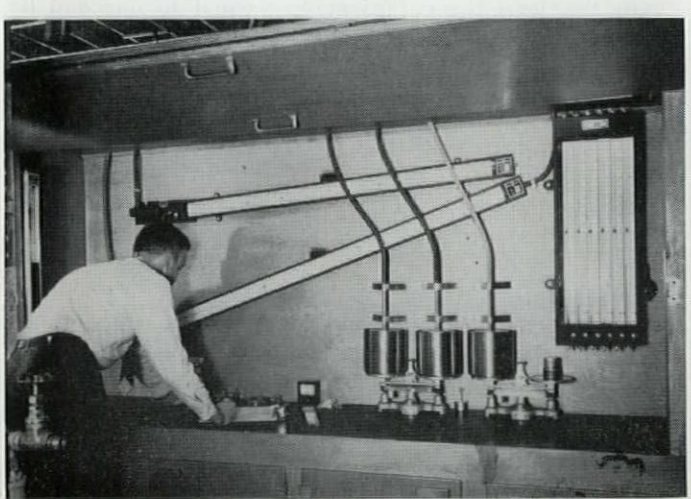


Figure 1—Instrument cabinet showing manometers and micromanometers. Micromanometers #1 and #2 (left pair on counter) are set to balance at a desired pressure differential between pressure and collection chambers in the test cell.

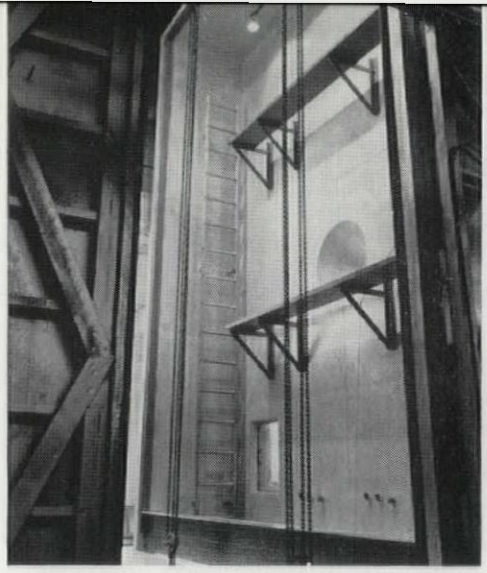


Figure 2—Interior of pressure chamber in test cell. Half of the cell has been moved to the left, to allow mounting of test sample. Samples up to 12′ wide and 17′4″ high can be accommodated. Note blower outlet in center of wall, and manhole below.

The six vertical manometers, which utilize a liquid lighter than water, have a range equivalent to 20″ of water, or 100 lb/ft². The first four instruments are connected to the upper and lower levels, respectively, of the pressure and collection chambers. By indicating uniform pressure throughout each chamber, they serve to check the absence of air leaks through the walls, and establish that test results are accurate. The last two vertical manometers indicate water level in the tanks in the test cells.

The mercury barometer gives station pressure at the location of the test cell.

On the other side of the instrument cabinet are two specially modified potentiometers. One is connected to six individual measuring circuits, equipped with transducers, which can be attached to the test sample. Horizontal deflection of the sample is indicated by .005″ graduations. The transducers can be equipped with suction cups, so as to show whether members return to normal position after air pressure is relieved. Deflection of glass as well as metal can be measured.

These transducers can also be used to measure expansion and contraction of wall members, and the movement between components.

The second modified potentiometer is connected to 30 measuring stations equipped with thermocouples. Ambient air temperature can be read in all parts of the pressure and collection chambers, at the blower, at the orifice—as well as the temperature of any part of the test sample.

Heating and refrigerating equipment is scheduled to be installed in the test cell in the immediate future. When this is operational, controlled temperatures of 0 F to 150 F may be produced in the pressure chamber, continuously or in cycle. It will then be possible to program additional tests for air infiltration due to temperature differentials, and for thermal conductivity in terms of relative U-factor.

Each test will simulate a climatic cycle appropriate to the locality where the curtain wall is to be installed. For example, tests specifications will be different for Houston and Minneapolis; for Boston and Los Angeles.

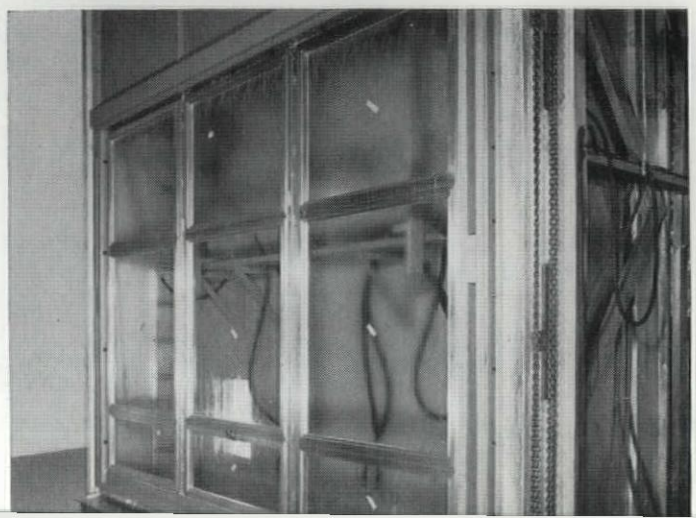
Walls of the test cell are specially constructed for insulating and airtight properties. Basic construction is plywood-panel/glass-fiber sandwich, strengthened by steel angles, and an inner lining of glass-fiber cloth treated with three coats of plastic seal, and one of vinyl base paint. An airtight seal between the two halves of the test cell is provided by a 4″ strip of closed-cell sponge rubber, running around the outside perimeter, and a series of clamps.

Manholes are provided in both chambers, for observation during a test, and for access after the cell has been joined and sealed *(Figure 2)*. Airtight panels in varying sizes are used to finish closing the partition between the pressure and collection chambers, when the test sample does not measure the full 12′x17′4″ of the space provided.

A smaller test cell has also been constructed adjacent to the large one, with a capacity for samples of up to nominal 4′ width and 6′ height. It is used to test smaller elements. Instruments in the instrument cabinet can be connected to either the large or small test cell.

By using these test cells, we believe that it is now possible to forecast accurately the performance of metal curtain-wall systems after erection, under any weather condition experienced in nature.

Figure 3—Test sample in position is subjected to simulated wind pressure and heavy rainfall. Airtight panels have been mounted to complete closing of space around the sample. In this photo, other half of test cell has been moved back. During actual test, the window surface shown would be inside the collection chamber.



specification data: stainless steel

by W. H. Withey*

Stainless steel is known to have superior qualities of strength and corrosion resistance. When designers take maximum advantage of these inherent properties—by using suggested "design tips" in the latter part of this article—this metal may be found economical, comparing favorably with other metals in final cost.

Stainless steel is a high-quality building material that need not be expensive. Architects familiar with the potentialities of this metal have found many ways to make the final cost comparable with other building materials of lesser quality.

For example, a wise selection of grades for a specific job will make considerable difference in the initial cost. There are three popular alloys in architectural use today—Type 301 (17 percent chromium, 7 percent nickel), Type 302 (18 percent Cr, 8 percent Ni), and Type 430 (17 percent Cr). The lower the alloying elements, the lower the cost. Right now, Type 430 sheets cost $225 a ton less than Type 302. Type 301 in strip widths of less than 24″ is considerably more economical than Type 302.

True, Type 302 is usually referred to as the "all-purpose" stainless steel, and it is suited to virtually all architectural uses. Yet, ordinarily, there is little to choose between it and less expensive Type 301 in appearance, durability, and ease of fabrication.

Nickel-free Type 430 stainless steel was first widely used in architectural applications during the Korean War years. A recent inspection of Type 430 installations in New York, Chicago, and at the Gateway Center buildings in Pittsburgh indicates that this material is performing satisfactorily. However, it should not be specified if there is to be welding on exposed surfaces. Even so, this minor limitation leaves many opportunities to use this relatively inexpensive metal.

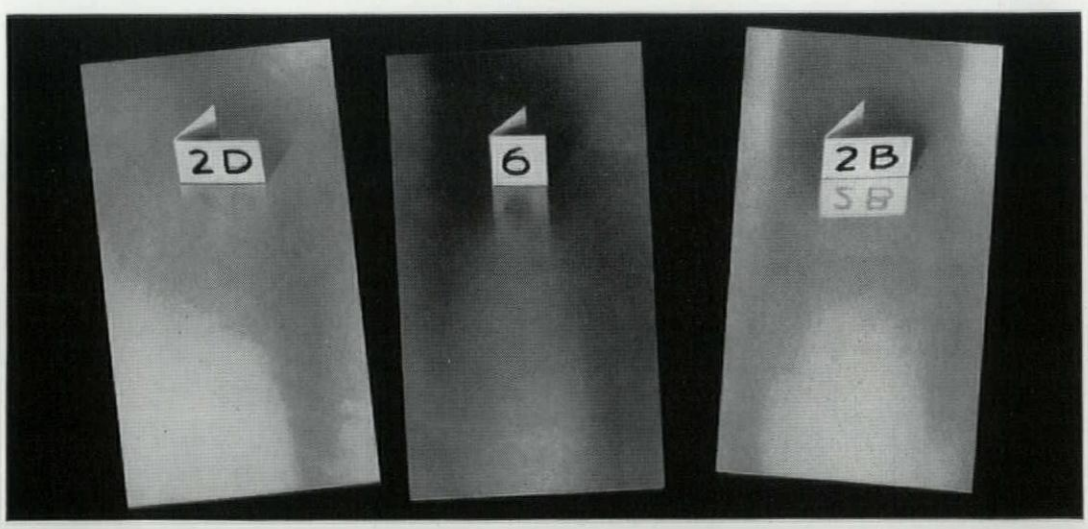
There are seven standard finishes for stainless steel. Some cost extra, others do not. For example, 2B and 2D are "as rolled" finished and carry no extra price. In addition, a variation of Finish 2D, known as 2D Special, was developed for use on New York's Socony-Mobil and Pittsburgh's Gateway Center buildings. It is regularly available at no extra cost. In curtain-wall construction, Finishes 2B and 2D are often used for flat surfaces because they are attractive and relatively nonreflecting. The 2D Special has a satin-like appearance; reflects a soft, diffused light; and is also recommended for large expanses of wall.

Finishes 3, 4, 6, and 7 are specially polished and progressively higher in cost. Trim for highlighting is most often specified in Finish 4. The other polishes are rarely used in architecture except for special effects.

At least two finishes developed by Armco Research Laboratories can be applied to stainless steel after fabrication. One of these is a black-mat finish achieved by immersion of the stainless steel in a molten bath of sodium dichromate heated to approximately 840 F. The procedure is simple and inexpensive. Known as Ebonizing, this black finish was developed during World War II to eliminate reflection from military equipment. It is color stable and outdoor exposure, or direct sunlight, will not fade it or alter its opacity. It was specified for mullion accents on the new CIT Financial Building in New York.

Another finish that can be applied to stainless steel for decorative effect is porcelain enamel. When applied only to parts of a patterned sheet, the brilliant hues of the porcelain-enamel coating stand out vividly against the luster of the stainless steel. Because stainless steel is an exceptionally strong material, one coat of porcelain enamel on only one side is practicable on sheets as thin as .025″. The full range of porcelain-enamel colors is available to the designer.

Still another process for adding color to stainless steel is called Permyron, recently developed by the Electro Metal-



* *Senior Construction Specialist, Armco Steel Corporation, Middletown, Ohio.*

lurgical Company and now being licensed to the trade. The process involves applying the proper paint pigment in a suitable vehicle to specially prepared surfaces by spray or roller coating, and processing under controlled conditions of temperature and atmosphere. Parts can be formed after coloring, without impairing their surfaces.

Stainless-steel sheets or strips will take patterns ranging from .005" to 1½" depth. Stamped or rolled patterns are available from established processors on either standard or special order.

Ribbed or fluted panels are produced in a wide variety of standard types, ranging from conventional corrugations to rectangular, V-shaped, or curved ribs.

Stainless steel is available from the mill in sheet, strip, bar, wire, and tubing. Flat-polished material is provided in sheets. Flat "as-rolled" finishes are supplied in either sheets or coils.

design tips

By utilizing design techniques that take advantage of its greater strength and corrosion resistance, many architects have found stainless steel economical to use. Here are just a few tips on getting the most for your client's architectural dollar:

1 Use the lightest gage possible. Stainless steel is an exceptionally strong metal. Texturing and laminating impart even greater strength and rigidity.

2 Try to design for standard sheet or strip widths to avoid scrap loss.

3 Try to design so that welds will be concealed. This eliminates finishing after welding.

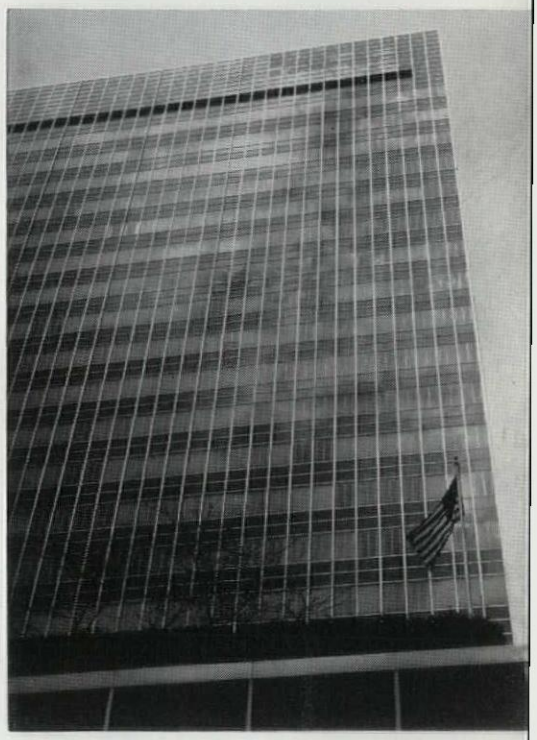
4 Avoid the more expensive polishes, unless they are essential for a particular effect. For most applications, the 2D Special is highly desirable and costs no extra for finish.

5 Wherever feasible, roll-forming from coils costs less than stamping or die-forming of sheets.

6 For such applications as large curtain-wall panels, consider laminating to a thin honeycomb of metal or specially treated paper. This permits use of a very light-gage stainless steel.

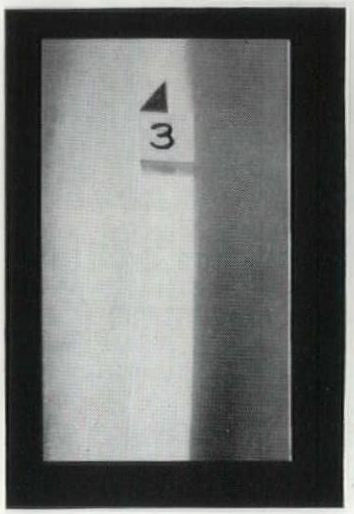
7 Many standard textures and patterns are available and generally cost less than special designs that require new dies.

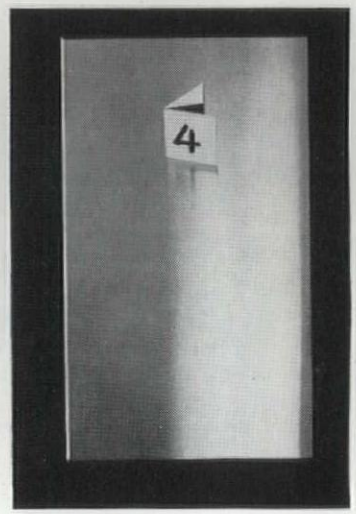
8 If panels are mechanically fastened, specify stainless-steel fasteners. This will eliminate unsightly rusting and bleeding on the stainless surfaces—another way to save the client's money on maintenance.

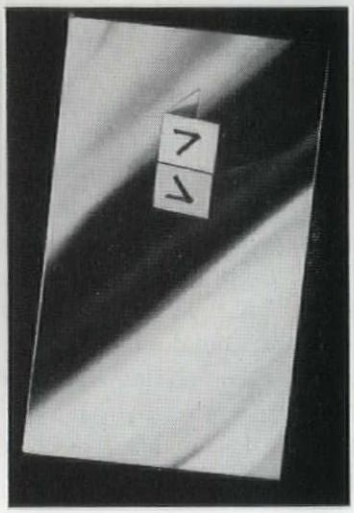


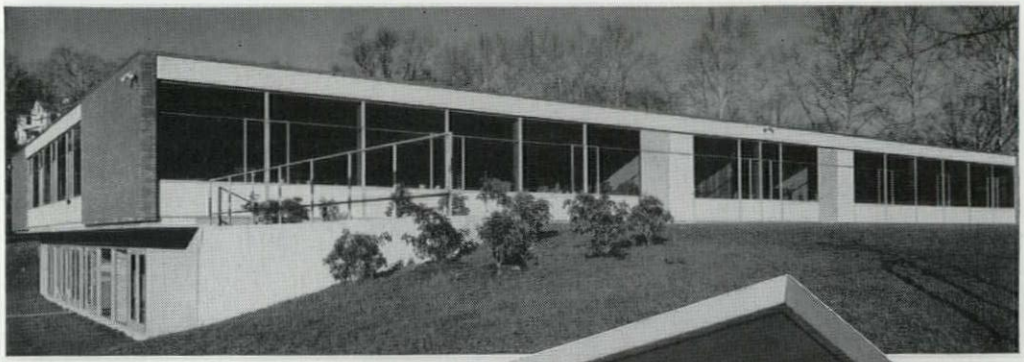
Numbered samples (acrosspage *and* left) *indicate different stainless-steel surface finishes.*

Stainless-steel mullion provide vertical accent for Lever House, New York (above), *now about seven years old. Little cleaning has been required for maintenance. Architect—Skidmore, Owings & Merrill.*









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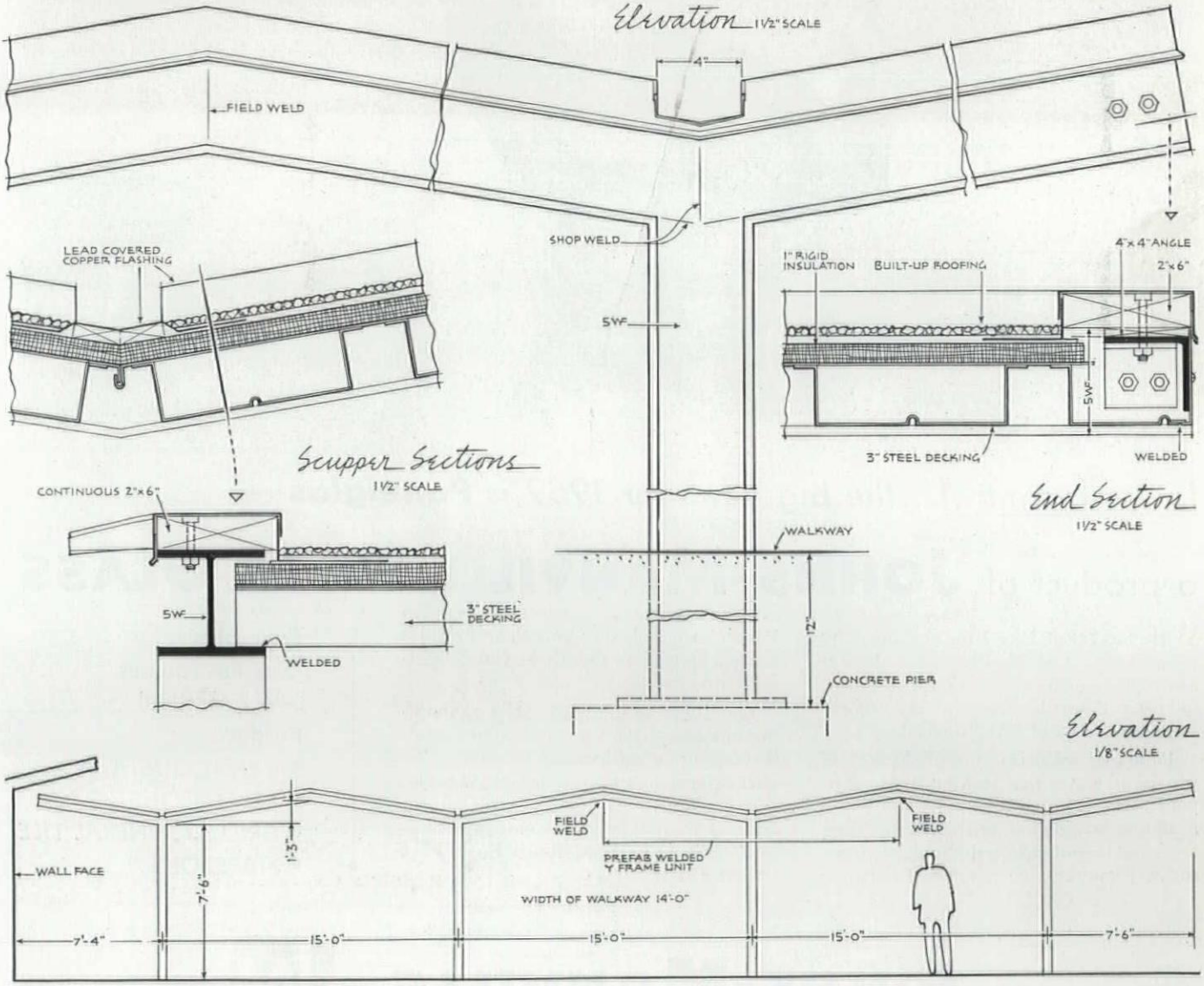
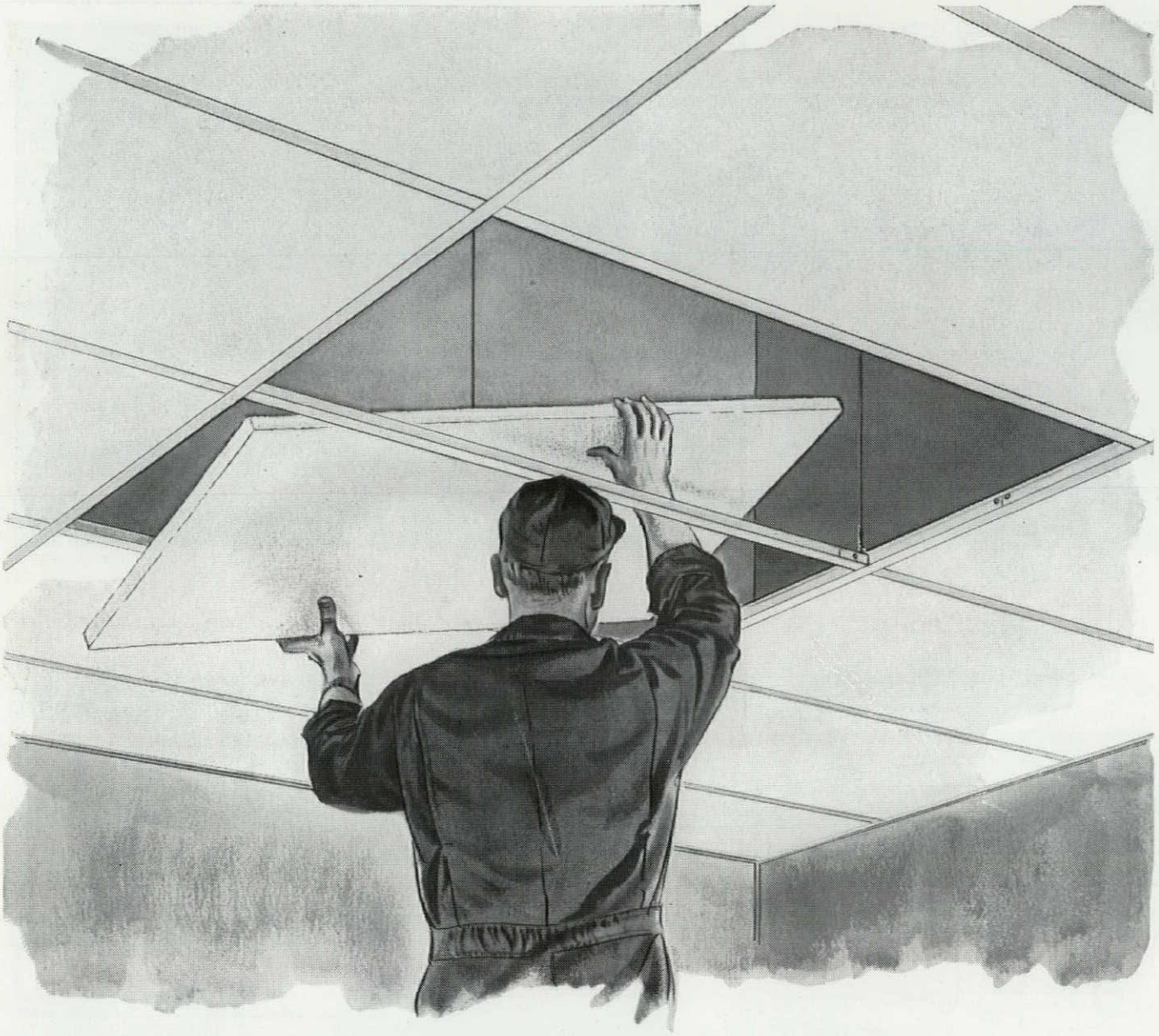
covered walkway

ALEXANDRE GEORGES



MORSE SCHOOL, Cambridge, Massachusettes
Carl Koch & Associates, Architects



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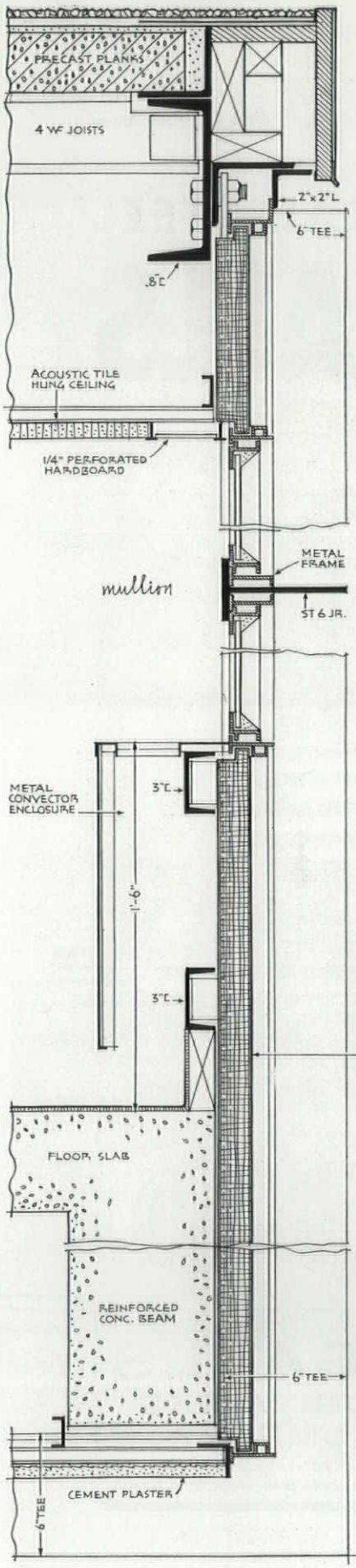
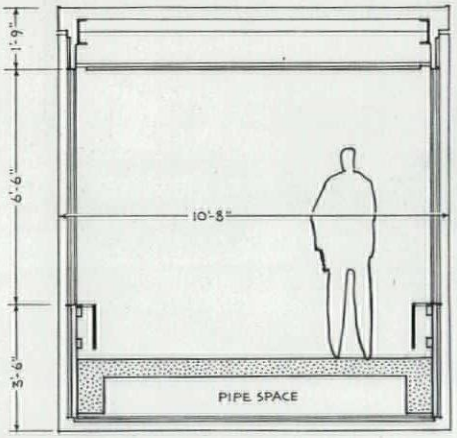
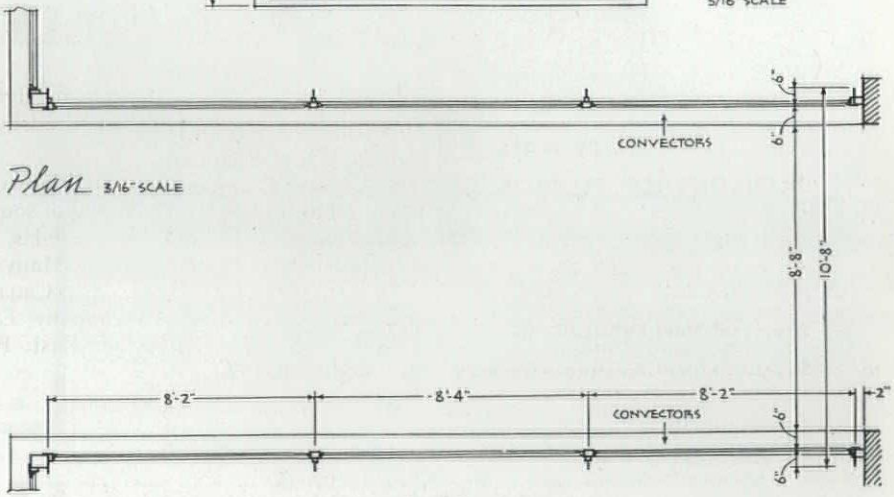


Wall Section
1½" SCALE



Section
3/16" SCALE



Plan 3/16" SCALE

HIGH SCHOOL, Tarrytown, New York
Perkins & Will, Architects

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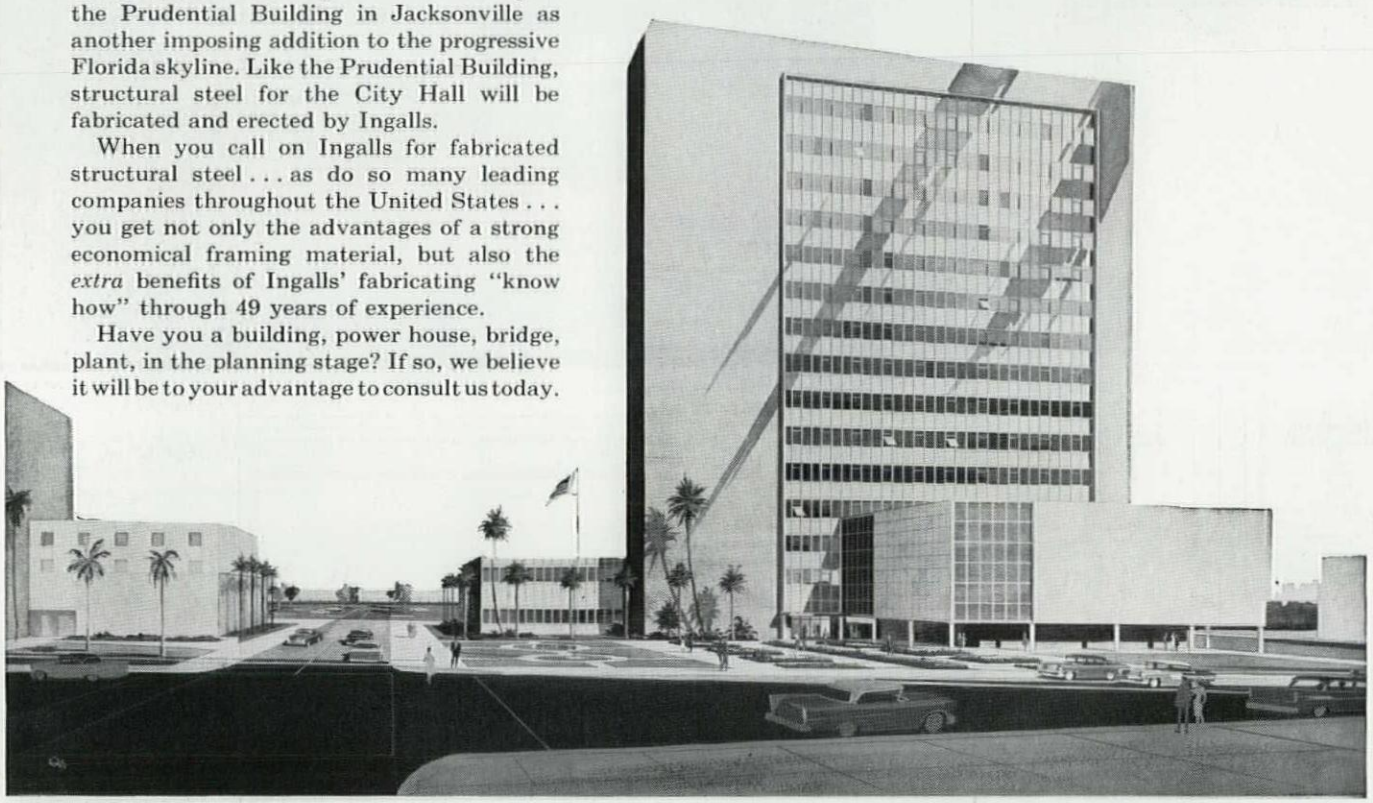

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Barbara J. Melnick

classrooms

Days of dreading school must surely be gone forever, as changes in educational policy and programs are reflected — and provided for — in today's well designed classrooms. Since classes participate in a wide variety of learning experiences (designed to foster the child's intellectual, physical, social, and emotional development), the classroom must be adaptable to many teaching situations.

The four classrooms we show are flexible, with excellent provisions for sundry activities: mobile furniture which may be arranged in many possible groupings for general class work or small committee projects; sinks and work counters for art work; storage space for materials and supplies; ample surfaces for the display of student work; equipment, space, and lighting for audio-visual work. In addition to satisfying these and other functional requirements—good lighting and acoustical conditions, materials which are economical and easily maintained—these classrooms are gay and cheerful places for learning. With simplicity and directness, furnishings are scaled to the child, an atmosphere of light and color is created. Neither institutional nor monotonous, these classrooms are instead lively, relaxed, and informal settings for active participation in learning — reflecting thought for the "whole child."

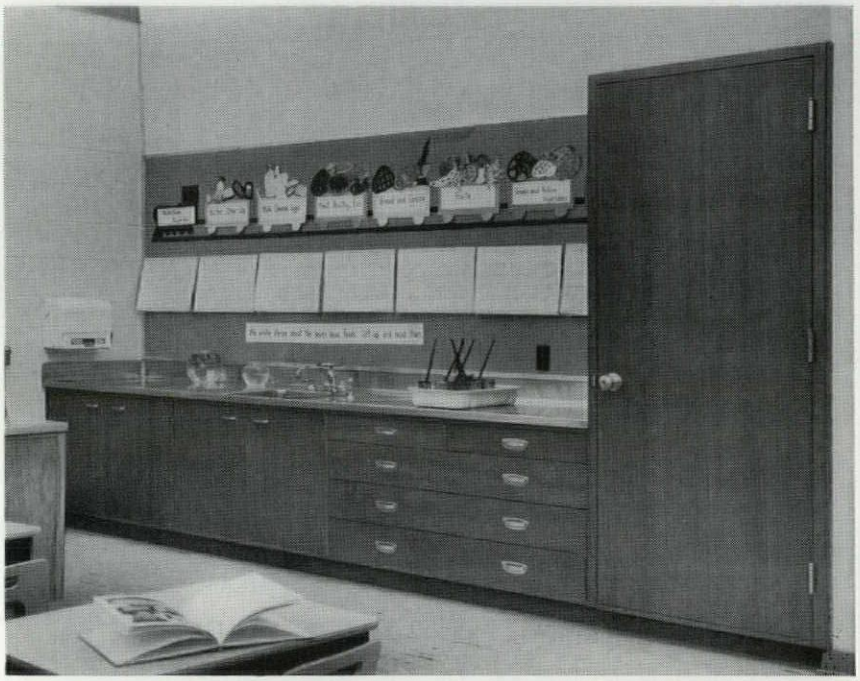
Architects Bassetti & Morse have designed a simple, square, fire-resistant room, practical for Grades One to Six because chalkboards and tackboards may be easily rearranged on wall-installed hook strips. An airy window wall and skylights, produced by simple roof modification, open the classroom to light. The steel ceiling deck is perforated for acoustical purposes. Clarity of detail shows in compact storage cabinet and teacher's closet, smoothly integrated with stainless-steel work counter and sink.

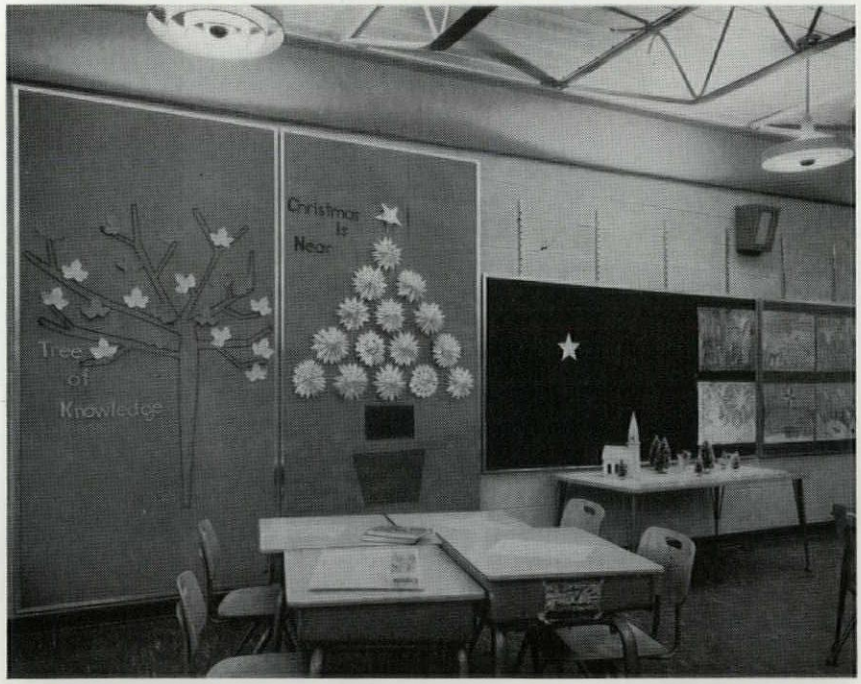
Architects Ketchum, Giná & Sharp have provided a large, completely self-contained classroom with bilateral daylighting. An inventive scheme for darkening the room for audio-visual work uses raised panels (that conceal coats when lowered and also serve as display surfaces) and, to cut light from opposite windows, a curtain in center of room. The curtain also divides room for special activities. Durable, economical surfaces which serve acoustical purposes: cement-block walls, corrugated-steel ceiling deck.

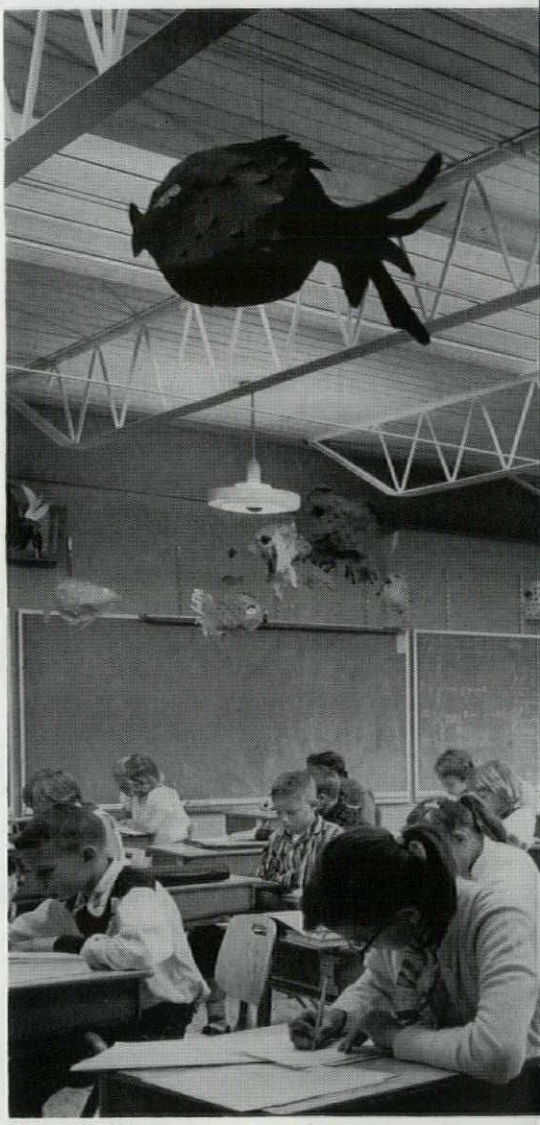
Architect William M. Van Fleet has achieved a relaxed kindergarten with residential scale. The room extends to a covered play deck and is daylighted by two window walls, rising from low sills which serve as shelf space. Spacious storage—with shelves for students' lunches, coats—doubles as a divider unit, separating the music alcove from other areas.

Architects Hardison, Clausen, Komatsu give their kindergarten bilateral lighting, though other classrooms (on double-loaded corridors) depend largely on artificial lighting. We see here flexible space, generous storage, thoughtful attention to light reflectance and pleasant colors.

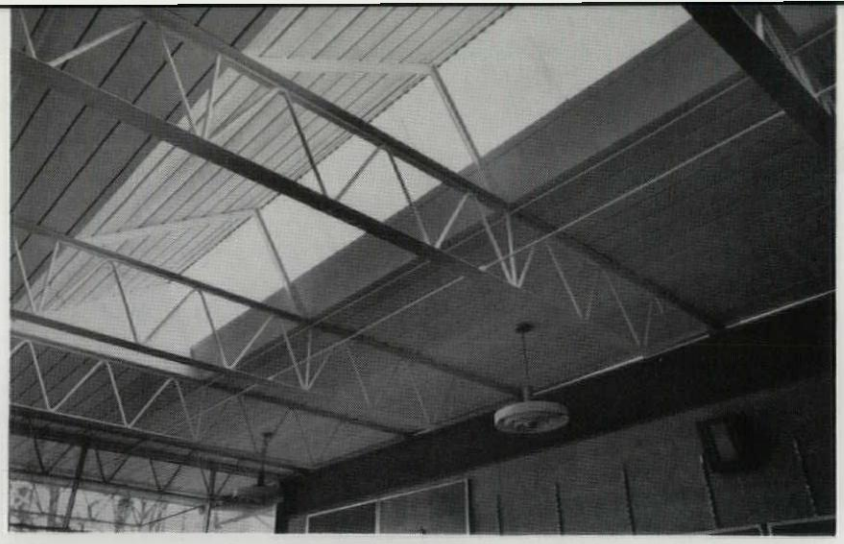
classrooms







Photos: Art Hupy



Design Theory: Simple, square classroom is adaptable to elementary grades, 1 to 6, because walls may be flexibly arranged: installed hookstrips permit all chalkboards, tackboards to be hung vertically or horizontally at any height. Sufficient on bright days, north light from skylights is supplemented with direct/indirect incandescent lighting. Shadowed north wall is used for black-and-white movies, slides, but is not dark enough for color definition.

Color Plan: Light, cheerful atmosphere results from white-painted, steel, ceiling deck; pale blues and greens in walls and flooring of west rooms; yellows in east rooms; pale-green chalkbards, tackboards.

data

cabinetwork

Storage Cabinet/Teacher Closet: vertical-grain fir/dark stain/stainless-steel counter, sink/architect-designed/custom-made.

doors, windows

Doors: birch/light stained/The Mengel Co., Fourth St. & Colorado Ave., Louisville 1, Ky.; United States Plywood Corp., 55 W. 44 St., New York, N.Y. **Windows:** aluminum sash/Tecler Aluminum Corp., 625 Yale Ave., N., Seattle 9, Wash.

furniture

Built-Ins: light-stained fir. **Movable:** red, blue cabinets/natural finish desks, chairs/Brunswick-Balke-Collender Co., School Equipment Div., 623 S. Wabash Ave., Chicago 5, Ill.

lighting

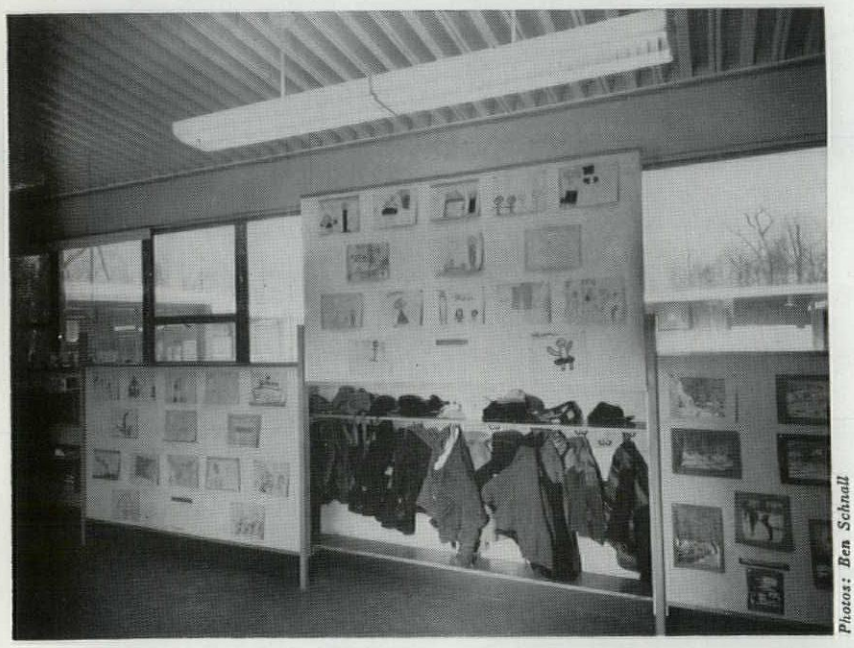
Skylights: corrugated plastic/sawtooth pattern/Filon Plastic Corp., 2051 E. Maple Ave., El Segundo, Calif. **Concentric-Ring Fixtures:** Smoot-Holman Co., Inglewood, Calif.

walls, ceiling, flooring

Walls: pumice block/painted pale blues, greens on west; yellow on east. **Chalkboards, Tackboards:** pale green/Claridge Products & Equipment, Inc., Harrison, Ark. **Ceiling:** steel-deck perforated for acoustics/painted white/Fenestra, Inc., 2250 E. Grand Blvd., Detroit, Mich. **Flooring:** asphalt tile/wall colors/Armstrong Cork Co., Lancaster, Pa.

client | School District No. 400
location | Mercer Island, Washington
architect | Bassetti & Morse

classrooms



Photos: Ben Schnall

Design Theory: Large, self-contained classroom is adaptable to general class work, small-group activities, audio-visual work, outdoor class work, and display of student work. Vertically sliding panels darken room for audio-visual work; conceal coats when lowered; provide display surface. During audio-visual work, curtain in center of room allows group activities to continue in other section. Economical acoustic qualities in ribbed-steel ceiling deck, block walls and bilateral daylighting are excellent features. Sink, fountain, toilet facilities save teaching time, minimize moving children, simplify supervision.

Color Plan: Three cement-block walls are painted warm, pale grey for light reflectance without eye strain; one wall is red, yellow, or blue for accent. White ceilings give maximum reflectance for natural and artificial light.

client | Board of Education, Waldwick, New Jersey
location | Waldwick, New Jersey
architect | Ketchum, Giná & Sharp

data

cabinetwork

Built-Ins: birch/natural finish/architect-designed/custom-made; stainless-steel sink, work counter/Elkay Mfg. Co., 1874 S. 54 Ave., Cicero, Ill. **Movable Cabinets:** Educators Mfg. Co., P.O. Box 1261, Tacoma, Wash.

doors, windows

Doors: birch/natural finish/United States Plywood Corp. **Window Panels:** vertically sliding/conceal coat storage or darken room for audio-visual work/Armorply/United States Plywood Corp.; tackboard surface/L. E. Carpenter & Co., Inc., 350 Fifth Ave., New York, N.Y.; architect-designed. **Room Divider/Darkening Device Curtain:** Novelty Scenic Studios, Inc., 432 E. 91 St., New York, N.Y.

furniture

All: Norcor Mfg. Co., Inc., Green Bay, Wis.

lighting

Fluorescent Fixtures: direct-indirect/4' rapid-start/ Pittsburgh Reflector Co., 450 Oliver Bldg., Pittsburgh, Pa.

walls, ceiling, flooring

Walls: cement block/painted gray and red, yellow, or blue. **Ceiling:** ribbed steel deck/H. H. Robertson Co., 2407 Farmers Bank Bldg., Pittsburgh, Pa.; painted white. **Flooring:** asphalt tile/light gray/Kentile, Inc., 58 Second Ave., Brooklyn 15, N.Y.

classrooms

client	Freshwater Elementary School District
location	Freshwater Corners, California
architect	William M. Van Fleet

Morley Baer

Design Theory: To achieve a relaxed kindergarten room which would be an effective background for drawings, exhibits, and the children themselves, region's natural redwood, slightly lightened, is used for all solid walls, except where burlap occurs above sink on east wall. Generous window walls—at north and facing covered play deck at west—open room to light. Architect-designed divider unit (left of photo) separates music alcove near windows from coat, lunch storage wall toward east. East wall has sink, additional storage units.

Color Plan: To minimize contrast, window-wall mullions, horizontals are painted white. Exposed beams, diagonal sheathing, divider unit are painted white to reflect light and set off natural wood walls. Light gray flooring, white are accented by black window sill, yellow operating sash, blue corridor door, touches of yellow, persimmon, blue in divider unit.

data

cabinetwork

Sink/Work Counter/Cabinet: birch/gray Formica top/Educators Mfg. Co. **Built-In Shelving/Coat Storage/Divider Unit:** Douglas fir plywood/bound/painted white, accents of yellow, persimmon, blue/architect-designed/custom-made.

doors, windows

Corridor Doors: wood/painted blue. **Window-Wall Mullions, Horizontals:** painted white. **Operating Sash:** painted yellow.

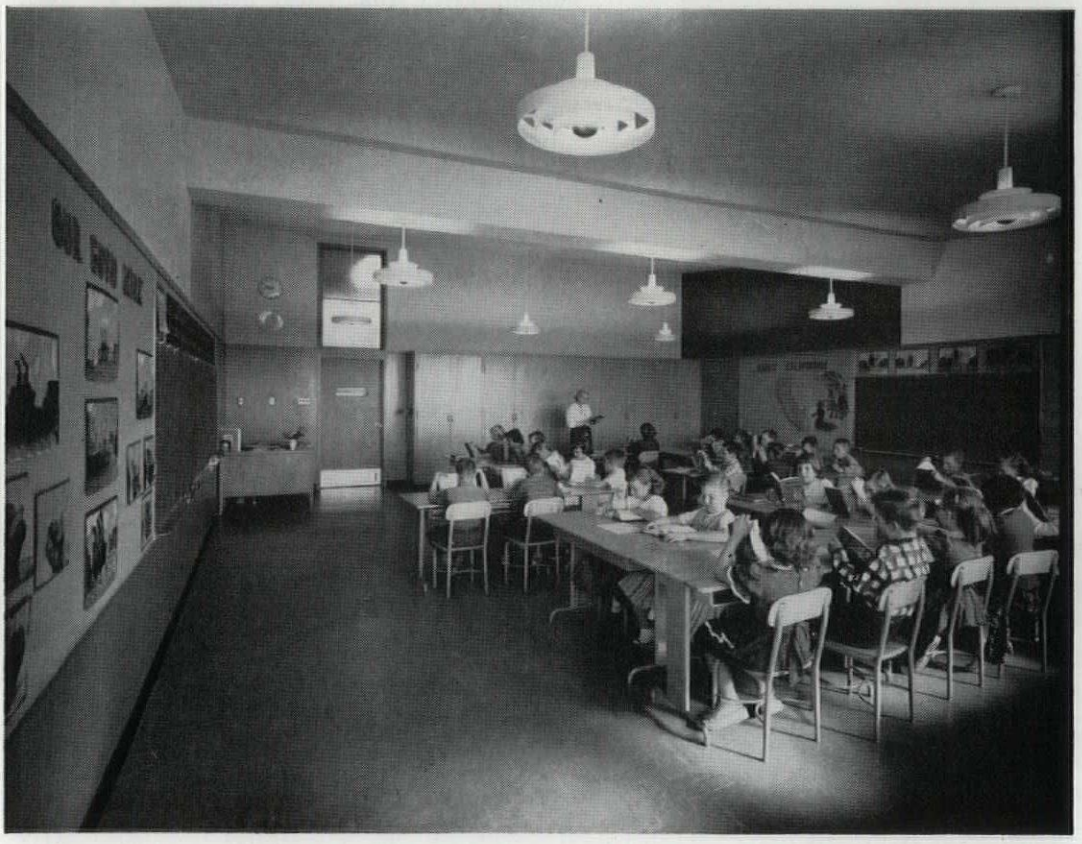
lighting

Concentric-Ring Fixtures: Smoot-Holman Co., Inglewood, Calif.

walls, ceiling, flooring

Walls: natural redwood/flush, vertical, shiplap/white rez wiped off/dull varnish/wax finish. **Wall Above Sink:** natural burlap over caneboard/Fabrikona/Chandler Mfg. Co., Inc., 100 Old Colony Ave., East Taunton, Mass. **Ceiling:** exposed Douglas fir/painted off-white. **Flooring:** asphalt tile/light gray/Travertine/Kentile, Inc.

Photos: Morley Baer



Design Theory: Kindergarten (top) has bilateral daylighting. Regular classrooms (bottom) on double-loaded corridors have single source of daylight. Generous storage facilities are all architect-designed.

Color Plan: High degree of light reflectance is provided by off-white walls, ceilings. Gray flooring and tackboards, green chalkboards, natural-finished wood combine with warm color accents on walls of north-facing rooms, cool colors in south-facing rooms.

data

cabinetwork

All: Douglas fir/stained ash/architect-designed/custom-made. **Window Counter:** vinyl top/terrazzo Corlon/yellow/Armstrong Cork Co.

doors, windows

Doors: birch/stained pecan/Pacific Manufacturing Co., Santa Clara, Calif. **Windows:** fixed glass and jalousies/Dennison Corp., Jalousie Div., 1890 N.E. 146 St., N. Miami, Fla. **Visual-Aid Curtains:** tan Tontine/E. I. du Pont de Nemours & Co., Inc., Fabric Div., Newburgh, N.Y.

furniture

Desks, Chairs: birch/Virco Mfg. Corp., 1355 Market St., San Francisco, Calif.

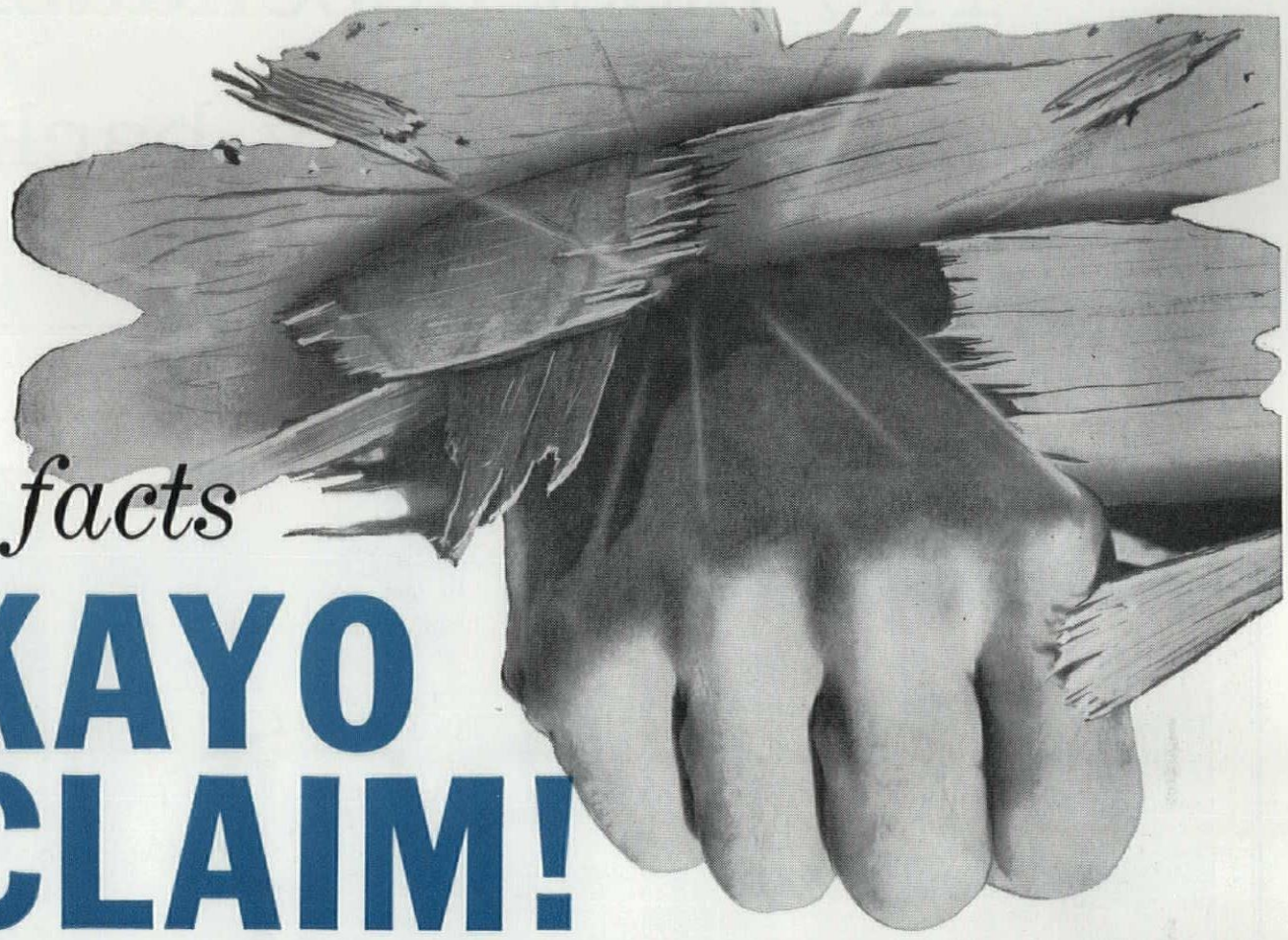
lighting

Concentric-Ring Fixtures: Prescolite Manufacturing Corp., 2229 Fourth St., Berkeley, Calif.

walls, ceiling, flooring

Walls, Ceiling: gypsum board/painted off-white/wall accents green, blue, red, or brown/Firestop/Bestwall Gypsum Co., Ardmore, Pa. **Ceiling:** white acoustical tile/random perforations/Cushiontone/Armstrong Cork Co. **Wainscot:** Douglas fir plywood/stained ash. **Tackboard:** gray cork/Gold Seal/Congoleum-Nairn, Inc., Kearny, N.J. **Chalkboard:** green/Weber - Costello Co., 12th & McKinley, Chicago Heights, Ill. **Flooring:** asphalt tile/gray/Kentile, Inc.

client | Richmond School District
location | Richmond, California
architect | Hardison, Clausen, Komatsu



facts

KAYO CLAIM!

A Single "All-Purpose" Vinyl Wall Covering Does Not Exist!

. . . glittering claims not withstanding! In fact, even though most practical needs are satisfied by a light and a heavy type vinyl wall covering, the industry distinguishes between three groups: light gauge such as FABRON*; medium gauge; and heavy gauge such as PERMON.

YOU CANNOT SUBSTITUTE ONE FOR ANOTHER WITHOUT WASTING MONEY!

- Don't use a medium-gauge where FABRON will do — it wastes money!
- Don't use a medium-gauge where PERMON is needed — it can't do the job!
- Don't let anyone tell you he has an "all-purpose" grade — its use will inevitably lead to dissatisfaction or loss!
- Do remember — FABRON and PERMON are the acknowledged leaders in their respective fields for performance, economy, long-lasting beauty, and vinyl content. They provide the highest abrasion resistance known — a positive proof of purity in vinyl, free of extenders or additives. Write for laboratory test reports . . . and compare!

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NEW! Low Cost
MEDIUM-GAUGE PERMON!
Outstanding performance for walls where top-to-bottom uniformity of decoration is desired.
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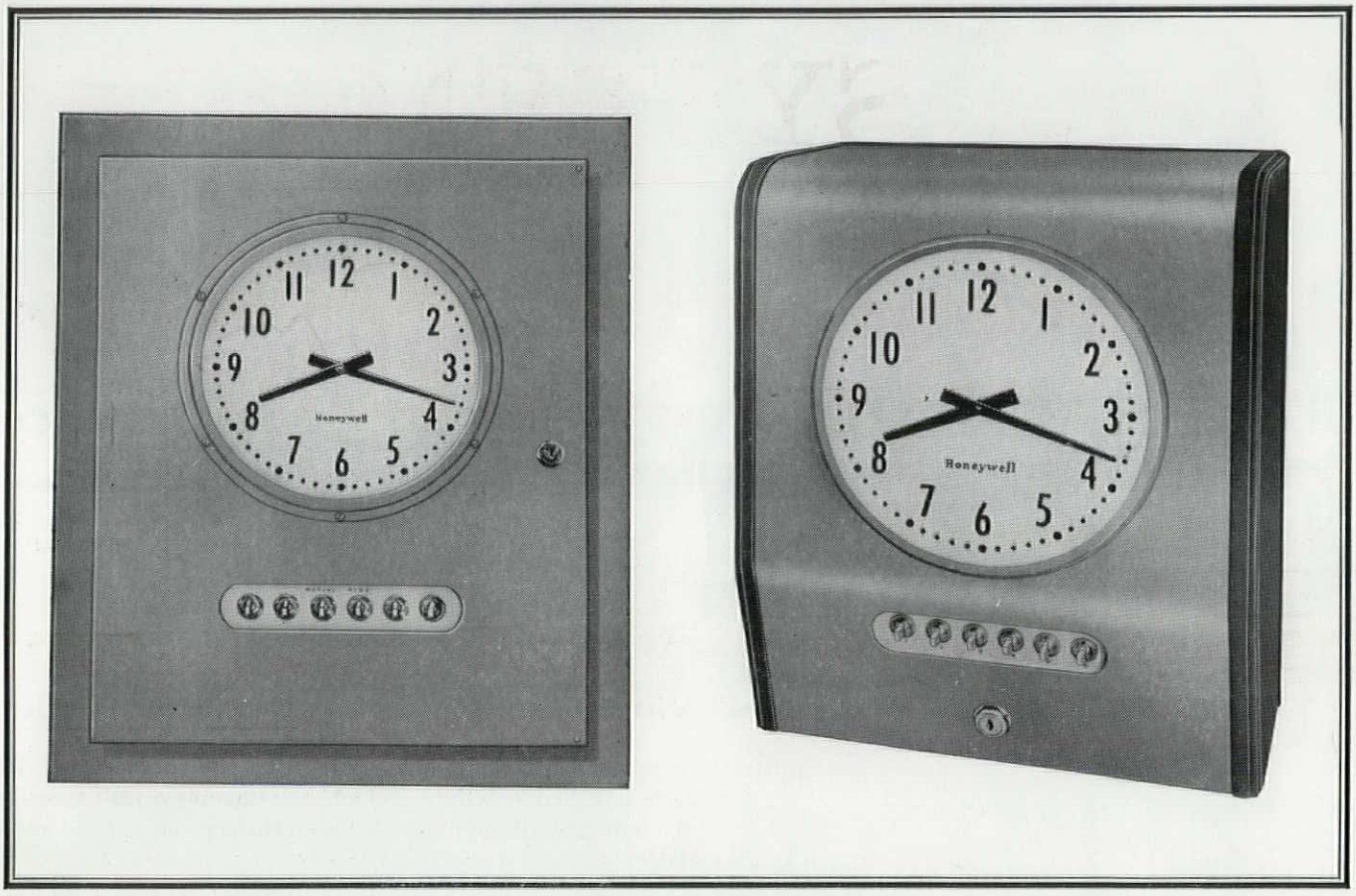
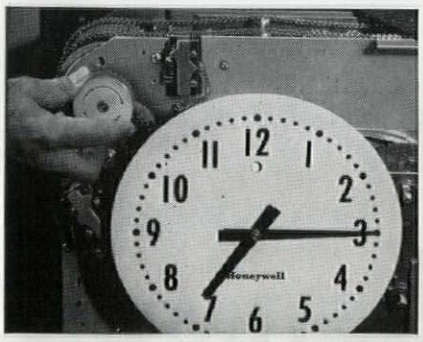
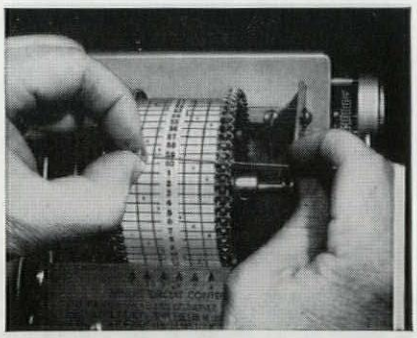
The most dependable ever offered now backs



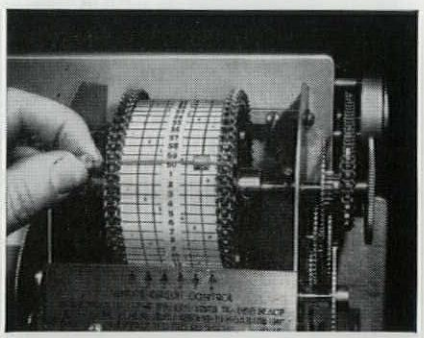
AS AN ADDED BENEFIT TO YOUR CLIENTS—CLOCKMASTER PROGRAMMING IS THE EASIEST TO SET:



1 The same setting wheel used for setting master clock to the correct time is used to set the programmer. Time and program bells are always in step with one another.



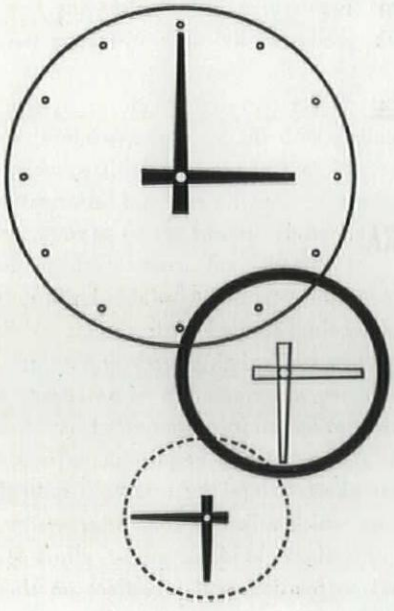
2 Then, simple, reusable steel pin is inserted in chain link opposite minute mark indicating time signal is to sound. Light section is day, dark section is night.



3 Reusable plastic roller slides onto pin, without special tools, to sound program-signal. Any signal can be changed without affecting any other part of program.

nationwide service up HONEYWELL'S CLOCKMASTER* SYSTEM

A Honeywell expert is always on hand, beginning with initial clock and programming planning . . . continuing through years of efficient, convenient service.



Honeywell sales engineers work closely with architects and engineers in planning a master time and programming system.

During installation, experienced Honeywell installation supervisors are present to answer any questions and check the finished job. Once the system is in operation, Honeywell's factory-trained men provide free service for one year. Then Honeywell offers a low-cost maintenance plan that includes regular inspections and prompt, efficient service by skilled men who are available immediately when needed from 112 Honeywell offices throughout the country. There is one in your area.

Handsomely-designed Honeywell clocks come in dial sizes of 9, 12, 15 or 18 inches. They may be flush or surface mounted. They're easy to install and have standard plug-and-socket connections.

For more information about Honeywell's Master Time and Programming Systems, call your nearest Honeywell office. Or write Minneapolis-Honeywell, Dept. PA-4-04, Minneapolis 8, Minnesota.

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H HONEYWELL First in Control

For specification details see Sweet's Architectural File 33b/Mi.

modular research

(Continued from page 162)

by which an educational program can be translated into an environment amenable to the program while easing many of the toilsome detail problems. The architect is therefore able to devote more effort to his design solution.

Thus, in architecture, and more specifically school architecture, the use of modulation is a method or system by which an orderly and efficient interrelation may be achieved dimensionally between the design of space, the fabrication of material components, and their assembly into a completed building without loss of design freedom or variety of materials.

The producers or manufacturers of these building materials are ever seeking to develop and provide the building industry with components which have a wide variety of use and meet acceptable requirements for such multiplicity of use. These fabricators have long sought guidance in the establishment of dimensional co-ordination and simplification in an attempt to offer a greater variety of materials for an ever-increasing number of uses. This fact is evident in their support of The Producers Council, Inc., and their individual industry segment associations which have been pursuing dimensional organization for many years.

This research project initiated in September, 1957, and scheduled for completion by June 30, 1960, comprises three major study areas:

1 Background investigation and data collection.
2 Development of the tentative modular system.
3 Evaluation and finalization of the co-ordinated modular system.

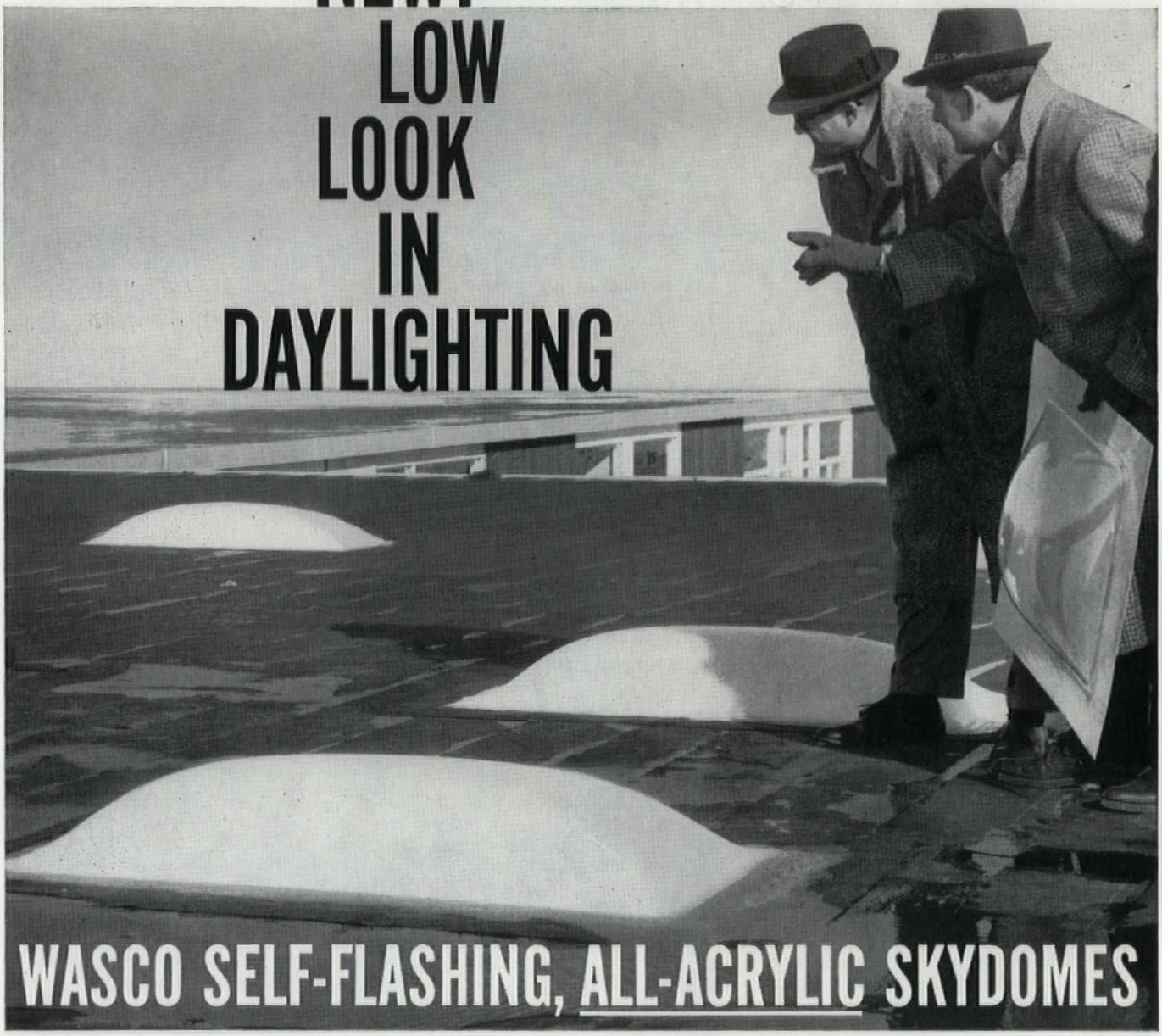
The early effort of collecting all available material on previous efforts, and the review and compilation of these data have been essentially completed by the research staff. The only remaining endeavor in this area is to review any new modular co-ordination work produced by others during the span of this project.

The development of the tentative modular system requires several studies dealing with the various aspects of this phase. Drawings for some 125 to 150 recently built schools are being examined with regard to the dimensional information of the various elements. This study should act as a guide and should indicate a variety of dimensional aspects which distinguish schools from other building types. Available building materials and components are being studied with regard to dimensions in an effort (1) to learn of existing sizes and ranges of sizes, and (2) to assist in the determination of variations necessary in order to develop a modular system that is unrestrictive. An analysis study of construction requirements is also a part of the development phase. Here the intention is to determine the assembly factors which affect the modular system.

In addition to the above studies, major effort is directed toward dimensional correlation and its effect on the subjects of design, proportion, scale, numbers, number patterns, grids, and grid relations. These are basic areas to which the theory of modular co-ordination must be applied. The research staff believes that there should be a firm understanding of the re-

(Continued on page 196)

NEW! LOW LOOK IN DAYLIGHTING



WASCO SELF-FLASHING, ALL-ACRYLIC SKYDOMES

New! Low silhouette

Wasco Self-Flashing Skydomes are shown installed on the partially completed roof of Natick, Mass. Jr. High School — designed by Boston architects Smith and Sellew. See how these units hug the roof, allow you to keep horizontal lines clean.

New! All-acrylic double dome

Acrylic lasts longer, weathers better, and is self-cleaning. Wasco Self-Flashing Skydomes are made by chemically welding the *acrylic* dome to a fiber-glass reinforced *acrylic* sheet.

New! Condensation eliminated

The factory-sealed double dome provides dead air insulation against heat losses and condensation. Tests show no condensation at temperatures as low as −20°F.

New! Low-cost installation

Wasco Self-Flashing Skydomes eliminate curbs. Reinforced flange can be nailed directly to roof. Then, roofing goes over flange, right up to the dome . . . positively sealing out wind and water.

Send for details, or see Sweet's Architectural File 20a/Wa.

WASCO
PRODUCTS, INC.
5 BAY STATE ROAD
CAMBRIDGE 38, MASS.

In Canada: Wasco Products (Canada) Ltd., Toronto 15

modular research

(Continued from page 194)

lation to each in addition to comprehending the values of their interrelation.

The last major portion of this research effort is the evaluation and finalization of the co-ordinated modular system. Although the specific method or form of presentation has not been developed, it is presently understood that information should be prepared for the architect, the manufacturer, and the contractor. These individuals or groups of individuals are the ones who will either accept or reject, in part or in total, the principles and practice of modular design, modular measure, and modular assembly according to the usefulness and applicability to each as implied by the system developed.

notices

new offices

WOODWARD, CLYDE, SHERARD & ASSOCIATES of Denver, Oakland, and Kansas City announce opening of three new branch offices: 3467 Kurtz St., San Diego, Calif., 98 Greenwood Ave., Montclair, N. J., and 680 Fifth Ave., New York, N. Y.

JERRY HAPPEK, Architect, 1941 Teall Ave., East Syracuse, N. Y.

WILLIAM C. HOLLAND, Architect, 1880 Shermer Rd., Northbrook, Ill.

CICCHELLI-HOWELL ASSOCIATES, for practice of architecture and interior design, 388 Benefit St., Providence 3, R. I.

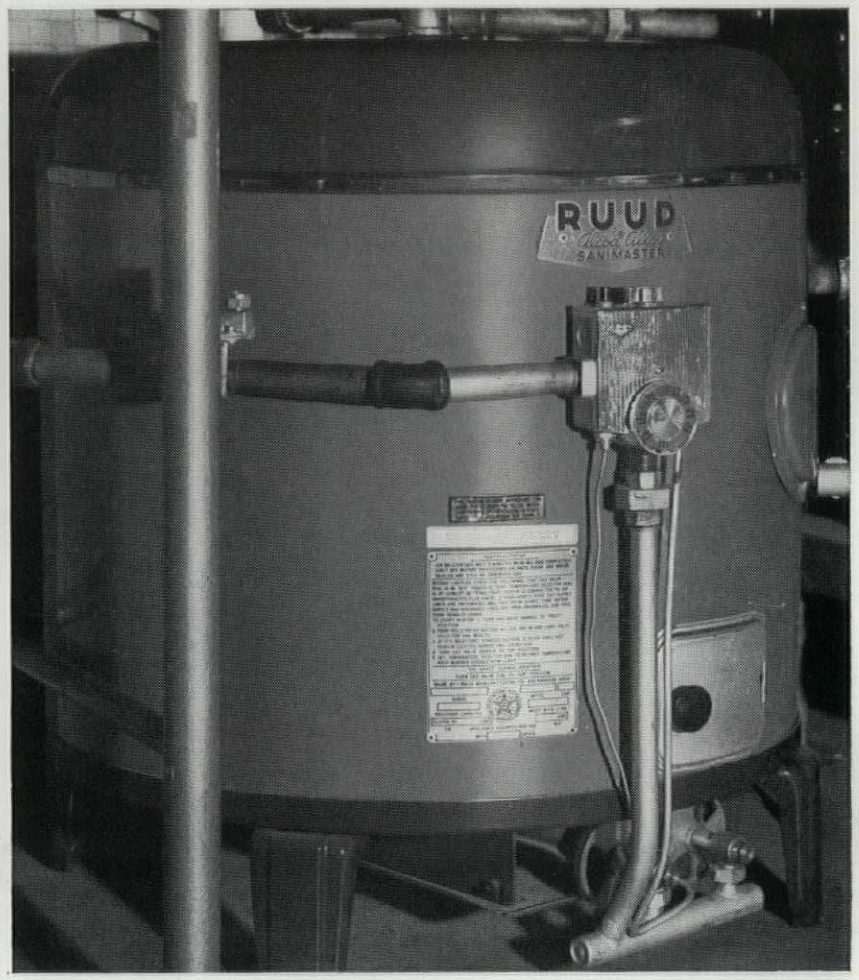
new partners, associates

SERGE P. PETROFF, Architect, now Director of Planning in New York branch of CHARLES LUCKMAN ASSOCIATES of Los Angeles and New York.

RAYMOND S. GRIFFITH, Architect, BRUCE WARNER, Architect, HAROLD C. DECKER, Architect, and FRANKLYN H. PAGE, JR., Draftsman, new staff members in Miami branch of RADER & ASSOCIATES, Congress Bldg., Miami, Fla.

ARTHUR A. TREUT, Industrial Designer, now with firm of FRANK M. VALDE, Architects-Engineers, 1818 San Pedro Ave., San Antonio, Tex.

COMPACT WATER HEATER WITH ALCOA ALUMINUM SAVES SPACE IN NEW SCHOOL BUILDING



Plumbing Contractor: Ekstrom Plumbing and Heating Sales, Galesburg, Ill.

A single Alcoa alloy gas water heater so compact that it fits snugly under a drying table meets all the hot water needs for the kitchen of the new Immaculate Heart of Mary School in Galesburg, Illinois.

The new Ruud-Alcoa unit keeps a constant supply of 180° water always on tap for the heavily used dishwasher. Although 30,000 meals have been served by the kitchen since the installation of the unit in October, 1957, no maintenance or repairs have ever been necessary.

Compact Alcoa alloy water heaters are an economical answer for schools, institutions and other applications where space requirements are tight. The aluminum alloy tank is strong, solid and corrosion resistant for longer life and complete freedom from water discoloration. High thermal conductivity assures rapid recovery rate and low-cost operation. Specially designed units meet American Gas Association Laboratories' requirements and those of the National Sanitation Foundation's Standards Nos. 3 and 5. For more information on any application—commercial, industrial or residential—send in the coupon, or write Aluminum Company of America, 1900-D Alcoa Building, Pittsburgh 19, Pa.

Your Guide to the Best in Aluminum Value

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV

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Please send me *Water Heater Applications of Alcoa Aluminum*, the 12-page FREE booklet that tells why Alcoa alloy water heaters outperform other water heaters, gives the easy way to figure hot water requirements, lists case histories.

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City_____ Zone_____ State_____

Gibson Ortho 88

PATENT PENDING

THE FIXTURE THAT JUST PLUGS IN

snap - and it's up! **ortho-88®**

Made in 48" and 96" lengths for the following lamps:

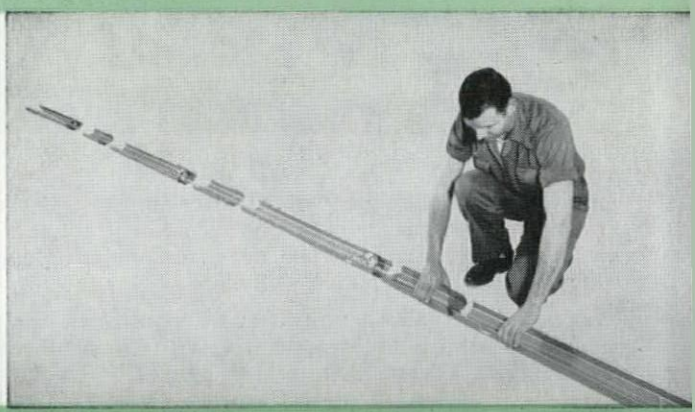
Rapid Start
Slimline
800 ma R. S.
Power Groove
VHO and SHO

All fixtures, except the 40 w. Rapid Start, are interchangeable on the Uni-Race with all other fixtures of the same length.

4 SIMPLE STEPS

THAT SAVE OVER 75% IN INSTALLATION TIME

Contractors report that all labor, including rods or stems and lamping, for a Gibson Ortho installation averages only 17 to 22 man-minutes per fixture, as compared with the NECA standard of over 2 man-hours for conventional fixtures.

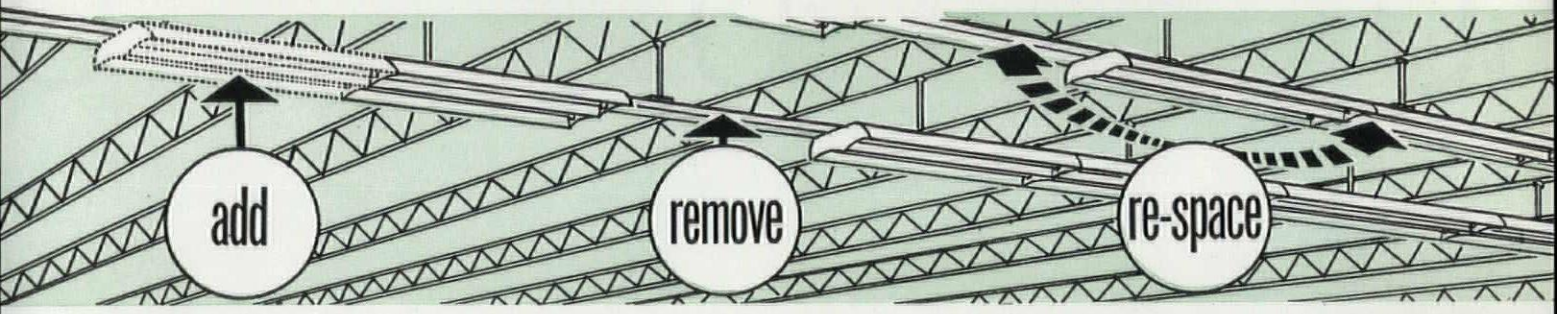


1 Assemble the Uni-Race • The exclusive Gibson Raceway known as the Uni-Race can be assembled on the floor in lengths up to 48 feet. The four or eight-foot sections are joined by telescoping couplers which provide a smooth, rigid union of the sections and are fastened with self-tapping screws.

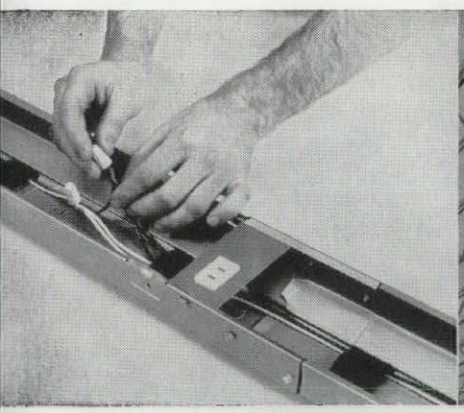
WRITE FOR COMPLETE INFORMATION ABOUT THE GIBSON ORTHO LINE

Gibson LIGHTING

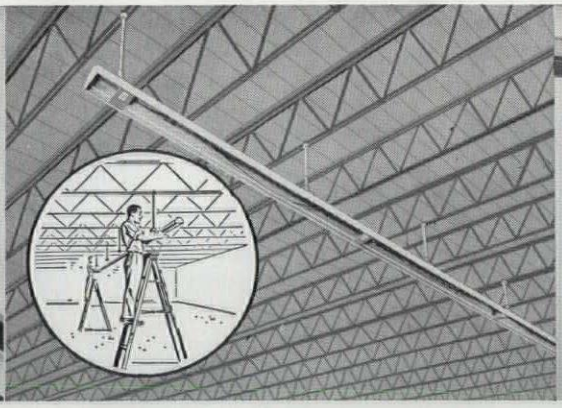
Add, remove, re-space fixtures any time without tools or rewiring



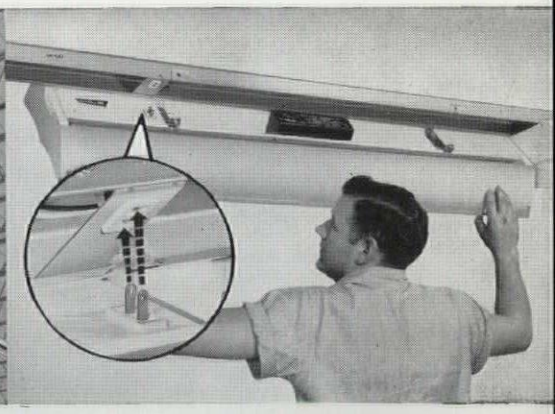
The unique design of the Gibson Ortho, with its exclusive Uni-Race, makes it the world's most versatile fixture. Instead of being wired permanently to the branch circuit, it simply plugs in—like an appliance. A plug built into the fixture engages a receptacle in the Uni-Race, and since the receptacles are positioned at 48″ or 96″ fixture intervals along the Uni-Race, spacing of the fixtures is automatic. They can be mounted in continuous rows or spaced at intervals of 4, 8, 12 or more feet. Fixtures can be added or removed any time, according to the requirements of plant layout. Such changes need no electrical work whatever. They can be made by one man without tools. Think what this saves the owner whenever the lighting layout has to be re-arranged or when a fixture must be removed for repairs or cleaning!



2 Wire the Uni-Race • Branch-circuit wires are laid in the Uni-Race and connection is made at each built-in receptacle. The receptacles will later receive the plug that is built into each fixture. The Uni-Race is U.L. approved as a raceway with a capacity of five No. 8 AWG wires or eleven No. 14 wires.



3 Hang the Uni-Race • The rigid Uni-Race is easily lifted and hung in any of several different ways. Lengths up to 48′ can be hung as a unit if supported every 24′ while being raised to mounting position. When the branch-circuit connection is made, the Uni-Race is ready for the fixtures.



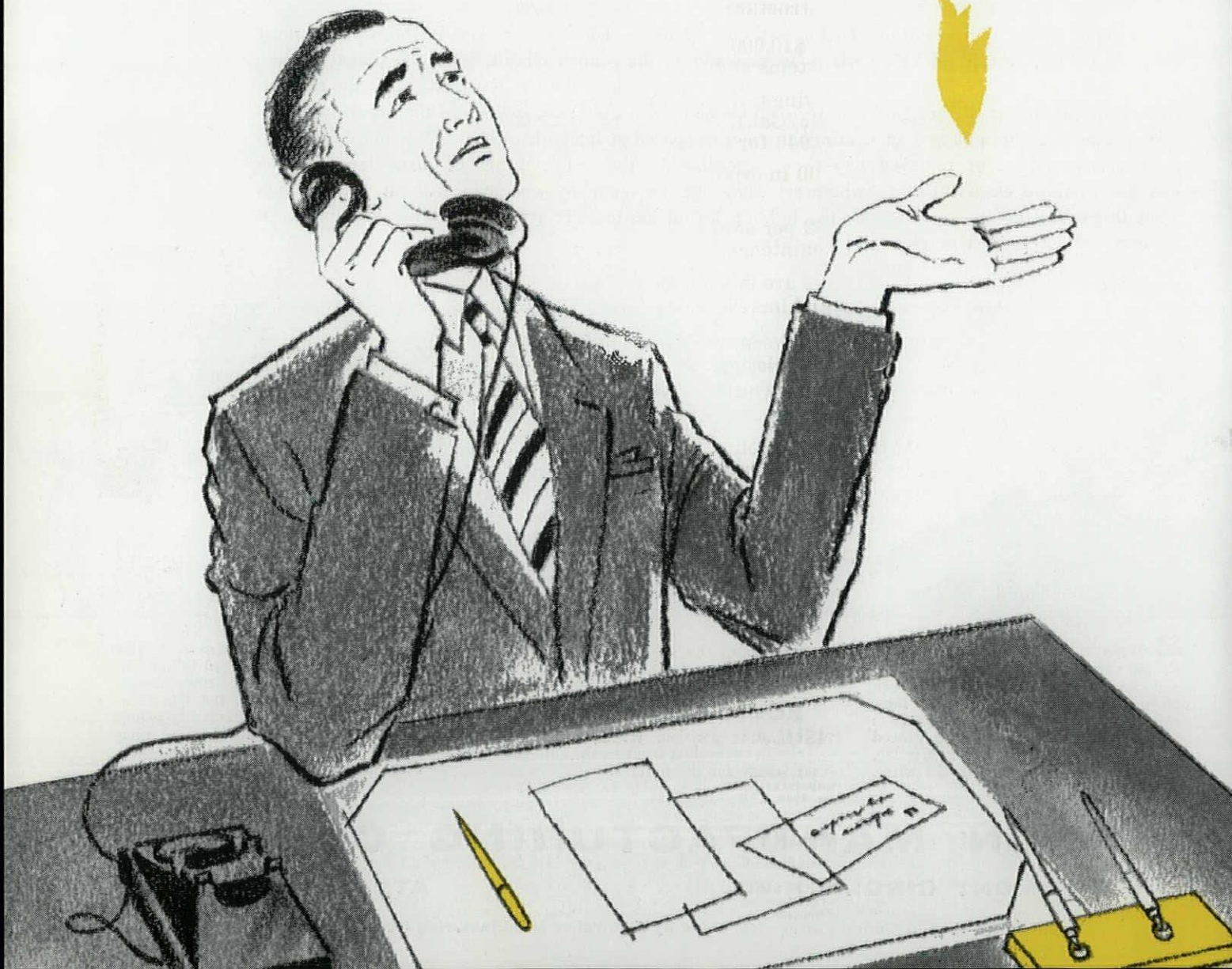
4 "Plug In" the Fixtures • The fixtures are merely "plugged in" on the Uni-Race. Hooks on the fixture engage in slots on one side of the Uni-Race, acting as hinges. The fixture is swung closed and latched. The built-in plug on the fixture automatically connects with the receptacle in the Uni-Race.

GIBSON MANUFACTURING COMPANY

1919 PIEDMONT CIRCLE, N.E. **ATLANTA 9, GEORGIA**

Manufactured in Canada under franchise by Electrolier Manufacturing Co., Ltd., Montreal

"WHAT DO YOU MEAN



..A LEAK IN MY ROOF?"

Yes, this owner's new roof does have a leak — A HEAT LEAK. And, it can't be fixed. It was designed into the roof, quite unintentionally, by a specification allowing thermal conductance in excess of a 0.24 U.

How costly is such a leak? In terms of return on investment, the architect's greatest contribution to the structure could have been right here — in its thermal design. For example, a 0.12 U roof specification (instead of 0.24) could have offered these savings for a 200,000 sq. ft. structure in a 7000 degree-day zone:

1 — A savings of from $10,000 to $20,000 on original investment in heating systems and equipment.

2 — Per-season fuel savings, depending on fuel used, of $4,650 for oil (@11.4¢/Gal.), $4,530 for natural gas (@ 8.4¢/Therm), or $2,940 for coal (@ $11.85/Ton).

3 — A savings of $15,000 in original investment in cooling system and equipment.

4 — A reduction of $462 per season in cooling costs — for electrical energy and maintenance of equipment.

And these direct savings are in addition to the benefits of better condensation control, and increased comfort for the occupants.

The difference in cost between **minimum** roof insulation, and an adequate, 0.12 U thermal design is small — so small that it becomes the most profitable investment that can be made in a structure.

And because heating and cooling costs are a continuing expense it is necessary to choose a roof insulation that will provide these dramatic savings year after year. Fesco Board will provide this permanence. Formulated with all-mineral perlite, Fesco is incombustible, moisture resistant, super-efficient, and rot-, mildew-, and fungus-proof. Write us for new technical data on thermal design.

SEE OUR CATALOG IN SWEET'S ARCHITECTURAL FILE OR WRITE FOR COPY

SEE OUR CATALOG IN SWEET'S INDUSTRIAL CONSTRUCTION FILE OR WRITE FOR COPY

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SPECIFY INCOMBUSTIBLE

FESCO® ROOF INSULATION BOARD

Calculations based on 200,000 square foot industrial building in 7000 degree-day zone, using temperature differential of 75° for heating and 15° for cooling. Reference: 1958 ASH&VE GUIDE.

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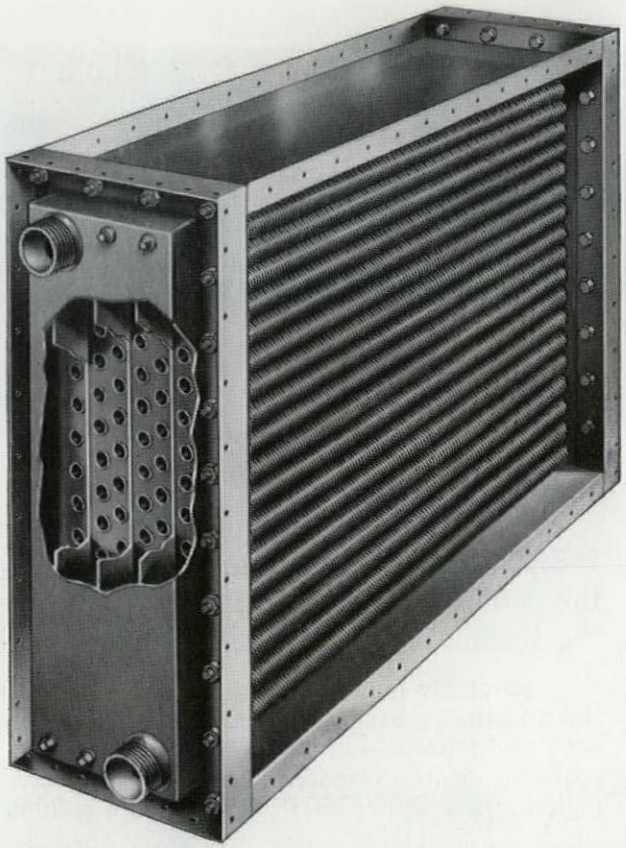

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• Complete Drainability
• Easily Cleaned
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Completely drainable and easily cleaned, Aerofin Type "R" coils are specially designed for installations where frequent mechanical cleaning of the inside of the tubes is required.

The use of 5/8" O. D. tubes permits the coil to drain completely through the water and drain connections and, in installations where sediment is a problem, the coil can be pitched in either direction. The simple removal of a single gasketed plate at each end of the coil exposes every tube, and makes thorough cleaning possible from either end.

The finned tubes are staggered in the direction of air flow, resulting in maximum heat transfer. Casings are standardized for easy installation.

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Acoustical treatment
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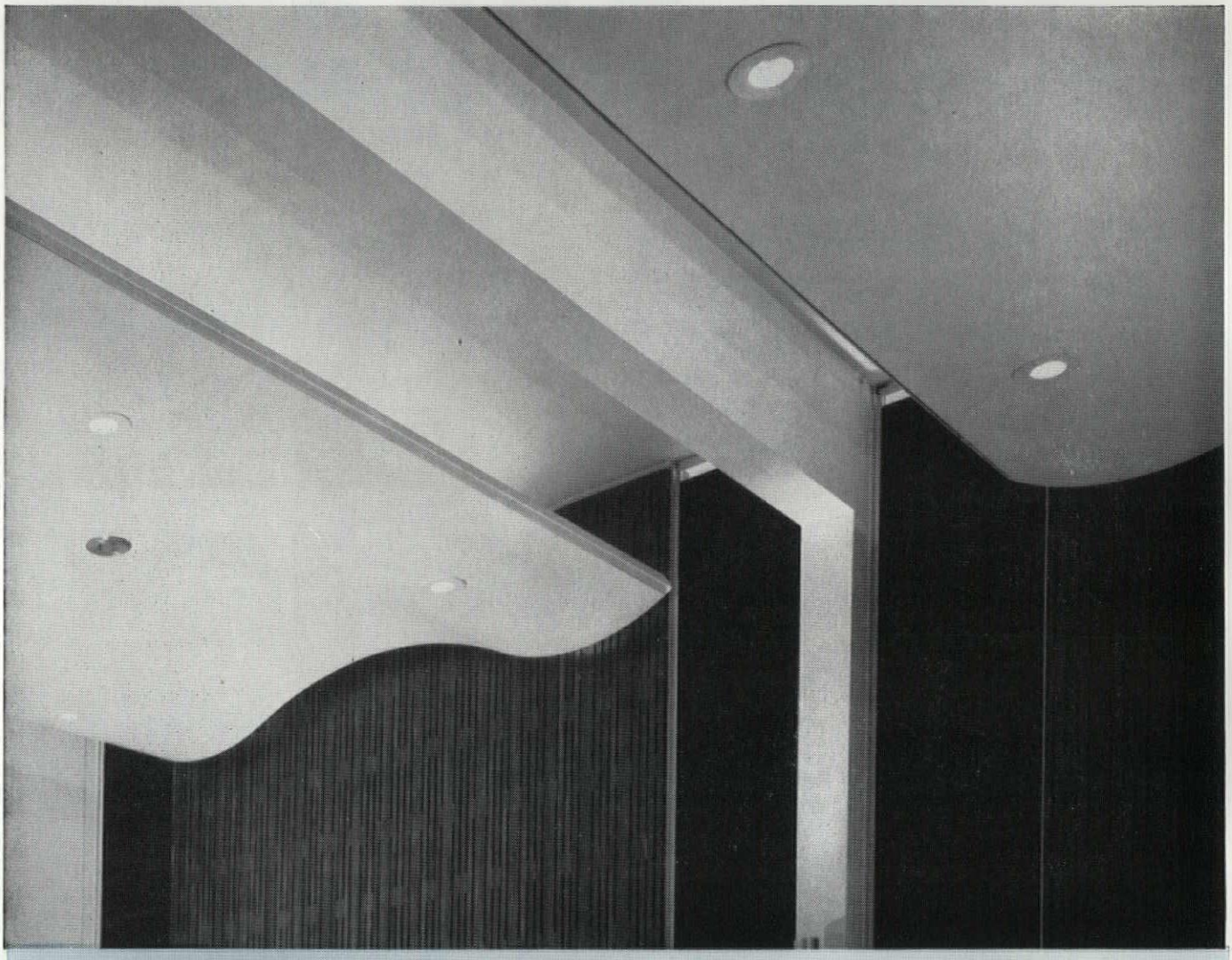

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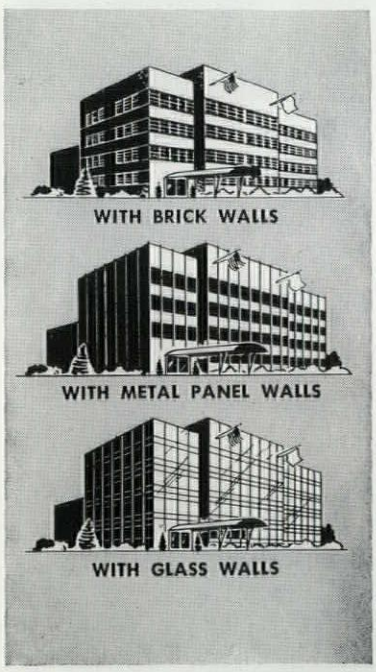

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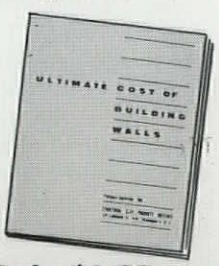

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Urban Dilemma Surveyed: With Attention to Pseudo-Solutions

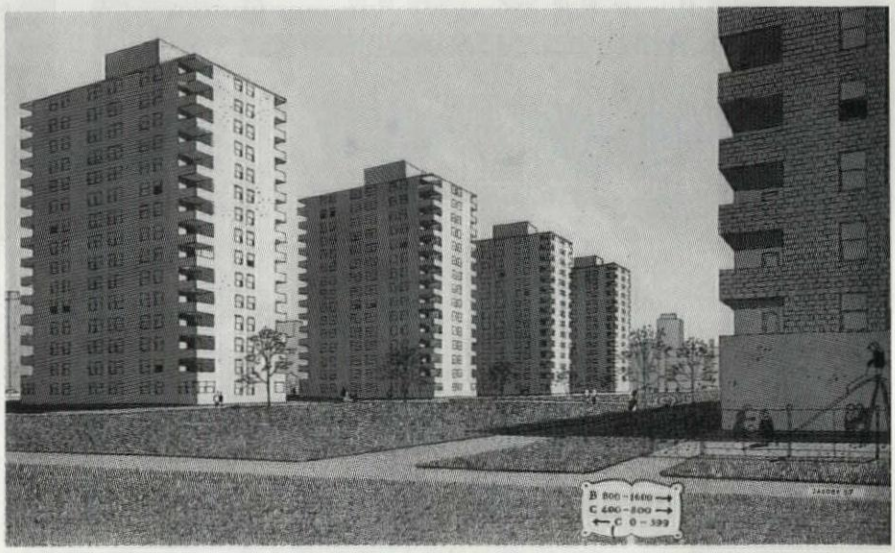
*by Paul Zucker**

The Exploding Metropolis. *Editors of* Fortune. *Doubleday Anchor Books, Doubleday & Co., Inc., 575 Madison Ave., New York, N. Y., 1958. 230 pp., illus. $.95 (paperbound)*

Could there be better proof of the importance of this problem and the impact of this book than the fact that its title, four months after publication, has become a familiar phrase? Each of the six essays in this study was written by an expert in his field. The development of city and suburbs, and with it that of whole geographical regions, is closely connected with sociological and psychological standardization and automatization, with emotional indifference, and with the lack of intellectual curiosity which has befallen such a tremendous percentage of Americans today. Therefore, it may be excusable that this review is somewhat more subjective and emotional than discussion of books of more scholarly interest which do not deal with affairs so close to our hearts. Actually, the reviewer must restrain himself from quoting whole passages with which he agrees so fully.

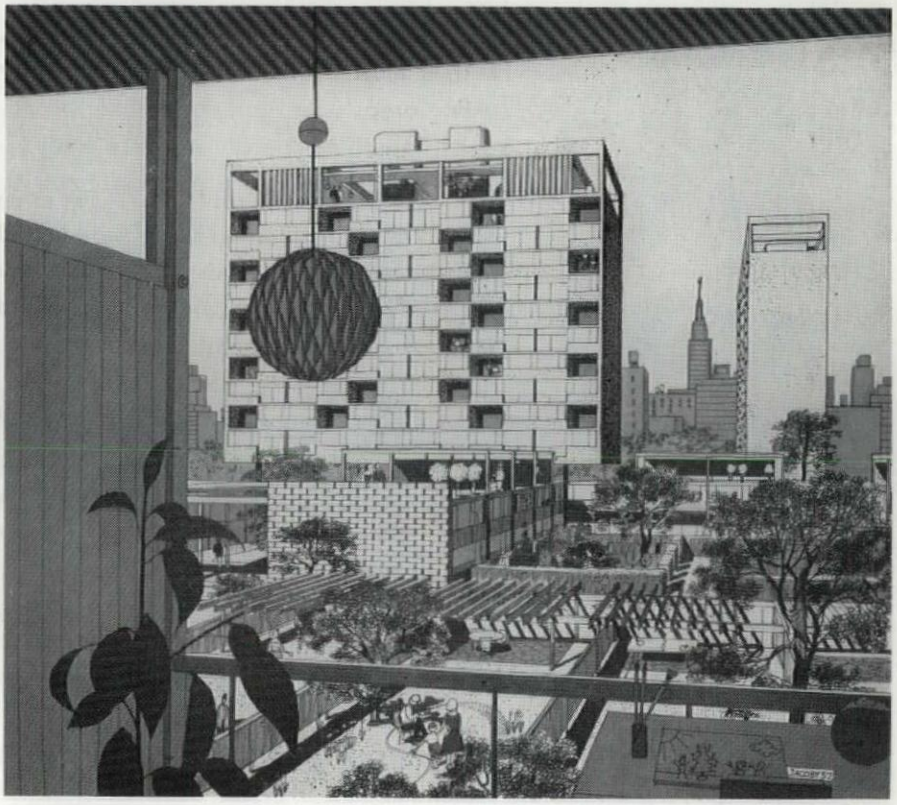
William H. Whyte, Jr., who contributed two chapters and the principal introduction, has expressed the inner connection of psychological, sociological, and ecological problems with those of city planning and housing. It is not mere chance that the same man, the managing editor of *Fortune* (where the individual chapters were originally published), is the author of *The Organization Man*, that striking and discouraging analysis of American society. He emphasizes the loss of individualism and self-reliance, supplanted by new "social ethics," the exclusive belief in the group as source of creativity, and in the values of "belonging." These are the starting points for a sociological analysis of hyperorganization, of the deification of management and the cult of the group

(Continued on page 210)



Renderings: Jacoby

Is this (above) our paradise? These vast barrackslike superblocks, with keep-off-the-grass malls, designed for that euphemism: middle-income housing? A few imaginative architects and planners have shown (below) that redeveloped blocks need not be repellent. This combination tower and garden duplex could be more economical and would be more pleasant—with private gardens, terraces, and grass, not asphalt, for the children.



* *Architectural historian, professor, New York, N. Y.*

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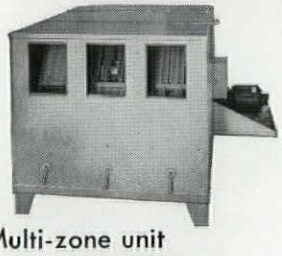

Multi-zone unit

Next, it must be *flexible*—adaptable to differing environments: telecasting areas with batteries of heat-producing spotlights; film storage vaults, where temperature and humidity must be closely controlled; and general offices, where normal heat-load conditions prevail.

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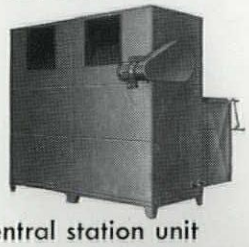

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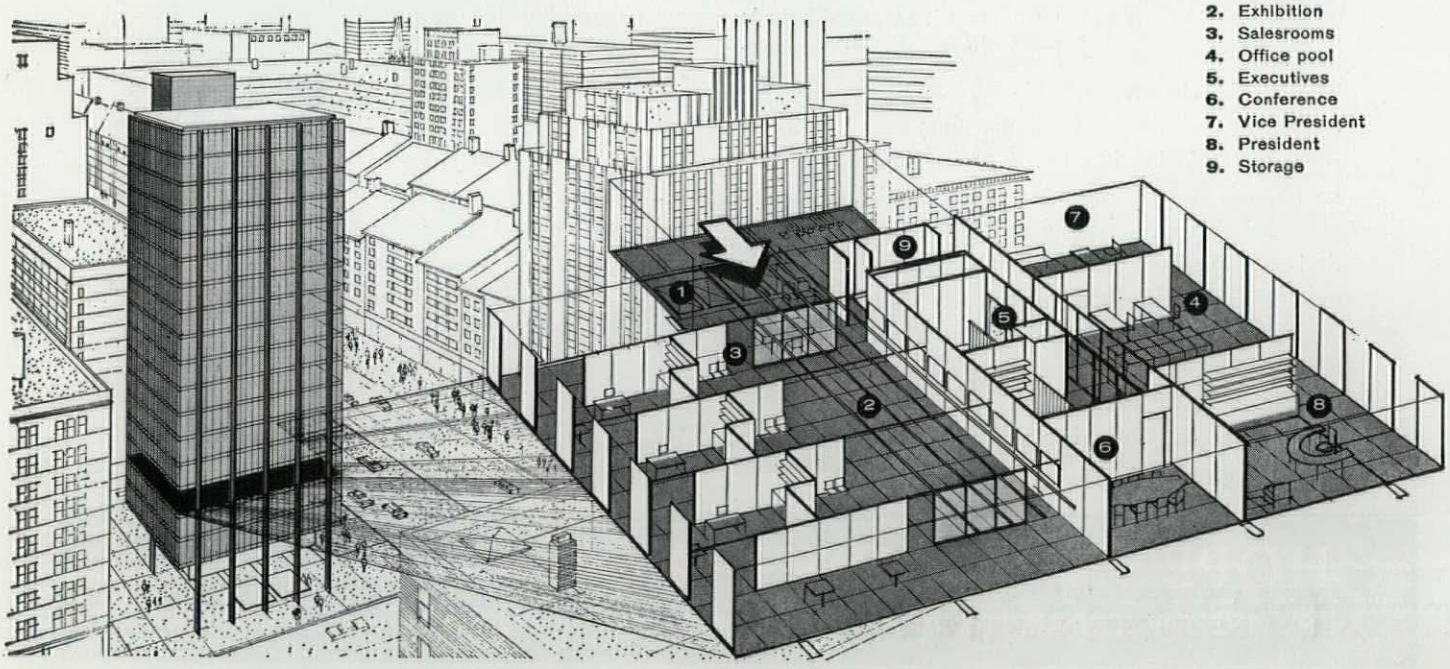

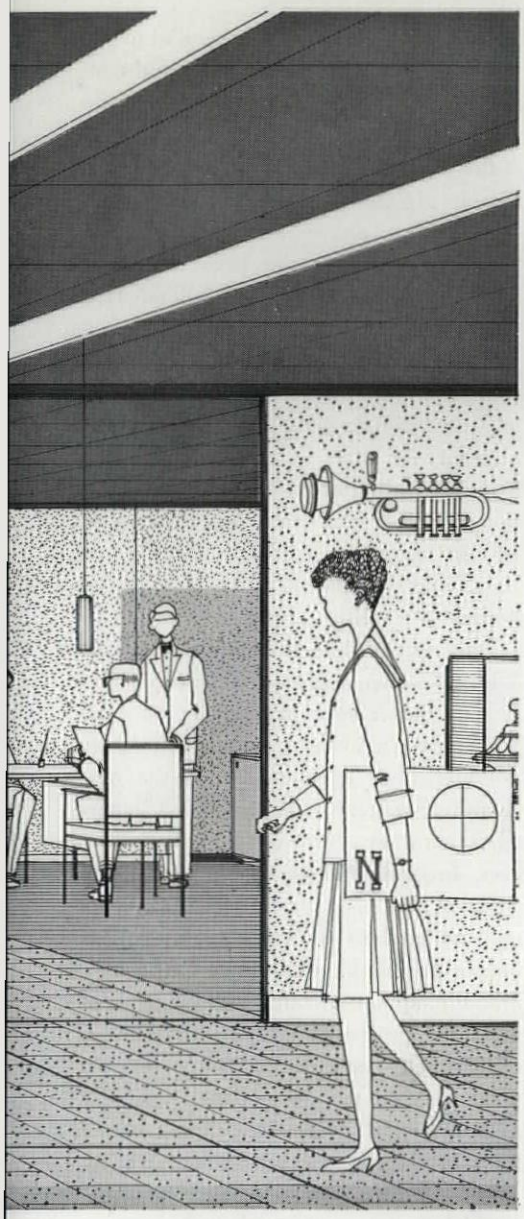

Multiple space division made easy...

Johns-Manville Movable Walls provide dignity, beauty and flexibility

The architectural designer who developed this presentation was given the following problem. A wholesale toy firm has rented the entire fifth floor of a contemporary office building. The floor is to be subdivided to provide for both the sales and administrative activities.

REQUIREMENTS

The sales department needs a large exhibit area for the display of toys and a series of adjoining alcoves for the use of salesmen. The administrative section is to be segregated and provision made for executives' rooms, stenographic pool and storage facilities.

The firm wants to use movable walls so that space division, particularly in the sales department, can be rearranged from time to time. Also the movable walls should be of the type that can be painted and redecorated at frequent intervals to provide for seasonal merchandising changes.

SOLUTION

The reception room and exhibit area is given a central location. It runs from the elevator lobby to the opposite window wall. Along one side is a series of sales alcoves with free standing partitions 7′ 6″ high. On the other side of the exhibit area is a floor-to-ceiling partition containing shadow boxes for small displays. Behind this 12′ 0″ partition is the administrative section.

This entire layout is planned on a 4′ 0″ module using standard Johns-Manville Movable Wall units.

For free standing partitions, Johns-Manville Class "A" Movable Walls were used. These units are factory-fabricated noncombustible panels 1¾″ thick. Panels are erected independently and are completely interchangeable.

For the floor-to-ceiling partitions, Johns-Manville Imperial Movable Walls were used. These consist of fireproof panels attached to steel studs. Thickness can vary from 3⅞″ up to practically any thickness required. This type of partition can be carried to heights of 20′ and higher.

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(Continued from page 205)

as such, of the overevaluation of personality tests, and so on. These concepts quite naturally underlie Whyte's ideas about the exploding metropolis. He, as well as the other contributors, love cities as such. They do not suffer from inferiority complexes because they do not happen to be guides in National Parks, state troopers, or "nature boys." Whyte perceives clearly that the glorified provincialism of suburbia, the togethernization of people in mass-fabricated homes, the enforced informality, mass-fabricated social contacts, "friendships based on propinquity and not on selectivity," automatized fun and standardized emotions are not enough. They are no substitutes for the intellectual stimulation, for the psychological potentialities of unlimited human encounters offered by the big town, for the blessings of urban anonymity, and the continuous change of urban life—in spite of the dirt, noise, and congestion of the metropolis. There have always been people for whom challenge is the meaning of life, who are even not afraid of continuous "tension" — and others who, above all else, want to "relax." These are the born suburbanites; those, the born city dwellers. History has always been made in cities, not in the open country, and least of all in suburbia. Of course, it would be childish and futile to deny all the advantages claimed for life in the suburbs: for bringing up children, for healthy recreation, for better schools, for less traffic, less noise, fewer accidents, easier shopping, and all the practical aspects of household realities—and yet!

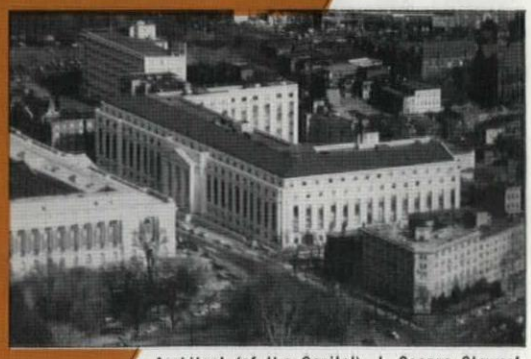
One would like to quote many of Whyte's statements, such as: people who live at the fringes of the city "are no longer drawn inward, toward the center (of city life) but outward to the new shopping center"; that a unified superadministration of the whole metropolitan area, instead of municipal governments, is based on illusions; and especially that most of modern planning represents an impossible combination of Le Corbusier's grand, eloquent schemes with the pseudoromantic garden cities. His description of "the returnees," those people who reemigrate into the city after life in the suburbs, is in its realism highly amusing and the statistics are persuasive.

But all this does not mean that so-called urban renewal and mass housing "series of high-tower apartments set in geometric patterns on an abstract green space carefully preserved against human encroachment" represent a solution within the city. The depressing boredom of the long row of housing projects along New York's East River, for instance, exemplify how housing should not be done. The disadvantages—economic, technical, and, of course, esthetic—are evident. The form of their layouts certainly does not "follow function," but prescribes function and life of their inhabitants. There may be air, but certainly no atmosphere!

Examples of older American streets, from Baltimore to San Francisco, from Providence to New Orleans, shown in suggestive illustrations by Orfeo Tamburi, prove, by contrast, the obvious lack of originality, variety, and character in these giant modern solutions.

(Continued on page 212)

GOOD NEWS FOR TAXPAYERS



Architect (of the Capitol): J. George Stewart, Washington, D. C. Associate Architects: Eggers & Higgins, New York City.

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(Continued from page 210)

Other chapters, dedicated to special problems, quite naturally follow the philosophy of the introductory chapters. Francis Bello concentrates on transportation and the potential function of the car. On this problem depends the decision: "whether the city will continue to serve as a unifying core for its surrounding metropolitan region or whether it will be utterly fragmented." Extremely interesting statistics are the basis of his judgment, and Victor Gruen's famous solution for Fort Worth—keeping traffic completely out of the inner city—is analyzed. Basically, Bello does not favor the expansion of mass transportation, although he recognizes that the car still represents "the cheapest way to circulate people in and around tomorrow's lower density metropolis."

Seymour Freedgood discusses the impact of a strengthened administration in city hall and emphasizes the decisive role of energetic mayors and city managers. Daniel Seligman, who characteristically calls his chapter, "The Enduring Slums," starts from the statistical fact that today 17 million Americans live in dwellings beyond rehabilitation, and that the number crowded into slums is growing faster than the population of the city as a whole. Not every city planner is aware of these conditions. Quantity and quality of public housing during the last 20 years have caused tremendous disillusionment among planners. The author pleads mainly for an expansion of Federal and state anti-slum efforts. How far, if at all, it may be possible to stimulate the flow of private funds for slum clearance in connection with new housing projects represents still another problem. It has been estimated that it will cost $100 billions to wipe out the slums over a 10-year period. This reviewer is even more sceptical than the author is about the possibilities of eradicating slums, but I agree with him that "just nibbling at the problem may well prove more expensive to the city's health in the long run."

Equally as destructive as the slums, of the esthetic aspect of the city and its over-all economic scheme, is what Whyte calls the "Urban Sprawl." He means the erosion of any definite, given pattern of urban growth, whether good or bad; the haphazard fusion of city, suburbs, farmland, industrial district, settlement, etc.; the intermingling of different public utility services, of different traffic speeds, of heterogeneous real estate developments, of legal complications through zoning laws, etc. All of us remember enough examples of these ugly oddities, and all of us have despaired of any planning vision that actually could be realized—especially the lack of what Henry James calls "a really grasping imagination." The mechanized dogmatic recipes of CIAM, either modulized or hyper-romanticized — in both instances late by 30 years—are no help. Rightly Whyte says that the "human scale" is something that all downtown planners praise theoretically and obliterate actually. An Englishman, who in the judgment of this reviewer has the best eye for the esthetic potentialities—and for

(Continued on page 214)

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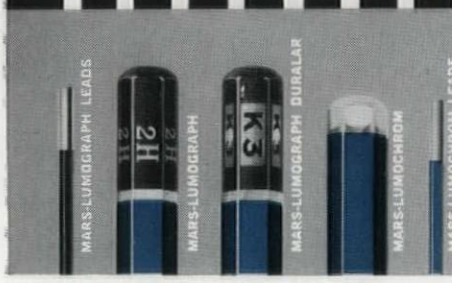

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reviews

(Continued from page 212)

the unforgivable sins in realization—Gordon Cullen of *The Architectural Review*, has contributed excellent illustrations of earlier worthwhile American solutions and has indicated by their captions why each is good. The proportions of open and built-over space, of recreational and utilized area, of quarters to be preserved, of small streets and wide squares, all can be decided only in action, for each specific case. The key to decent solutions lies in the acquisition of enough open space at the fringes of the city so that communities, heterogeneous as they may be, "can do together what they cannot do individually"; so that competing real estate interests, competing public utilities can agree on compromises.

With unusual temperament, Jane Jacobs, in "Downtown is for People," criticizes most of the new projects, for San Francisco, New Orleans, Pittsburgh, Cleveland, Kansas City, and Nashville. How right she is in poking fun at symmetrical and orderly monumentality, "a dignified cemetery" as she calls it. How right she is in her statement that "no logic can be superimposed on the city." How much do these dogmatic schemes remove any possibility of human life and of human enjoyment from the regularized cities and plazas. Enjoyment and, more important, human activity within open space "depend on the feeling of enclosure it gives people," with focal points like fountains, benches, shrubs, individual buildings, and even sculptures. That given topographical and geographical conditions have to be utilized is a matter of course. Please, do not misunderstand these demands. The author of this chapter knows, as well as you and I, that downtown cannot and will not compete with the coziness of a village green, that its emotional impact will certainly not be one of sentimentality and romanticism. But it could be based on a meaningful succession of characteristic visual impressions and of alternating spatial experiences.

The book, as a whole, represents a masterly survey of the tremendous problems of modern city planning. It is a

(Continued on page 218)

Careful attention to detail is evident in this swimming pool. Walls are 4¼ x 4¼, 81 Spruce Green. Deck Floor: Sand Gray Textone. Pool ledge and markers are Maroon Textone with numbers and lettering in Sand Gray Textone. Pool lining is White with Red markings. Color Plate 391.

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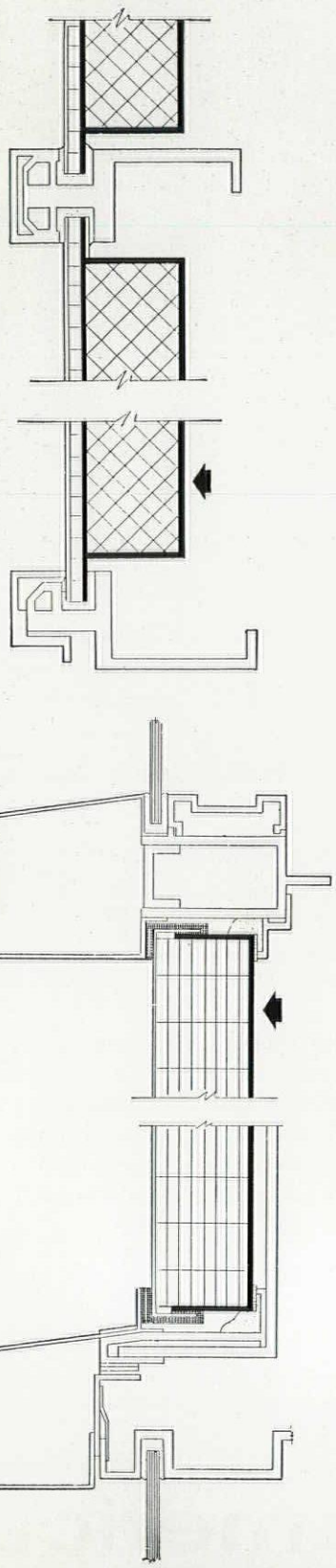

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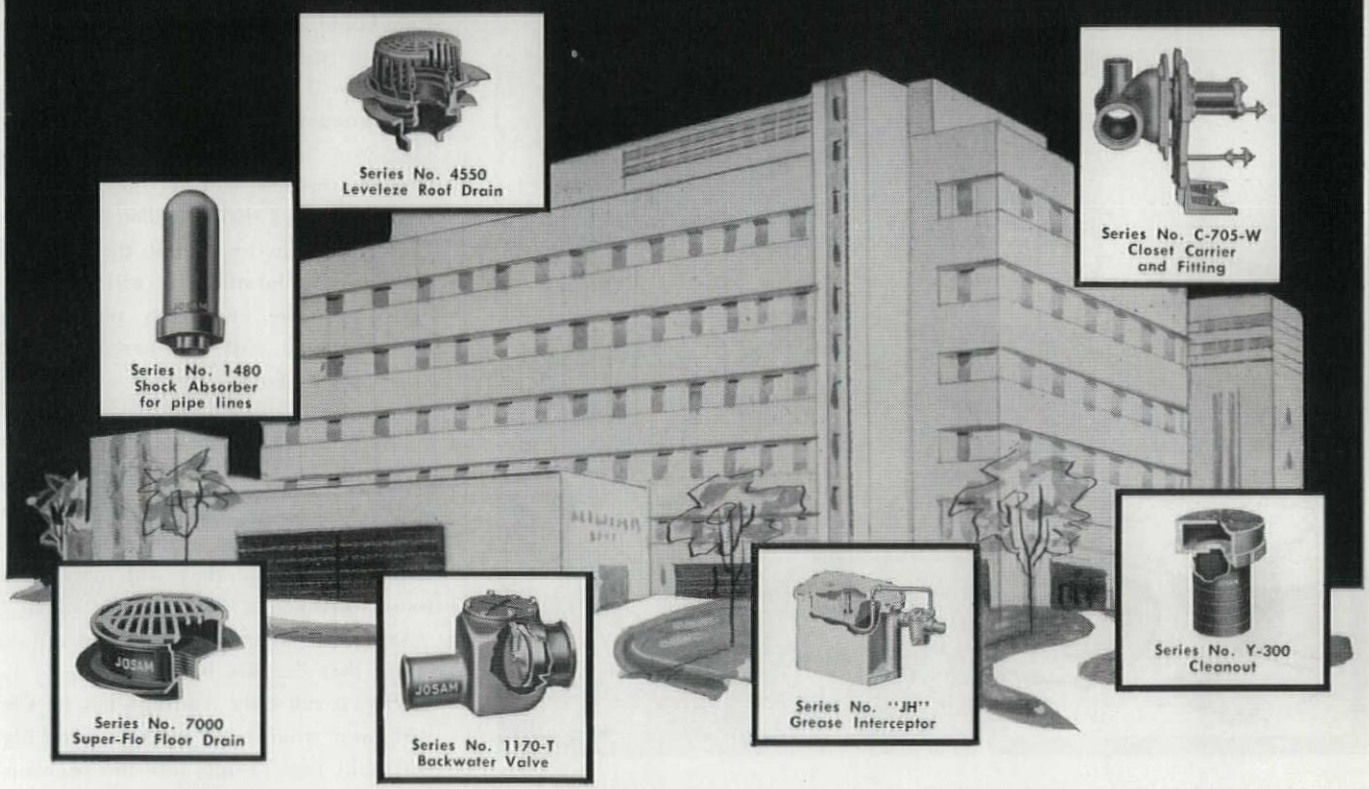

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(Continued from page 214)

merciless debunking of the many empty slogans which prevail in so many of today's projects, well disguised by sociological phrases or pseudo-modernistic, standardized drawing-board patterns. Its sincerity and clear thinking are less sensational—but make more sense than most theoretical abstractions in this complex field.

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The Church Incarnate: The Sacred Function of Christian Architecture. *Rudolf Schwarz. Translated by Cynthia Harris. Henry Regnery Co., 64 E. Jackson Blvd., Chicago, Ill., 1958. 232 pp. $7.50*

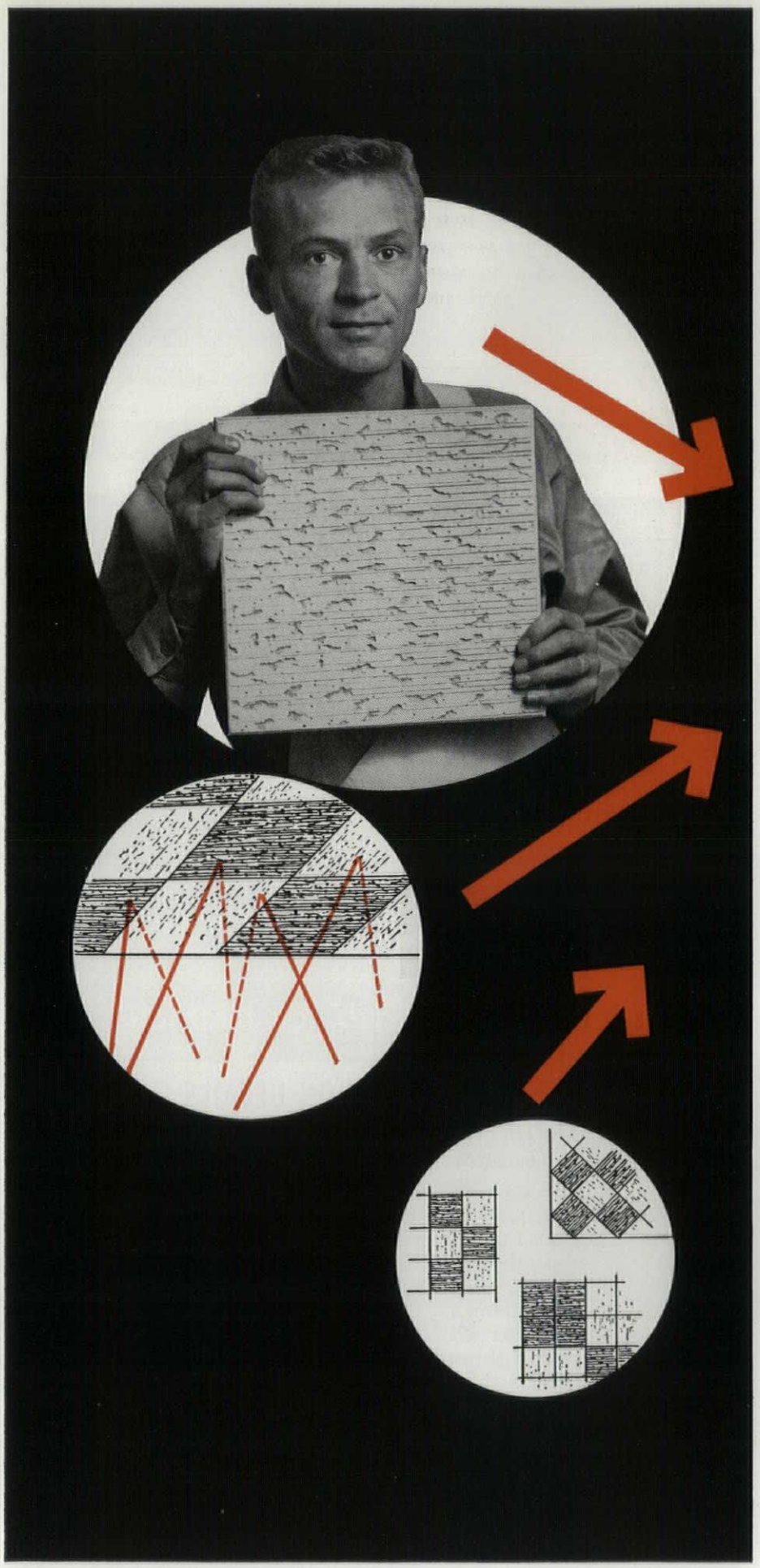
This book will undoubtedly prove to be somewhat a surprise to most readers. Rudolf Schwarz is one of the outstanding present-day church designers and this book, first published in Germany some 20 years ago, summarizes the basis of his philosophy of architecture. It has exercised a definite but hard-to-define influence on many contemporary architects. Among these, Mies van der Rohe goes farthest in acknowledging his indebtedness. He writes in the introduction, " . . . this book . . . throws light for the first time on the question of church building and illuminates the whole problem of architecture itself."

With this background, the reader may well be forgiven a certain amount of trepidation as he begins reading. Chances are that instead of a feeling of trepidation he will soon be in a sea of frustration, wondering whether he is not tripping over his own thoughts. One of the first impressions will be that either he is more stupid than he thought or that Schwarz has gotten lost in the throes of some odd philosophy. He will also wonder where the customary photographs are that form part and parcel of most architectural books. Instead of pictures, he will find himself confronted by diagramatic sketches whose association with architecture appears remote. It is to be feared that many readers will next close the book grumbling about money ill spent. If they do, they will miss something worthwhile.

In the introduction, Mies van der Rohe states that "...his book, in spite of its clarity, is not easy reading—but he who will take trouble to study it carefully, will gain real insight into the problems discussed." Mies' reference to clarity might be questionable but the rest of the statement is more than true.

Schwarz goes to one of the key problems of architecture of this or any time. It is agreed that buildings should express their purpose and their period. In the case of churches, it is expected that they are an expression of the religious faith of the members. Unfortunately, this is where the agreement ends today. The Gothic cathedral expressed the faith of its builders while many of today's churches express the fad of the moment. This results from the fact that our contemporaries are no longer as aware of the spiritual values and the mystical expression of faith as the men of the Middle Ages were of their beliefs. One

(Continued on page 220)



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(Continued from page 218)

has to understand the faith that made the cathedrals possible, if one wants to build with the same spiritual values. Schwarz brilliantly states the problems confronting us today:

"To build churches out of that reality which we experience and verify every day; to take this our own reality so seriously and to recognize it to be so holy that it may be able to enter in before God. To renew the old teachings concerning sacred work by trying to recognize the body, even as it is real to us today, as creature and as revelation, and by trying to render it so; to reinstitute the body in its dignity and to do our own work so well that this body may prove to be *sacred body*. And beyond this, to guard ourselves against repeating the old words when for us no living content is connected with them."

This task Schwarz pursues unflaggingly. At times, he and his readers have to wade through long passages of mystical turgidity, but in the end a clear goal is reached. Schwarz examines the problem of church architecture from its basic elements, i.e., the relationship of the congregation to the priest and the altar, and then to God. He shows how specific plans express aspects of this interrelationship. According to Schwarz, there are six basic plans and a seventh plan, which is the final summation of the six. The discussion begins with the "Ring" which expresses the "sacred inwardness" with the altar and priest located at the center of the congregation. We then proceed past the "Open Ring" and the circular "Chalice of Light" with its opening above. Next, Schwarz examines two linear plans, "The Way" and the "Dark Chalice" where the participant has to progress up toward the altar. The sixth plan is again circular and illustrates Schwarz' preoccupation with light: entitled, "Dome of Light," this plan virtually substitutes light for structure. According to the author, "The building consists of light breaking in from all sides, light shining forth from all things, light fused with light. The earth is transformed into a star, her stuff afire, she is a monstrance of rays about the child in the center, her altar a flame, the people a sea of fire and each one of them a star."

The seventh plan sums up the previous six and contains within it the various parts of their elements. It consists of three major elements, " . . . the first and last are centric and between them the way takes its course. . . ." Unfortunately for would-be builders, Schwarz concludes that " . . . this seventh is a plan above all plans and no man can build it. For he would stand within his own period, his building would show its meaning and everything would be hidden within this. Our architecture with its comparative permanence corresponds to the period; but the seventh plan lays the epochs end to end in one great form, and its walls are the horizon of eternity."

One is tempted at this point to say that Schwarz has argued himself into a circle—that his conclusion is the impossible. If this is the case, why has he

(Continued on page 222)

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Construction Details on Opposite Page

reviews

(Continued from page 220)

written the book? Schwarz supplies the answer. The book "is intended to be a primer for church buildings—no more but also no less." Whether one agrees depends upon the definition of the word "primer." Actually, this is immaterial.

Schwarz has been able to focus the attention of the reader not only on the question of church architecture but also on the basic tenets of an architectural philosophy regarding the question: what should a building express? This is a task that needs doing not only for ecclesiastical architecture but also for all types of architecture. We are in a period of transition and by reducing the problem confronting us in this field to its essentials, Schwarz has supplied us with some guidelines of wide applicability.

DR. FREDERICK HERMAN
College of William & Mary
Norfolk, Va.

an amazing richness

The Arts and Civilization of Angkor. *Bernard-Philippe Groslier. Photographs by Jacques Arthaud. Frederick A. Praeger, Inc., 15 W. 42 St., New York, N. Y., 1957. 230 pp., illus. $15*

To extend further our knowledge of the Eastern imagination, this superbly illustrated book presents the art of the Kmer civilization in ancient Cambodia and particularly Angkor, 12th Century center of the region and site of marvelous sculptures and temples.

The glory of the book is its beautiful illustrations—more than a hundred, including aerial views of the buildings in lake and jungle settings. They are, in effect, great stone-galleried temple-mountains; static, symmetrical monuments to hierarchy, to worship of the eternal, to heavenly deliverance. The illustrations also explore with sensitivity the amazing richness, the profusion, of sculptural decoration in reliefs, free-standing figures, colossal figures and heads. It is startling to see the variety of expression here: from restrained, refined, compact figures (recalling early Greek works) to the most voluptuous, fleshy, almost boneless ones (like Cretan clay figures); serene, mysterious, knowing smiles of gods or masklike, highly conventionalized expressions of wrath; endless repetition of stylized figures and the most perceptive acute observation of innumerable gestures, animal and human, in a frantic battle scene—art ordering the chaos of war.

The author, an archeologist associated with the *Centre de Recherches Scientifiques Français*, has provided a text describing the society, religion, history of this Asian civilization and translations of Kmer inscriptions which, as captions, enrich the sculptures.

Useful appendices (summary of the development of Kmer art; iconographical explanation; meaning of names; bibliography; historical table comparing this to the Mediterranean world, India, Southeastern Asia, China; notes on inscriptions and photographs; and an index of maps and figures) are all found at the back of the book. This organization of the book—with the added disadvantage of no Table of Contents—is a serious shortcoming for a reader (rather than

(Continued on page 228)

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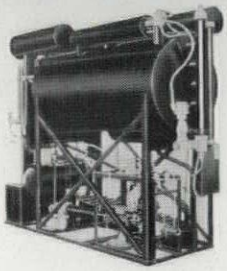

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reviews

(Continued from page 222)

a peruser of pictures), who finds turning from text to photographs to the various appendices a cumbersome and confusing procedure. B.J.M.

pronouncement

Dali on Modern Art. *Salvador Dali. The Dial Press, Inc., 461 Fourth Ave., New York, N. Y., 1957. 156 pp., illus. $5*

The Cuckolds of Antiquated Modern Art is the subtitle of this volume by an angry Dali. An angry Dali indeed, so angry at times that much of what he says is mere rage. We might agree with him on Buffet, on Puvis de Chavannes, on Ingres, on any number of people—but how one sided! His observations are often remarkable, often funny, often unfair, often incomprehensible, often simply artsy Dali-esque jargon, and often just an indication of profound egomania.

His opinions on architecture are here concerned with Gaudi and Le Corbusier. That he prefers the "sublime genius" of Gaudi to the "Protestant face" of Le Corbusier goes almost without saying. In short, Dali's book is one to be read, if only for fun. A well organized layout has helped the presentation of the volume. The original French text is also included.

FRANCIS J. S. HUGHES
New York, N. Y.

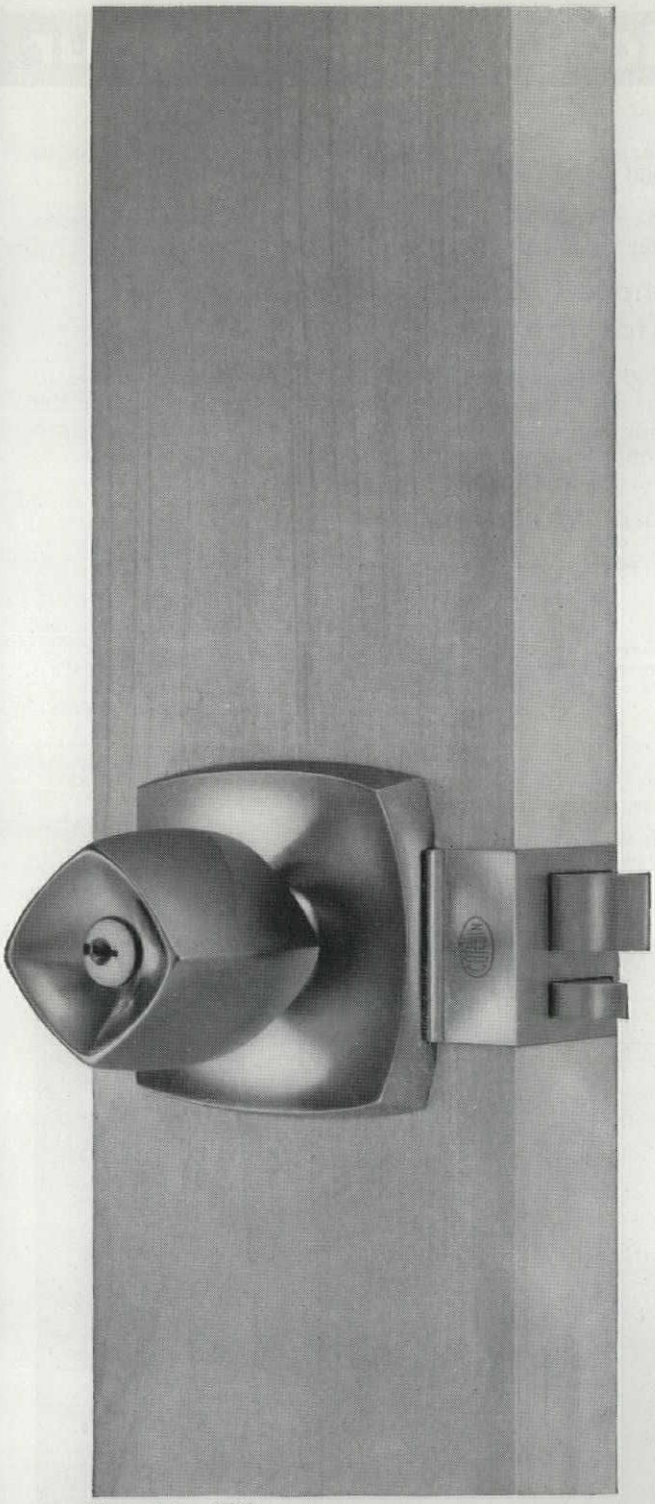
first-rate achievement

Summer Air Conditioning. *Seichi Konzo, J. Raymond Carroll, and Harlan D. Bareither. Windsor Press, 200 E. Ontario St., Chicago, Ill., 1958. 554 pp., illus. $7.50*

It is almost unheard of for a nonprofessional to be able to say of an engineering textbook that he actually enjoyed reading it. In the case of the present volume, however, which was originally prepared for the Armed Forces Institute as a text for budding contractors, builders, sales engineers, and the like, the reviewer can make such a statement with real enthusiasm.

From the points of view of organization of material, style of writing, co-ordination of illustrations with text, and complete practicality, this new *Popular Mechanics*

(Continued on page 232)



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GlasSeal® *Thermopane* is made from either *double* strength or *single* strength window glass with a nominal 3/16″ air space between the panes. DSA units are available in 65 standard sizes, SSA in 18 standard sizes for double-hung and other popular types of sash. Single strength units are up to 25% lighter and, when used in double-hung sash, are easier to balance and operate.

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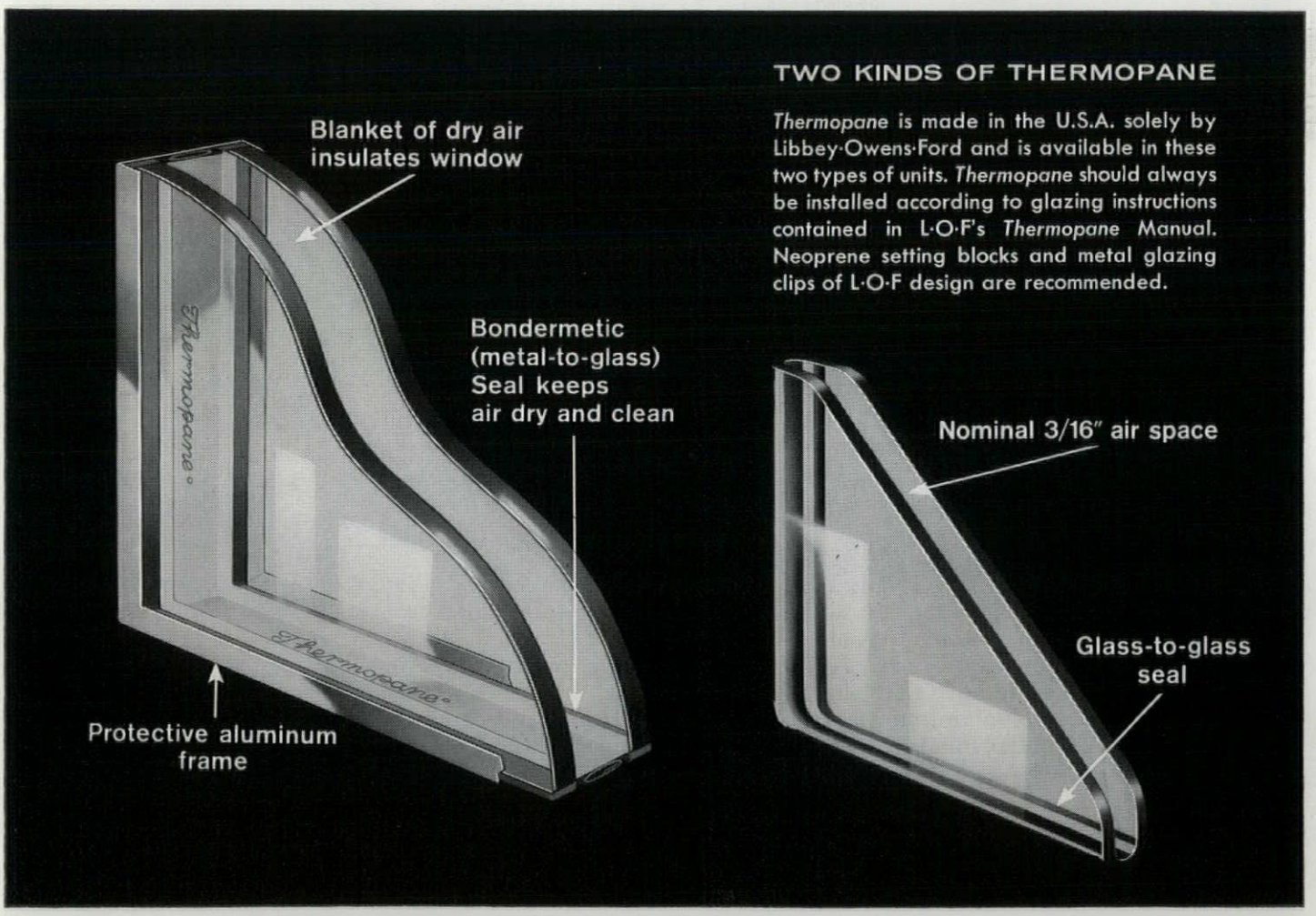
	Polished Plate	
	Regular	1/8″, 1/4″
	Parallel-O-Grey®	1/4″
	Heat Absorbing	1/8″, 1/4″
	Tuf-flex®	1/4″
Blue Ridge	Plain Patterned	
	Hammered, Velvex	1/8″, 7/32″
	Flutex	7/32″
	AKLO Hammered	1/8″, 1/4″

*Single strength or picture glass cannot be used.



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Why Thermopane Saves Heat (U VALUE — Winter)

Over-all heat transmission coefficient (U value) varies with ranges of temperature at which coefficient is determined. For most practical heat loss calculations coefficient U can be the value determined at 10° outside temperature, 70° inside temperature, 15 mph outside air velocity and natural convection inside. Therefore, the U values shown here apply to winter heat losses.

type	thickness	U value		
single glass	1/8″	1.16		
	1/4″	1.15		
double Thermopane	1/8″ or 1/4″	3/16″ air space* .69	1/4″ air space .65	1/2″ air space .58
triple Thermopane	1/4″	1/4″ air space .47		

*GlasSeal Thermopane only.

How it Reduces Air-Conditioning Costs (U VALUE — Summer)

Summer air cooling calculations are usually based on an outside air temperature of 95° and exterior wind velocity of 7.5 mph, a room temperature of 75°. U values for these summer conditions are given below.

type	glass thickness	U value		
single glass	1/8″	1.07		
	1/4″	1.06		
double Thermopane	1/8″ or 1/4″	3/16″ air space* 0.64	1/4″ air space 0.61	1/2″ air space 0.56
triple Thermopane	1/4″	1/4″ air space 0.45		

*GlasSeal Thermopane only.

Reduction of Cooling Load

Summer heat transmitted through glass is divided into three types or may be said to come from three sources: (1) direct solar radiation, (2) sky or diffuse radiation, (3) outdoor-indoor temperature differential. The *Thermopane* Manual offered upon request gives formulas and charts for calculating cooling loads in residential and nonresidential buildings.

Why You're More Comfortable Near Thermopane

temperatures of glass surface on the warm side and per cent relative humidity (RH) at which condensation occurs (dry bulb air temperature 70° F. on warm side)

no. of panes	glass thickness	air space thickness	dry bulb air temperatures on cold side													
			−30°		−20°		−10°		0°		+10°		+20°		+30°	
			T	RH	T	RH	T	RH	T	RH	T	RH	T	RH	T	RH
single glass	1/8″	none	2°	5.5	9°	8.5	15°	12.0	22°	16.0	28°	21.0	35°	28.0	42°	36.5
	1/4″	none	5°	6.0	11°	9.5	18°	13.0	24°	17.0	30°	22.5	37°	29.5	43°	37.5
double Thermopane	1/8″	1/4″	35°	28.0	38°	31.5	41°	35.5	44°	39.5	47°	45.0	51°	50.0	54°	56.5
		1/2″	38°	31.0	41°	32.0	43°	38.0	46°	43.0	49°	48.0	52°	54.0	55°	60.0
	1/4″	1/4″	36°	28.5	39°	32.5	42°	36.5	45°	41.0	48°	47.0	51°	52.0	54°	58.0
		1/2″	39°	31.5	42°	33.0	45°	40.0	47°	45.0	50°	50.5	53°	56.0	56°	62.0
triple Thermopane	1/4″	1/4″	46°	41.5	48°	44.5	49°	49.0	52°	54.0	54°	58.0	57°	63.0	59°	68.5
GlasSeal Thermopane	1/8″	1/16″	34°	26.0	37°	29.5	40°	33.0	43°	37.0	46°	42.5	50°	49.0	53°	55.0

Above chart is based on normal convection currents on room side when unobstructed by curtains, draperies or heavy muntins. Condensation will occur at slightly higher inside temperatures than as shown on the charts if curtains, shades or the construction of the window prevent free air movement over the surface of the glass.

You will note from the above chart that when it is really cold outside, the inner pane of *Thermopane* will be as much as 34° warmer than if a single pane was used. That saves heat. Reduces drafts. Makes rooms more comfortable, even near windows. It reduces condensation. For example, with temperatures 70° inside and 0° outside, the inner pane of *Thermopane* will be over 20° warmer than would single glass. Thus, the relative humidity can be up to 28% greater before condensation will form.

For complete technical data on *Thermopane*, ask for the newest *Thermopane* Manual. Call your L·O·F Glass Distributor or Dealer (listed under "Glass" in the Yellow Pages). Or write to Dept. 8249, Libbey·Owens·Ford Glass Company, 608 Madison Avenue, Toledo 3, Ohio.

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reviews

(Continued from page 228)

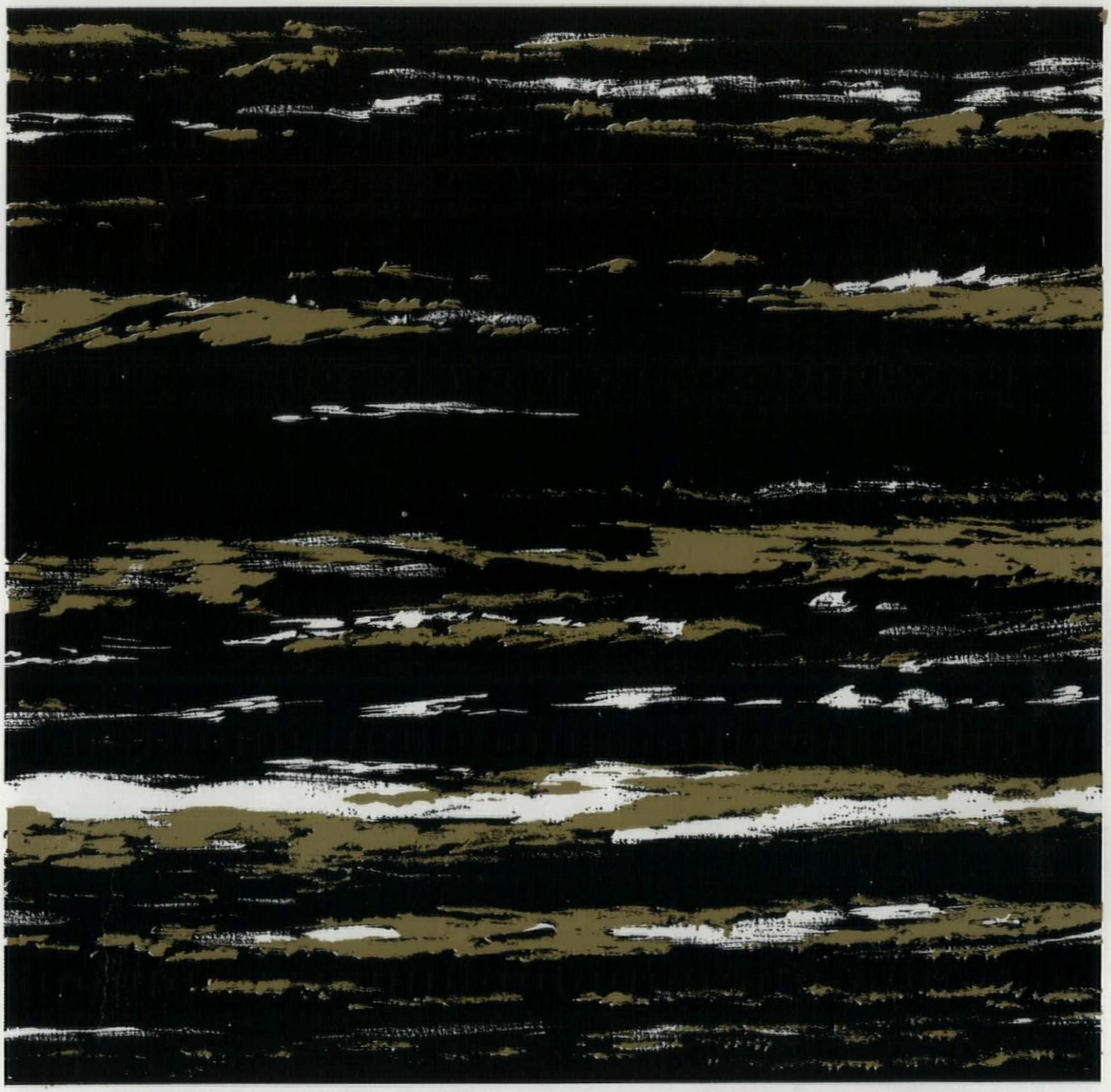
—Windsor Press presentation of the principles of air conditioning is a first-rate achievement. And this makes it valuable for architects as well as for the audience for which it originally was written. You can *understand* this book!

The authors, who are all members of the Mechanical Engineering Department, University of Illinois, have drawn upon the extensive researches that have accumulated over the years—from work done in the University's three National Warm Air Heating and Air Conditioning Research Residences, and its one Institute of Boiler and Radiator Manufacturers' Research Residence, plus basic data from the Engineering Department's own laboratories —to enrich their theoretical material with a wealth of practical, test information. The result is a book that is more than ordinarily informative and usable. Primarily devoted to packaged central cooling systems for houses and other small structures, the book nevertheless presents enough basic data to make it useful in the design and specifying of larger, custom-made installations.

Any architect who has ever puzzled over the mess of lines that constitute a psychrometric chart for the analysis of air-moisture conditions will revel in the step-by-step explanation of how the chart is made. This is the main substance of the book's first chapter, which deals ostensibly with what constitutes summer comfort, and which describes that standard of comfort by working out examples needed to explain the construction of the chart. It is really a brilliant performance!

The two chapters that follow deal with summer-weather conditions in various parts of the country. The problems of sun control are, naturally, considered separately from convective and conductive heat gains, and in both cases are handled simply and practically, without any of the stigmata of the "textbook" style that afflicts most engineering texts. These first three chapters, constituting a kind of Baedeker to the summer-climatic environments of the United States, are without question the clearest and most sensible presentation of a difficult subject that this

(Continued on page 242)



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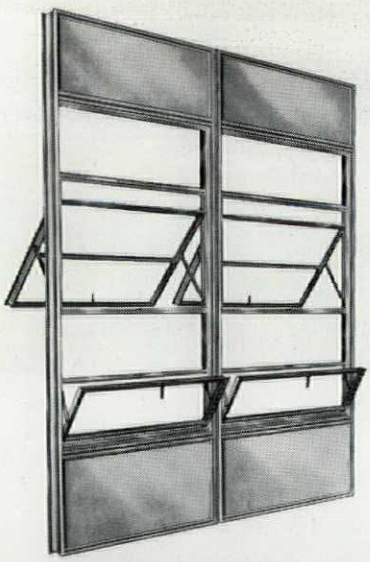

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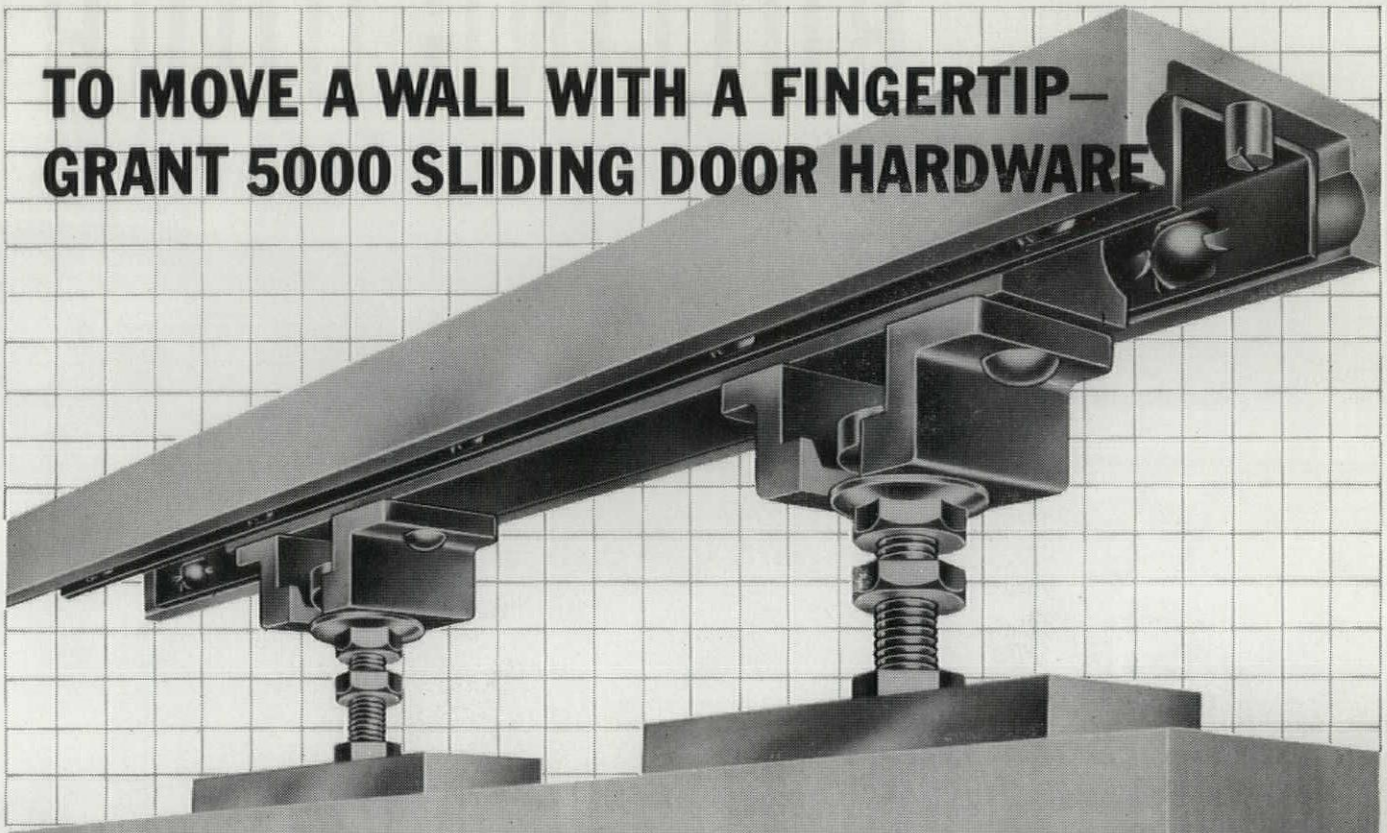

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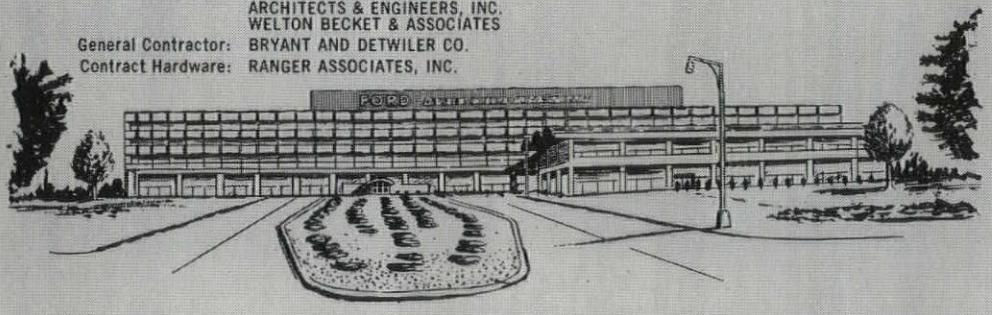

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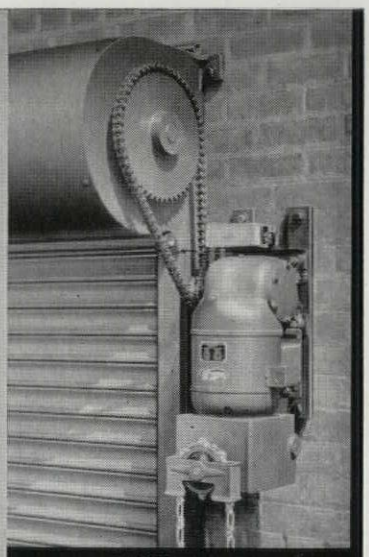

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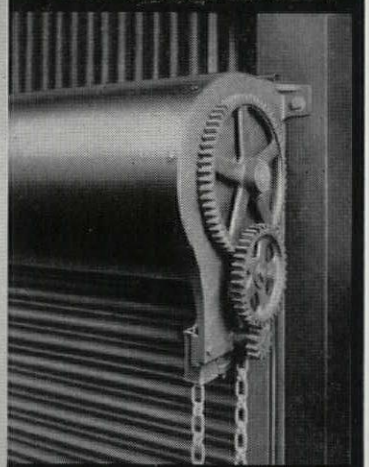

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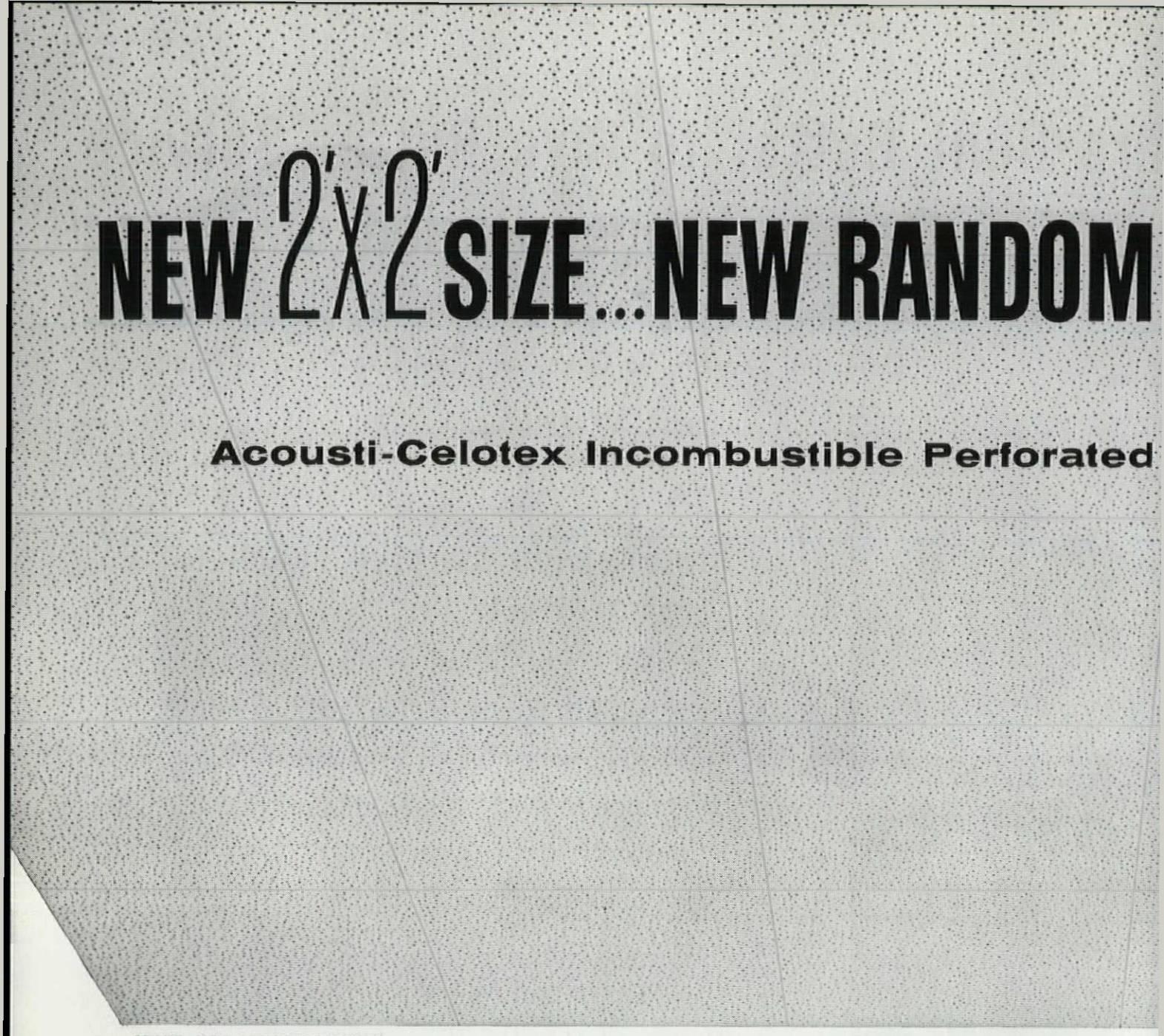
Acousti-Celotex Incombustible Perforated



ABOVE: NEW RANDOM PATTERN

- **Larger, more versatile size**
- **Faster application... more economical**
- **Permanent, paint-proof acoustical efficiency**

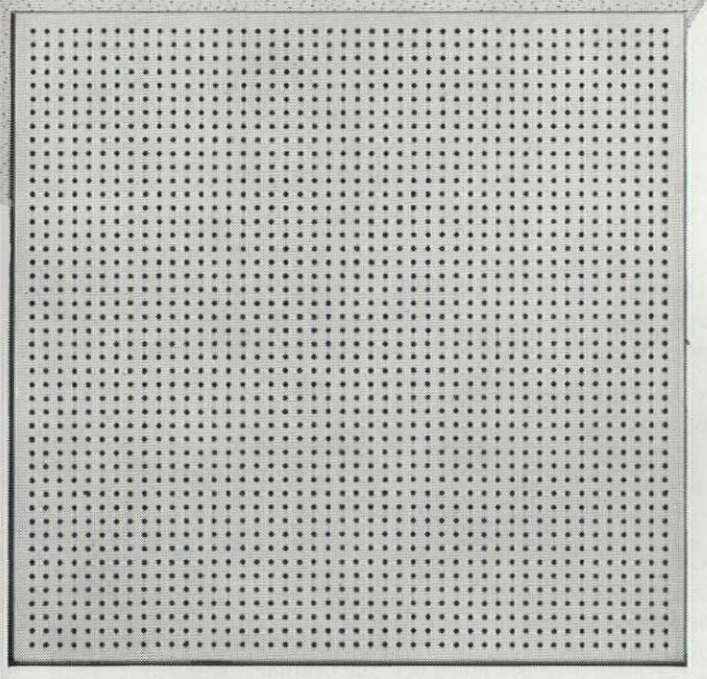
Already famous for strength, rigidity, high sound-absorption and paintability... Acousti-Celotex Perforated Mineral Fiber Tile is now available in new double-size version. These new larger units enhance modern "open" interiors. Note, too, how the new random design (above) minimizes joint lines... creates a monolithic effect.

The need for fewer suspension system parts and faster application combine to make this 2' x 2' module a more economical installation. And your clients will appreciate permanent sound absorption. Periodically tested over the past 25 years, this Acousti-Celotex tile has demonstrated that it retains its original acoustical efficiency after numerous maintenance paintings.

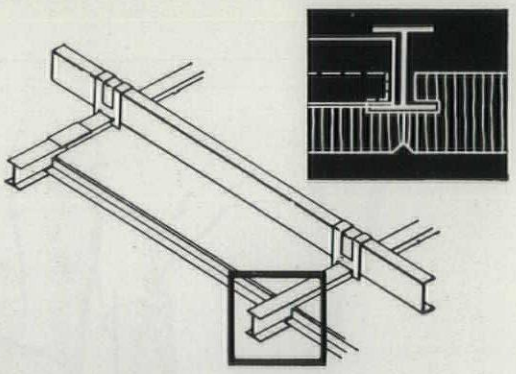
Your Acousti-Celotex distributor will be glad to provide specification drawings for a variety of installation systems.

PATTERN

Mineral Fiber Tile

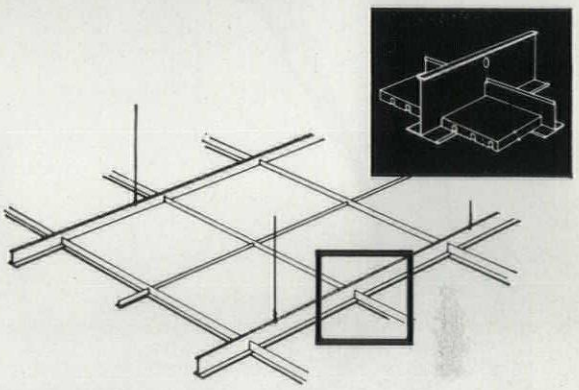


STANDARD PATTERN (Both Random and Standard patterns available with or without kerfed edges)



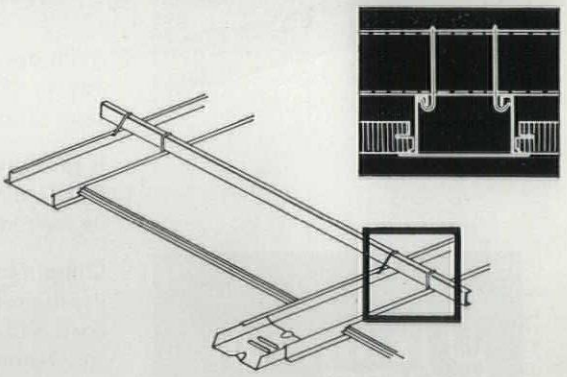
Kerfed 2′ x 2′ Acousti-Celotex Mineral Fiber Tile on Celotex H&T Concealed Suspension System

Provides uninterrupted ceiling plane. Completely concealed. Non-breathing, so surface stays cleaner.



Butt edge 2′ x 2′ Acousti-Celotex Mineral Fiber Tile on Celotex T&T® Exposed Suspension System

Easy access to above-ceiling utilities, integration with lighting fixtures and air diffusers. Exposed T-sections finished in white baked enamel.



Butt edge 2′ x 2′ Acousti-Celotex Mineral Fiber Tile on Celotex Acousti-Line® Suspension System

Sturdy, structural suspension system designed for effective integration of Sound, Light, and Air Conditioning components, all modular and interchangeable.

ACOUSTI-CELOTEX **Sound Conditioning**

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Products to Meet Every Sound Conditioning Problem...Every Building Code

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reviews

(Continued from page 232)

reviewer has ever read.

The balance of the book is a down-to-earth manual on air-conditioning design and practice. It commences with a detailed survey of the different methods of cooling a house, from the melting-ice technique of the Romans to the modern heat pump. It then goes on to sections analyzing packaged compressors of all types (without, however, quite enough on absorptive cooling to be adequate), fans, ducts and duct systems, and registers and diffusers. There is a simple, understandable chapter on cooling load calculation, and a somewhat inadequate one on noise control; and then a summarizing of the previous data by means of an analysis of specific design considerations for specific buildings.

The next chapter, on cooling-equipment operation, is so definitive and succinct that one wishes it could be reprinted as a separate pamphlet to be put into the hands of every practicing architect, builder, contractor, and air-conditioning mechanic in the country—and also every home owner who has a central air-conditioning system.

The final chapter, dealing with the air-conditioning industry itself, is of lesser importance, primarily because it is so obviously subject to change without (or with very little) notice. However, it probably will be useful to the young man who is planning to go into the air-conditioning business.

The charts, drawings, and other figures —of which there are over 250—are models of clarity, simplicity, and practicality; almost every one has been especially redrawn for the book.

Of course, no book is perfect. In this case, it is unfortunate that warm-air heating is not covered along with summer cooling. At least half, and probably more, of the book is almost as applicable to warm-air heat as to cooling. And, inasmuch as the authors themselves seem convinced that the future of summer cooling lies in the packaged, year-round heating-cooling unit, it would have been only sensible for them to have added sections on heat-load calculation and on warm-air

(Continued on page 246)

"I HAVE BEEN ASKED TO SAY
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NEW SMITHCRAFT LARGE ELEMENT
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big fixture to install
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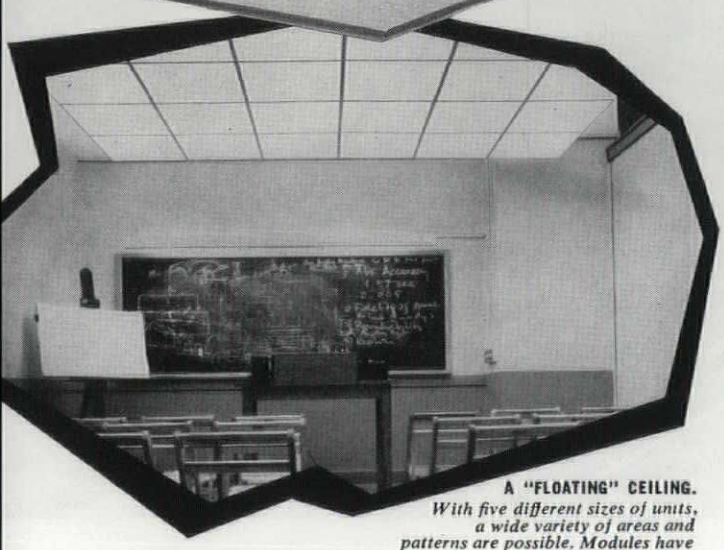

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REPUBLIC HIGH STRENGTH REINFORCING BARS

Reduce column size, save floor space, permit design stress of 30,000 PSI

REPUBLIC HIGH STRENGTH REINFORCING BARS MEET ASTM SPECIFICATION A-431-58T

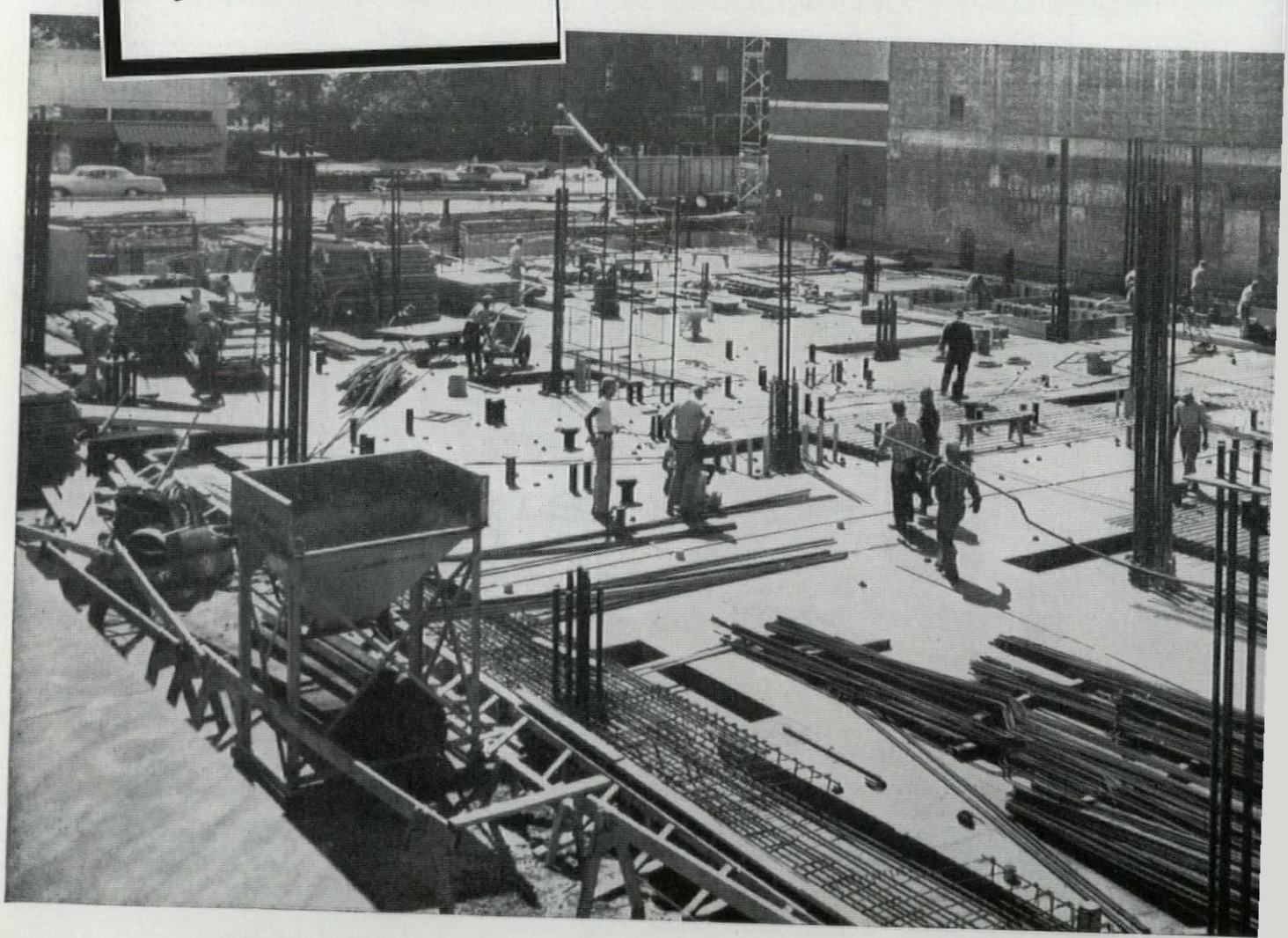
. . ."High Strength Billet Steel Bars for Concrete Reinforcement". Material used in bar fabrication is of a special high strength grade intended for use in concrete structures designed to require steel reinforcement with a yield point of 75,000 pounds per square inch.

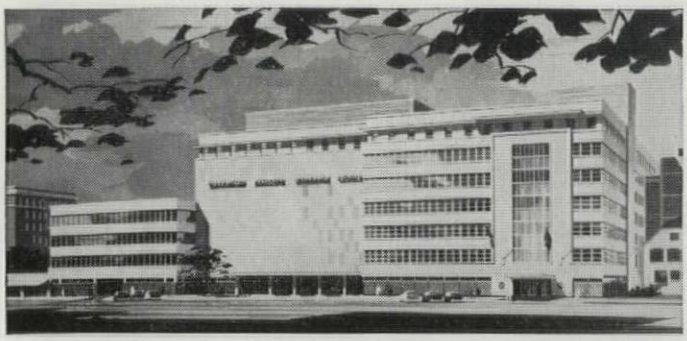
These advantages were obtained by employing large size, Nos. 14S and 18S Republic High Strength Concrete Reinforcing Bars for column verticals in the Washington National Insurance Company Building, Evanston, Illinois.

The building has unusually large bays, approximately 27′ by 27′ with flat slab reinforced floors 9″ and 10″ thick. While the building is only seven stories, and the floor live load 100# per square foot, heavy loads must be supported by the columns because of the large bays.

Decision by the Architects-Engineers, Graham, Anderson, Probst & White, to use high strength reinforcing bars was based on utility rather than on initial economy.

For example, a first story column with conventional steel verticals consisting of two concentric spirals contain-





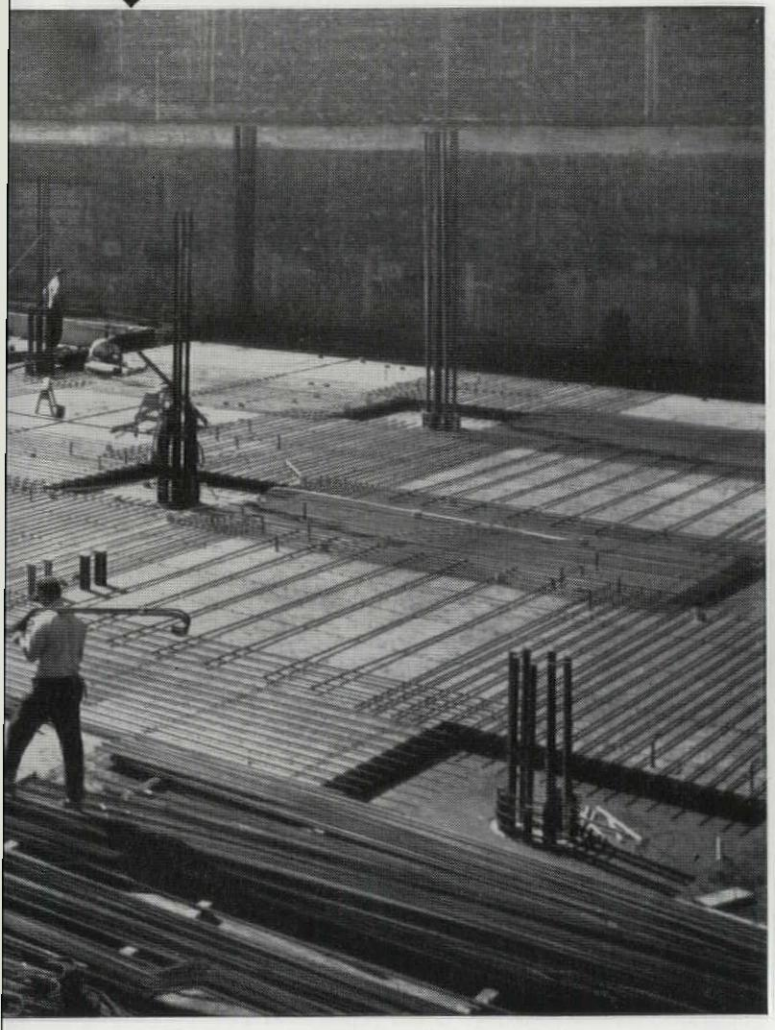
Washington National Insurance Company Building, Evanston, Illinois. Graham, Anderson, Probst & White, Architects-Engineers, Chicago. Norman F. Brunkow, Chief Structural Engineer. A. L. Jackson Company, General Contractor, Chicago. Gateway Erectors, Inc., Steel Erectors, Chicago.

ing 22 No. 11 bars, limited to a design stress of 20,000 PSI, would have been 32″ in diameter. The same column using 11 No. 18S butt-welded, high strength bars, with a possible design stress of 30,000 PSI, measures 26″ in diameter—a saving in floor space of approximately 2 sq. ft. per column.

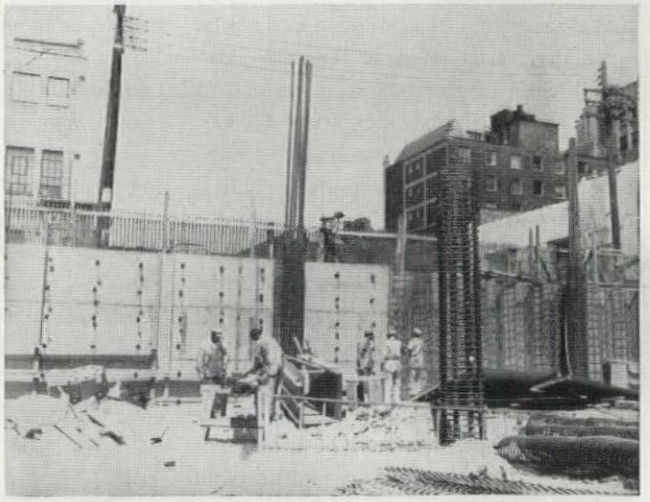
Republic High Strength Reinforcing Bars provide a minimum yield point of 75,000 pounds per square inch and meet the new ASTM Specification A-431-58T.

The high strength bars are rolled from new billet steel only, in all standard sizes including, 14S (1½″ square equivalent) and 18S (2″ square equivalent). Bars can be specified to any length up to 60 feet. All splices are field welded. Mail the coupon today for full facts.

Progress photo below shows the setting of reinforcing steel in the second floor and indicates the staggered heights of column verticals.



NO. 18S HIGH STRENGTH REINFORCING BARS used in column verticals are electrically butt-welded in basement story adjacent to steel sheeting. To accomplish the weld, the lower bar is furnished with a square cut end and the top bar is beveled at 45 degrees from each side to form a chisel end. Clamps are used to hold bars in alignment.



This photo shows first and second story column verticals extending above the basement floor after having been butt-welded to the dowels in caisson tops. Bars are No. 18S high strength types furnished by Republic Steel.

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Please send more information on Republic High Strength Concrete Reinforcing Bars.

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Address_____

City_____ Zone_____ State_____

(Continued from page 242)

furnaces, and to have modified the existing chapters on distribution, etc., as required. Professor Konzo reports that the material on heating was purposely omitted "since it will be covered in Volume 1 on winter air conditioning"—which simply means that the poor, suffering student will have to buy *two* $7.50 books instead of one!

Lesser complaints include the fact that the Index is so parsimonious as to be frequently useless; that the Glossary is somewhat captious and discriminatory (it includes the term "soffit openings" but neither "register" or "diffuser"—nor, as a matter of peculiar fact, "heat gain" or "heat loss"); that there is no table of physical constants; and that not one, single, bibliographical item is included; that is, no reading list for advanced study.

Finally, it is possible that the book would carry more general weight if it used research sources other than University of Illinois' Engineering Experiment Station and Small Homes Council. This is not necessarily wrong—it merely is a bit provincial. There are some instances in which the Illinois data do not seem to be in complete accord with other facts from equally reliable sources.

But none of these criticisms is basic; the book still remains an outstanding accomplishment. It would be a salutary reading experience for every architect and architectural student: not so they can become air-conditioning contractors, but so they can *understand what air-conditioning contractors are talking about.* They would also learn enough to avoid making some of the more egregious errors that are only too often made by (even famous) architects who are poorly informed on the physical requirements of a cooling system.

GROFF CONKLIN
New York, N. Y.

new space-estimating procedure

How to Estimate the Building Needs of a College or University. *William T. Middlebrook. The University of Minnesota Press, Minneapolis, Minn., 1958. 169 pp., charts and tables. $15*

At first glance, this appears to be a book better suited to college administrators worrying about plant expansion than to the architects and site planners who might be commissioned to handle the technical details of such expansion. Closer reading quickly brings out its architectural significance.

The book is a demonstration of methods developed at University of Minnesota to predict future enrolments and the need for additional building space. Traditionally, college building needs have been determined by simply multiplying a given square footage by the total number of anticipated students. This older method is now being discarded as too unrealistic: it does not take adequately into account the fact that different kinds of instruction call for varying kinds and quantities of space. Furthermore—and here is a point certain to interest the administrators and legislators and trustees responsible for authorizing the expenditure of money for new college buildings—recognition must also be given to the fact that most existing classrooms and laboratories are not used as intensively as they could be through a better scheduling of activities, and this unused potential capacity of the school plant should be included in figuring the need for any additional space.

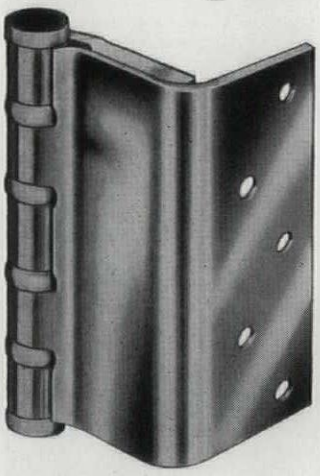
To overcome the limitations of conventional space-estimating, the Minnesota planners have concocted an ingenious procedure. Student attendance estimates for 1960, 1965, and 1970 are developed through projections of population estimates for the entire state. Enrolments in the University, it is found, will rise from 23,400 in 1955 to approximately 47,000 by 1970, an increase that continues the doubling every 15 years which has occurred regularly in the past, not only at Minnesota but elsewhere as well. The attendance estimates are then broken down into hours of instruction to be given each student in each college of the University. After allowing for students enrolled in one college who are taking courses in other academic units (the so-called "crossover factor"), the future teaching load for each college is computed in terms of "total student station hour loads."

(Continued on page 250)

Rhode Island Hospital, Providence, R.I.
Architects: Shepley, Bulfinch, Richardson & Abbott

The problems of inner space must be solved, too . . .

specify **STANLEY "Swing-Clear" Hinges**



Wherever space is a design problem because it is at a premium, Stanley Swing-Clear Hinges deserve your consideration . . . and selection. These hinges swing entirely clear of their openings and provide up to two more inches of clearance. In hospitals, beds can pass through doorways without damaging door corners and faces. Doors last longer. Like all hinges in Stanley's full-jeweled ball bearing line, they will last the life of the building.

Your best source for solving *any* hardware problem is Stanley's complete line of quality hardware for industrial, institutional, commercial and residential building. Stanley Hardware, Division of The Stanley Works, Dept. D, 78 Lake Street, New Britain, Conn.

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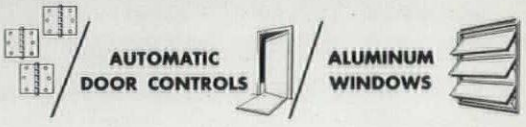

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This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • builders and industrial hardware • drapery hardware • door controls • aluminum windows • stampings • springs • coatings • strip steel • steel strapping—made in 24 plants in the United States, Canada, England and Germany.

Photos by Guillet Studio - Natchitoches, La.

Drafting room, Butler & Dobson, AIA

Louisiana Architects design own office building with Insulite Roof Deck

Butler & Dobson like clean, contemporary appearance of functional 4-in-1 panels

Acting as their own clients, Oscar Butler and E.P. Dobson had complete freedom in the selection of materials and the creation of every single design element in their new office building. The excellent combination of functionalism with beauty you see here is the result.

Insulite Roof Deck, for example, provides beauty plus a 4-in-1 functional advantage. It's decking . . . insulation . . . vapor barrier . . . prefinished ceiling all in one. And it's economical. Washable.

Over the past four years, Butler and Dobson have detailed Insulite Roof Deck in plans for a number of commercial and residential structures—including Mr. Dobson's home.

If you'd like additional technical data and literature showing a number of interesting Insulite Roof Deck installations, just write: Insulite, Minneapolis 2, Minnesota.

build better with

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Insulite Division, Minnesota and Ontario Paper Company, Minneapolis 2, Minnesota

E. P. Dobson's home, Natchitoches, La.

Partner's office in new building

reviews

(Continued from page 246)

The next step is to determine how much space will be required to accommodate the projected teaching loads. All existing facilities of the University have been appraised for their potential effectiveness in use. Each type of space—offices, classrooms, laboratories, libraries, research areas, administrative areas, food service, plant operation, and the like—has been given an "optimal space-use factor," expressed as so many square feet of "assignable" (as distinct from "gross") floor area per student station hour of instruction. From these factors are derived another set, the "space-increase factors," which vary according to the function of each particular space, the efficiency of its present use, and the possible improvement in use. By applying the space-increase factors to the projected teaching loads, the net additional building space required to do the job can be quickly computed. All computations imply a school plant that becomes ever more efficiently used as it grows larger and larger under the pressure of expanding enrolments.

The Minnesota arithmetic can be readily applied to other institutions of higher learning, large and small, public or private—which is why this book has been published by the University. Different optimal space-use factors and space-increase factors would have to be established, of course, and this implies utilization studies of the existing school plant in every case. In making such appraisals it would seem that the architects could contribute a great deal.

Essentially the proposed method of calculating academic-space requirements is a new planning tool. It attempts to introduce a qualitative evaluation into the quantitative statistical measurements and projections. Like any tool, it can be refined further, but it can never be any better than the critical judgments that are incorporated into the computations. Unless these critical judgments include a design point of view, the whole procedure can be seriously questioned.

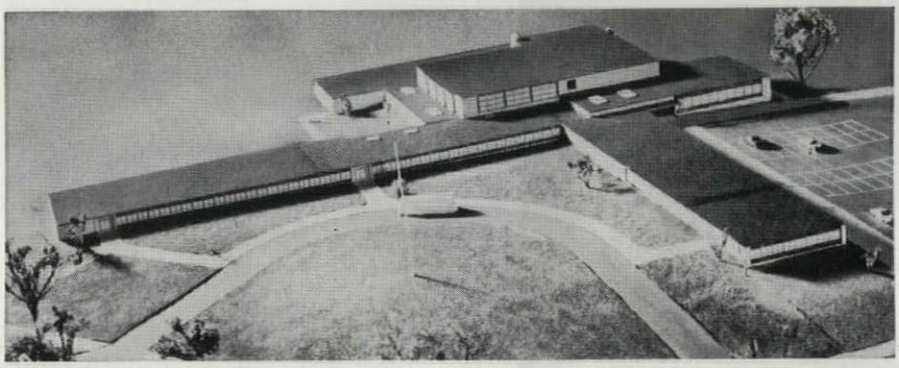
Indeed, as one ponders the method's implications, it becomes clear that archi-

(Continued on page 254)

Radiant Ceiling News

With Burgess-Manning Ceilings — Your Building Is Better — Your Building Budget No Bigger

Pupil Health Considerations Prompt Selection of Radiant Acoustical Ceiling



School board members of Attica, N.Y., when planning a new 680 pupil junior-senior high school, were especially conscious of the importance of schoolroom heating in the preservation of child health. They investigated several different types, and visited schools where different systems were installed to see them in operation.

The system which impressed them most was the Burgess-Manning Radiant Acoustical Ceiling which uses radiant energy from the ceiling for heating, the same radiant energy that comes from the sun. Convection currents from radiators or air ducts are eliminated.

The use of radiant energy from the ceiling, they found, insured a uniform temperature throughout the room, even close to the windows. It does not heat the air, but only the solid objects it strikes. Floors, walls, desks, chairs, and the pupils themselves,—any objects that intercept the radiant energy waves, are warmed. The floor was warm enough for pupils to sit on during the coldest winter days.

The school board members, wanting the very best for the new Attica High School, decided to install a Burgess-Manning Radiant Acoustical Ceiling.

With this type of comfort conditioning there are no radiators to clutter up the floor, and no drafts. Temperatures are uniform throughout the room and from floor to ceiling.

Automatic anthracite burning boilers with water-cooled grates, through which boiler water is circulated at all times, provides further efficiency for the heating systems.

With this highly efficient equipment, a very high standard of student comfort was attained at an economical operating cost and moderate first cost, both well within the New York State averages for school buildings.

Radiant Energy Provides Ideal Method For Comfort Conditioning

The principle of heating by radiant energy is as old as the sun itself and yet is misunderstood by most people.

Radiant energy passes through air without raising its temperature. It is converted into heat only after it strikes a solid object—a chair, a desk, the floor or walls.

Any warm object radiates energy to the cooler objects surrounding it.

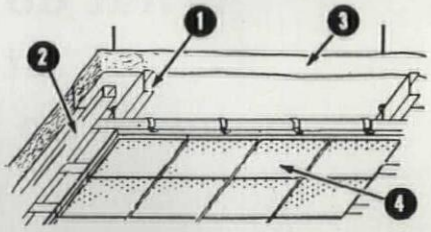
Human comfort is dependant on heat transfer. Our bodies are constantly generating heat that must be dissipated, mostly by radiation, as it is produced.

If this heat transfer is too rapid, as when the body is surrounded by cold objects, we feel cold. If it is surrounded by hot objects, slowing down the transfer of body heat, we feel hot. In cold weather we wear heavy clothes, not to keep cold out, but to keep our body heat from dissipating too rapidly. In hot weather the reverse is true.

Older heating and cooling methods bathe the body in volumes of warm or chilled air, depending on the season.

Radiant comfort conditioning warms or cools the objects surrounding the body by the transfer of radiant energy, just like the sun.

A Burgess-Manning Ceiling installation places the source of radiant energy in the only room surface that is completely unobstructed.



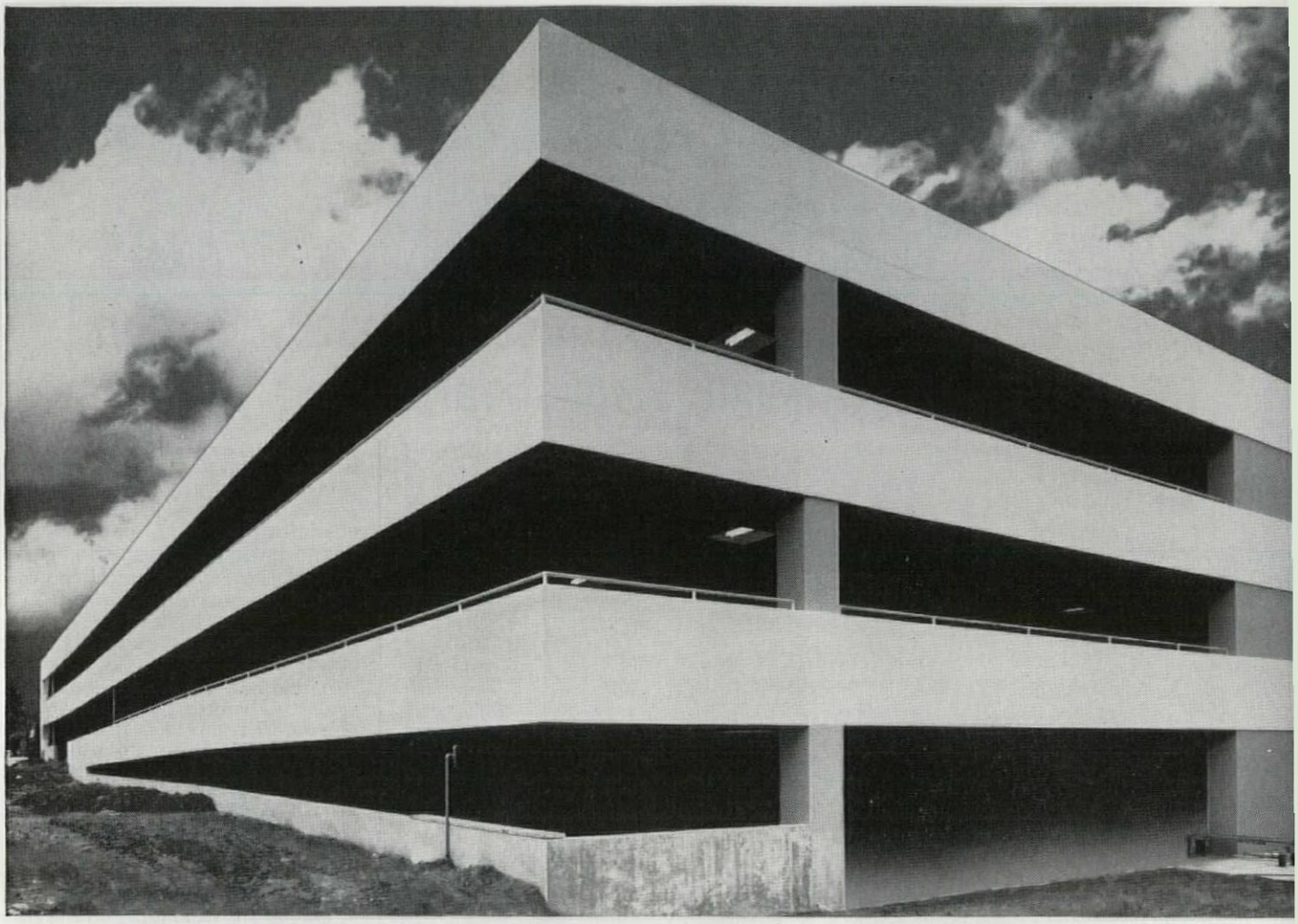
The simple construction of the Burgess-Manning Radiant Acoustical Ceiling is shown above.

(1) Suspension Grid

(2) Hot or chilled water circulation coil.

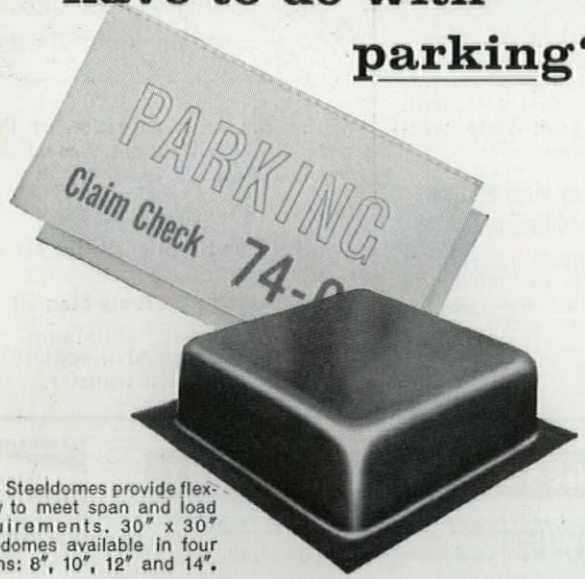
(3) Sound absorbing blanket.

(4) Perforated aluminum ceiling panels clipped directly to coil for efficient heat transfer.



The Texas Company Parking Structure, Los Angeles, California. Architect: Welton Becket and Associates. Contractor: Del E. Webb Construction Co.

What do steeldomes have to do with parking?



Ceco Steeldomes provide flexibility to meet span and load requirements. 30" x 30" Steeldomes available in four depths: 8", 10", 12" and 14".

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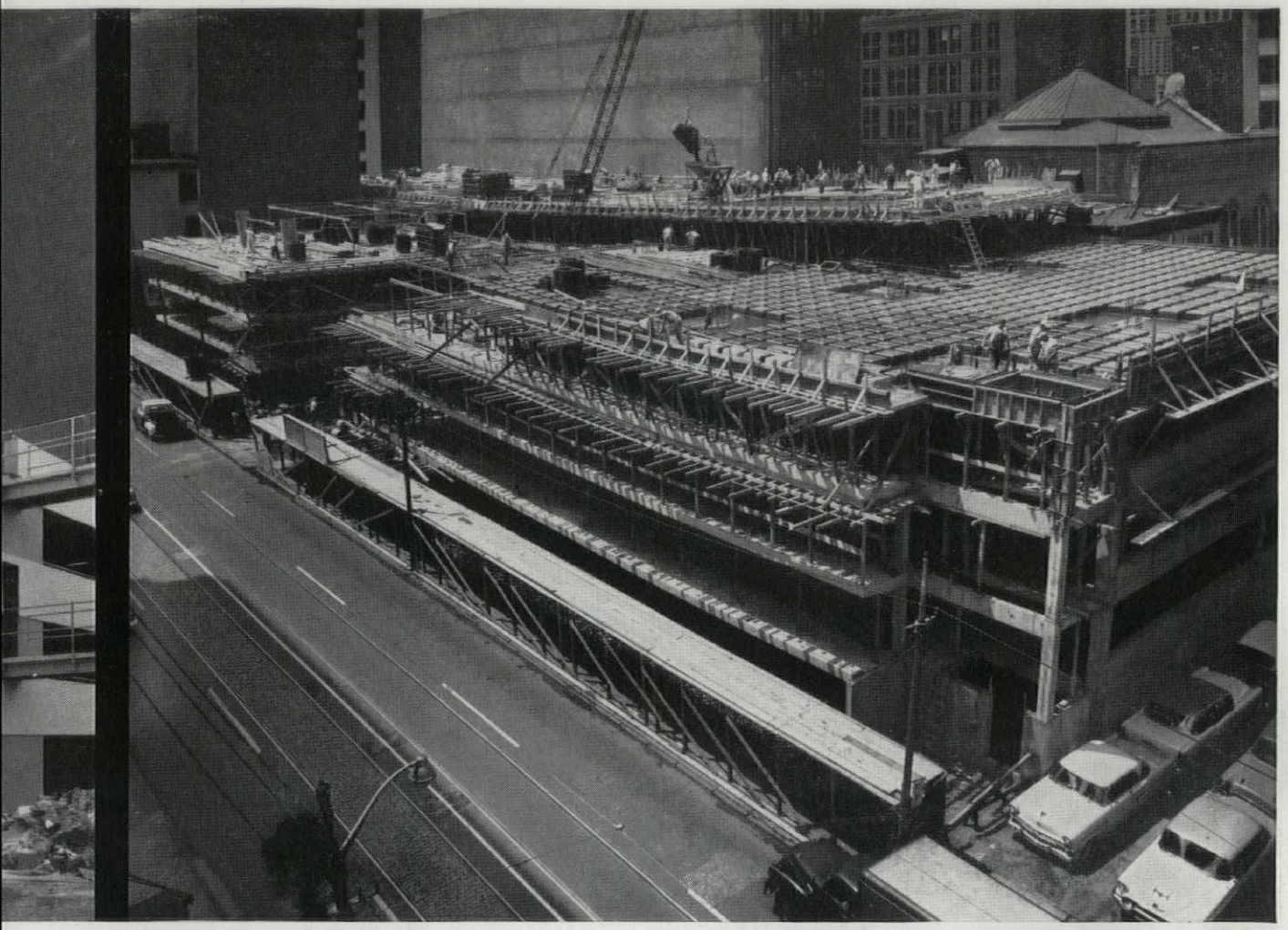
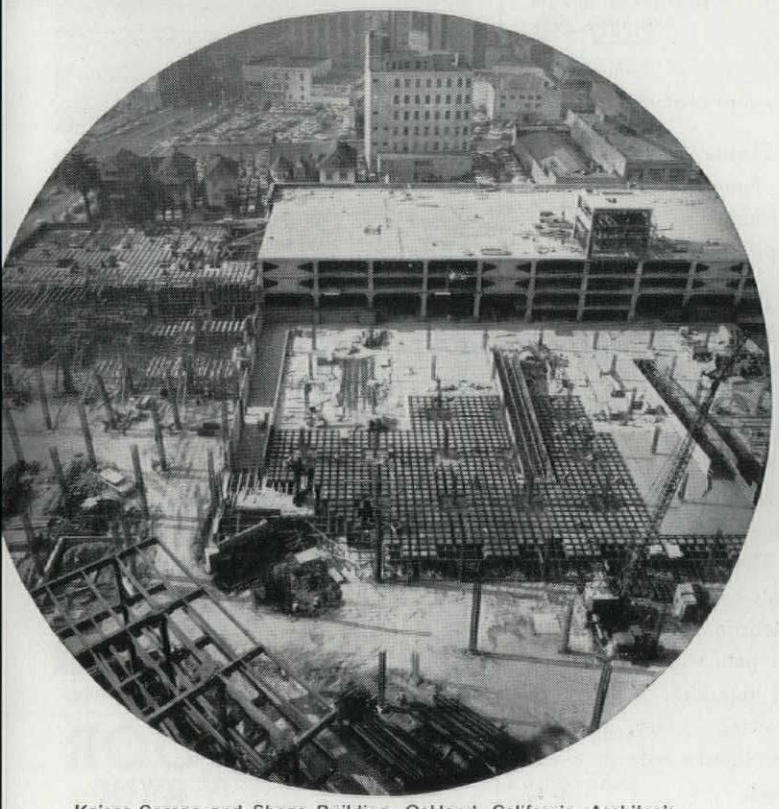


Site "Y" parking facility, Pittsburgh Parking Authority, Pittsburgh, Pa. Structural Engineer: Leland W. Cook. Contractor: Graziano Construction Co.



Kaiser Garage and Shops Building, Oakland, California. Architect: Welton Becket and Associates. Structural Engineer: Murray Erick Associates. Contractor: Robert E. McKee, Inc.

Ceco's one-piece Steeldomes in position, ready for reinforcing steel. Easily erected and removed, Steeldomes speed construction. There is no excessive clean-up expense because forms fit tight, leave no unsightly residue.

reviews

(Continued from page 250)

tectural considerations are paramount. The possibility of achieving improvements in building use through better planning and utilization of the many space-saving communication devices now becoming available for educational purposes should be taken into account in setting up the various space-use factors, but this presupposes a broad knowledge of new potentials in architectural planning and design.

In this connection, a widening program of architectural research of the sort suggested by Ford Foundation's fact-finding Educational Facilities Laboratories would be most helpful. Why, for instance—as the EFL officials have been asking, with refreshing bluntness—should we continue to build college classrooms mainly for daytime use while dormitories are designed only for the overnight storage of students? Why shouldn't the dormitory quarters, through the use of closed-circuit TV or intercoms, take on some of the classroom functions? Wouldn't there be a net saving in building space, as well as a gain in educaional efficiency?

C. THEODORE LARSON
College of Architecture & Design
University of Michigan
Ann Arbor, Mich.

contemporary prototype

Western Ranch Houses by Cliff May. *Editorial staff of* Sunset *Magazine and Books. Lane Publishing Co., Menlo Park, Calif., 1958. 176 pp., illus. $7.50*

Symbolic of the contemporary, western, ranch house are these handsome, liveable houses by designer-builder Cliff May. Two introductory chapters on the background of the traditional ranch house, with its roots in the early Spanish ranchos of Southern California, are followed by 152 well illustrated pages showing a collection of May's houses. The book is also a pictorial view of contemporary western living, with its outdoor-indoor emphasis on informal living in patios and courtyards or open, exposed interiors. Another of *Sunset* Books' growing library, this one is more for the architect's wife or client than for the architect. A. L.

(Continued on page 260)

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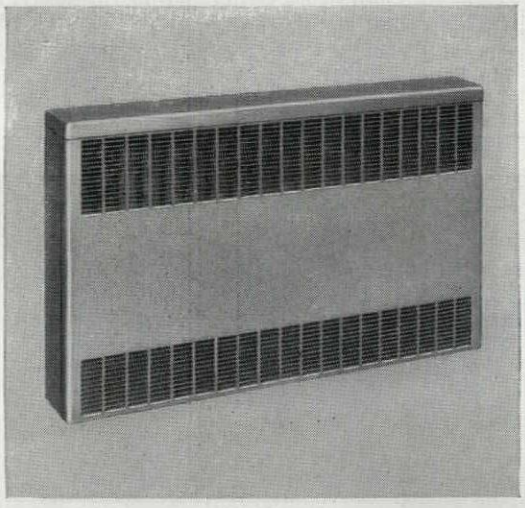

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ARCHITECT—Wishes to associate with firm in western part of country. All inquiries will receive resume upon request. Age 30, married, registered by examination. Presently employed. Can be available July 1. Box 745 PROGRESSIVE ARCHITECTURE.

ARCHITECT-ENGINEER wishes to associate with progressive Southern, Southwestern, or Western firm. Twenty-one years varied experience. Age forty. Resume available. Box 746 PROGRESSIVE ARCHITECTURE.

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(Continued on page 262)

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reviews

(Continued from page 254)

BOOKS RECEIVED

Architecture of Today. Udo Kultermann. Universe Books, 381 Fourth Ave., New York, N. Y., 1959. 236 pp., 180 plates. $9.50

Looking at Architecture in Canada. Alan Gowans. Oxford University Press, 417 Fifth Ave., New York, N. Y., 1959. 232 pp., illus. $10

The Golden City. Henry Hope Reed, Jr. Doubleday & Co., Inc., 575 Madison Ave., New York, N. Y., 1959. 160 pp., illus. $5.75

Our Architectural Confusion. Essays on Architecture. Louis LaBeaume. Vantage Press, Inc., 120 W. 31 St., New York, N. Y., 1959. 128 pp. $3

The Effective Location of Public Library Buildings. Joseph L. Wheeler. *Occasional Papers No. 52,* University of Illinois Library School, Urbana, Ill., 1958. 50 pp. $1 (paperbound)

Swedish Design. The Swedish Institute, Stockholm, Sweden, 1958. Distributed by The American-Swedish News Exchange, Inc., 630 Fifth Ave., New York, N. Y. 14 text pp., 66 plates. $2 (paperbound)

Construction Accounting and Financial Management. William E. Coombs. F. W. Dodge Corp., 119 W. 40 St., New York, N. Y., 1958. 490 pp., illus. $12.85

Legal Aspects of Construction. Walter C. Sadler. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York, N. Y., 1959. 400 pp., illus. $8.50

Design of Plumbing and Drainage Systems. Louis Blendermann. Industrial Press, 93 Worth St., New York, N. Y., 1959. 328 pp., illus. $7

Handbook of Air Conditioning, Heating and Ventilating. Clifford Strock. Industrial Press, 93 Worth St., New York, N. Y., 1959. 1112 pp., illus. $15

Plastic Design of Steel Frames. Lynn S. Beedle. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y., 1958. 406 pp., illus. $13

art

It is. Second Half Publishing Co. Inc., 22 E. 17 St., New York, N. Y., 1958. 72 pp., including 34 plates, 4 in full-color. $2, single copy; $5.50, subscription (3 issues). First issue of a new magazine for abstract art, featuring paintings, sculptures, and articles by today's artists.

Painting and Drawing in Charcoal and Oil. Edmond J. Fitzgerald. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1959. 128 pp., illus. $10

The Way Beyond "Art." Alexander Dorner. New York University Press, Washington Square, New York, N. Y., 1958. 154 pp., illus. $4

Van Gogh. Frank Elgar. Translated by James Cleugh. Frederick A. Praeger Inc. Publishers, 15 W. 47 St., New York, N. Y., 1958. 316 pp., illus., 64 full-color plates. $5.75

notices

name changes

McENTIRE, WHITE, PENDERGRAST & JELLISON, Architects, 131 Fifth Ave., Anchorage, Alaska, and 201 Chena Bldg., Fairbanks, Alaska. Formerly McENTIRE, WHITE & PENDERGRAST.

MAGNEY, SETTER, LEACH, LINDSTROM & ERICKSON, INC., 303 Roanoke Bldg., St. Paul, Minn. Formerly MAGNEY, TULSER & SETTER. WILBUR H. TULSER will continue as consultant to the firm.

BRUCE HUSTON & ARCHITECTS ASSOCIATED, 30841 Euclid Ave., Willoughby, Ohio. Formerly BRUCE HUSTON ASSOCIATES and JENKS-DEAKIN. CHARLES DEAKIN will remain with the firm as staff architect.

CLINCH, CRIMP, BROWN & FISHER, 177 State St., Boston, Mass. Formerly ADDEN, PARKER, CLINCH & CRIMP.

new addresses

EDWIN C. BRUNO, Architect, Old Orchard Professional Bldg., Room 526, 64 Old Orchard Rd., Skokie, Ill.

C. E. MAUK, F. E. VAN SICKLE, Associated Consulting Electrical Engineers, 704 South Spring St., Suite 810, Los Angeles 14, Calif.

BRIAN E. O'CONNOR, Architect, 7 Kensington Rd., South Yarra, Victoria, Australia.

LONERS, STROEBE & JOHNSON, Architects, 201 N. 24 St., Billings, Mont.

p/a jobs and men

(Continued from page 258)

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the sawdust trail

Every so often we pass through a phase, in some area of physical planning, in which the professional planner is deprecated and the layman (the *user*, who is therefore the ultimate authority) is touted as the one who should plan. I remember when this happened in the realm of hospital planning (it took a long time to demonstrate that *architects*, translating medical-nursing programs, could plan better hospitals than doctors could) and it has happened in the field of school planning and, more recently it is happening in several new design fields. Now the same antiprofessional argument is being raised in the area of urban design.

It is quite fashionable, at the moment, to be an antiplanner. It is very amusing (even to groups of professional planners) to hold professional planning up to ridicule. This seems, partly, to be related to the inner confusion at the professional level, expressed in the current, almost masochistic desire for self-criticism and self-analysis, and partly through the confusion in the public mind about the functions of architecture and planning.

Both of these tendencies seem to result in an inability to distinguish between *good* design and *bad* design, a willingness to condemn everything that is designed by a professional, and a leaping to the feet to applaud indiscriminately whenever someone says that planners in general are such miserable performers that the public should take over the planning job. I feel that many parts of the *Fortune* book, *The Exploding Metropolis*, and many aspects of Paul Zucker's review of this book, on page 205 of this issue of P/A, demonstrate what I mean. I will try to make my point by direct quotation.

First, however, let me make certain stipulations (as a lawyer says). I think we all agree that the city has become crowded; that there was a movement out of the city and that now there is movement back to the city on the part of certain groups; that the automobile is a great problem in the city; that the city has value as a cultural center; that there are certain urban characteristics distinguishable from suburban and rural traits and patterns. We all deplore urban sprawl and the swallowing up of the few remaining green areas. These points are not new; they have been the subject of much important literature, some of it now classic. They are well documented in *The Exploding Metropolis* and this part of the book I applaud. Let us also stipulate that there are some mechanically minded designers who copy, don't use imagination in planning.

Granting all these rather obvious things, do we need to say, as authors of chapters in this book do say:

"If design and planning are left entirely to (the experts) the buildings will be thoroughly institutional." (*Whyte*)

". . . these bleak new Utopias . . ." (*Whyte*)

". . . will the city exploit its strength? Unfortunately, with superb technical ability and a truly remarkable unity of approach, architects and redevelopers are taking exactly the opposite tack." (*Whyte*)

"What will the projects look like? They will be spacious, parklike, and uncrowded. They will feature long green vistas. They will be stable, and symmetrical, and orderly. They will be clean, impressive, and monumental. They will have all the attributes of a well-kept, dignified cemetery. And each project will look very much like the next one . . ." (*Jacobs*)

"The architects, planners—and businessmen—are seized with dreams of order, and they have become fascinated with scale models and birdseye views. This is a vicarious way to deal with reality." (*Jacobs*)

"The logic of the project is the logic of egocentric children, playing with pretty blocks and shouting, 'See what I made!'—a viewpoint much cultivated in our schools of architecture and design." (*Jacobs*)

Now that we have established the premise that *all* architects and planners are incompetent and that *all* redevelopment projects now under way are sterile, exactly alike, and unfortunately planned with the help of such professional tools as scale models and bird's-eye views, we come to the logical conclusion that unplanned cities, confusion, nostalgia for poverty and crowding, pure corn, and city growth directed by nonprofessionals, are desirable aims. More quotes:

"It is the layman, we believe, who must take the initiative . . ." (*Whyte*)

"Let me salute the fountain . . . the fountain (*at Orlando, Florida*) itself rises 18 ft above the lagoon and has seven sub-fountains around it. All are illuminated in an electrically controlled sequence of colors that lasts eighteen minutes. In the center the major fountain spouts from a green-blue Plexiglass dome, lighted from within." (*Clay*)

". . . planners and architects have a vital contribution to make, but the citizen has a more vital one. It is his *city*, after all; his job is not merely to sell plans made by others, it is to get into the thick of the planning job himself." (*Jacobs*)

Now I know Jane Jacobs and I know Grady Clay, and I have high respect for the social philosophy of William H. Whyte, Jr., and I feel sure that they do not really mean to say all this; yet they say the same things, time after time, through this book.

Why do I think that it is dangerous? Well, for one thing, it has led Paul Zucker, a solid professional himself, to rush down the sawdust trail to the evangelist's pulpit, to beat his breast and confess—to proclaim in this very magazine of ours that *all* present urban planning is bad. Again I quote, this time from Zucker:

"Rightly, Whyte says that the human scale is something that all downtown planners praise theoretically and obliterate actually."

". . . so-called urban renewal . . ."

". . . the mechanized, dogmatic recipes of CIAM, either modulized or hyper-romanticized—in both instances late by 30 years—are no help."

"[*The book's*] sincerity and clear thinking . . . make more sense than most theoretical abstractions in this complex field."

Another instance of the way this book will be used: I have just been reading the galley proofs of an article which will be published in the English magazine, *Architectural Design*. It was written by a young man who has visited the United States and is reporting on our lack of planning to an English professional audience. He refers, with admiration, to the book, *The Exploding Metropolis*, and uses it as basis for his own comment:

". . . the new centers (however excellent architecturally) have been planned without proper regard, either for their future growth, or for town-planning considerations generally . . ."

Let's not forget that when the lay person reads this book his reaction will be precisely that: that *all* planned urban improvements are bad and that it is now up to the citizen and the businessman to take on the job of planning which the professionals have handled so badly.

A much more serious, and in the long run much more useful, study of the present status and the future of urban centers in the United States is being produced by ACTION (American Council to Improve Our Neighborhoods) in a series of books being published by McGraw Hill, with the help of a Ford Foundation grant. Two have appeared so far—*Government and Housing*, by Edward C. Banfield and Morton Grodzins;—and *Rental Housing* (recently published) by Louis Winnick. Here is much factual data, speculation and commentary (when it appears, inevitably, in the manuscripts of such knowledgable men,) and basis for programming in the area of reurbanization. This is raw material that can be used by professionals who, let's hope, will continue to do the planning, and will continue to improve—not just corn up—the sober job they are doing.

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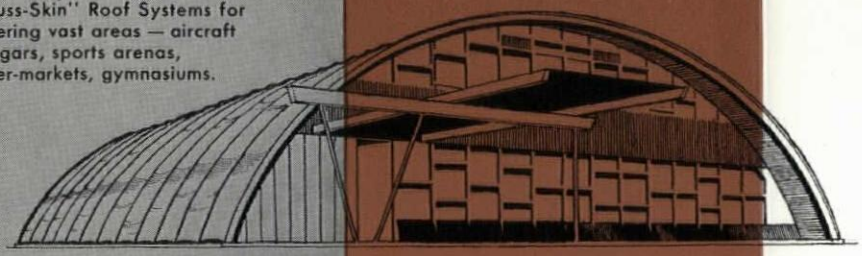

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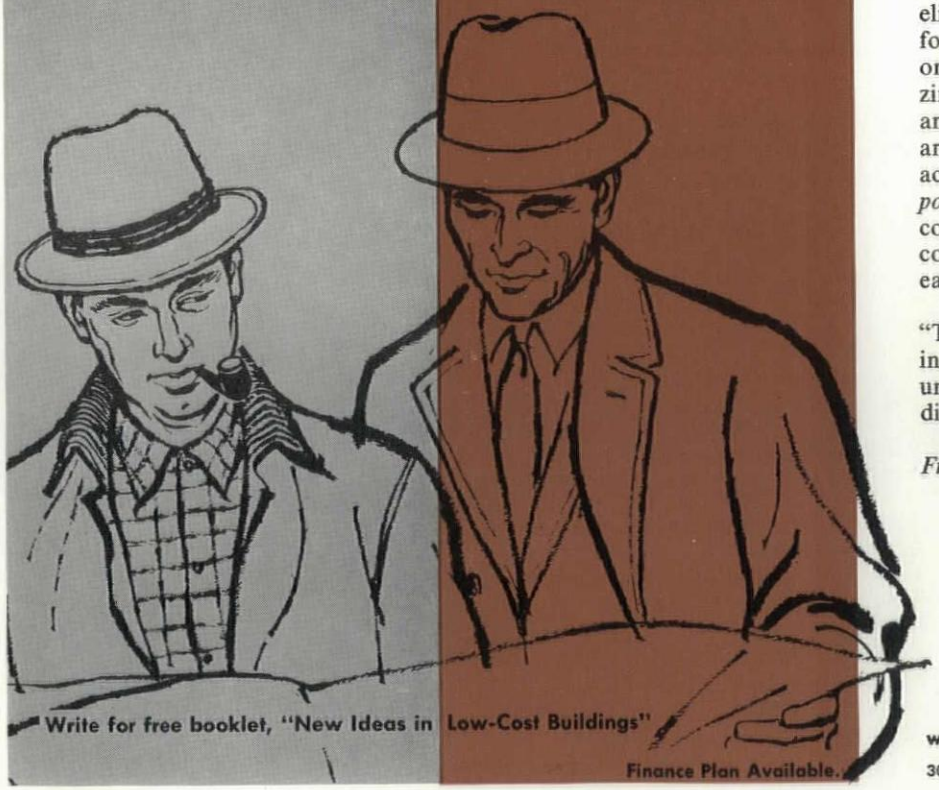

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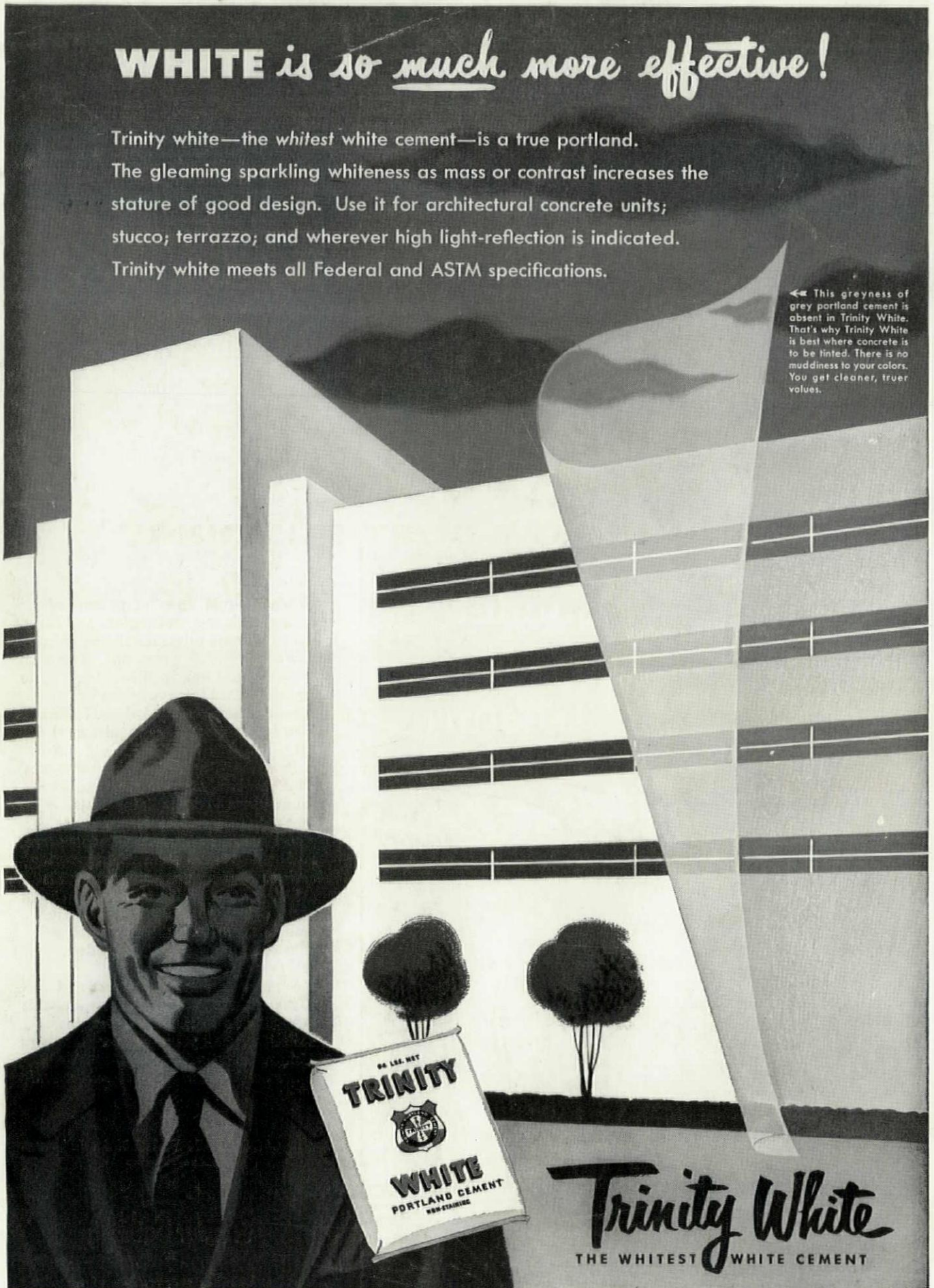

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