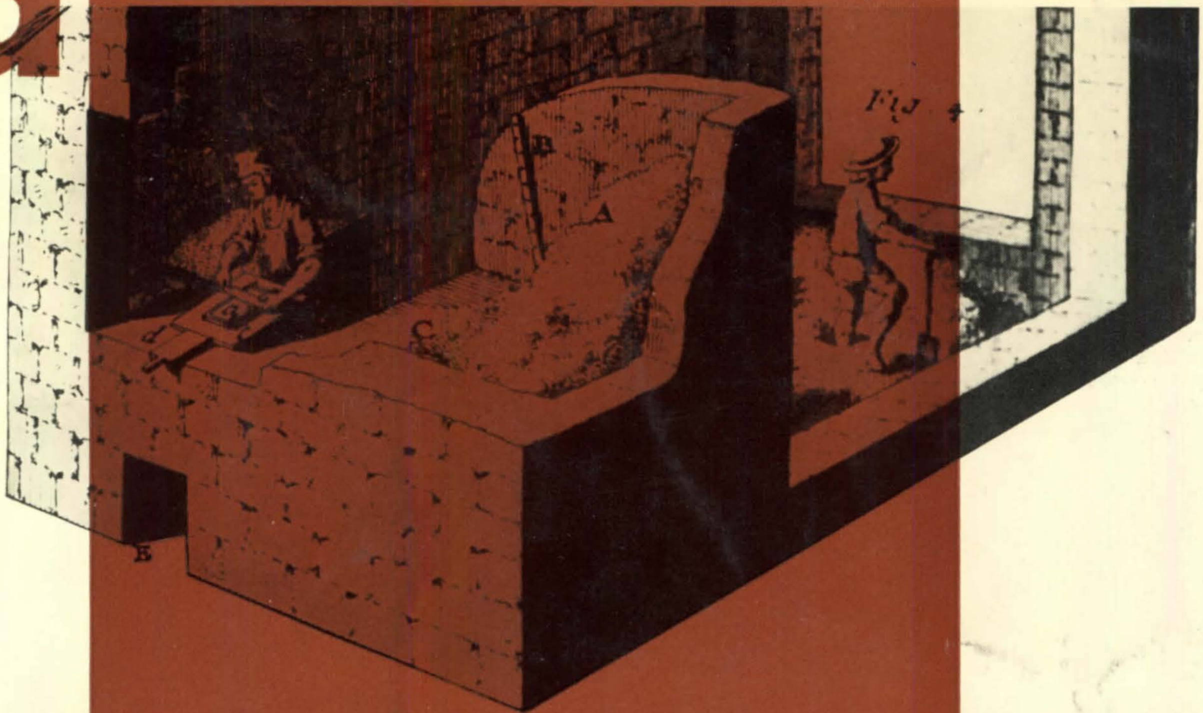
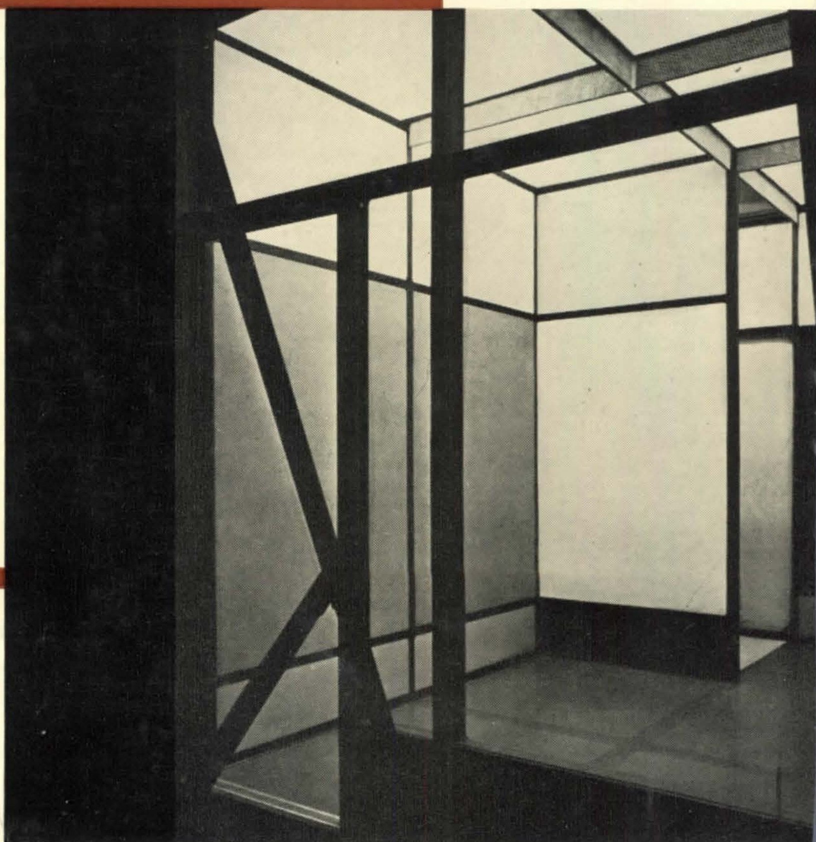
pa

Progressive Architecture





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10

october 1954

General Hospital Neurological Building, Philadelphia, Penna. Archt.—Harbeson, Hough, Livingston & Larson; Contr.—McCloskey & Co., Inc.—both of Philadelphia. Pozzolith Ready-Mixed Concrete supplied by The Warner Co., Philadelphia.

hospitals

St. Joseph's Hospital Addition, Burbank, Calif. Archt.—John W. Maloney, Seattle, Wash.; Contr.—Pozzo Construction Co., Los Angeles. Pozzolith Ready-Mixed Concrete supplied by Jewel City Ready-Mix Co., Beverly Hills.

Permanente Foundation Hospital, Los Angeles, Calif. Archt.—Wolff and Phillips, Portland, Oregon; Contr.—C. L. Peck, Los Angeles. Pozzolith Ready-Mixed Concrete supplied by Graham Brothers Co., Los Angeles.

Veteran's Hospital, New Orleans, La. Archts.—Favrot, Reed, Mathes & Bergman, New Orleans; Faulkner, Kingsbury & Stenhouse, Washington, D.C.; Contr.—Robert E. McKee, Dallas, Tex. Pozzolith Concrete batched at job site.

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*See Bureau of Reclamation's current Concrete Manual, Page 130.

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p/a newsletter

October 1954

Lectureships and research awards for academic year 1955-56, to be granted by the Government under Fulbright Act, are now open for application. Information and forms are obtainable from Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Ave., Washington, D. C.

American Academy in Rome is also offering limited number of Fellowships in Architecture, to begin October 1, 1955. Applications and submissions of work, in form prescribed, must be received at Academy's New York office before January 1. For details, address Academy's Executive Secretary at 101 Park Avenue, New York 17, N. Y.

Neil A. Connor, partner in Boston firm of Bourne, Connor, Nichols & Whiting, has been appointed Director of Architectural Standards, Federal Housing Administration. Commissioner Norman P. Mason announced that Connor will assist in revision of FHA minimum property requirements with following objectives: encouragement of improvements in design of dwellings on which there are FHA-insured mortgages, and recognition to quality construction and use of quality products in amounts of FHA-insured mortgages.

First Award and $20,000 were won in Carson Pirie Scott & Co. Centennial Competition by a Pratt Institute team: four senior students and Bill Breger, their critic and Associate Professor. Presentations from 106 entrants were judged. Among cash winners were three other school groups, from North Carolina State, MIT, and Auburn Polytechnic Institute. Prizewinners and Mentions are listed on page 218.

Producers' Council $100,000 traveling "Caravan of Quality Building Products" began second half of nationwide tour last month. October show dates are: 1st—Birmingham, 6th—Atlanta, 12th—Miami, 15th—Jacksonville, 19th—Charlotte, 22nd—Washington, D. C., 26th-28th—New York. Caravan's last showing of the year will be November 3rd at Newark, N. J.

Omnibus Housing Revision Bill was signed in August by President Eisenhower, who called it one of his major legislative victories. Bill liberalizes Government mortgage insurance, allows smaller down payments and longer terms. It also provides for gradual switchover of Federal National Mortgage Association from Federal to private capital. Only setback to the President in bill was in public housing—compromise bill provided authority for 35,000 units in the next year, rather than 140,000 units over the next four years which had been asked.

For first seven months of this year, Labor and Commerce Departments estimated construction expenditures at record $20.1-billions. Biggest dollar gains over like 1953 period were in offices, stores, and other commercial building; private residential building; and private and public educational construction. Substantial decreases were reported in 1954 spending for military facilities, both private and public industrial building, public housing, farm construction, and conservation and development work.

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Turn page for WASHINGTON PERSPECTIVE

newsletter

Frederick Gutheim Washington Perspective

The dismal international outlook continues to affect all Washington thinking, like radioactivity striking distant photographic emulsions. In previous columns I have suggested that this is the fundamental background for all national decisions on building legislation, programs, and money—including the supply of mortgage credit. How much building, what kind, where and when—these are the direct or indirect consequences of Congressional and Administration action. National policy has created our present building "boom" which appears likely to continue indefinitely, until halted by some international factors. Only the need for materials, manpower, or a diversion of national construction effort into more boldly defined channels of defense or military effort, seems likely to stem the continuing high production of the homes, commercial buildings, schools, highways, utilities, and those other constructed essentials of our dynamic, expanding nation which are now causing construction figures to rise.

New faces have recently appeared in a large number of architecturally-important Washington offices. Retirements and resignations have eliminated many familiars, and reorganizations and new legislation have created new posts and many new assignments. At the Public Buildings Service, Peter Strobel, the new Commissioner, is rapidly establishing himself. PBS is minus the services of Alan S. Thorn, Supervising Architect, who retired last month, after serving for five years in the Government's key architectural spot. Thorn rounded out a career of 20 years in the Federal service. Much current PBS activity revolves around the Lease-Purchase building program, now under the supervision of Assistant Commissioner Harry Hunter. The first group of these projects has now been processed and indicates there will be little change in architectural character from the conventional public buildings and post offices. While it's still too early to tell, the experience of the Atomic Energy Commission, with its headquarters building plans, indicates that while PBS clings firmly to its idea of an all-purpose loft-type office building, especially for dispersed sites, the agency *for which* it is being designed can have a big say in what is done to meet its needs. Dispersal is a big factor in restoring the importance of agency requirements in the design of public buildings; concentration, on the other hand, allows more interchangeable office space among Federal departments.

Dispersal got its biggest boost with the delayed publication of an April 15 circular directive from the Office of *Defense Mobilization. The Presidential* order stated flatly that no new permanent construction for vital government offices should be erected within 10 miles of the perimeter of an established urban target area. The initial test of the directive, in a redevelopment project in southwest Washington, has shown it means business.

At the Office of Defense Mobilization, Tracy Augur, who has been mainly responsible for dispersal policies in the location of defense production and government facilities, has been shifted to the Housing and Home Finance Agency. It does not appear that Augur's former job will be filled. At HHFA he will be in charge of a new program of Federal aids to local planning authorized in Title VII of the new housing act. A major change at HHFA was the resignation of Carl Feiss, who had directed the design aspects of the urban redevelopment program, now swallowed up in the more comprehensive "urban renewal" activity initiated by the housing act.

One important change at FHA is the appointment of an excellent New England architect, Neil Connor, to head a new office of architectural standards. If Connor is allowed to do a job, his contribution could be most important from the standpoint of that most retarded area of FHA practice—design. Powerful forces can be counted to resist any effort to develop objective design criteria, especially any which narrow the discretionary powers of the FHA evaluators. The activity is also trapped in a paradox: any effort to tighten standards is apt to be a design straitjacket. A substantial research program is needed to find the way out of this dilemma, and that is the very door Congress slammed last spring.

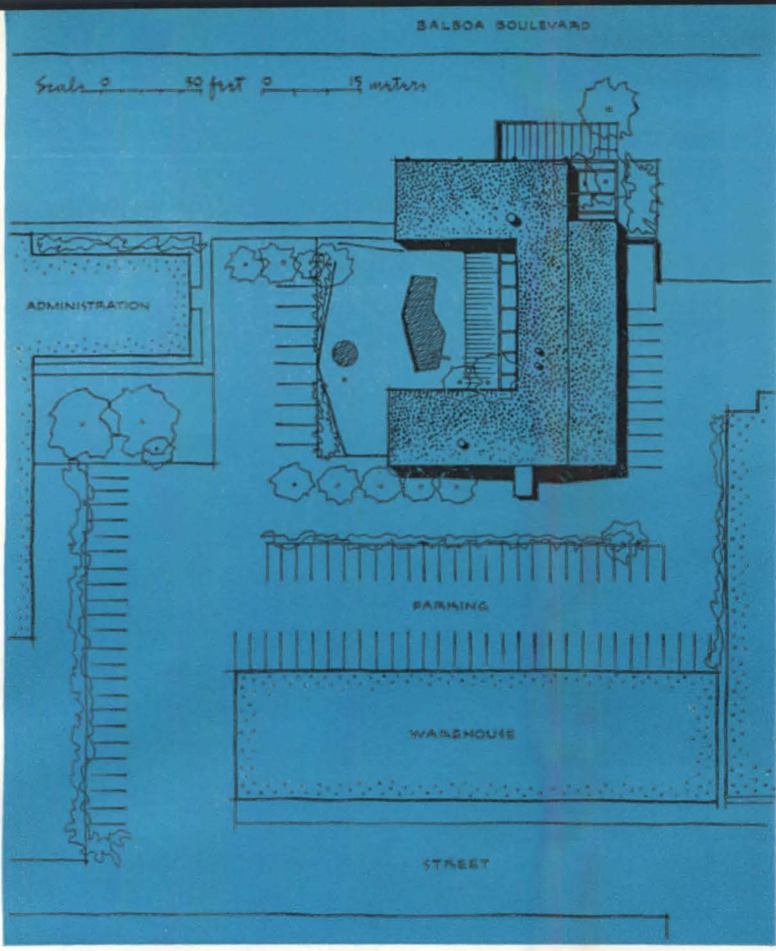
State Department's Foreign Buildings Office has received the resignation of Edward J. Kerrigan, who succeeded Leland King last year. The splendid architectural appointments made by FBO's advisory committee (see P.S. column in this issue) gave this activity a fresh impetus, which this change at the top is not likely to endanger.

At the other end of Pennsylvania Avenue there is a new Architect of the Capitol. This curiously named office has little to do with architecture, and is concerned mainly with management of buildings that house Congressional activity—down to and including the number of beans in the Senate restaurant's navy bean soup. The new Architect of the Capitol is a former Congressman, builder, landscape contractor, and engineer, J. George Stewart, who takes over from the indestructible David Lynn.

PROGRESSIVE ARCHITECTURE

October 1954

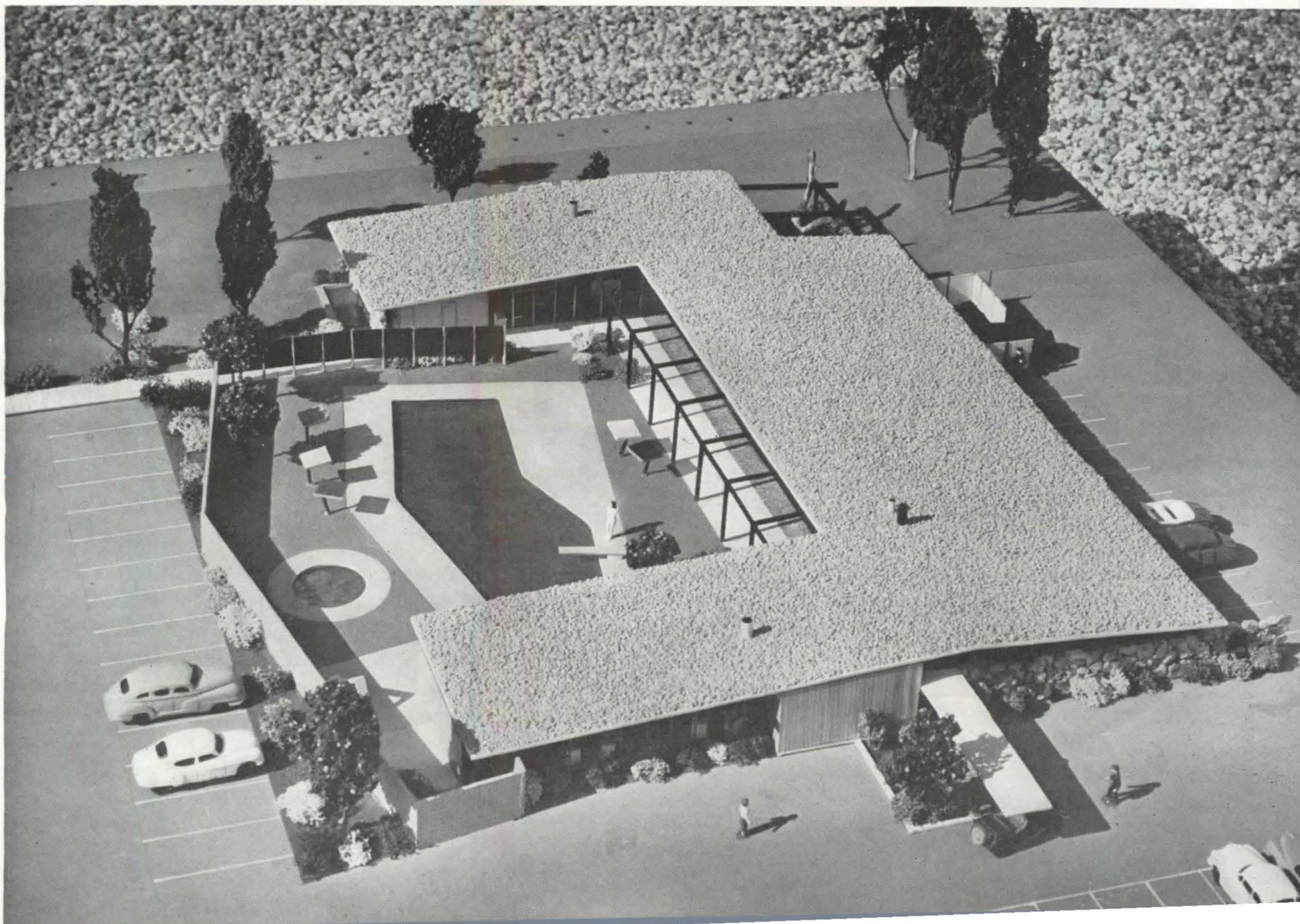
p/a progress preview



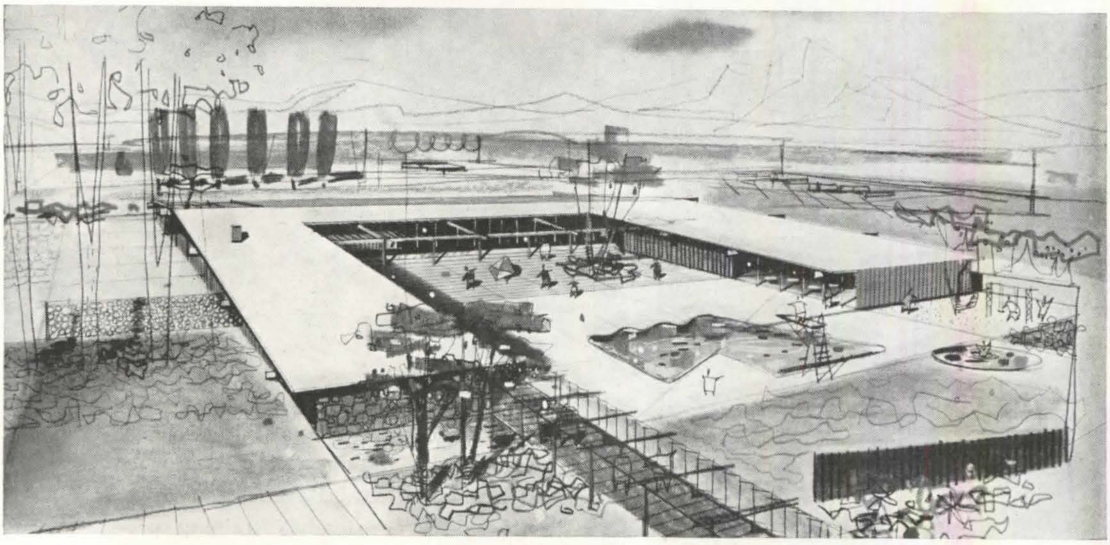
recreation building for officers and airmen

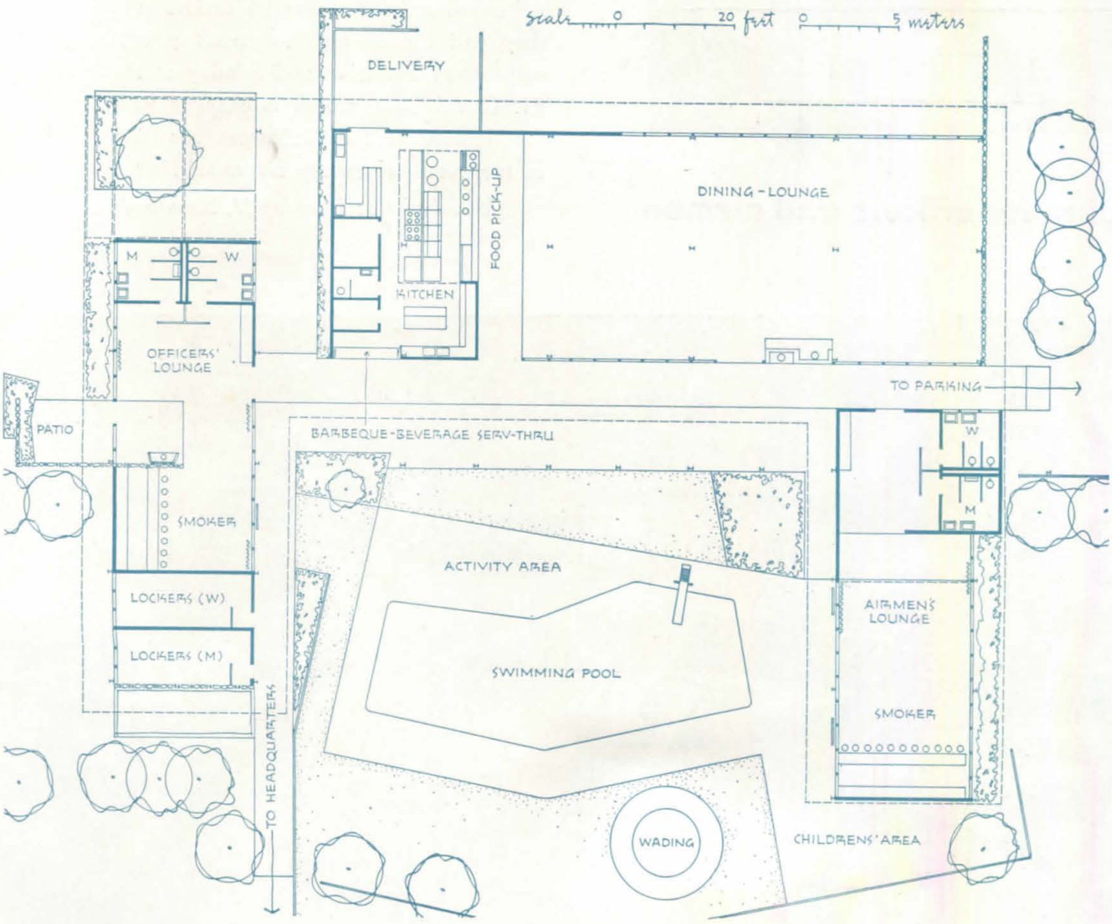
A definite need will be met by the new recreational building at the California Air National Guard Base at Van Nuys, California. The rigorous training program for both flying and ground personnel requires the "Weekend Warriors" (as they call themselves) to spend practically every Saturday and Sunday at the Air Guard Base, which is charged with the defense of the California coastline in the event of enemy air attack.

Model photo: Douglas M. Simmonds



p/a progress preview





The mess and recreational facilities afforded by this new building will be open to airmen, their families, and all others participating in Air Guard activities. Funds obtained through public subscription and industrial contributions will cover the costs. Architect for the structure is Welton Becket, who has contributed his services in support of the project.

The new structure will replace a worn wooden one on the west side of the airport. Built in a U form around an open-air recreation area and swimming pool, the building will include a central mess hall, kitchen, a large indoor-outdoor barbecue, and lounges for officers and airmen. For the families a snack bar, guest dressing rooms, and showers will be provided.

Designed for a steel frame, the walls will be concrete block with brick and tile panels. Provision for air conditioning has been made.

Attractive landscaping and indoor planting, combined with colorful materials, will provide a cheerful and relaxing atmosphere for servicemen and their families during off-duty hours.

Rendering: Welton Becket & Associates

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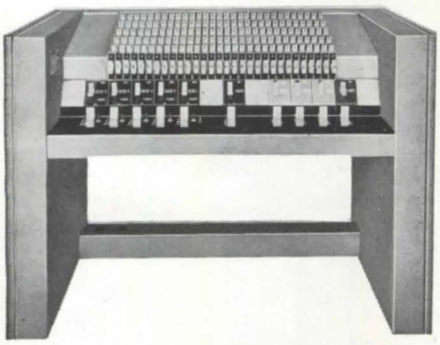

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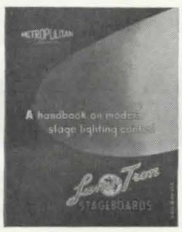

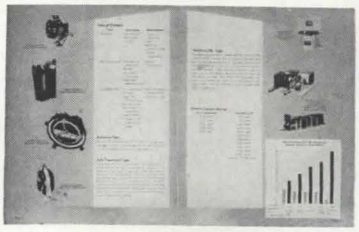

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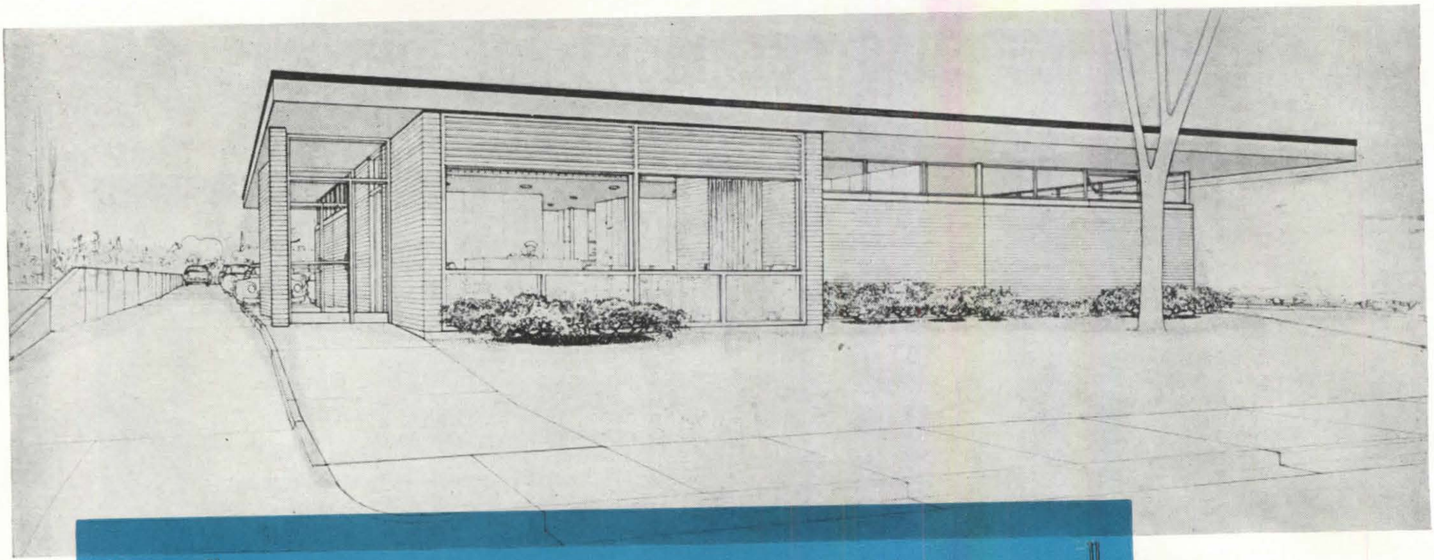

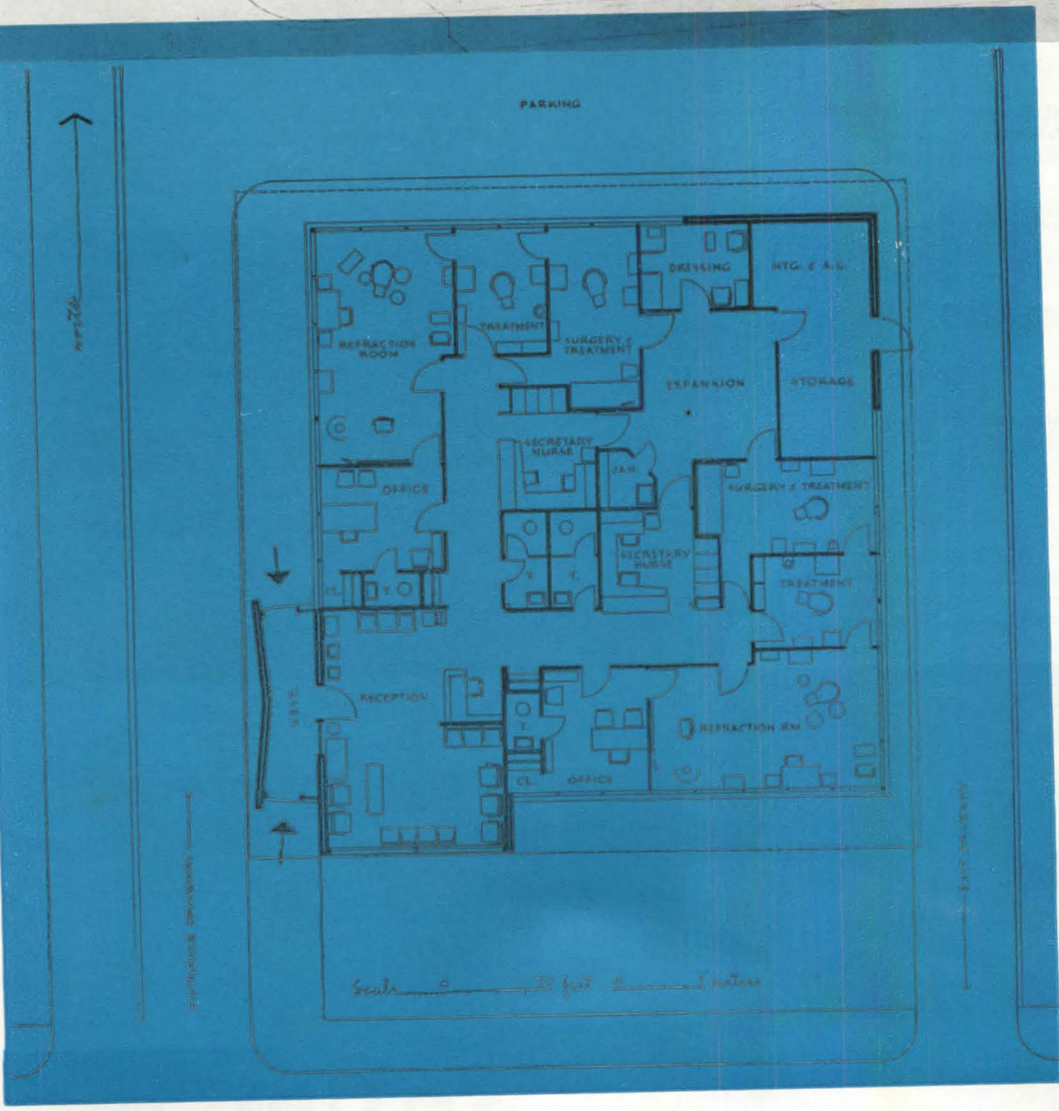

offices and clinic

Two eye specialists own and share the operation of this building, which will house their separate clinics. Now under construction in one of Oklahoma City's residential neighborhoods, it was designed by Joseph N. Boaz, of Winkler, Reid & Boaz (the firm is now dissolved).

The structural frame is steel, entirely independent of walls and partitions. Exterior wall material is face brick. Interior partitions are all plywood—walnut, birch, and fir—on redwood studs.

Air-conditioning controls automatically cut off compressors, leaving only blowers in operation when outside air reaches the proper temperature. A return air tunnel surrounds the entire building. *Rendering: Joseph N. Boaz*

P/A readers like to see how other architects detail

Dear Editor: Personally, I find your new ARCHITECT'S DETAILS of considerable value. We use them here for comparisons in methods—and frequently for design ideas. I hope the section is continued.

WILLIAM I. PARR
Lewiston, Idaho

•

Dear Editor: I believe the idea is fine and, if the details are properly selected, it would be of great use to most of us.

ROBERT J. BENNETT
Morgantown, W. Va.

•

Dear Editor: We appreciate seeing details done by other Architects.

W. B. MC CALL
Tressler & McCall
Cody, Wyo.

•

Dear Editor: We think the presentation of ARCHITECT'S DETAILS as a feature in your magazine is very interesting and helpful to the profession.

J. FRANKLIN CLARK, JR.
Kingstree, S. C.

•

Dear Editor: I feel it is of considerable interest to see samples of the drafting room methods of other offices. I favor a continuation of ARCHITECT'S DETAILS in future issues.

As long as this note is in the machine, I would like to express my thanks for your magazine. Have gone along with the name changes and improvements in P/A since 1940 and can't say there has been a single issue which I haven't enjoyed reading.

There are times when a new issue of P/A must be just thumbed-through when it arrives—and really absorbed at a later date. But even when just thumbing through your P.S. column is always read —there is food for thought as well as a laugh.

Again, I would like to see more ARCHITECT'S DETAILS.

ROBERT C. DOUGLAS
Beaverton, Ore.

Dear Editor: I like your series, ARCHITECT'S DETAILS, direct from the original sheets. This one (September) is a trifle on the engineering side.

SEYMOUR SALTUS
Morristown, N. J.

•

Dear Editor: This takes us back to the early *Pencil Points,* which when considered, is what we like. Questions on "how was it presented, worked out, detailed," etc.; for the hard-pressed architect this series should be quite valuable.

I would suggest you manage somehow to provide expendable "ads" on the backs of these details for ease of filing.

LEONARD SCHEER
New York, N. Y.

•

Dear Editor: We are all for details, but they must be selected for the best in architecture.

G. J. HANNIKEN
Detroit, Mich.

•

Dear Editor: This is good—I would like to see it continued.

RAYMOND S. ZIEGLER
Altadena, Calif.

•

Dear Editor: I feel that a magazine, just as an Architect, must continually look for new and better methods of doing a job. I believe that your feature, ARCHITECT'S DETAILS, will aid us all in this search.

JAMES S. LIBERTY
Albuquerque, N. Mex.

•

Dear Editor: I certainly do appreciate the feature, and the ones that have appeared in the past few issues of P/A have been interesting. I must say, rather critically, however, that I feel the (September) one on the Hackensack river crossing, by Fellheimer & Wagner, is of such limited application, and deals with a circumstance that few architects will ever have occasion to meet, that I, for one, would feel that it falls far below the previous selections.

The feature is good, the past selections have been excellent.

GORDON DICKSON ORR, JR.
Wallingford, Conn.

•

Dear Editor: As a long-time subscriber to P/A and its forebears, I have always been interested in your SELECTED DETAILS, primarily because Caleb Hornbostel was several years my senior at school, where his father took a great interest in the work. Accordingly, when I first conceived the current brochure series for the Architectural Woodwork Institute, and was drawing my preliminary plans, so to speak, I interviewed Richard Bennett here in Chicago, because, as you know, Dick is one of Caleb's former partners, and often serves on the juries of Producers Council for product literature. We talked at considerable length about the SELECTED DETAILS, and about details in general. He made some very good suggestions to me, some of which I have tried to incorporate into the brochures that are now being published by AWI.

We have been pleasantly surprised by the reaction to the AWI details from architects, and I think it is significant that many of our readers are stimulated by the reading matter which appears in conjunction with the details, rather than by the pictures themselves. Of course, we are a long way from having attained the ideal we are seeking, and I need hardly tell you that it is sometimes difficult to obtain from architects the information that will help to illuminate their own drawings. For what it is worth, here is the critique as rendered by Bennett, and as adapted by the AWI, after six months of practice:

"The detail in its printed format can mean more to the architect if it is accompanied by an underlying philosophy, or *raison d'etre.* For example, information should be conveyed as to why the particular detail was used in a particular situation. Why were certain materials

(Continued on page 16)

p/a views

(Continued from page 15)

chosen, and other materials not selected? What is the basic principle used in this detail that could be applied to similar details in other situations? *(For example, is there any aspect of the detail of the railing by Fellheimer & Wagner that could be applied to a railing on the balcony of a high apartment building?)* Specific data is likewise very helpful in enhancing a detail, which is more often than not an incomplete document without accurate specifications." *(An example thereof is the flashing which appears on the wall sections, published on pages 122 and 123 of your July issue. A little story in print describing the flashing, or an actual specification would go a long way to make these details more valuable to an architect too busy to read the fine nomenclature.)*

There is another principle which Dick Bennett emphasized. He stressed the fact that the hypothetical details should carry some objective comment by the architect or designer which would answer the following questions:

"How did this installation endure after several years? Did the materials succumb to the weather; and did the joints leak? If this detail were to be done over again today, could it be improved upon or would it be drawn in a different manner? What are the good features of this detail which have endeared it to the architect?"

I realize that some of the above comments may pertain to your SELECTED DETAILS as well as your ARCHITECT'S DETAILS. With reference to the new feature, I am sure that you will recall that some of the architectural magazines back in the '20s and early '30s used to publish details of this type; and I suppose that the magazines eventually discontinued these features because of lack of interest on the part of readers. The architect who is concerned with working drawings in his own office every day can easily be forgiven for developing a blind spot with regard to more working drawings, when he sees them in a magazine. Perhaps in this lone respect, the pen is mightier than the T-square; and the printed word might be used in conjunction with any worthwhile endeavor to find a new approach to the problem of graphically presenting useful methods and ideas.

Yours for higher standards of architectural journalism.

JAMES ARKIN, Architectural Consultant
Architectural Woodwork Institute
Chicago, Ill.

•

Dear Editor: One of the reasons I continue my subscription to P/A is because of the SELECTED DETAILS and the accompanying photos, which I consider a "must" to really comprehend them. They help to explain in seconds to draftsmen what it would take hours to do in freehand sketches.

If ARCHITECT'S DETAILS are to supplement the SELECTED DETAILS, that is fine, but if they are to replace them I say

(Continued on page 19)

(Continued from page 16)

emphatically—*don't!* And don't print them back to back—it is difficult to file them when two entirely different subjects appear on reverse sides.

A. R. MARTIN
Wilmette, Ill.

definition doubted

Dear Editor: As a structural engineer and a member of an architect-engineer firm, I could not avoid reading the article by Felix Candela (*June 1954 P/A*) and the discussions of the article by the other members of our profession—or to be more correct, reading them several times. The article and discussions, just as the structures they write about, are not entirely obvious at first glance.

It seems to me that the various writers have made a basic definition that is not entirely correct. I am referring to the apparent separation of intuitive analysis and mathematical analysis. Any analysis of a structure is only relative as to being exact or approximate. Take even the case of the simple beam. The actual complete stress condition cannot be determined. True, we can make assumptions based on experimentation and experience and apply these assumptions to make an educated guess—with the help of mathematical expressions, but at the same time we can just go ahead and guess the answer by intuition. If both methods give the same results, who is to say which is the correct way? I am by no means attempting to say that structures should be designed without the aid of mathematics. I am saying that any method of analysis, even the most vigorous mathematical solution, is an approximation and that the exactness of the solutions is relative. How can we, then, separate the analysis of a structure into intuition or mathematics, when we must use them together in any solution, and they are as compatible as bending and direct stress.

Candela seems to be quite disturbed by the majority of the structures that are being designed today. He expresses the idea that our vertical and horizontal structures are uneconomical and unattractive. Just as a thought, I wonder how a thin-shell structure would evolve if the client demanded roof parking or if it was necessary to obtain 50,000 sq ft of floor space on a 10,000 sq ft lot. As for being unattractive, I imagine Wall Street becomes as boring as an Eskimo village of igloos. But also, from Candela's viewpoint, I would feel quite perplexed in trying to inflate a rectangular balloon.

This sort of thinking can be carried to the ridiculous in many directions. However, it brings out a point I wish to make: that a structure should be designed to serve best the purpose for which it is to be used. Stereo-structures, just as any other type structure, can become stereotyped structures if they are used without sincere purpose and if buildings are forced into an enclosure

(Continued on page 20)

(Continued from page 19)

rather than an enclosure being designed around a function. There are, of course, unlimited numbers of forms for a solution to a given problem. The entire operation that is to take place within a building must be considered and from this a proper form arrived at that can be viewed with pleasure. No person is more aware of the advantages of pressure line structure than a structural engineer, nor is anyone more aware of their limitations.

I am in complete sympathy with Candela's desire for new and exciting forms. But at the same time, I am keenly aware that it is often necessary to "waste" material in order to save money, and a building that shouts solely for the purpose of making noise is not always a step forward.

In my thinking, a structure that meets all of the requirements of the society it is to serve, esthetically and otherwise, whether brand new or a thousand years old, is a sign of progress.

JOHN J. MILES
Seattle, Wash.

overhead percentage

Dear Editor: Siegmund Spiegel's article in May 1954 P/A greatly interested me. I would like to inquire about one of the items listed in the Job Analysis. Under Item No. 19 was listed Overhead on Salaries (60 percent). Could you clarify the meaning of this Item? EARL R. WILSON
Wilson & Earnheart
Kansas City, Kan.

Dear Mr. Wilson: *With regard to your question, I would like to clarify this roughly as follows: first of all, the entire Job Analysis Chart was taken as an example only, and the figure of 65 percent is not a realistic one. The percentage of Overhead will vary from office to office. Overhead which incorporates all expense items not chargeable directly to an individual job must be accounted for, however, in order to provide a production-cost picture as realistic as possible.*

There are several methods of determining Overhead percentages. A great number of offices in the New York region use a method by which the percentage of indirect office expense which cannot be readily charged to an individual job is applied against direct technical payroll. This method does not take into account a partner's or a principal's nonproductive time. The AIA method of accounting, however, does make provision for inclusion of this item. This, of necessity, would raise the Overhead percentage and, depending upon the amount of "general" time a partner spends, may tend to distort the Overhead percentage figure.

Two of my articles (February 1954 P/A and March 1954 P/A) *go into considerable detail with respect to Overhead.*

SIEGMUND SPIEGEL

how effective is copyright of plans?

Probably every architect who has produced what he considers an original design has been frustrated and annoyed at the copying of that design by others. Often it happens that the same idea bursts upon the architectural scene from several sources at once—it is a logical development from what has gone before, and cannot be claimed as the exclusive product of any one man's creative genius. Other "ideas" are of such a general nature that they never could be kept as proprietary designs, and soon become common property. (Then we begin classifying them as clichés!) But the fact remains, especially in construction methods and often in the design result of those methods, that an architect or an engineer may develop, over a long period of time, a design of his own which he believes should remain his own; and be used by others only with proper credit, and in some cases proper royalties.

The Copyright Law has not protected the architect too well in this regard. And the architectural profession has not actively worked to find a solution as, for instance, musicians have. A California case at present in the Federal courts may point a way to a solution. P/A believes that it is of sufficient importance to the whole profession to merit discussion, and even support.

The situation is this: The firm of Cliff May & Chris Choate, designers and consultants for low-cost housing (May is well known for his "ranch house" designs; Choate is an architect associated with him) developed what is known as the "Cliff May Home." They have licensed 50 dealers in California, and have distributors in eleven western states and Texas at the present time. The design, May says, "we have worked on for a long period of time, devoting our entire effort to experimenting and research, and have spent large sums of money in drawing, testing, etc. . . ." They feel that "its outward architectural appearance is the result of the system of construction that we have created."

They are now disturbed because, "it is the most copied house in California at the present time," and this, they feel, "tears down the work we have done and depreciates the product we have created."

Cliff May and Chris Choate feel so strongly on the subject of copyright that they have already pressed two cases: they recently won an injunction against a contractor and construction company preventing them from using, duplicating, or disclosing copyrighted plans. A year ago, May settled, by agreement, two cases of infringement of copyright, receiving payment of back fees.

Now the new case: May & Choate and their Ranch Home Supply Corporation are asking $500,000 damages from the defendants—William M. Bray, Los Angeles architect, the Bristol Development Company, the Federated Construction Company, and six individuals—for infringement of copyright plans, specifically in a development known as Bristol Manor; and are seeking from the court an injunction prohibiting the systematic copying of the appearance of the Cliff May house. Photographs of the two houses—the May & Choate "original" and the Bristol Manor house, are shown on the next page.

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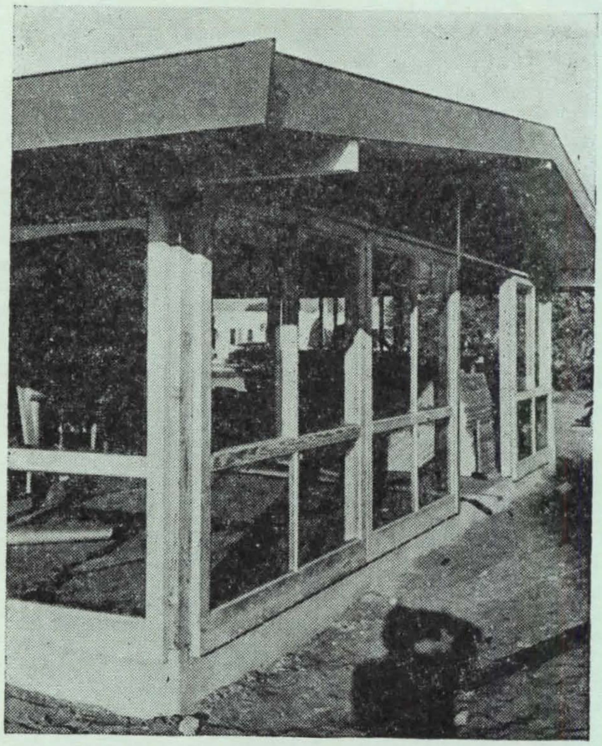
Can architectural plans be effectively copyrighted? Some authorities have said *no*, but Cliff May points out that until Victor Herbert, Frank Buck, and others proved that song writers could have an effective copyright ("with only seven notes to the scale, you can see what a job they did!") and ASCAP was formed, it had seemed impossible in that field also.

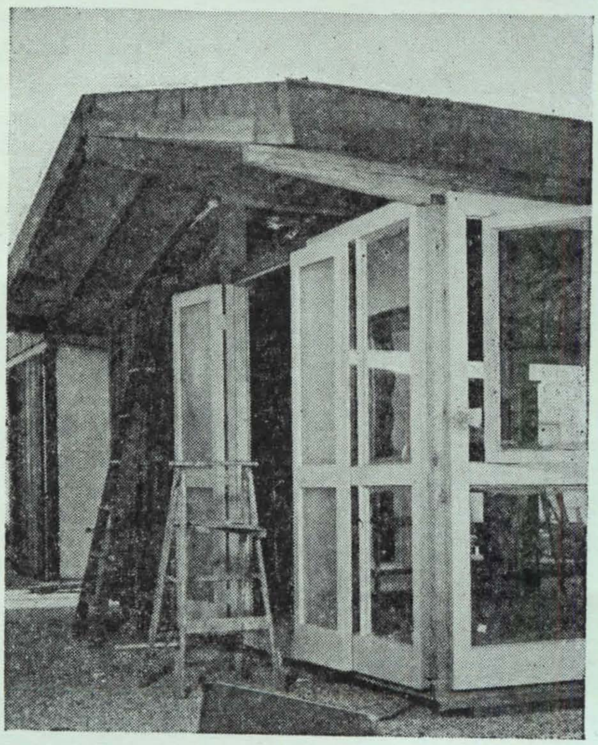
The present copyright law of the United States affords very little protection to the intellectual productions of the architect. The law protects only the *plan* or *design* of the architect and not the building ideas they contain. Further, the proprietor of a copyrighted plan does not have the exclusive right to execute the structure it describes. Accordingly, the protection afforded a copyrighted architect's plan is most elemental: It may not be "copied," that is, there may be no unauthorized printing, reprinting, publishing, copying, or vending of the *plan*. Any other use, no matter how unfair or dishonest, is not an infringement of copyright, although it may be the basis for a suit in unfair competition.

Where does this leave the architect? If his only protection is against copying of *plans*, direct or indirect, this sounds like a difficult thing to prove. If the *building* cannot be copyrighted, but only the plans, does this give an architect any protection when someone erects a structure copied from his? Some recent studies of the subject indicate that there may be an approach which has not yet been explored in the courts.

This new approach proceeds from the premise that no structure can be built without plans. In some form, if only to comply with requirements for building

May & Choate house.





Bristol Manor house.

permits and building loans, there must be plans. Hence it follows that if A wishes to build a house identical with one designed by B, he must have *identical* plans. How does A get these (unauthorized) identical plans? By *copying*, in some manner, the plans of B. And when he copies, he infringes the copyright.

There are various ways of copying plans. The *direct* method would be to trace, photograph, or blueprint the original plans. An *indirect* method would be to commit them to memory, and retrace them. Even more *indirectly*, a copy would be made according to instructions from a third party who had seen the original plans.

The new thinking on the subject goes a step further and asks: If the copyist makes his plans after having looked at, studied, perhaps measured and photographed the original *building* (which is not in itself eligible for copyright protection; only its plans are, we must remember), has he not, indeed, copied the original plans?

If this interpretation should be developed and upheld, it is believed that a complaining architect should be able to obtain practical legal protection. Certainly no commercial builder can construct a building without plans which have been put on paper. If the court orders destruction of infringed copies and an injunction against further copying, this should indeed be "practical relief."

This is an interesting twist. It must be borne in mind that the courts will not enjoin the copyist from *building* copies—only from using *plans* which are copies. The protection, actually, rests on the fact that no one can build, today, without plans.

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Just what the argument will be in the *May* v. *Bristol* case remains to be seen. Up to now, other plaintiffs have failed in the few suits there have been involving architectural "copying," with arguments based on imitation of the finished structure, or of an "idea."

A number of nationally prominent architects have indicated "complete sympathy" with May & Choate in the fight on this alleged infringement, and various AIA groups are following the case with obvious interest. The outcome can have important implications for the entire profession. T. H. C.

Bernard Tomson

it's the law

In a previous column *(September 1954 P/A)* I discussed the status of the architect as a leader in the field of construction, pointing out the implications arising in that respect from the failure of the architectural profession to support the adoption of Public Law 356. This statute provides as follows:

"That no provision of any contract entered into by the U. S., relating to the finality or conclusiveness of any decision of the head of any department or agency or his duly authorized representative or board in a dispute involving a question arising under such contract, shall be pleaded in any suit now filed or to be filed as limiting judicial review of any such decision to cases where fraud by such official or his said representative or board is alleged; provided, however, that any such decision shall be final and conclusive unless the same is fraudulent or capricious or arbitrary or so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence.

SECTION II

"No government contract shall contain a provision making final on a question of law the decision of any administrative official, representative, or board."

The purpose of the statute was to protect those parties contracting with the Federal Government from the effects of two decisions of the United States Supreme Court *(United States* v. *Moorman* and *United States* v. *Wunderlich).*

The decisions of the United States Supreme Court in *United States* v. *Moorman* and in *United States* v. *Wunderlich* and the importance of such decisions to architects, contractors, engineers, and owners were discussed in this column in the March 1950, October 1951, November 1951, and February 1952 issues of P/A. A review of that discussion, in the light of the enactment of Public Law 356, is of interest and significance.

In 1950, in the case of *United States* v. *Moorman,* the United States Supreme Court was called upon to construe a "disputes clause" in a contract between a Contractor and the Federal Government. The Court construed the clause to provide that, in the event of a dispute, the Government's Contracting Officer could finally and conclusively determine all questions of fact and law, with no right of appeal to the courts. The Supreme Court upheld the validity of such clause on the ground that the parties freely entered into such a contract and that they were, therefore, bound thereby. In reaching this conclusion, the Court noted that clauses in building contracts between Owner and Contractor which provided for the arbitration of disputes by the Architect were valid. The effect of the Supreme Court's decision was to make the Owner (here the Government) the final arbiter of any dispute which arose between itself and the Contractor, unless the Contractor could show fraud or bad faith.

After the *Moorman* case, some courts tried to limit its harshness by holding that only those disputes which arose during the progress of the work were to be finally arbitrated under the "disputes clause." Other courts examined very closely into the impartiality and good faith of the contracting officer and sought to find bad faith where his decision was arbitrary or without foundation. Many courts, however, strictly followed the *Moorman* decision, re-emphasizing the rights of the parties to make and rely upon such mutual agreements as they desired, refusing to upset any decision of the contracting officer unless a clear-cut case of fraud or bad faith was established.

Subsequently, the United States Supreme Court, in the case of *United States* v. *Wunderlich,* reaffirmed the position it had taken in the *Moorman* case. In the *Wunderlich* case, the United States Court of Claims had determined that a decision of a Contracting Officer was arbitrary, capricious, and grossly erroneous. The Supreme Court, by a vote of six to three, upheld the Contracting Officer's decision, on the ground that there was no proof that such decision was fraudulent or made in bad faith. The majority held that the Contractor had no recourse, even though the decision of the Contracting Officer was arbitrary and capricious. Three Justices of the United States Supreme Court dissented in a strongly worded opinion, which stated, in part:

"Law has reached its finest moments when it has freed man from the unlimited discretion of some ruler, some civil or military official, some bureaucrat. Where discretion is absolute, man has always suffered. . . .

"The instant case reveals only a minor facet of the age-long struggle. . . . But the rule we announce has wide application and a devastating effect. It makes a tyrant out of every contracting officer. . . . He has the power of life and death over a private business even though his decision is grossly erroneous. Power granted is seldom neglected. . . .

"The principle of checks and balances is a healthy one. An official who is accountable will act more prudently. A citizen who has an appeal to a body independent of the controversy has protection against passion, obstinacy, irrational conduct, and incompetency of an official. . . . The rule we announce makes government oppressive."

At the time of these decisions, it was my recommendation that determined efforts be made by architects, engineers, and contractors to have the "disputes clause" stricken out of government contracts, so that federal agencies would cease being judge and jury, as well as owner. Congress and the President recognized the inherent dangers implicit in such a clause, as construed by the United States Supreme Court, by adopting Public Law 356. The law provides for judicial review of the decision of any governmental department or agency concerning a question of law. It further provides that a decision concerning any question of fact shall be subject to judicial review if the decision is claimed to be fraudulent, capricious, arbitrary, so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence.

The statute, in permitting judicial review of many of the decisions of the contracting officer, affords protection to parties contracting with the government which they were not in a position to obtain for themselves through negotiating with the government. In dealing with the government, freedom to bargain is largely illusory. The right of judicial review should be an effective deterrent to arbitrary, prejudicial, or capricious acts on the part of an administrative official.

improved materials

In the construction of man's earliest cities the building materials used were entirely indigenous—those found to be the most plentiful or workable in a particular locality. Depending on the amount of woodland, the nature of geologic formations, and the prevailing climatic conditions, either wood, stone, clay, or cementious mixes—or some combination of these basic materials—would be utilized. As a civilization extended its lines of communication, however, materials from distant areas were imported, because of their relative abundance or because they more readily fulfilled the community's requirements for buildings. With these few fundamental materials (shaped, cut, and molded in an infinite variety of ways) the great structures of the past were erected: temples, baths, aqueducts, cathedrals, fortifications, villas, etc. It was not until the 19th Century that man-produced, technological materials were developed for use in construction (except for a few remarkable experiments). It was during the long period of evolution that the manner in which materials were employed resulted in basic recognizable styles—as discussed by Sibyl Moholy-Nagy in "Style and Materials" (*acrosspage*).

During the last 75 or more years, builders have been able to use new materials and to integrate them in new systems that have no kinship with the manner in which basic materials were traditionally assembled. That these new materials have had an effect on architecture—changed its appearance and made buildings more useful and comfortable for their occupants—is abundantly evident. How these will ultimately affect architectural style cannot be answered today.

For this issue, the Editors have chosen structures that evidence the present effect of improved materials on architecture. Following the Moholy-Nagy discussion are presentations of two houses in which a new use of a familiar structural material is employed for framework, a resume of numerous improved uses of porcelain enamel in architecture, and a group of four schools in which the principal design problem was the study and selection of materials that best fulfilled the requirements of the respective programs and budgets.

Style and Materials

*by Sibyl Moholy-Nagy**

Felix Candela, Mexican architect, recently stated that the "essential purpose of structure, that property which defines it as such, is to transform external loads into internal stresses and to transmit these, distributed along the structural members, to convenient locations." Had he added that it is the specific purpose of architectural engineering to create enclosed space by this structure, the nature of structure and space would have been defined. But we would still lack a full interpretation of architecture, since structure and enclosed space alone do not make a building: the third ingredient is style.

What is style? It is very tempting to parry with a paraphrase of Benedetto Croce's laconic last verdict of esthetics, "Art is what everybody knows it is," substituting the word Style for Art; or to take refuge in Walt Whitman's tongue-in-cheek primitivism, "All architecture is what you do to it when you look upon it!" But it would be too easy, it would not help to clarify an obvious concern about architectural style in current building design. To dispose of the clichés: most of us were told at one time or another in our training that if structure is the anatomy of building, style is its features; that John Ruskin made Victorian eclecticism respectable by defining architecture as "that part which impresses on a building certain characteristics, venerable and beautiful, but otherwise unnecessary"; that the *Art Nouveau* rebels of 1900 (in Victor Horta's words) "voided the uncompromising rigidity of the right angle by substituting the organically curved for the straight, and the bowed for the plane surface . . . in animated coloristic façades." And that Frank Lloyd Wright, notwithstanding the agonized groans each new design of his arouses from IIT to Cambridge's Mount Auburn Street, finally added to the two basic definitions of style as decoration and as organic growth, *style as idea*, when he stated, "Architecture is abstract. Abstract form is the pattern of the essential. It is spirit in objectified form . . . embodied in materials."

Valid as these definitions may be, they represent no more than an evolution of personal creeds. For even the most irreverent historian, there is something vastly more inclusive expressed in architectural style—*a balanced relationship of purpose, material, and form, visibly interpreted through the excellence of the architect.* And here, at once, at the very root of the definition, appears the basic division of two concepts of style that have prevailed throughout history. "Excellence of the architect" can be an expression of ideals shared by all. Through his interpretation of the common creed, the architect unites each building with the rest. Iktinos built that way, and so did di Cambio and Robert Mills. "Excellence of the architect" can also be quite the opposite—an expression of convictions and esthetic concepts that are peculiarly his own, distinguishing him and his buildings from everything else. Brunelleschi belonged to this group, as well as Balthazar Neumann and Auguste Perret. But all of them—the fulfillers and the rebels—are bound to available materials and skills. Individual excellence masters matter, but matter remains the stuff buildings are made of. The help or tyranny of materials decides, in the last analysis, architectural style.

The relationship of the builder to his materials — seen historically — is very much like his relationship to his environment. In the beginning of civilization, shelter design was subject to the unalterable properties of twig and reed, mud and stamped earth, Cyclopean rock and pebble. One cannot speak of architecture where construction adjusts to given means without any conscious form-giving effort; and one cannot speak of style where the primordial forces of magic beliefs predetermine each detail of structure and decor.

From this aspect, architectural style—as so much else—starts with Greece. It was during the astonishingly brief period of some 160 years, from the earliest stone temples at Olympia, just before 600 B.C., to the marble structure of the Parthenon, begun in 447 B.C., that the first of our two dominant style concepts emerged.

structural style

In the sixth book of the *Laws* Plato says: "A new beginning is like a God, saving all things." The beginning of freely interpreted style saved architecture from the static building forms, derived solely from the traditional application of materials to purpose. Our textbooks list a Mesopotamian and an Egyptian style, but it would be more precise to speak merely of architectural form. Aloys Riegl, eminent pioneer of style history, was the first to recognize that true style is the result of a will-to-art in the builder, who selects from alternative solutions the ideal synthesis of spiritual, material, and structural elements. A sufficiently wide range of building interpretations and of materials and techniques must have been obtained in a culture to create style as a testimony of architectural excellence. In Structural Style, the esthetic impact derives from the structurally expressed idea of the building. Since post-and-lintel construction was the structural principle of Greek architecture *(Figure 1)*, the large unit, varying from wood to stone to marble, determined the stylistic features. Wood excels through the facility of jointure and the divisibility into smallest units. It suggested the raking cornice, the subdivisions of entablature, abacus, and flute. Sicilian limestone added monumentality and texture: the archaic simplicity and strength of the Doric order seem always to conjure up the image of Paestum rather than Athens. And there

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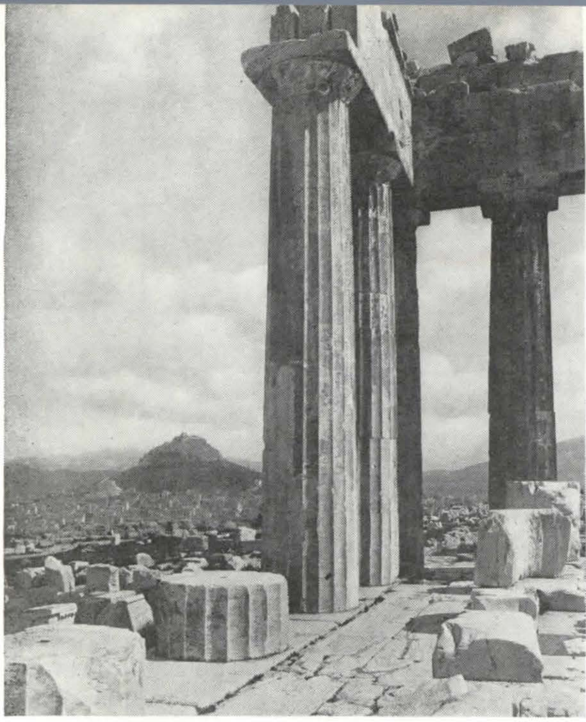

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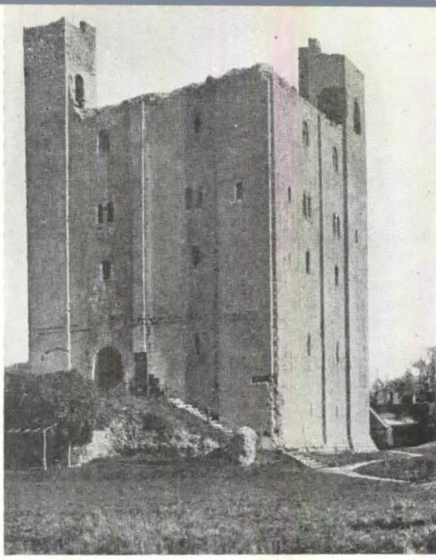

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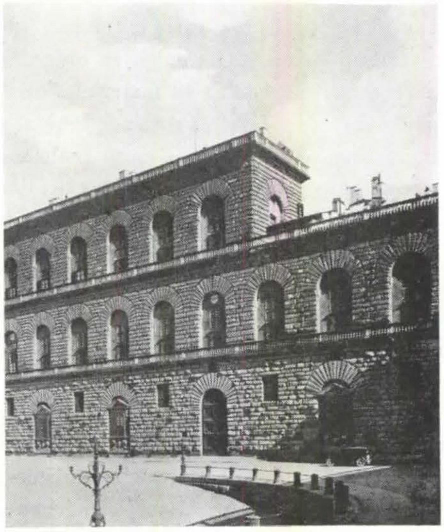
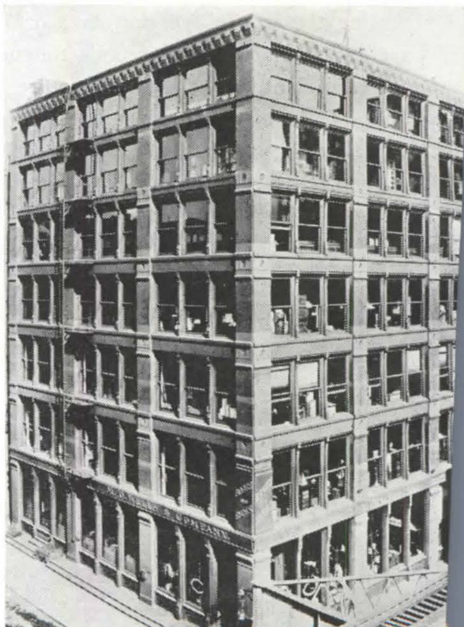


"In Structural Style the esthetic impact derives from the structurally expressed idea of the building." 1—Parthenon, Athens; 2—Colosseum, Rome; 3—Castle Hedingham, Essex; 4—Pitti Palace, Florence; 5—First Leiter Building, Chicago (photo: courtesy of Museum of Modern Art).



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was the Pentelic marble: by virtue of its density allowing the utmost linear refinement, the minute balance of calculable proportions, and by virtue of its hardness giving to Structural Style that peculiar quality of finality, an imperviousness to weathering and aging. Column, architrave, and portico are sublimations of structure into formal equilibrium, testifying to the eternal, non-transient quality of the human mind. They were appreciated at the date of their creation through common standards of rationality and taste.

The Greeks were supreme realists, deducing from observation of the physical universe the laws by which to live and to build. As in science, Greeks did not experiment in building. Structural and esthetic laws, distilled from observation and reasoning, were implementations of philosophical truth. They were as much incarnations of the *Logos* as philosophy, mathematics, and poetry. St. Paul, the Tarsian, spoke as the Greek native "of no mean city," and not as a Jew, when he postulated that "the invisible must be understood by the visible." The accord between service and form is one with the accord between ideal and reality.

Athens became the teacher of all epochs in Western Civilization striving for a visualization of universality and collective progress through harmonious form. For about 150 years, in the brief post-Augustinian climax, Rome had a Structural Style, expressive of the affirmative creed of the *Pax Romana.* The Theater at Orange, the Colosseum, the Pantheon, built between 50 and 150 A.D. superbly used the concrete unit to achieve an entity of structure and style. In the Colosseum *(Figure 2),* the diminishing load is expressed not only in concrete components of diminishing density (lava, tufa, and pumice) but also in a subtle transition from horizontal emphasis in the squat Doric order of the lower arcade, to intermediary Ionic orders, ending in the emphasized verticality of Corinthian pilaster strips which were (originally) surmounted by masts, soaring over the top cornice straight into the sky.

Structural Style vanished with the collective ideal of Rome, before the decadence. Almost a thousand years passed until the Comacine stone masons and the first cathedral builders in England and Northern France again felt the affirmative wave that called for Structural Style. In the 12th and 13th Centuries, Christianity had finally found its contact with the world of man. Cathedrals and castles were built to confirm St. Paul's demand for a visible style signifying invisible faith. The soaring walls of Hedingham *(Figure 3)* and the Choir of Beauvais share an intimate stylistic affinity. Verticality—the common ideal of man's unlimited faith in his alliance with a benevolent God—gave meaning beyond function to buttressing strip, tower, and pier. Florentine architecture of the Quattrocento represents the last historical flowering of Structural Style as a pure expression of a common ideal through structural form. *Palazzi* such as Strozzi, Pitti *(Figure 4)*, and Riccardi used a new structural unit—the rusticated stone block—to testify to a new phase of affirmative communality through intellect and taste. Variety within structural uniformity creates the severe rhythm of alternating window pediments, while story is marked off from story by horizontal moldings, acting as water tables.

Structural Style was killed by the perversions of late Renaissance eclecticism. The credit for its revival is due to America and the architects of the Chicago School. Cast iron, the ubiquitous symbol of the Industrial Revolution, seemed at first a stylistic embarrassment because its adaptation to molded forms made it the cheap means of every stylistic adultery. Such sleight-of-hand as Nash's Brighton Pavilion, or Labrouste's superb interior structure behind the Renaissance replica of the Bibliothèque Sainte-Geneviève, had indicated no more than a dreary continuation of neo-Renaissance. From this chaos, architecture was saved by the intelligence and taste of the Chicago pioneers. William LeBaron Jenney liquidated the old "mill" architecture and created the transparent bays of the First Leiter Building *(Figure 5)*. The first skyscraper was as much the visible expression of the invisible ideal of a worldwide Industrial Revolution as the Hellenic Temple had been of the harmony of mind and body. The skeleton frame, visibly expressed in horizontal-vertical rhythms, stylistically emphasized by steel-rimmed windows, was a new statement of Structural Style. Neither the advent of the exposed steel frame nor the glass curtain wall, 25 years later, surpass the revolutionary achievement of the Chicago School. Through rationality and taste arose a new stylistic variation as an impersonal statement of quality, conforming to the highest standards of the group.

applied style

The second style concept, persisting throughout the history of architecture, is Applied Style. It is the antithesis of Structural Style, and its definition is here attempted with some jitters because the reckless addiction of our age to the catchword of functionality has muddled the term "applied" into something dishonest and obsolete. Yet the ideological as well as the architectural justifications of Applied Style are in no way inferior to those of Structural Style. Applied Style simply means that "the balanced relation of purpose, material, and form, visibly interpreted through the excellence of the architect" (with apologies for the rare pleasure of putting oneself between quotation marks) is achieved through a conscious separation of architectural structure from architectural ornament, and a conscious separation of rationality from taste. Perhaps its earliest historical appearance was in the Roman Villa. In the First and Second Centuries A.D., the plan and structure of the *domus* had been standardized. The plan was determined by the atrium, enclosed on all sides by a succession of cubicles, facing the street with austerely plain walls. The standard building material was brick, covered with stucco; the roof construction was the open rafter-truss combination, covered with pan tiles. Style was applied after the structure was finished, interpreting the meaning of the term on a highly individual basis. There were wall decorations *(Figure 6)* creating (through the medium of perspective rendering) arcades, colonnades, niches, landscapes—endless spaces within one space. Mosaic pavements conjured up below the feet of the visitor a world of depth as if he were diving into a new dimension.

Presently, Applied Style carried over into religious buildings which, for many centuries, had lived upon the borrowed vigor of the Greeks' Structural Style. The basic plan of the circular temple, for instance, remained unaltered and so did the method of wall construction. But roofs became pointed, domed, corbeled; walls vanished behind peripteral, pseudo-

"Applied Style . . . a conscious separation of architectural structure from architectural ornament, and a conscious separation of rationality from taste." 6—Mural from villa of Lucretius Fronto, Pompeii; 7—St. Peter's Hospital, Bristol. (Photos: The Bettmann Archive.)

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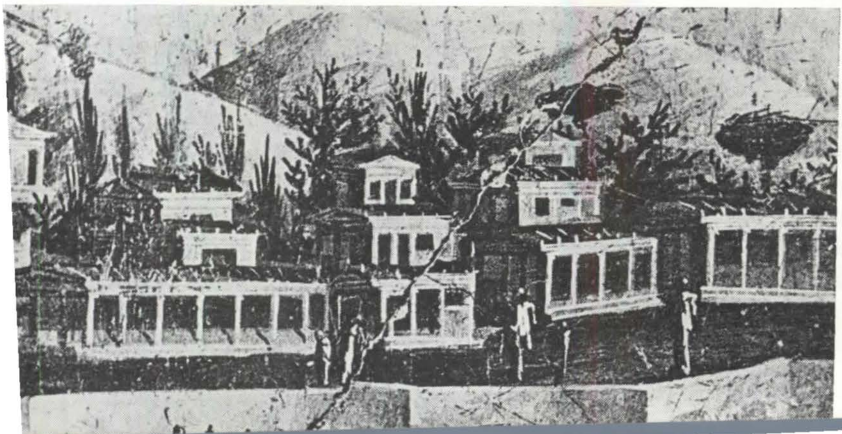

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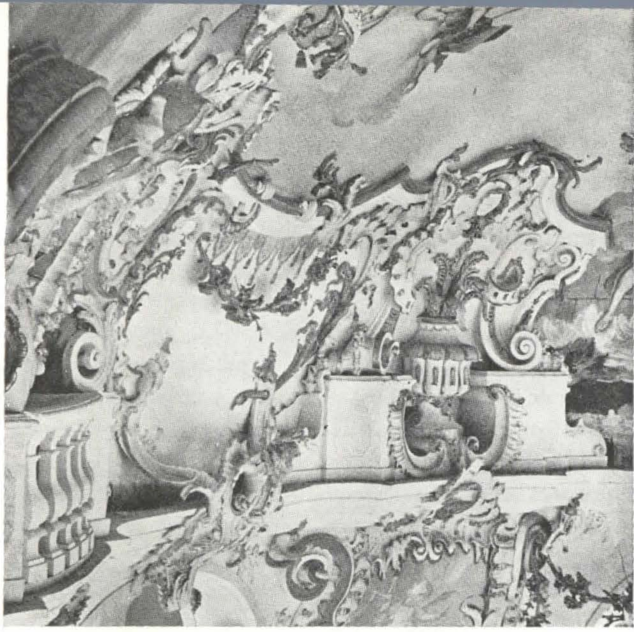

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"Liquefied stone, sculptured and gilded wood, and molded stucco were applied to the structural background. . . ." 8—Molded stucco on dome of baroque church. "Louis Sullivan wanted the ornament 'to grow from the wall like a flower grows from a stem,' but it proved a difficult task. . . ." 9—Merchants' National Bank, Grinnell, Iowa (photo: courtesy of Museum of Modern Art).

peripteral, porticoed, and arcaded exteriors. The only element common to late Hellenistic buildings was the concern for the application of style beyond structure. And with it, the main character of Applied Style was established. It is as individualistic as Structural Style is communal; as emotional as the other is intellectual. It is flux and does not aim at finality. Its contact with the beholder does not depend on shared ideals and principles but on individual imagination and interpretation. Most important of all: Applied Style does not depend on the innate resistance and character of materials. It achieves individual expression by using the simplest known structural method as a prop to display the variability of the small building unit and the pliable mix.

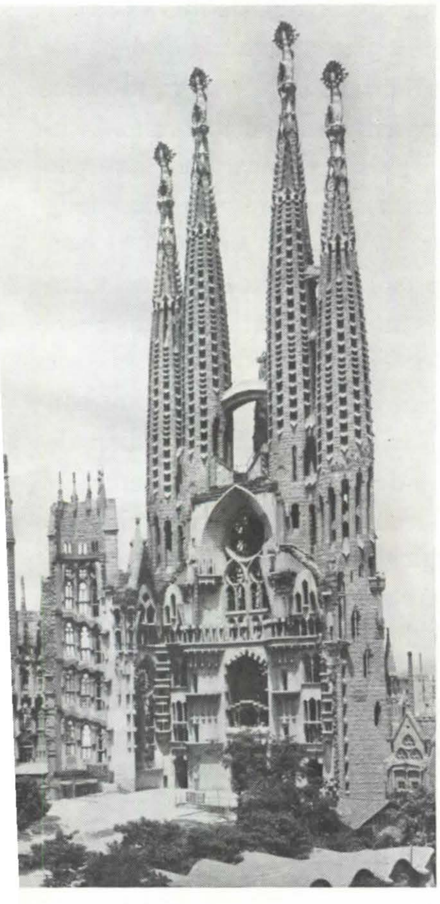
After Rome fell, European man struggled through the oblivion of the Dark Ages toward the victorious group-consciousness of the Gothic expressed in *Structural Style. By 1400* A.D. the separation of the individual from the masses by means of wealth, education, and title had been achieved, and again it was time for the individual language of Applied Style. In Flamboyant and Tudor, structure vanishes behind screens of stone lace-work, terra-cotta facing, stucco pendants and drops, and the delicately carved end-brackets of hammerbeam roofs that float like visual illusions between the eyes and the structural baldness of the roof construction. Tudor chimneys twist and curl in endless variations, and each magpie half-timber house proudly displays its own unrepeatable ornamental pattern *(Figure 7)*. The Applied Style of the Flamboyant Age was religious only in name. Its most characteristic example is Rouen's Butter Tower. Here a stylistic extravaganza of pure ornamentation proudly testifies to the wealth of the burghers who could afford to trespass religious laws at a scale that made such a monument possible.

For a bare 150 years, Humanism and Reformation disciplined this exuberance by a new collectivism. With the 17th Century, Applied Style was back as the supreme visualization of Enlightenment and Absolutism. Baroque man had freed himself from the tutelage of church and imperium. He could dismiss ecumenical canons. He had become conscious of himself as a creator, accountable to no one but his own genius. Liquefied stone, sculptured and gilded wood, and molded stucco were applied to the structural background as if this background were a painter's canvas *(Figure 8)*. Bernini gave essence to the whole concept of Applied Style when he turned away intruders from his working table, exclaiming: "Don't talk to me. I am in love!"

Nationalism and technology eventually choked the creative individualism of the Baroque, and Applied Style in its purest form—conceiving of the house as a piece of art—has never been revived. Its essential basis—the liberation of design from commonly acknowledged principles of rationality and taste—had been destroyed. But architecture, to quote one of its most tired definitions, persisted in being "an art for all men." The primordial compulsion that changed piled sheltering material into stylistic patterns refused to die.

At the turn of the 20th Century the two great antithetical principles—Structural Style and Applied Style—reappeared in new interpretations. Successive attempts were made to achieve a workable synthesis between structure and ornament. Louis Sullivan wanted the ornament "to grow from the wall like a flower grows from the stem," but it proved a difficult task, in spite of the deceptive simplicity of the statement *(Figure 9)*. The concepts of structure and decoration, separated for many centuries in the minds of man, fused only unwillingly, as the many abortive attempts at an equalization of structure and form show. *Art Nouveau* degenerated into Gaudi's Sagrada Chapel *(Figure 10)*; the Werkbund idea eventually produced the oddity of Höger's Chile House; and Sullivan's dedicated search has its last echo in the labored decorative applications of Wright's Oklahoma skyscraper.

The reason for so much stylistic confusion lay in the transitional character of the early 20th Century. Mutually exclusive traditions fought for equal recognition: Platonism and Materialism, Mass Culture and Individualism, Welfare Housing and Real Estate Speculation. In direct relationship to architecture this is the century of devotion to significant form and devotion to functional efficiency. Like Balaam's ass, the '30s and '40s frustrated themselves by the assumed need to choose between one or the other. Now, in the '50s, there are indications—few still and far between—that it is the specific task of our generation and of this century to come to terms with the structural thesis and the applied antithesis—through a reciprocal synthesis. Some of the best among our architects start to realize that by virtue of our late place in history we are equally committed to technology and to ideology. For the first time in 3000 years of building history, we are free from the limitations of wood, stone, and brick, of natural supplies and the principle of compression. We also are free of the exclusive patronage of church and state, nobleman and capitalist. Our range is limitless in all directions. The revolutionaries among 20th Century architects have carried these reciprocal values into their own attitude. They have resolved the age-old contrast between conformer and individualist. They build for common need with personal expression. There are the Breuer-Zehrfuss-Nervi UNESCO Conference Building *(Figure 11)*, Nervi's concrete vaults for public assembly halls, and Le Corbusier's roof sculpture on a modular structure *(Figure 12)*; Niemeyer's undulating apartment buildings and Johnson's whimsical glass room on a purely functional masonry foundation. Schools in Vermont and small Bay Region houses show Bernini's "being in love" fused with Gottfried Semper's "Style as product of material and purpose." To be sure, the leftovers of structural paucity and tasteless application are with us in appalling number. The boredom of the skyscraper box, hardly relieved by aluminum, and the gaunt ugliness of the residential matchbox still drive the emotionally unsatisfied masses to appliqué façades of true Williamsburg-Baroque. But a third epoch of Western architecture is on the way, and we are not only the witnesses but also the responsible makers of this new era, in which a balanced relationship of multiple purposes, adequate use of technological materials, and the forms of an underivative visual culture, are visibly set forth through a *Reciprocal Style.*



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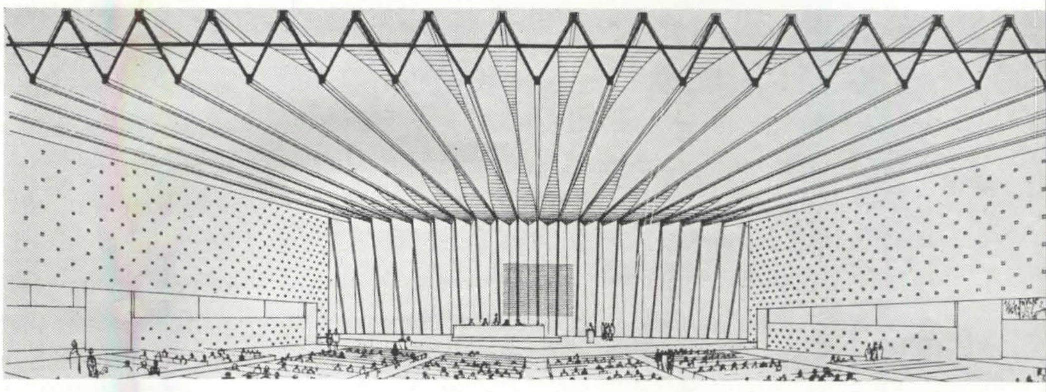
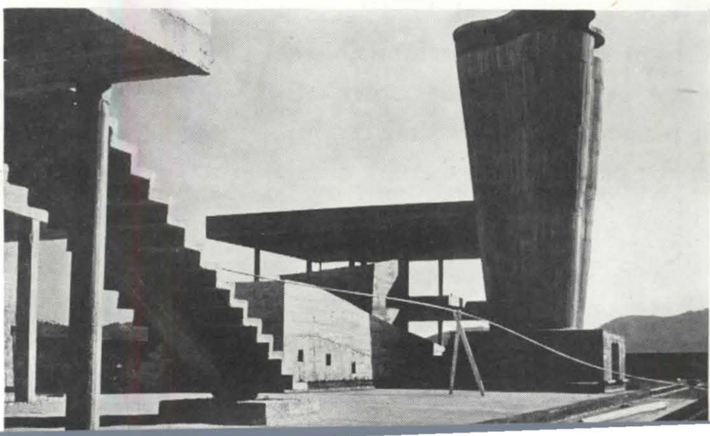


11

10—Sagrada Chapel, Barcelona; 11—Plenary Session Hall of UNESCO Conference Building, Paris; 12—Apartment house roof, Marseilles. (Sketch by Breuer, Zehrfuss, and Nervi; photos: courtesy of Museum of Modern Art.)



12

trends in lightweight metal structure

Very few building materials, if any, can truthfully be called "new" (that word so often misapplied by various publicity media). New uses of materials, however, are almost always of interest—either when these materials are used by themselves or in combination with others to answer specific building requirements. Attracting a great deal of attention today is the application of lightweight metal framing systems to houses and smaller types of commercial structures. Certainly one of the most promising of them is the use of Unistrut steel-channel members with patented bolt and spring-lock connections as framing members of walls, partitions, and roofs in schools and homes *(pages 100 to 109)*.

Another manufacturer with pilot installations already completed in this field is the Penn Metal Company, Inc. Unusual examples of their framing system are to be found in a house at Hanover, New Jersey, and a hospital (designed by James Byron Bell, New York architect) now under construction at Boonton, New Jersey. Penn Metal partitions are shop-fabricated of lightweight structural steel and, after placed in position at the job site, anchor bolts or concrete nails are used to hold them in position. Because erection of these partitions is accomplished in a minimum of time and as they are made of a relatively indestructible material, this manufacturer has been able to compete successfully with concrete in all of its forms and, in a great many instances, with wood framing. Extending the use of light steel, it is perforated and made nailable so that it is easy to tie metal lath to it or to nail on plasterboard. Pipe and conduit can be run through the perforations, thereby eliminating chipping and patching. Roof decks can be precast-concrete panels (such as Insulrock or Porete), gypsum plank, or corrugated metals.

Macomber Inc. has developed an ingenious combination of nailable steel and a three point connection—called V-Lok—to anchor open-web trusses to steel columns. An increasing use of this framing method is noted in schools, commercial buildings, industrial plants, and homes. Among the most recent structures to use V-Lok are the Beverlee Drive In (Columbus, Ohio) with its abundant use of cantilevered outriggers for roof overhangs and a new 50,000 sq ft building for the Diebold Safe and Lock Company which was erected in five days.

The Haven-Busch Company reports that although much of their interest in structural design has recently been directed toward improved rigid-frame construction and exposed girder construction with a suspended type of purlin system, they have devoted most of their efforts to improving their long-span joists which for at least two years have been offered in lengths up to 125 ft. Laclede Steel Company indicates there is an increasing use of open-web steel joists with extended ends. So that architects may achieve overhanging roofs with attendant construction and labor savings in school building design, they have recently developed a scheme for framing three-bay standard roofs wherein two joists with overhanging cantilever ends are used to form classroom areas with *end-connected* cantilevers framing over the interior corridors. In this way only two pieces are handled on the job to complete a full three-bay frame.

Because they permit greatly reduced erection time, prefab curtain-wall systems are gaining the favor of many designers. Pioneers in this type of wall construction *(Science and Pharmacy Buildings at Drake University, November 1950 P/A)*, Hope's Windows Inc. offers two basic types of prefab window-wall installations. One is the single story window-wall unit. This system uses a frame unit of an easily-handled modular width which extends from floor slab to roof slab and includes a steel sash (usually a projected type), insulated panels at top and bottom, and, where required, an opening for air-conditioning equipment. This system has the following advantages: It is easily and quickly erected, permitting a rapid closing-in of the building; the design is flexible and almost any desired arrangement and combination of ventilating sash, fixed glass, and insulating panels can be accommodated; sill-high masonry and exterior columns are eliminated and the weight of collateral construction may be reduced accordingly; and, where permitted by building codes, interior backup masonry may be eliminated.

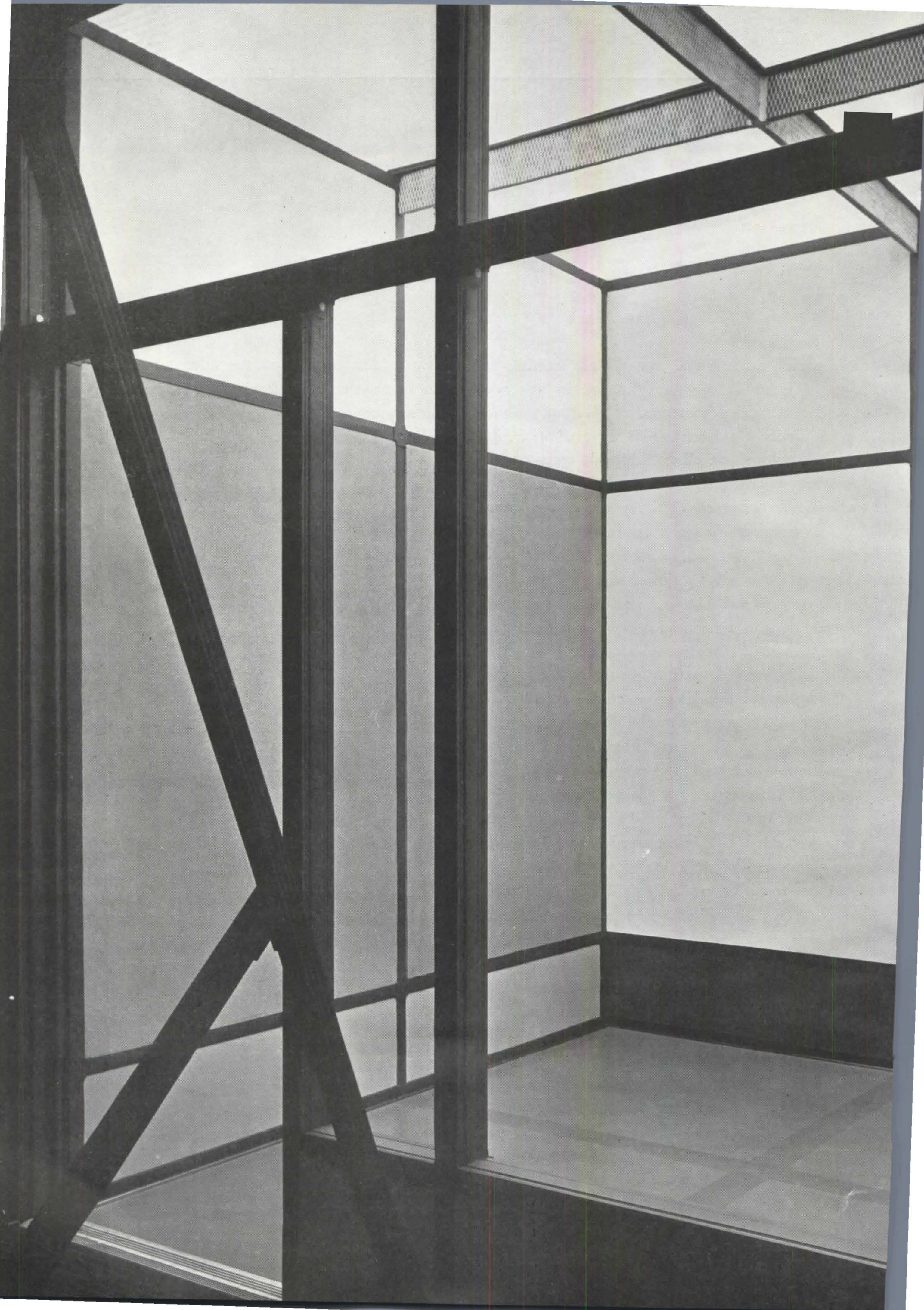
An outgrowth of research on this system might be a standardization of component parts of the units such as insulated panels, sash, air-conditioning louvers, etc. Another result could be standardization of collateral construction and equipment such as under-sill air-conditioning equipment and sill-high cabinets, shelving, and bookcases for schools.

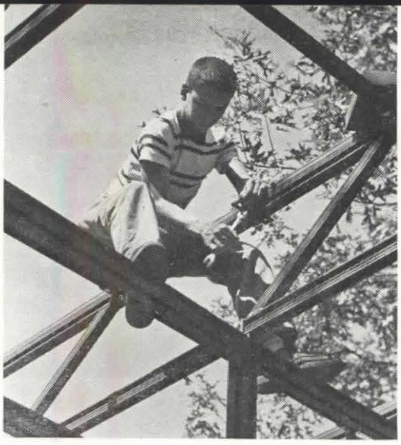
The second system is adapted to multistory buildings and is based on a pressed-metal frame or grid which covers the entire face of the building from grade to roof slab of the top story. Into this frame are placed sash, fixed glass, insulating panels, etc., as desired. All of the advantages listed for the first system also apply. *(Truscon Steel's prefab window wall is illustrated in "Porcelain Enamel Resumé," page 110.)*

Reynolds Metals Company recently announced an insulated-aluminum-wall system which consists of exterior aluminum skins and interior wall panels attached to opposite sides of steel girts. The exterior wall is formed of ribbed or corrugated aluminum siding material; an interior insulating panel consists of a honeycomb-paper core bonded between two aluminum sheets. Interior panels are hung on the steel building frame by means of continuous aluminum extrusions, while the exterior skin may be hung by clips, studs, or screws.

The Aluminum Company of America recently used an easy-to-erect aluminum sandwich curtain wall on their Heavy Press Plant at Cleveland. The curtain wall is fabricated from two slices of corrugated aluminum sheet between which is a 1-in. thick layer of glass fiber insulation. Its U factor is .155. First one layer of .024-in. thick siding was applied directly with self-tapping screws to the siding girts of the structural steel framework. Insulation was then temporarily fastened to the .024-in. sheet. In the last step, an outer layer of .032-in. thick industrial siding was anchored to the structure with self-tapping screws that also permanently hold the insulation in place. The average bid from six contractors was $1.11 per sq ft.

In the two following features, "Two Unistrut Houses" and "Porcelain Enamel Resumé," two special aspects of lightweight metal construction are more fully documented.





Unistrut used for house framing

Among characteristics that architects look for in a structural material and method, perhaps none is more desired than speed and ease of erection; flexibility; and the ability to expand the structure with minimum change and waste. The Unistrut system, utilizing standard Unistrut steel-channel members and patented bolt and spring-lock connections (along with various special brackets and fittings), offers all of these advantages—and many more. All that is needed to assemble this large-scale "Meccano set" are a hack saw and a wrench—"so simple a child can operate" (*photo at top*).

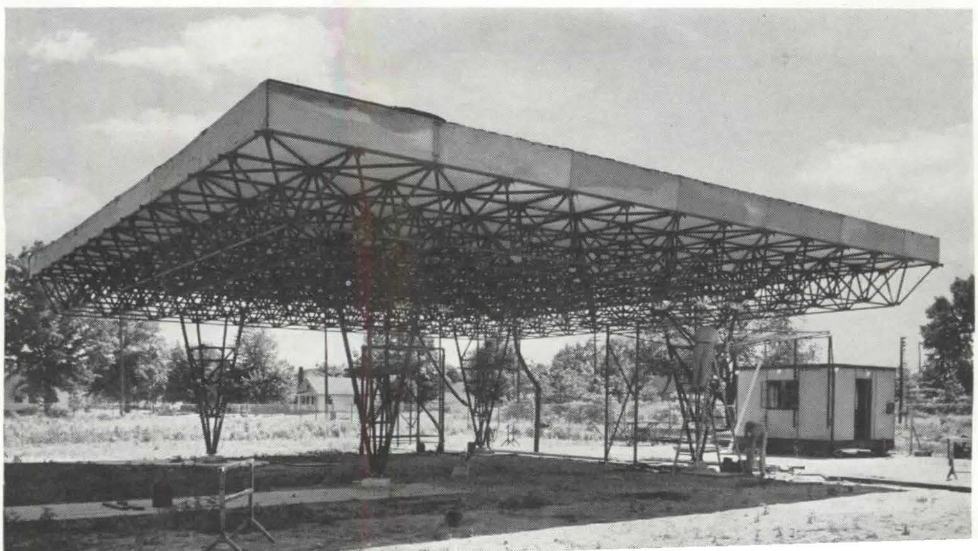
No holes have to be drilled. A spring-locking nut is simply inserted in a channel member and slipped along the channel to the point where another member is to be joined. A fitting (bracket or otherwise) is then centered above the nut, and a bolt is inserted and tightened, thus attaching the fitting and also holding the nut in position. The member to be joined is attached to the fitting similarly.

The channel framing members come in various standard sizes, with corresponding fittings and pieces. The different channel sizes are spot-welded together to form larger members. Thus, within the range of a few standard elements, infinite variety is possible.

Until 1949, Unistrut was used chiefly for such industrial elements as storage racks, jigs, scaffoldings, etc. At the company plant in Wayne, Michigan, however, it had been used to frame two factory buildings. Convinced that the material had great potentials in the building field, a research project was launched and supported by Charles W. Attwood, President of the Unistrut Corporation—an architect turned manufacturer. Undertaken by the University of Michigan's College of Architecture and Design, in collaboration with the College of Engineering and the School of Education, the work went forward under the administrative direction of the University's Engineering Research Institute. The program, limited to Unistrut's potential for use in low-cost school construction, resulted in a prototype school, a detail of which is shown in the photo (*across-page*) of a full-size mockup of a corner section. The research included experiments with various arrangements not only in disciplined design and structural organization, but also in natural and artificial lighting, use of color, and acoustical and heating problems.

The two houses shown on subsequent pages, though not a part of the official research project, are a direct outgrowth from it. For these houses were designed, for their own families, by two of the university professors who were active in the prototype-school research.

Like the prototype schools, both houses use welded roof trusses, made up of Unistrut elements. Currently, the potential of Unistrut's use for a space-frame system (*below*) is undergoing tests, and a research laboratory for the College of Architecture and Design, utilizing the space-frame system, is being erected in the college courtyard.



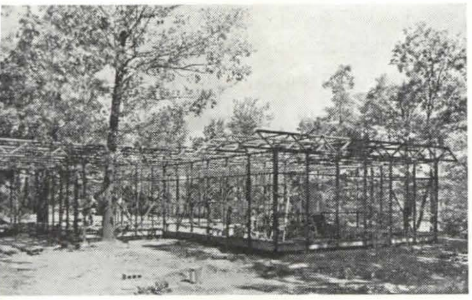
the Larson house

Architect and owner of this house—Prof. C. Theodore Larson, of the University of Michigan College of Architecture and Design—was supervisor of the research project that studied Unistrut's potential use for low-cost schoolhouse construction.

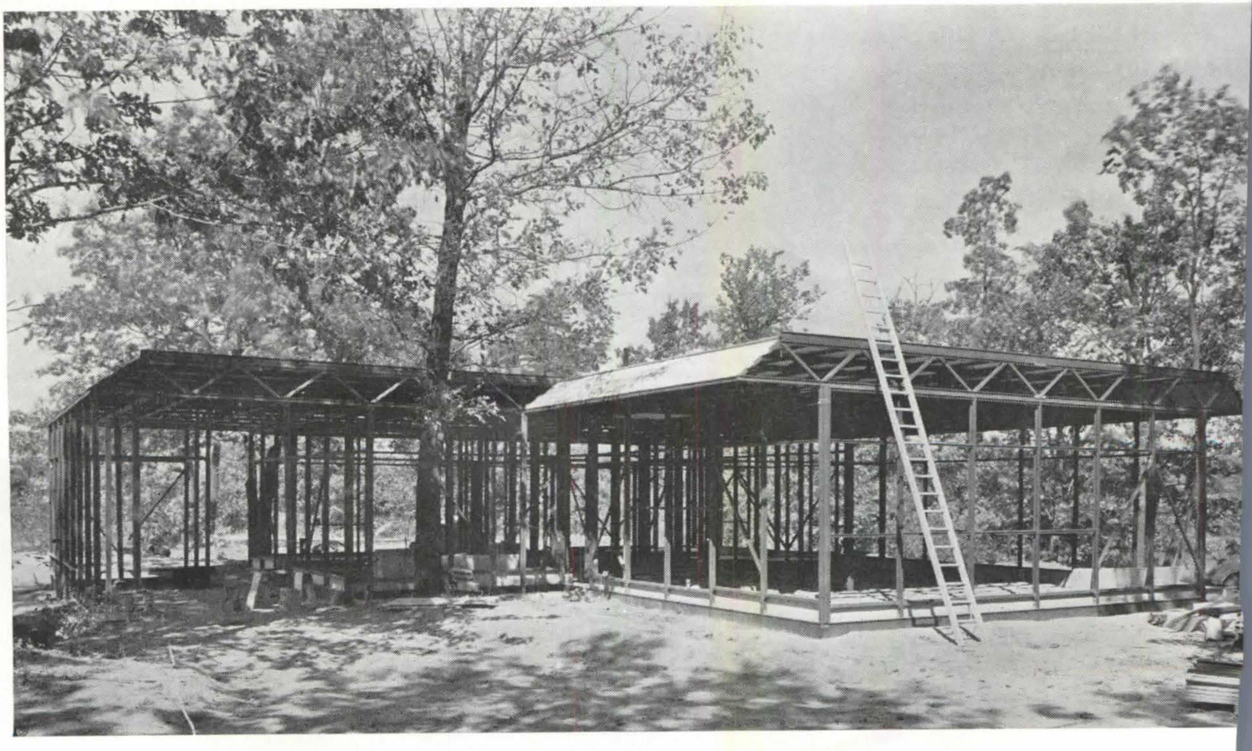
Among the advantages of Unistrut construction is that the steel channels can be used as wiring raceways. Toggle switches and plug-in outlets are readily fitted into the closer battens. General contractor for foundations and concrete floor slab and for finish wood carpentry was Albert Duckek. "On all the rest," Larson tells us, "I acted as my own general contractor, erecting the steel framing and applying the wall, roof, and ceiling panels, with the aid of my two sons and some of their school chums. I subcontracted the roofing, glazing, electrical, heating, plumbing, and flooring work."

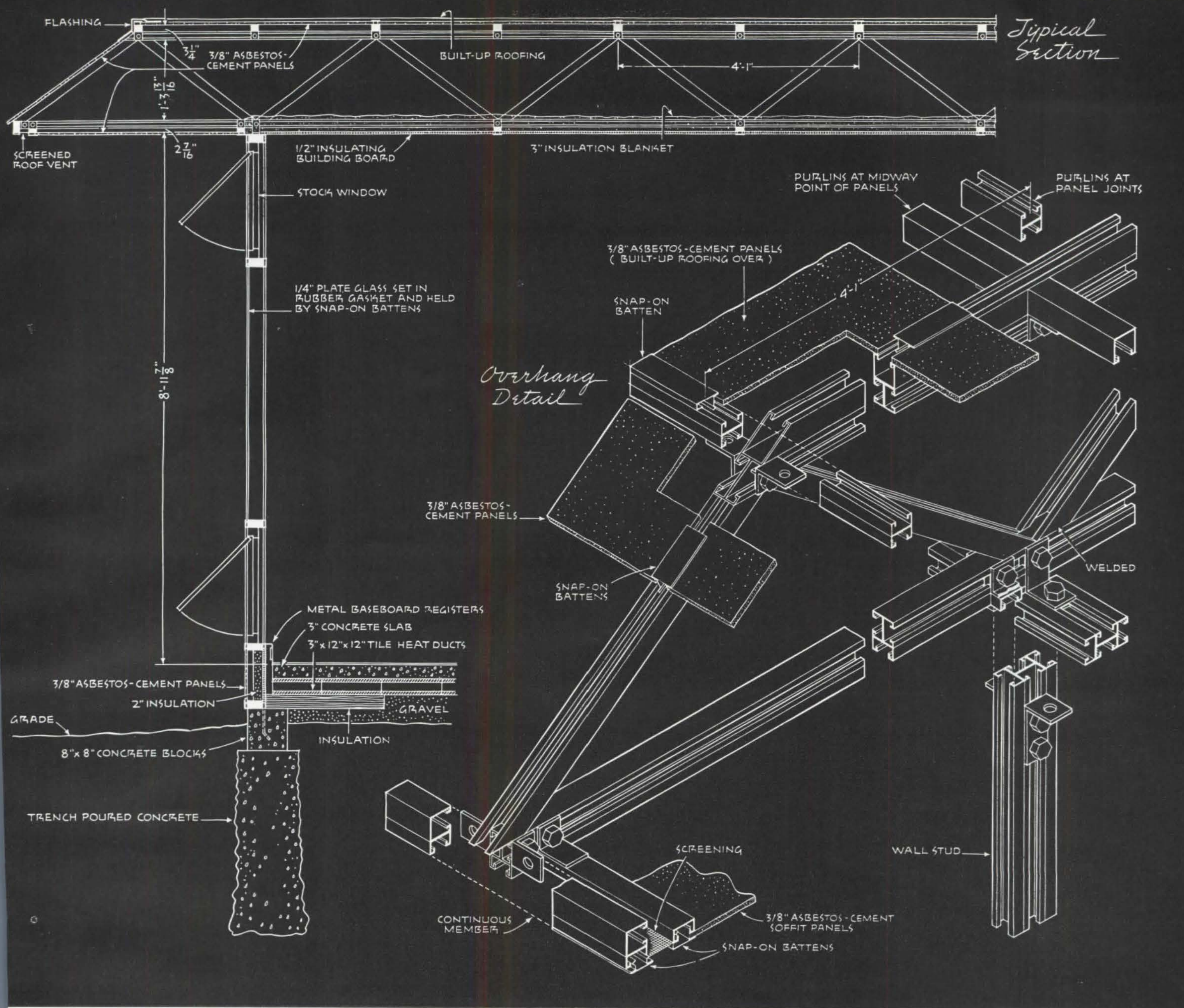
The Unistrut sidewall studs are spaced 4'-1" on centers, allowing use without cutting of standard, 48-in.-wide curtain-wall paneling. The extra inch takes care of the steel-framing joint (7/8" for the channel slot; 1/8" for tolerance). Both exterior and interior wall panels are of asbestos cement; ceiling panels are insulating building board. Most flooring (over the concrete floor slab) is of cork tile, though asphalt tile was used in bathrooms and utility room, and vinyl-surfaced cork is the kitchen flooring. The walls are insulated with glass-fiber material, while blanket-type insulation occurs above ceilings.

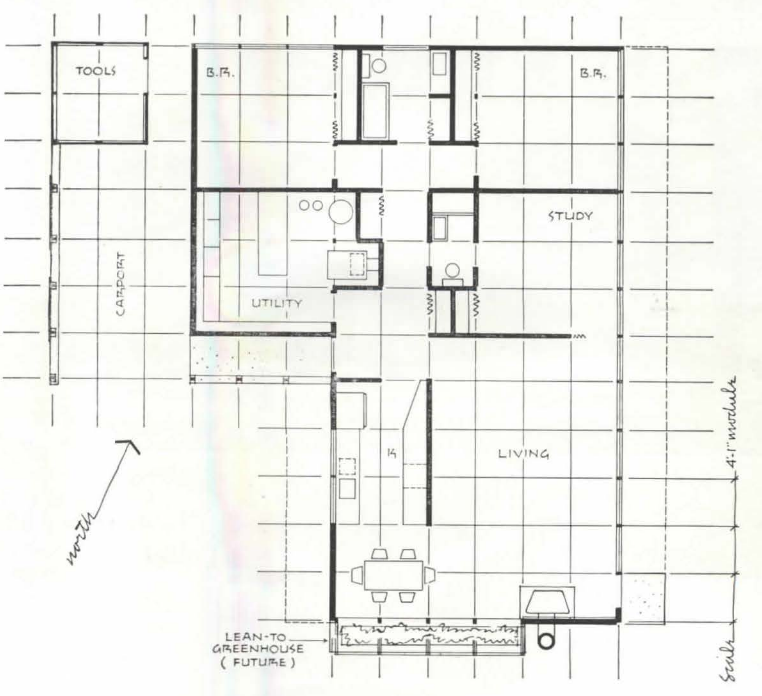
The heating system, on which Prof. Floyd Calhoon was consultant, is a combination of floor radiation and hot-air convection. Hot air from the down-feed furnace travels through a honeycomb of hollow-tile ducts in the floor slab and emerges into rooms through registers along outer walls at floor level. As the air loses some of its heat, it travels through the rooms to the main-hall corridor, where a cold-air return grill near the ceiling picks it up and delivers it into the plenum chamber directly above the furnace, where it is mixed with fresh air from outside, again heated, and recirculated.

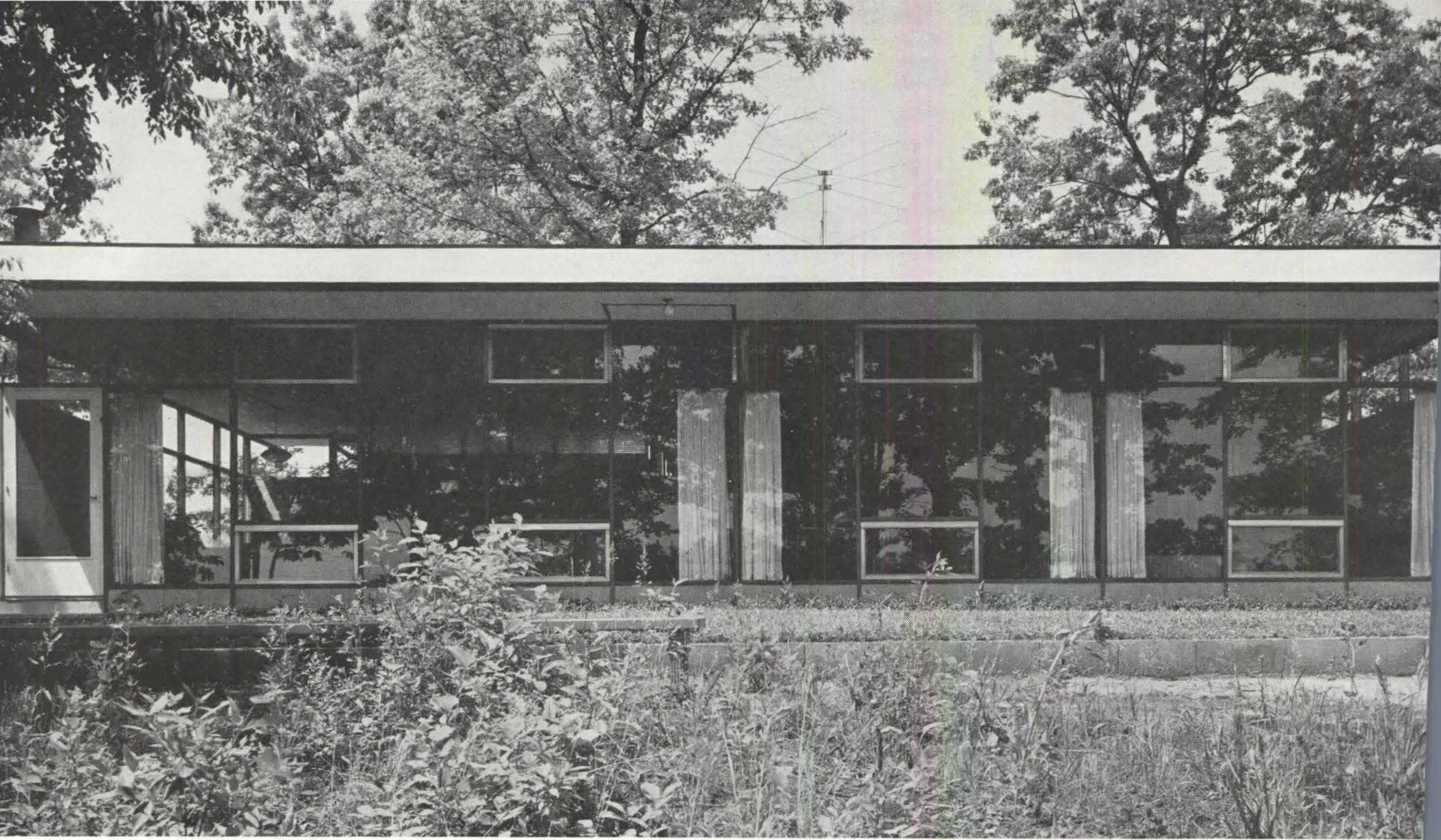


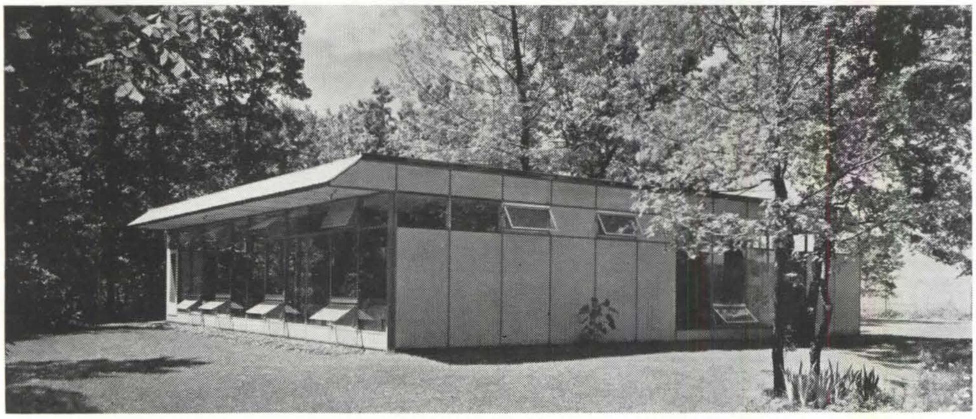
The progress photos and plan clearly show the Unistrut frame organized on a 4'-1" module to accommodate standard surfacing panels. Framing drawings (acrosspage) *detail the typical wall, roof, and partition connections.*
Photos: David Reider

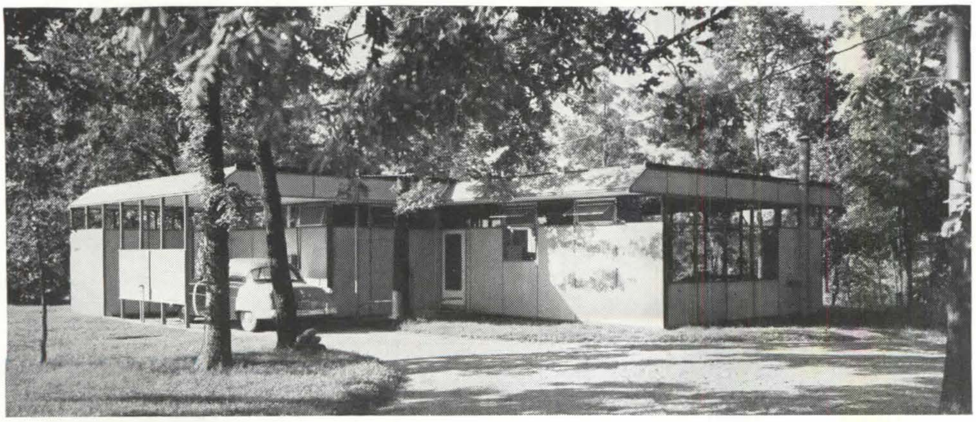



Typical Section
FLASHING
3/4"
3/8" ASBESTOS-CEMENT PANELS
BUILT-UP ROOFING
4'-1"
1'-3 13/16"
SCREENED ROOF VENT
2 7/16"
1/2" INSULATING BUILDING BOARD
3" INSULATION BLANKET
STOCK WINDOW
1/4" PLATE GLASS SET IN RUBBER GASKET AND HELD BY SNAP-ON BATTENS
8'-11 7/8"
METAL BASEBOARD REGISTERS
3" CONCRETE SLAB
3"x12"x12" TILE HEAT DUCTS
3/8" ASBESTOS-CEMENT PANELS
2" INSULATION
GRAVEL
GRADE
INSULATION
8"x 8" CONCRETE BLOCKS
TRENCH POURED CONCRETE
Overhang Detail
PURLINS AT MIDWAY POINT OF PANELS
PURLINS AT PANEL JOINTS
3/8" ASBESTOS-CEMENT PANELS (BUILT-UP ROOFING OVER)
SNAP-ON BATTEN
4'-1"
3/8" ASBESTOS-CEMENT PANELS
SNAP-ON BATTENS
WELDED
WALL STUD
SCREENING
CONTINUOUS MEMBER
3/8" ASBESTOS-CEMENT SOFFIT PANELS
SNAP-ON BATTENS


TOOLS
B.R.
B.R.
STUDY
CARPORT
UTILITY
K
LIVING
north
LEAN-TO GREENHOUSE (FUTURE)
4'-1" module
Scale

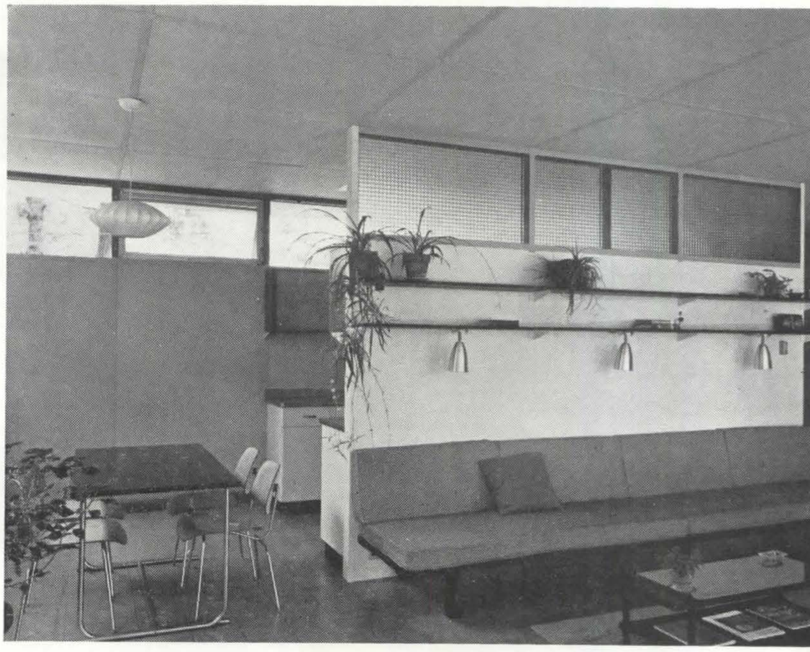






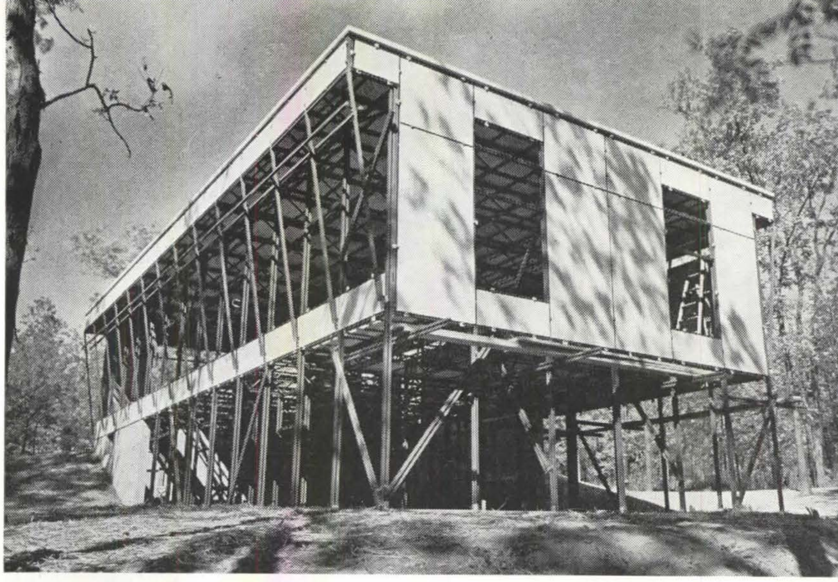
The house is on a level, one-acre site, on the bank of a beautiful pond toward the east and with a busy, gravel road to the west. Hence, to enjoy the view, the east side of the house (top) *is opened with a full wall of glass, while the west front* (above, left) *has relatively few openings.*

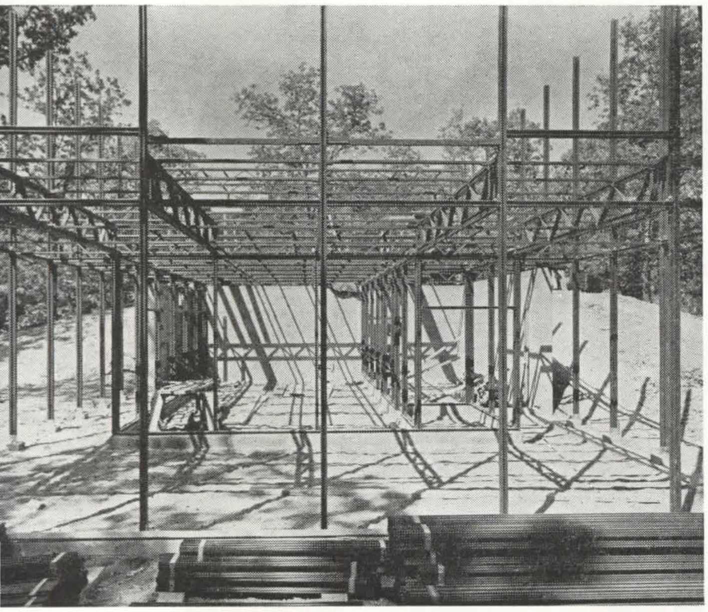
Unistrut house framing: the Larson house



For the living room, the architect designed and built two coffee tables and the frame for the 12-ft couch out of Unistrut. Only separation between living-dining space and kitchen is a storage partition (right).

Unistrut house framing





the Sanders house

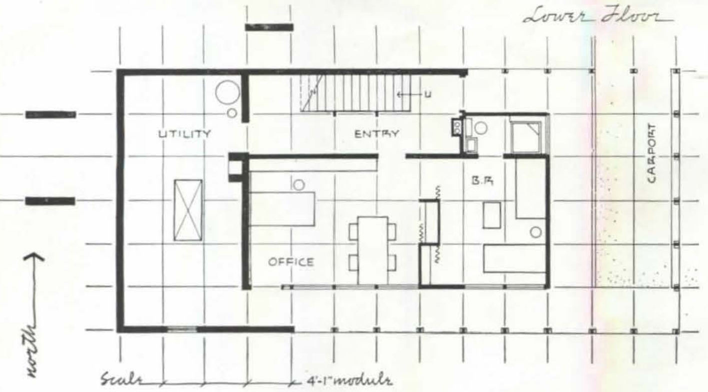
Built on a heavily wooded, hilly site, sloping away to the south with a fine view of the Huron River, this two-level Unistrut house, like the Larson house, uses basically the same structural system as that developed for the prototype school in the University of Michigan's research program. It was also designed by and is the home of a university professor and architect, Walter Sanders, of the New York firm of Sanders, Malsin, Reiman. Sanders served as General Consultant in the University-Unistrut research work. Albert Duckek was general contractor.

Part of the purpose in building these two houses—apart from providing homes for the two professors and their families—was to demonstrate how the Unistrut system, though limited to certain standards, results in very different design expressions depending both on the architectural hand at work and on varying site conditions.

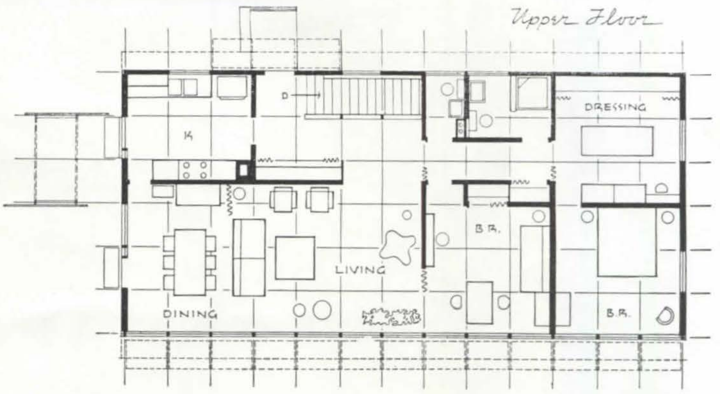
The in-sloping struts (*details, acrosspage*) were considered a necessary part of the *school* proposals, since there are few, if any interior partitions in the typical classroom sections, and the diagonals are needed to carry tension stresses from the roof overhang down to the floor-level studs. In the Sanders house, they carry small tension loads, but they were used here mainly to support the cement-asbestos sun guards, and, as Sanders says, "they constitute a sort of built-in scaffold for any purpose. They are particularly useful during construction."

All major living spaces face south, and the lower floor can be readily closed off as an efficiency apartment. As in the Larson house, the 4′-1″ module is used and for the same reason; the upper floor is 8′ high; the lower level, 7′.

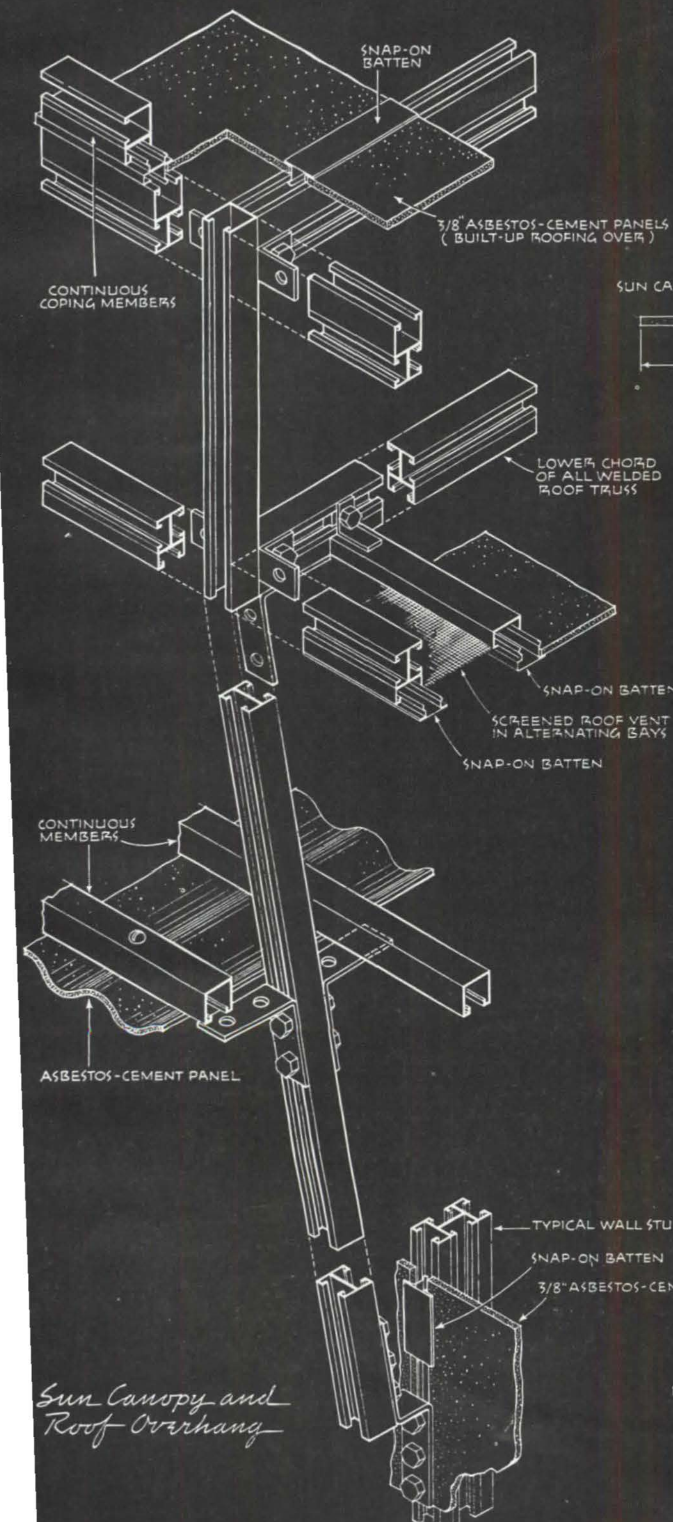
Exterior wall panels are 3/8″ asbestos cement; interior walls and ceilings are of 1/2″ insulating building board. Floorings are either *asphalt tile* or vinyl plastic asbestos. Rigid glass fiber insulates the walls, while blankets are used in ceilings. Heating is accomplished by a forced warm-air system, evenly distributed in the floor plenum by stove-pipe ducts, and exhausted in the living spaces through continuous baseboard registers.



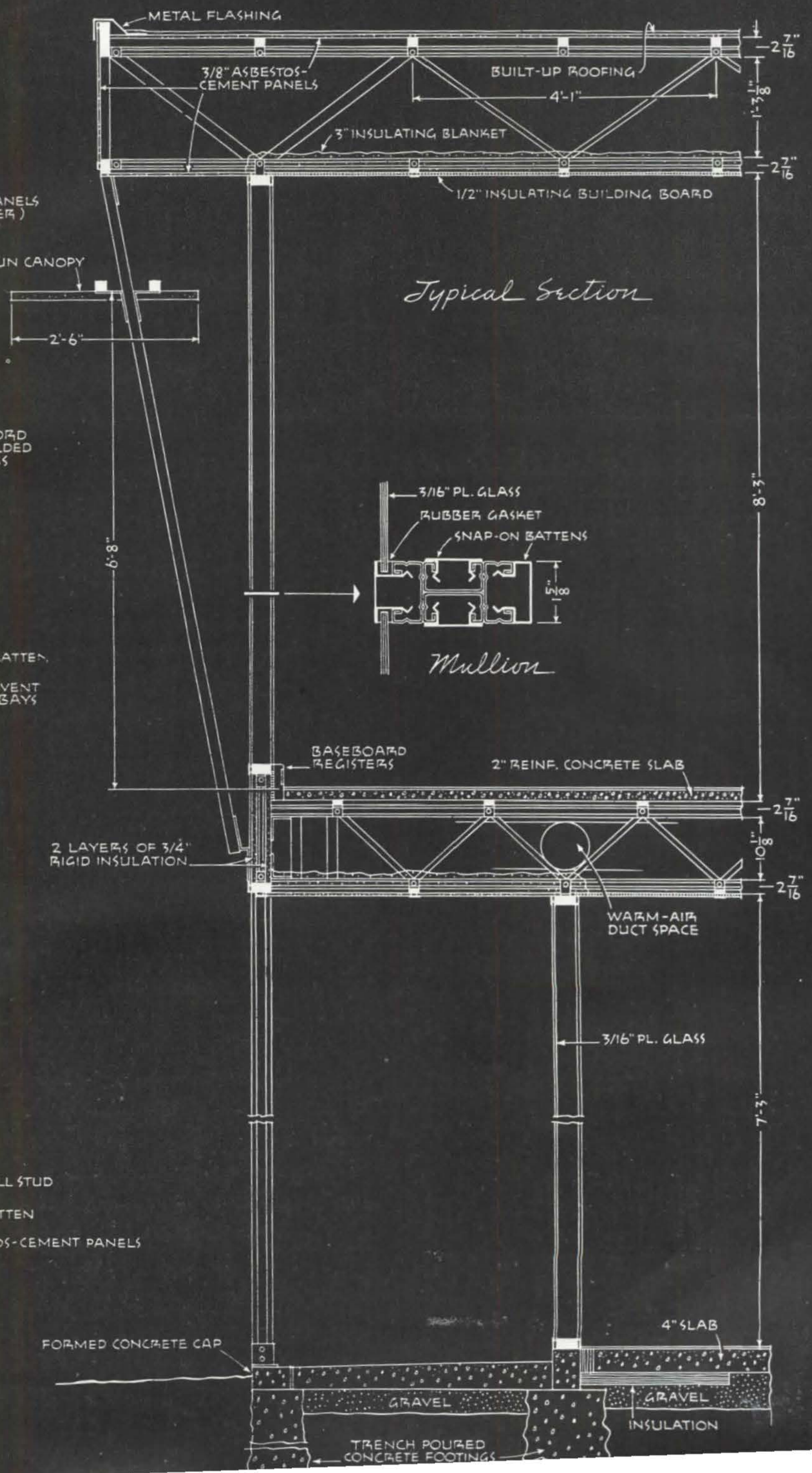
Lower Floor
UTILITY
ENTRY
U
B.R.
CARPORT
OFFICE
north
Scale
4'-1" module



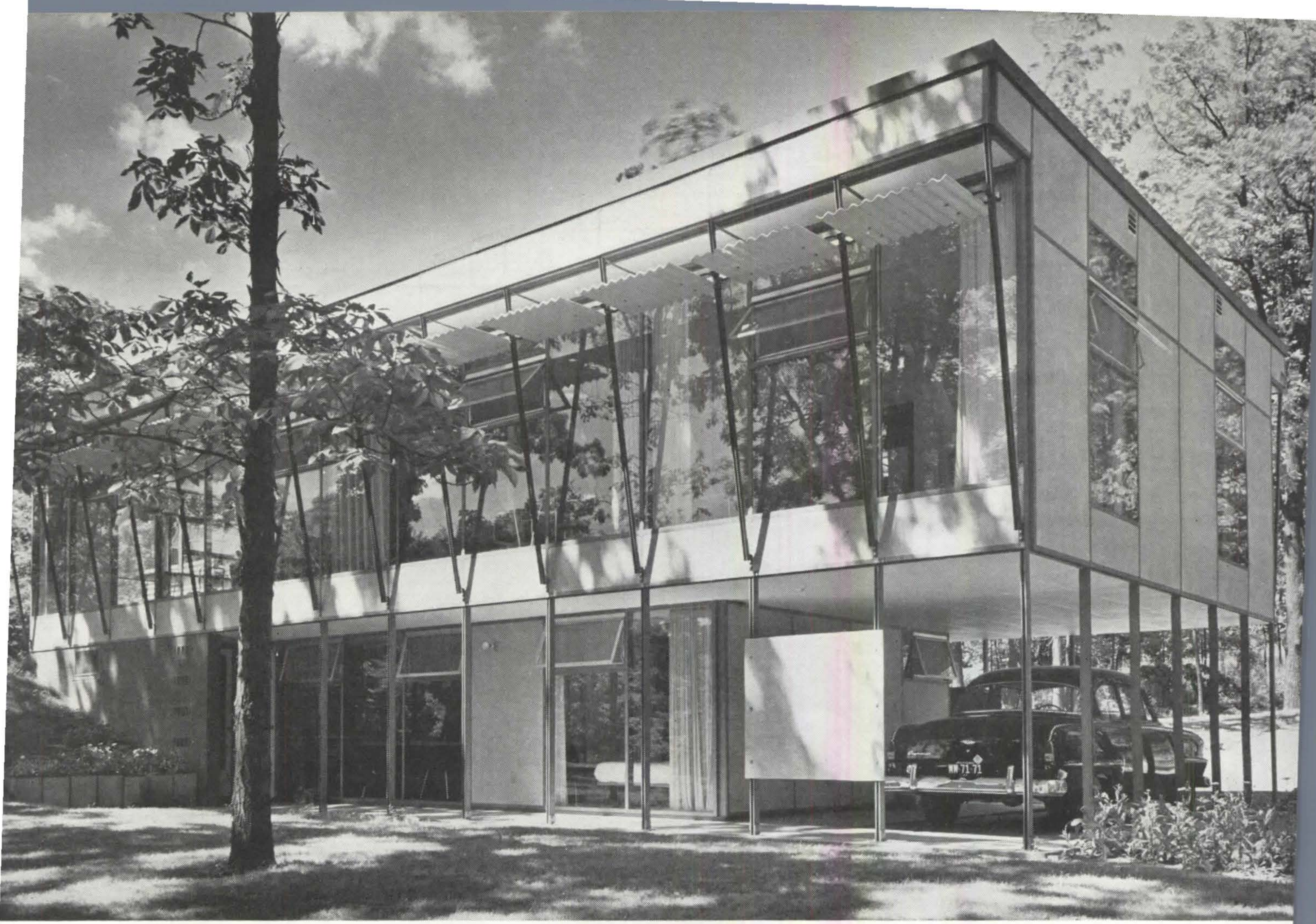
Upper Floor
D
DRESSING
K
B.R.
LIVING
DINING
B.R.



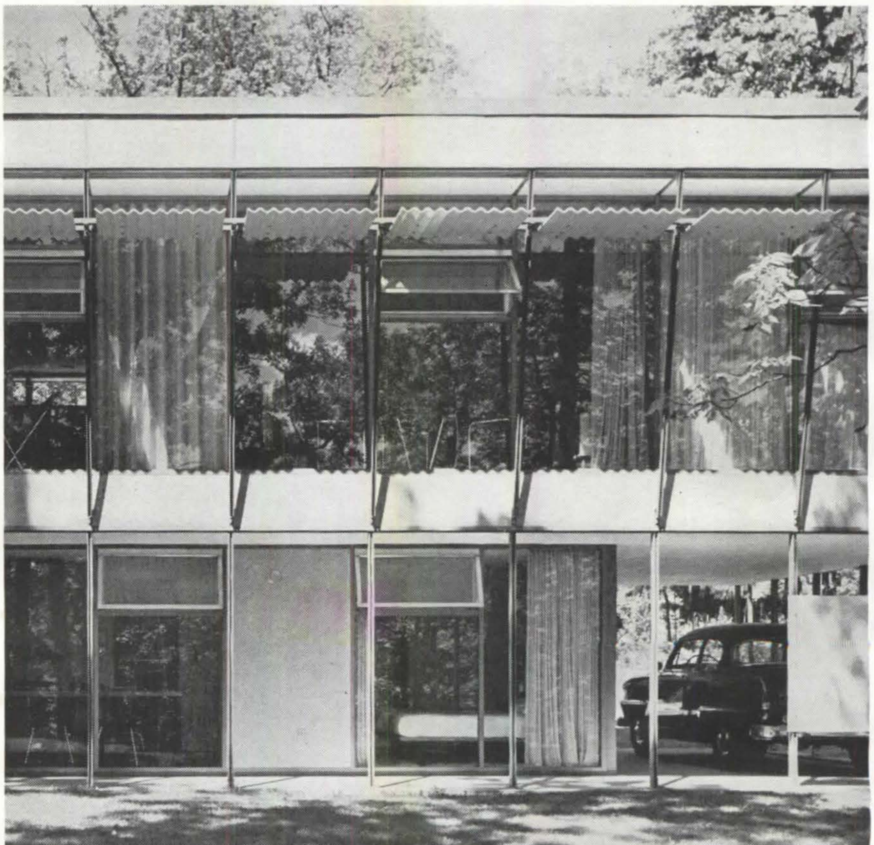
SNAP-ON BATTEN
CONTINUOUS COPING MEMBERS
3/8" ASBESTOS-CEMENT PANELS (BUILT-UP ROOFING OVER)
LOWER CHORD OF ALL WELDED ROOF TRUSS
SNAP-ON BATTEN
SCREENED ROOF VENT IN ALTERNATING BAYS
SNAP-ON BATTEN
CONTINUOUS MEMBERS
ASBESTOS-CEMENT PANEL
TYPICAL WALL STUD
SNAP-ON BATTEN
3/8" ASBESTOS-CEMENT PANELS
Sun Canopy and Roof Overhang

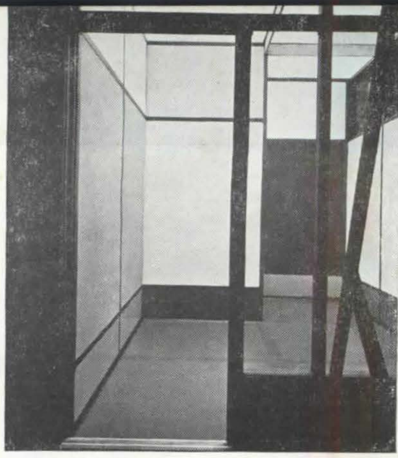


METAL FLASHING
3/8" ASBESTOS-CEMENT PANELS
BUILT-UP ROOFING
4'-1"
3" INSULATING BLANKET
1/2" INSULATING BUILDING BOARD
SUN CANOPY
2'-6"
Typical Section
3/16" PL. GLASS
RUBBER GASKET
SNAP-ON BATTENS
Mullion
6'-8"
8'-3"
BASEBOARD REGISTERS
2" REINF. CONCRETE SLAB
2 LAYERS OF 3/4" RIGID INSULATION
WARM-AIR DUCT SPACE
3/16" PL. GLASS
7'-3"
4" SLAB
FORMED CONCRETE CAP
GRAVEL
GRAVEL
INSULATION
TRENCH POURED CONCRETE FOOTINGS



On the south (view) *front of the house, sun control is handled by means of the roof overhang, in combination with the sunshades supported on the diagonal struts, as well as by the setback of the ground-floor wall, where it borders living spaces.* Photos: David Reider





Unistrut house framing: the Sanders house

The living-dining and study-guest-bedroom areas align along the south window wall. Because of placement on the site, doors open to grade from both upper and lower levels. The pattern of the prototype school mockup (above) *is reintroduced to emphasize once again the variety that can derive within the discipline—as in the musical scale.*

porcelain enamel resume

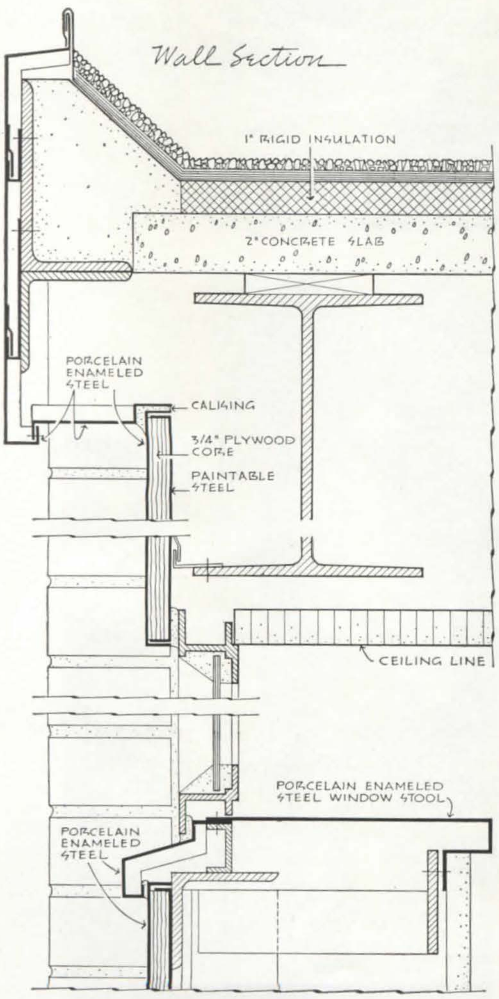


Figure 1—wall section of Whiting Lane Elementary School, West Hartford, Conn. Fascia- and spandrel-panel cores are plywood.

Glass-fused-to-metal, known as porcelain enamel, has become familiar as a building material throughout the United States during the past half century, and every structure containing it has offered a vivid demonstration of its durability, strength, ease of cleaning, and low maintenance cost. However, the unimaginative design of most buildings using porcelain enamel has, almost until the present, inhibited its use in more important buildings.

In the past two or three years, however, an exciting transformation has come about. Porcelain enamel, due to the research of a few brilliant technicians and the ingenuity of a few architects and artists, is becoming accepted throughout the nation for curtain walls, spandrels, fascias, and many other exterior and interior uses in modern buildings of the most advanced design. Two major developments have brought about this new acceptability of the material. The first is the perfection of laminated panels. These panels have sufficient rigidity to eliminate crowning and offer in a single unit all the qualities of thermal-acoustical insulation and fire protection that hitherto have usually been obtained by costly and complex combinations of materials erected at the site. The laminated panel as a practical product is hardly more than four years old —the first major installation being the General Motors Technical Center completed in 1951. The second new development, which reached a stage of actual usability only this year, is an acid-resistant full-matte porcelain enamel that eliminates the general objection to gloss and reflectance which heretofore inhibited the material's use in public and large commercial structures. The new matte enamel eliminates glare and has about the same amount of gloss as a piece of smooth but unpolished granite. Although somewhat more limited than regular porcelain enamels in color range, it can be obtained in a variety of pastel shades. The first building using this full-matte acid-resistant enamel to any great extent is the recently completed Whiting Lane Elementary School at West Hartford, Connecticut (*Figure 1*). Moore & Salsbury were the architects.

what is porcelain enamel?

Its base is glass in the form of frit or small gravel-like crystals. Together with metallic oxides to provide the desired color, the frit is ground to an almost microscopically fine powder in solution with water. Next, the mixture is sprayed on a metal base, dried, and then fired (at heats ranging as high as 1530 F) until the glass and metal are fused. Porcelain enamel is an inorganic material throughout, combining the chemical stability of glass with the physical strength of steel. It is a *permanent* finish. Ordinary paints, enamels, and baked enamels, on the other hand, are organic substances, subject to deterioration at varying rates, depending on their quality.

enameling steel

The most common metal used as a base for porcelain enamel is enameling steel or iron. This is a very low carbon steel which should be 99.9 percent pure. For architectural purposes, 26 to 14 gage sheets are available—26, the lightest, is about 0.0179" thick and 14, the heaviest, around 0.0747". Lighter and heavier gages, though available, are rarely used in architectural work.

Although occasional extra-large pieces can be specified at additional cost, generally speaking the maximum practical size of finished architectural porcelain-

New Developments in Architectural Porcelain Enamel

*by Robert A. Weaver Jr.**

enamel sheets is 4′ x 10′. If used as flat panels, sheets of this size must be laminated to insure flatness.

aluminum

This light metal is used as an enameling base by some fabricators, but it is felt generally that it is not yet entirely suitable for most architectural enameling purposes. It melts at around 1220 F and consequently the enameling frits used on it must have a correspondingly low fusing point, around 1000 F. This results in a much softer surface. (Enameling steel melts at approximately 2800 F and enamels fuse at about 1530 F.) Also, aluminum sheet is quite bendable, lacking the rigidity (unless corrugated or fluted) that gives enameling steel its inherent strength. Nevertheless, research in various aluminum alloys for enameling purposes is under way, and there can be little doubt that, for certain applications, aluminum-based porcelain enamel will soon be acceptable.

selection of enameling steel gage

For many years, the standard specification for architectural purposes called for 16-gage metal. However, with the advent of new techniques, it has been found that lighter gages may often be used to advantage. When large sheets are laminated to backing materials, an 18-gage steel is entirely adequate, and in certain applications metal as light as 26 gage has proved satisfactory. Such is the case with porcelain-enamel tile. These units, 4½″ x 4½″ or 8″ x 8″, are applied with a waterproof mastic to an asphalt-impregnated, grooved fiberboard which self-locates each tile; joints are finished with a specially designed grout. These tiles are literally the first improvement on ceramic clay tiles in history, since they will never crack or craze.

The proper gage of enameling steel is dependent on the end-use of the porcelain enamel, and the architect will be well advised not to specify a particular gage in advance—especially for large panels—but rather to decide in conference with the fabricator what the correct thickness should be.

It is also possible to decrease the thickness of the metal somewhat, and to reduce the danger of crowning and other distortions, by breaking the flatness of the sheet. This can be done by corrugating, fluting, or rigidizing. In most cases these techniques are resorted to not for purposes of economy or weight reduction, but rather for esthetic reasons, particularly since preforming the metal increases the cost. Perforating the steel also reduces or eliminates crowning, though it does not decrease the gage of metal required. However, if more than about 25 percent of the metal is removed by perforation, large panels may warp or curl when fired.

forming enameling steel

Sheets used for flat, smooth porcelain-enamel panels are often flanged on two or four sides before the enamel is applied. This provides a fastening surface for the panel. Occasionally, flat pieces without flanges are laminated and installed in channels.

Architectural porcelain enamel may be obtained in almost any building shape that the architect may specify, from one-piece window sills and stools to complete cornices, copings, and soffits, as well as even more complex forms. One of the most recent uses of the material in architecture is for three-dimensional murals, in which the metal is hammered into shapes or forms by the artist and is then fired with as brilliant an array of colors as he wishes.

porcelain enameling

Most porcelain-enamel sheets and shapes receive a base or ground coat, plus one or more finish coats. Both sides of the steel are coated, the back having about the same thickness as the front. If this were not done, the metal would curl and warp when fired. When the panel is to be laminated to a core material, a roughening agent is added to the back to assure a firm bond with the adhesives used in the laminating process.

Layers of enamel are kept as thin as possible, the controlling element being complete color continuity. The thinner the enamel coating, the greater the resistance to damage from mechanical shock. With modern technology, it is possible to keep the coatings from 5 to 10 mils in thickness, although certain types of high quality finishes, such as stippling, may run as high as 20 mils.

finishes

Single-color porcelain enamel comes in a variety of surface finishes, ranging from full gloss, registering between 70 and 75 on the Gardner Glossometer, down to the new acid-resistant full matte which registers no more than five. Many degrees of matte or gloss in between these limits can be obtained by varying the formulas of the enamels.

The material is also available, as it has been for years, in stipple or mottle finish. A stippled enamel is made by spattering enamels of the same color as the first color, or of one or more different colors, on the surface of the cover coat. Widely varying effects can be obtained by this technique.

An almost infinite variety of design or

* *President, The Bettinger Corporation, Waltham, Mass.*

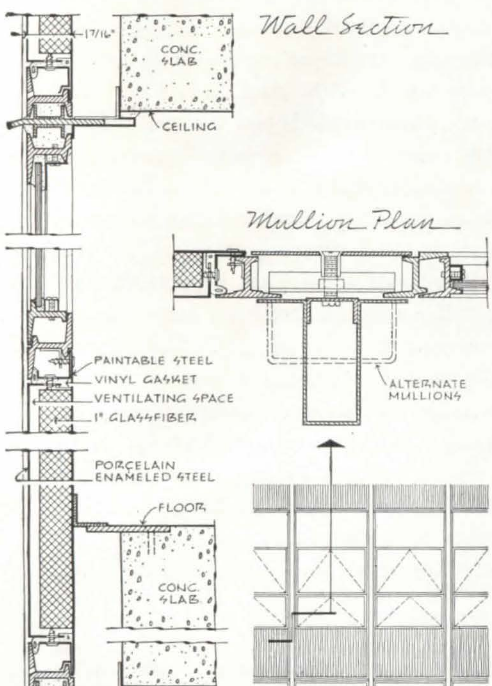


Figure 2—prefab window-wall details developed by Truscon Steel and The Bettinger Corporation. Spandrels have glass-fiber insulation.

pattern can be obtained in porcelain enamel by the use of stencils. The stenciling process can be used either for repetitive motifs at low cost, or, for individual works of art, at a cost limited only by the patience of the artist and the time available to him.

More recently, artists have begun designing directly in enamel for architectural purposes, exterior as well as interior. Doris Hall, Director of Architectural Art and Color at The Bettinger Corporation, and her husband, Kalman Kubinyi, have created porcelain-enamel murals of great distinction in this medium; and Gyorgy and Juliet Kepes have produced some brilliant abstract tiles and panels, working directly with the enamels without pattern or stencil.

colors

Porcelain enamel has always been rich in color and variety, as anyone knows who has studied medieval and Renaissance art objects using this medium. An even greater spectrum of colors is available to artists and architects in contemporary porcelain enamels, since modern research has developed so many new types of inorganic colors that can be used in enameling. Indeed, one of the constant companions of the up-to-date porcelain-enamel fabricator is the Ostwald Color Harmony Manual. Almost every one of the thousands of shades exhibited in that remarkable manual, except the metallic colors, can be matched in today's porcelain enamel.

panel types

Modern porcelain-enamel panels are available to architects in one of two basic types: the simple sheet panel, or "veneer," and the laminated panel of recent vintage.

(a) *Veneer.* This consists merely of the metal base and the porcelain-enamel finish. Until a few years ago this was the only way in which porcelain enamel could be obtained, and almost all of the structures using it up to 1951 consisted of veneer-enamel sheets fastened to wood or metal furring.

Of course, as has been made clear previously, veneer porcelain enamel can be obtained in almost any shape desired, in addition to flat panels. Among the more recent applications of veneer enamel are church spires, fireplace hoods, acoustical tiles, window stools, and so on. Corrugated porcelain-enamel roofing and siding sheets for industrial use have been on the market for many years and have proved to be indestructible and trouble-free in many an installation. Porcelain-enamel shingles for commercial and residential use are also available.

(b) *Laminated panels.* These come in two major types—insulating and noninsulating. The noninsulating panel usually consists of a porcelain-enamel facing laminated to a 1/4" to 3/4" plywood core with a suitable adhesive. To the back of the plywood is laminated either an inner porcelain-enamel face or a metal backing suitable for painting or a base for a plywood, or gypsum board interior finish material. The metal backing is essential both for rigidity and for a vapor barrier. This laminated panel eliminates crowning completely. Aluminum honeycomb has been used as a core, but the cost of this material is, for the present at least, almost prohibitive for average applications.

The insulating panel is made up of a porcelain-enameled steel exterior face, a layer of insulating material, and an inner enameled-steel face or metal backing. The metal backing can, of course, be painted and used as the interior finish itself. Insulating core materials may consist of various rigid insulating boards, organic or inorganic, or a paper honeycomb. Most of the organic insulating wallboards have two major disadvantages, at least from the point of view of use in a laminated panel. First, they will not pass many cities' fire tests. Second, they tend to delaminate because of their low tensile strength.

Probably the most effective insulating core material thus far developed is a paper honeycomb. This product consists of thousands of cells (roughly ¾″ in diameter) which run at right angles to the thin but strong paper skin that binds the material. The honeycomb paper may be obtained in thicknesses up to four inches. The best type is impregnated and coated with a portland cement compound that gives it a very good fire resistance. When the cells are filled with perlite the resistance is, of course, even greater; in this form the material has passed a standard, though unofficial, four-hour fire test. The honeycomb's thermal insulating value ranges from a U of 0.41 for a 1″ thickness without perlite to 0.09 for a 4″ thickness filled with perlite. These figures refer to the core alone; if a foil-backed gypsum plasterboard were used on the inside of the laminated panels for interior finish, the U factor would be still better.

Acoustically, a panel composed of a 1¼″ empty honeycomb core with sheets of ½″ gypsum board laminated on each side shows a decibel reduction of 34. If thicker and filled with perlite, the acoustical values would improve considerably.

A recent development in laminated panels is a mechanically assembled porcelain-enamel window wall (*Figure 2*). This wall, which was designed for a series of United Mine Workers hospitals in the South, provides a completely prefabricated unit for continuous window and curtain-wall installation. The panel again shows one of the innumerable ways whereby porcelain enamel in association with other building elements may be made to serve the endlessly varying requirements of the architect.

joints

Like any other metal-based sheets, porcelain-enamel panels in veneer or laminated form can be joined to each other by metal screws, bolts, splines (*Figure 3*), and by other methods. The joint space between the panels is calked by any of a variety of suitable materials, selection of which can be recommended by the fabricator, if the architect desires. They may be fastened to the structure by means of light-steel framing members, or may be set in upright slotted or channeled sections. The structural steel of the building itself may be used to secure the panels. Several of the illustrated details indicate possible methods of fastening panels, whether veneer or laminated.

conclusion

Today, architectural porcelain enamel must be considered an integral part of the building in which it is used. It is no longer merely a facing, to be applied more or less as an afterthought. In addition, every contemporary building has its own individuality and its own special problems. The alert enameler must be aware of these basic facts. With this in mind, architectural engineering services should be established to provide detail drawings, supervision of a porcelain-enamel installation, or actual contracting for the erection of the porcelain-enamel part of a job.

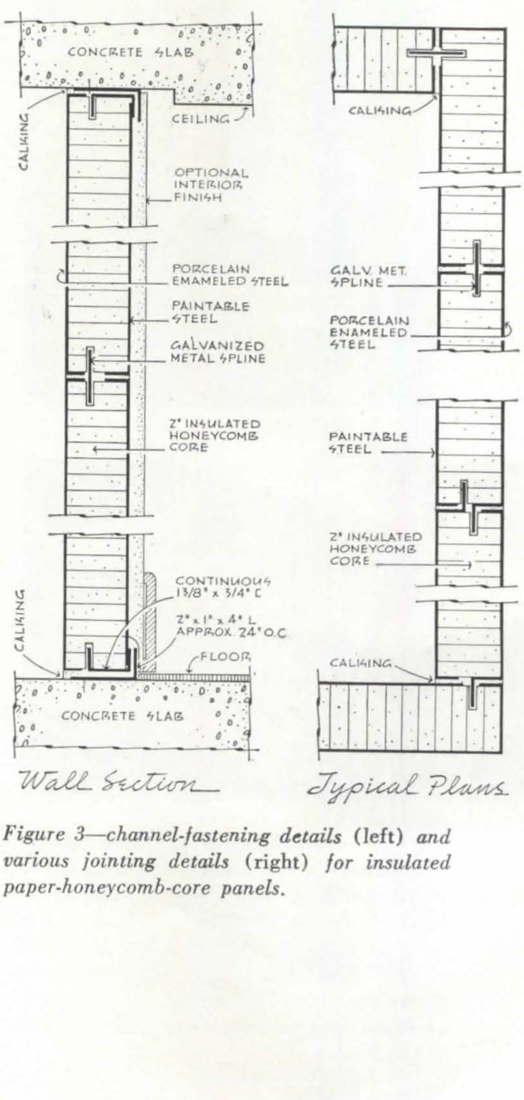


Figure 3—channel-fastening details (left) *and various jointing details* (right) *for insulated paper-honeycomb-core panels.*

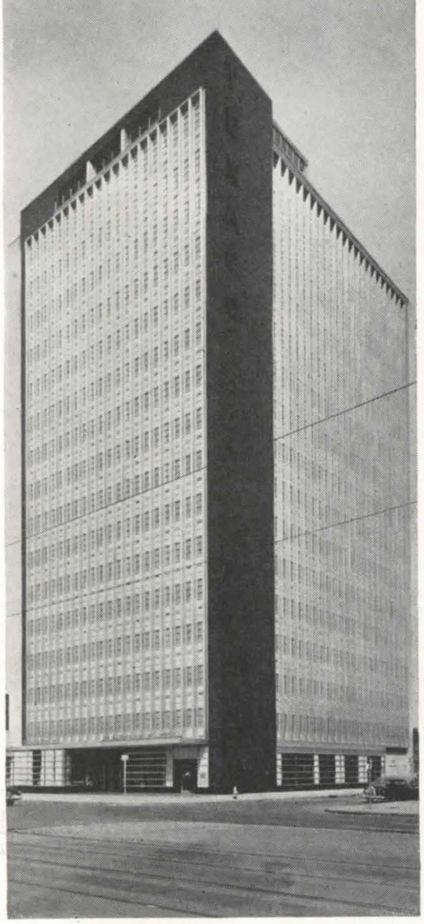


Figure 1 — porcelain-enamel metal panels frame façades of aluminum-fin construction on Texaco Building, New Orleans, La. (top), *Claude E. Hooton, Architect.*

Photo: Chas. L. Franck

Figure 2—last model of Lustron House (did not get into production). Various types of porcelain-enamel panels were used throughout (bottom).

porcelain enamel resume

The contemporary architect, if he is worth his salt, is constantly searching for new materials and new applications for those already established. His criteria for using such materials will be their suitability for his purposes, their superiority from a performance aspect, their esthetic qualities, and their economy.

While there is nothing new about porcelain enamel as such, until recently its uses have been extremely limited in the architectural field, perhaps because it was not adequately developed from the architect's point of view. Nevertheless, a few interesting early examples of porcelain enamel used effectively in buildings have exemplified the material's major merits: durability, constant freshness and brilliance, low maintenance cost, and richly varied color.

The technical advances that have made porcelain enamel worth the modern architect's attention have been outlined in the preceding article. This discussion will report my firm's experience with the material, as well as that of a few other architects who have recently begun using it in some of their new buildings.

We have long been intrigued with the many possibilities of porcelain enamel, both as a functional and as a decorative material. As far as we can see, porcelain possesses most of the flexibility in application that paint does—plus the advantages of durability and longevity without maintenance. In particular as regards decoration, porcelain enamel offers a chance for art to reappear in architecture on a colorful, individual, and relatively inexpensive basis.

recent uses of porcelain enamel

Many indeed are the uses that architects have already found for porcelain enamel. Perhaps the most rapidly expanding application is the use of exterior and interior flat panels, either laminated to cores of various materials or unlaminated. These panels can be used for spandrels, copings, bulkheads, fascias, walls, partitions, counters, and ceilings. They may be plain or richly decorated with imaginative designs by modern artists, to whom the flexibility of the material, its unlimited color possibilities, and its equally unlimited durability offer both a challenge and a satisfaction. Challenge to their artistic imaginations; satisfaction in knowing that the product of their endeavor will endure for the life of the building.

In our own work, for example, we have used porcelain-enamel panels decoratively in the interior of the York National Bank, at Old Orchard Beach, Maine (*June 1953 P/A*), in the form of a brilliant mural design by Gyorgy Kepes. We are completing a similar interior, this time in porcelain-enamel tile, in the Tufts Library, Branch Building, Weymouth, Massachusetts (*January 1954 P/A*). Here porcelain enamel is used around the librarian's counter; the installation will also have ornamented areas designed and executed by Kepes. The outside of this building will have two 2½′ x 24′ bulkhead porcelain-enamel sections underneath windows, front and back of the building; these panels may be made of the new acid-resistant full-matte enamel described previously.

Artist-decorated porcelain enamel is also being used by other architectural groups. In the interior of the West Side Elementary School at Taunton, Massachusetts, designed by The Architects' Collaborative, there will be 25 Kepes-decorated panels from 3′ x 3′ to 3′ x 6′ in size. On the exterior there are to be nearly 350 spandrels in various pastel colors, all in full-matte finish.

Elsewhere in the country, porcelain enamel is also swiftly coming into general use in flat panel form for curtain walls. As far as we know, the enamels have thus far been plain, generally veneer, and for the most part, semigloss. For example, in the Standard Federal Savings and Loan

Porcelain Enamel in Contemporary Architecture

by Carl Koch*

Association Building in Los Angeles, Welton Becket and Associates have designed curtain walls 5/8″ thick, consisting of a deep blue porcelain-enamel exterior, a thin aluminum honeycomb core, and an interior metal plate which is painted to serve as the interior wall surface (*March 1954 P/A*). And down in New Orleans, Claude E. Hooton is responsible for the new Texaco skyscraper (*Figure 1*), much of the exterior of which is clad in porcelain-enamel veneer.

Though one of the largest uses of the material, flat-panel porcelain enamel is far from being the only important one. Back in 1951, our firm worked for months on the design of a Lustron House (*Figure 2*) which would, we believe, have almost entirely answered consumer objections to the first model. Here porcelain enamel was to have been used throughout, in the form of flat, corrugated, and other types of panels. Unfortunately, this project came to a sudden stop when Lustron did.

Nevertheless, we feel that there is a large future for porcelain enamel in residential use, whether for complete houses or for separate elements. For example, in the near future we plan to offer as a substitute, in our Techbuilt Houses, porcelain-enamel panels for the painted plywood spandrels currently being used. The installed cost is reported to be little if any more than the plywood plus the insulation, the inner surfacing, and the paint; and the panel will be good for the life of the home.

Porcelain enamel also makes an ideal roofing material for homes and for public, commercial, and industrial buildings. A waffle-iron porcelain-enamel shingle was planned for the Lustron house. A remarkable use of the material for roofing can be found in the barrel roof of the kindergarten playroom of the Whiting Lane Elementary School, West Hartford, Connecticut—Moore & Salsbury, Architects (*Figure 3*). The use of cold-curved panels for this roof represents an extremely interesting development in light-panel construction. This building, incidentally, is using porcelain enamel in more ways than any other structure known to the writer. It is almost entirely clad with full-matte porcelain-enamel bulkheads, spandrels, fascias, soffits, and copings in varying pastel shades. On the inside, enamel is being used as a decorative element for lighting fixtures, ventilating louvers, and—perhaps for the first time anywhere—as an acoustical material. Perforated porcelain-enamel panels, backed with an inorganic sound-absorbing material, are used in the school auditorium, on parts of the walls and ceilings, and on parts of the dining room walls.

Another valuable use for porcelain enamel has been durable specialty work such as sunshades, hatches, and depositories. Considerable use of the material was made in the Fitchburg Youth Library (*December 1951 P/A*). The porcelain-enamel sunshade is particularly effective since it combines a light barrier with a high reflectivity of the sun's heat, due to the glossy top surfaces of the individual fins.

In the field of commercial signs, porcelain enamel has long had a bad name among architects. This is not, however, due to the nature of the material itself, but rather to the unesthetic designs which have been applied to it in the past. We have tried to use it in a more imaginative fashion as, for example, in our signs, murals, and store fixtures for the Radio Shack in Boston, the Regal Stores, and elsewhere.

Porcelain-enamel tiles have offered a number of effective applications. A well-made porcelain-enamel tile is equal to ceramic tiles in most interior locations. In the Techbuilt Houses, colorful 8″ x 8″ tiles have been scattered informally

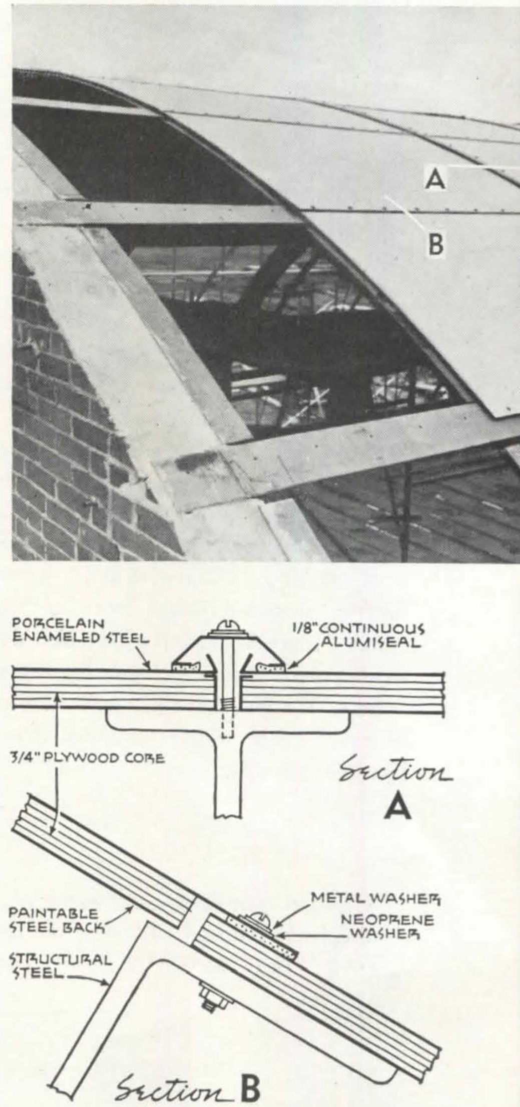


Figure 3—photo and details of barrel roof over kindergarten playroom at Whiting Lane Elementary School, West Hartford, Conn. The 4′ x 6′ panels were cold bent, 16 in a stack, by built-up plywood dies. Panels took their permanent shape (curved to a 23′ radius) after subjected to 100 psf pressure for 12 to 15 hours. Slow-setting glue allowed panels to slide as required by the bending process.

Photo: Wren Studio

* *Carl Koch & Associates, Architects, Cambridge, Mass.*

among the plain tiles above the bathtub. These are brilliantly-colored abstract units designed by Kepes, to serve as a permanent accent on the bathroom walls (*Figure 4*).

An exterior application, perhaps the first such use of a porcelain-enamel tile, is found in several Techbuilt Houses, where some of the large ornamental and plain tiles were embedded in mortar on the face of the cement block chimneys. This made the ordinarily homely but inexpensive cinder-block chimneys both handsome and highly individual.

Already well publicized are the uses of porcelain enamel in the little Acorn fireplace and in our larger, individually designed fireplace hoods.

Lighting fixtures in porcelain enamel provide a durability and a permanently effective finish that cannot be duplicated by the usual baked-enamel surfaces. We have specified the material in our fixtures for the proposed Regal Store in Baltimore; Moore & Salsbury have also done so in their Whiting Lane Elementary School. We feel that this application can be much more widely exploited than it has been thus far.

Other uses to which the material can successfully be put include furniture, such as desk tops, decorative cabinets, room-dividing screens (perhaps in perforated sheets), chalkboard, and so on. Porcelain-enamel chalkboard, in what is familiarly known as "chlorophyll green," is swiftly supplanting the old and dismal slate blackboards of the schools of our youth (*April 1954 P/A*). Since the base material is steel, the sheet can also be used as a bulletin board with small magnets holding the pieces of paper to the surface.

One of the most interesting new uses of porcelain enamel is in sculpture. Currently in process of creation is a series of 12 huge signs of the zodiac, designed by Doris Hall and Kalman Kubinyi for several buildings on Michigan State University's new campus designed by Ralph Calder, Architect. Each of these porcelain-enamel sculptures will measure approximately 6′ x 10′, and will be made from eight to 10 separate pieces, all to be assembled and fastened permanently to the walls of the University's new buildings. These artists are working directly on the enameling steel in the Bettinger plants.

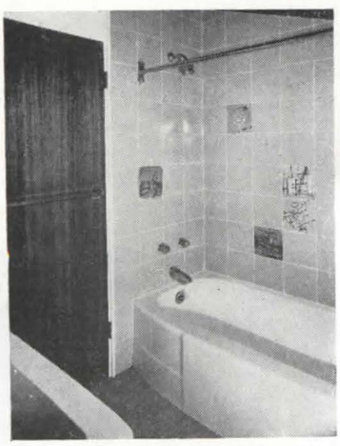
In our opinion, we have only begun to explore the innumerable possibilities of porcelain enamel in architecture. And it should always be borne in mind that the material usually is competitive with other less durable and less decorative materials. For example, we found that in the Techbuilt House, which is in the low-cost field, the porcelain-enamel tiles in the bathroom could be fitted into the budget, complete with Kepes-designed decorative elements, without any strain at all. Even when porcelain enamel is not entirely competitive from the point of view of original cost (although it can be if it is well integrated with the building and secondary savings are taken advantage of), it practically always becomes so when one considers its maintenance economy.

resume of new uses

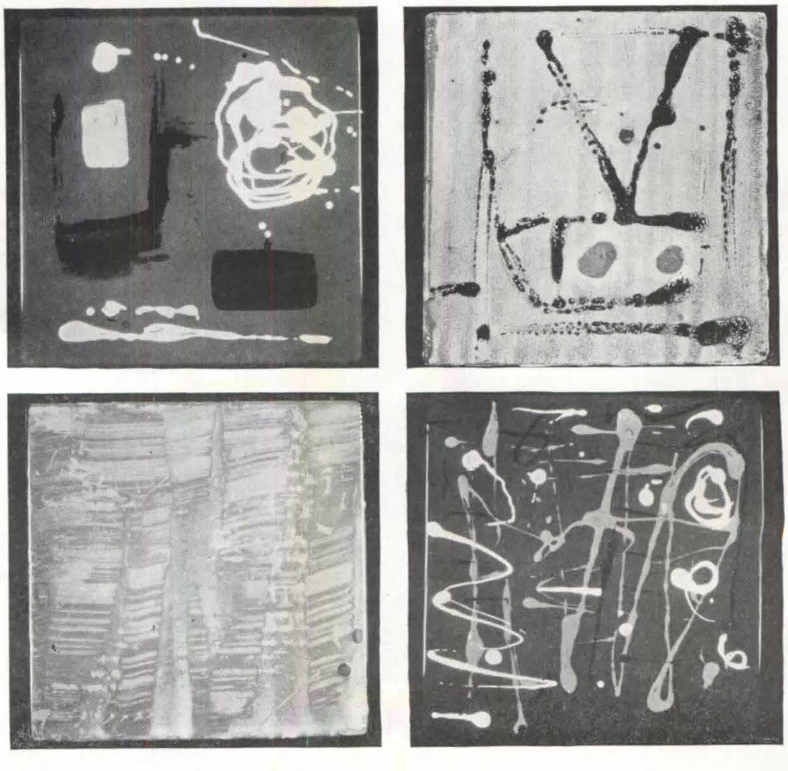
Some of the new uses for porcelain enamel which either have been discussed or are actually in the process of development, include the following:

As a boxing for light structural mem-

Figure 4—porcelain-enamel wall tiles in bathroom of Techbuilt House. This kind of tile will not crack or craze as building settles or as tiles age.



Four abstract tile designs by Gyorgy Kepes (right); *actual size of tiles is 8″ x 8″.*
Photos: Ben Schnall; Fred Stone



bers. (You cannot enamel structural steel, but occasions may arise when heavy-gage enameling iron might be used to form such members.)

For caps for beams and trusses.

For complete framework for prefab window panels, including operating sash and either with or without spandrel sections.

For acoustical ceilings, to produce a surface that will never need painting and is easy to clean.

For the complete packaged bathroom or kitchen of tomorrow.

For colored stair risers and door kick plates in schools, etc.

For nonskid floors of ramps, stairs, and so on in public buildings. It is reported that by adding a high refractory abrasive to the porcelain, the result should be an almost everlasting, slip-proof surface.

Further development of its possibilities in the field of panel prefabrication, for residential, commercial, and industrial uses.

For all forms of ornamental works, railings, grill work, etc.

For specialty or stock items of hardware, for louvers, architectural screens, metal-clad doors, metal baseboards, drain pipes, gutters, and downspouts, and for innumerable other applications where a durable and colorful material can have a useful function.

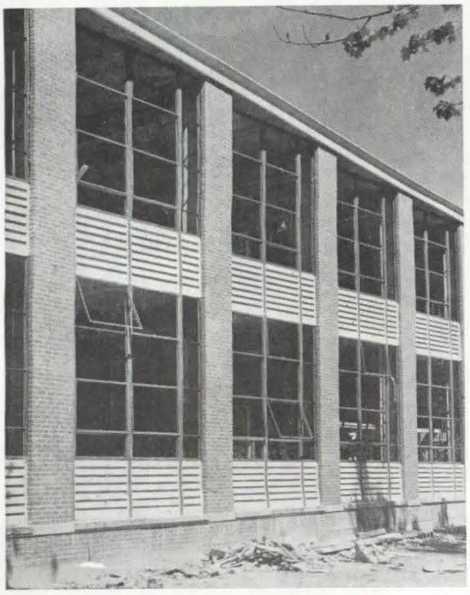
final thoughts

My associates and I have been working with porcelain enamel long enough to have learned three basic "don'ts" about it, and we would like to pass them on.

First, do not try to make porcelain enamel imitate other materials. Why attempt to disguise a material that has so many outstanding individual characteristics of its own by trying to make it "look like" granite, or terra cotta, or what have you?

Second, do not expect absolute color and texture sameness from a series of porcelain-enamel panels, any more than you do from other materials. One does not insist that marble, granite, ceramic-glazed clay tile, brick, aluminum, stainless steel, etc., match absolutely—from piece to piece, or panel to panel—in color, reflectivity, or surface texture. Why demand that porcelain enamel do what these other materials cannot do? Such variations as occur will always be slight, and the over-all appearance of the panels when in place will be uniform enough for every reasonable purpose.

Third, and most important, do not try to specify the exact physical or artistic properties and components of a porcelain-enamel installation. Look to the progressive porcelain-enamel fabricator for design, engineering, and construction assistance. Of course, the curious-minded architect will gain inspiration from familiarizing himself with the merits, the performance qualities, and even the manufacturing procedures of the material in its various forms, but even then he will be well advised to look upon the architectural and engineering services of the genuinely up-to-date manufacturers as a sort of technical "branch office." Some enamelers have established such architectural, engineering, and construction service departments, manned by experts with imagination and with years of experience. These men are there to help the architect avoid mistakes, save money, develop new applications, and in general make the best possible use of architectural porcelain enamel.



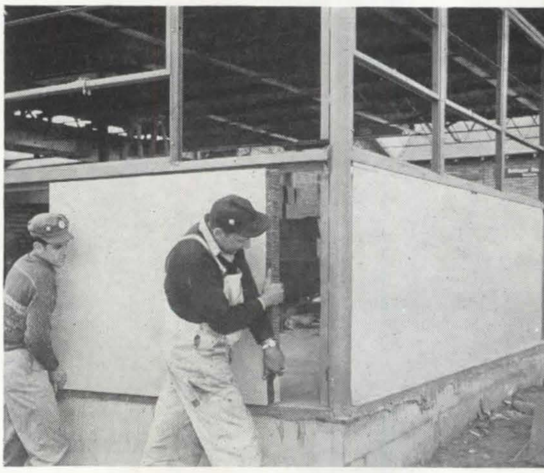


Figure 5—porcelain-enamel louvers cover spandrels of Lexington High School, Lexington, Mass. Perry, Shaw, Hepburn, Kehoe & Dean, Architects.

Figure 6—porcelain-enamel curtain-wall panels (approximately 3'-6" x 4'-3") with paper-honeycomb cores being installed in small office building. Photos: Will Rapport Lenscraft Photos, Inc.

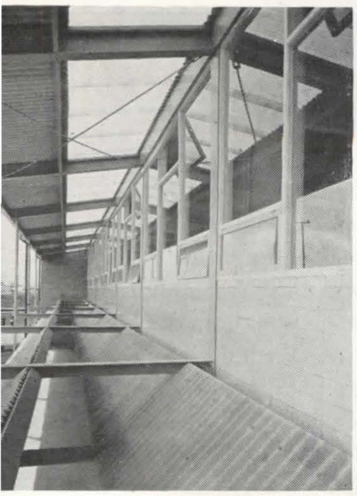
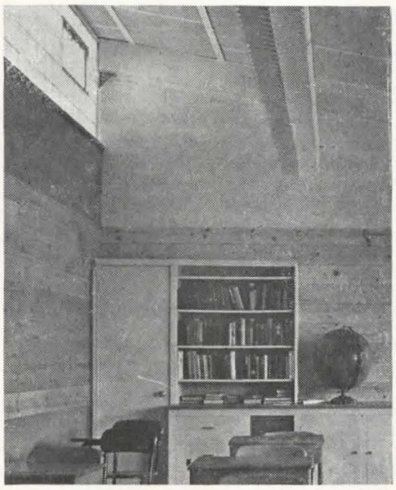


Photo: Frank Lotz Miller



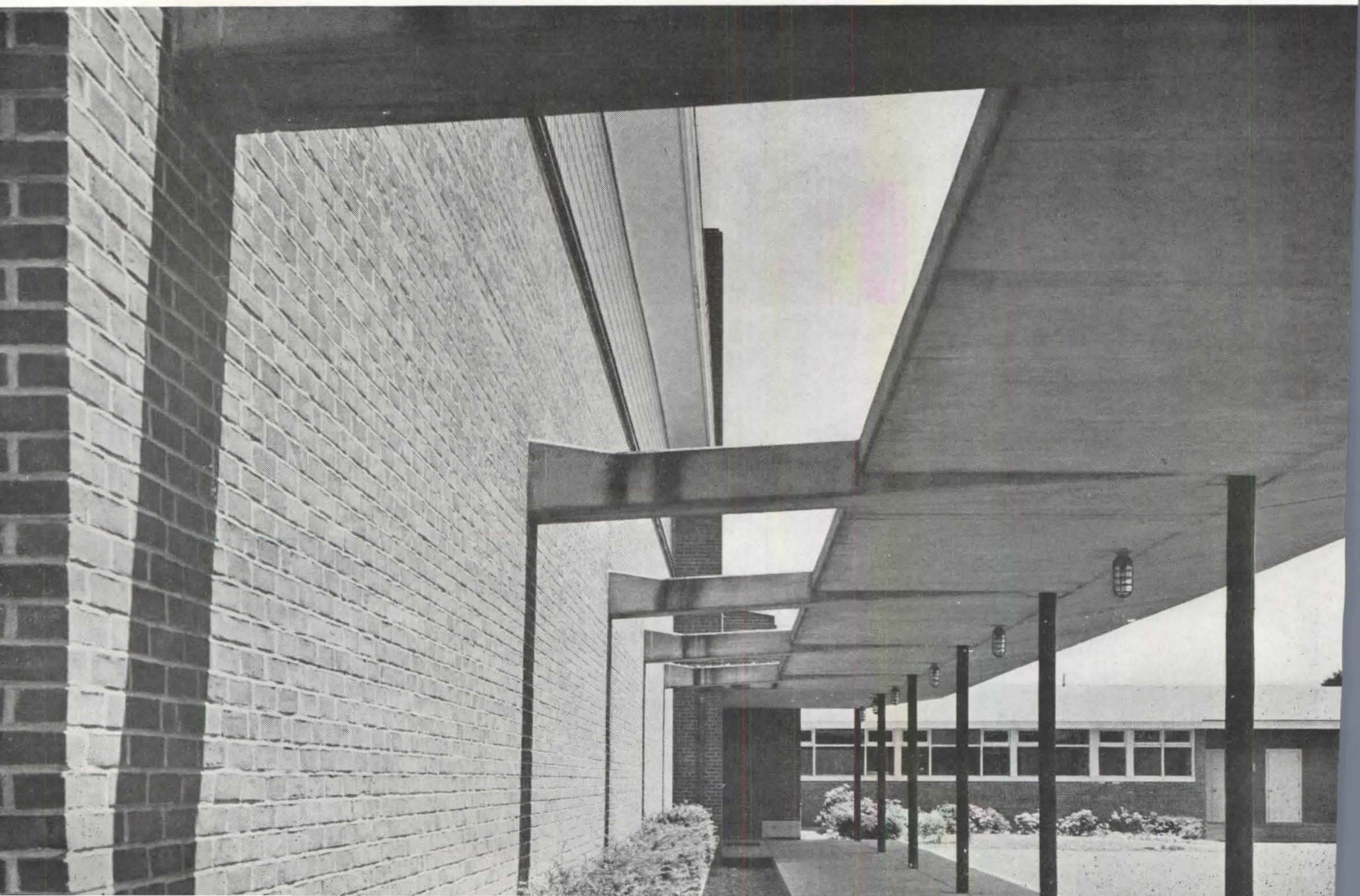
Schools come near the top of the list of building types in which it is important to make a judicious selection of materials—and to assemble these into efficient, economical buildings. For the country has pressing need for new schools of every type and local budgets make it essential that every penny count. Hence, in exploring the effect of materials on design, we focus on schools in which selection and use of materials are particularly thoughtful.

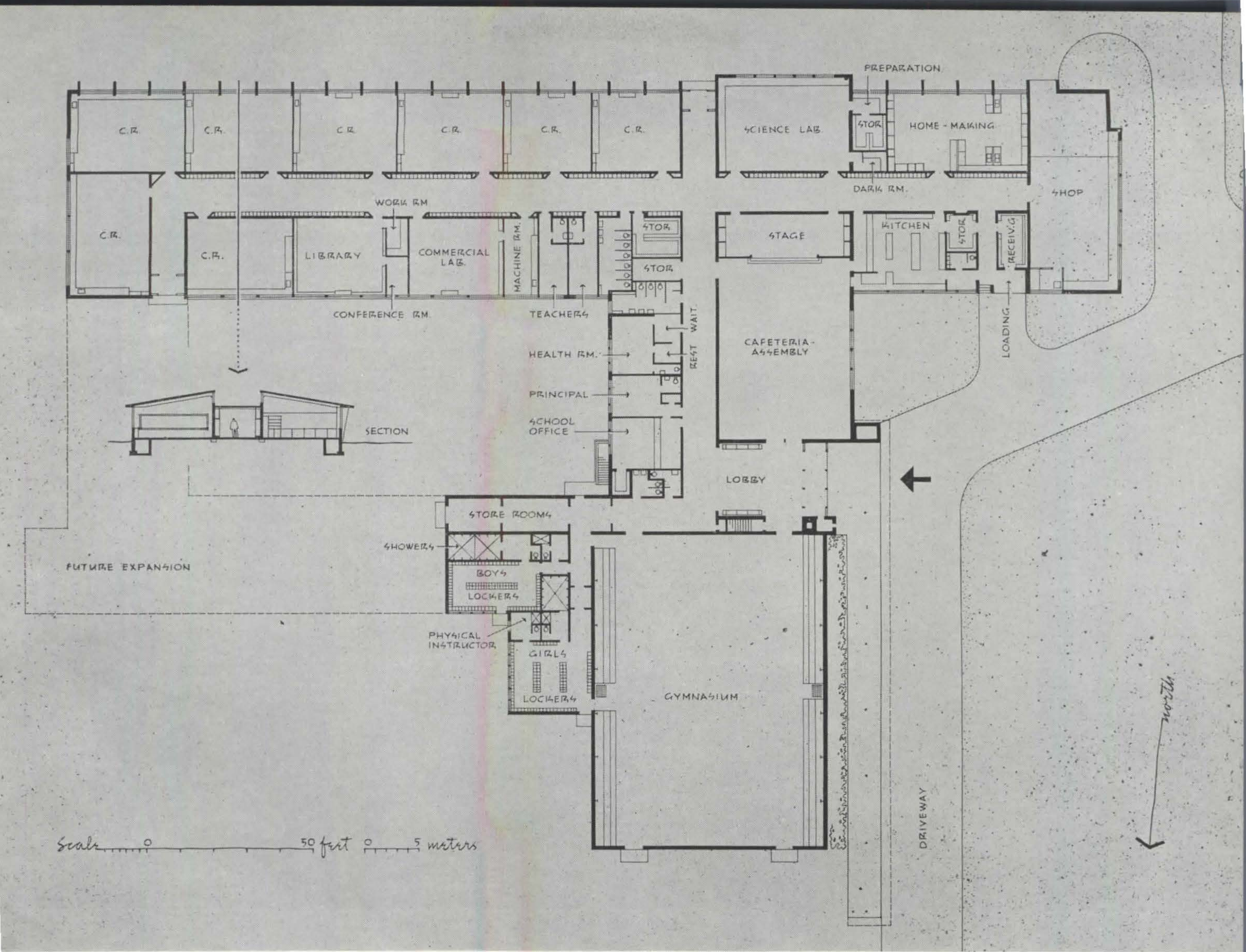
Steel rolled sections; pipe columns; glass; terra-cotta tile; and corrugated asbestos and plastic panels constitute the sun-and-weather-control elements of the south-facing wall of a two-story school (above left) *in Louisiana by Curtis & Davis, Architects, New Orleans.*

For analysis of economical materials in a Connecticut school (left), *see acrosspage.*

location	Clinton, Connecticut
architects	Nichols & Butterfield
structural engineers	Marchant & Minges
mechanical engineers	Leslie A. Hoffman Associates
general contractor	Feliz Buzzi & Son

high school





This is the only school building designed in its entirety by the late John E. Nichols, who as a state and private consultant influenced the design of hundreds of schools throughout New England and elsewhere.

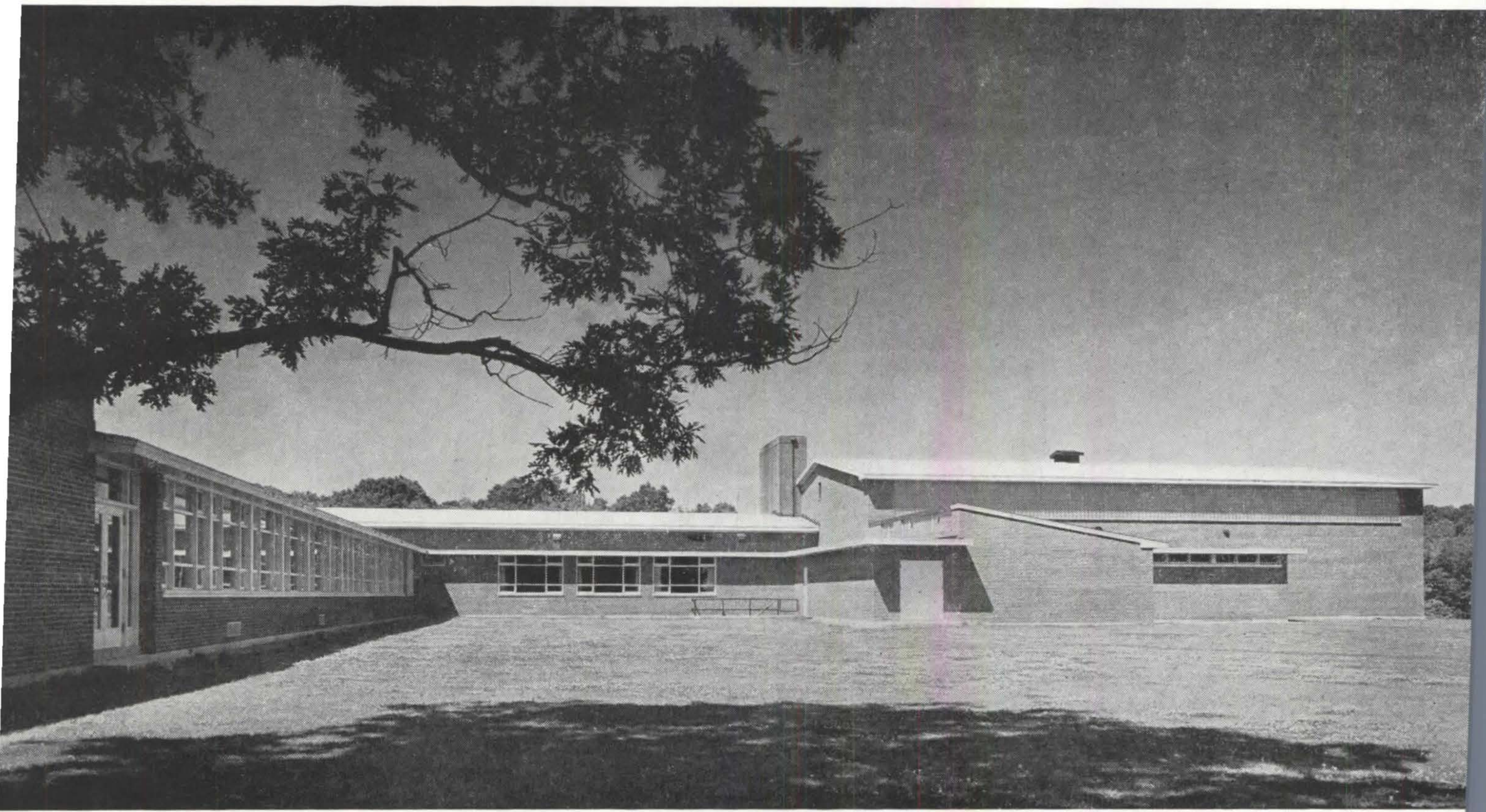
When this small high school was proposed to replace the old Morgan school in the center of town, the idea of the regional high school had not been generally accepted in Connecticut. Therefore the architect had to provide, in this 365-pupil school, facilities normally found only in much larger plants. Except for an auditorium (which was not necessary, since the Town Hall afforded excellent facilities) the school was required to provide for all high school activities. The stringent dictates of a very tight budget were offset by the willingness of the committee to accept a building in which structure and materials were integrated.

Nichols' choice, for example, of glass-fiber formboards to serve as (a) roof insulation, (b) acoustic treatment, (c) formwork for poured slab, illustrates his judicious use of materials. Other features contributing to lower cost are exposed cinder block and brick, simple mill-fabricated cabinets and native pine sheathing which provides endless tack surface and adds warmth to the rooms. In the corridors and restrooms, ceramic tiles provide a clean and indestructible surface. The use of directional glass block has proved entirely feasible even in the Connecticut climate.

Natural light is controlled by a wide roof overhang over the south classrooms and brick jib walls to minimize the effect of the low east and west sun. The clerestory panels of light-directing glass block contribute to the uniformity of the classroom lighting. Light-weight casement cloth on traverse rods controls the natural light but does not exclude it.

The owner wished to use black slate chalkboards, therefore the color of each "focal" wall surrounding the board was made relatively dark, to reduce the contrast, while other walls are lighter.

The Committee and the Superintendent of Schools pay tribute to Nichols' design solution, which held the ultimate cost of the building, with all built-in equipment, to $10.95 per square foot.

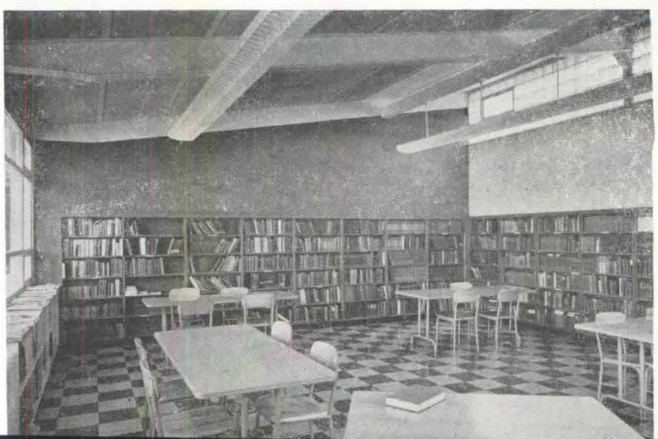


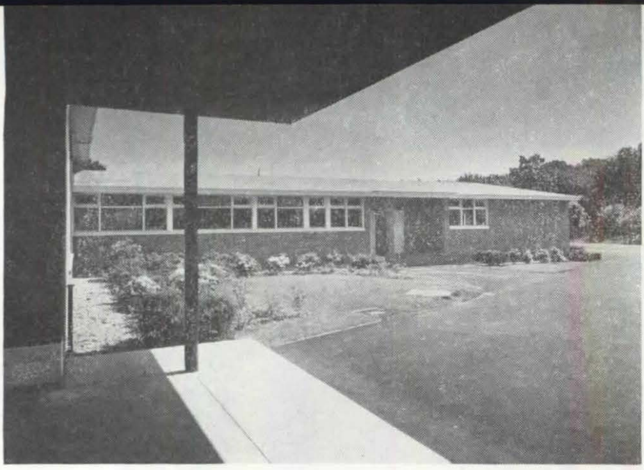
Pleasant patio (above) may be completely enclosed when expansion becomes necessary. Classrooms are at left, offices at the far end, and gymnasium and locker rooms to the right.

Typical classroom (left) receives uniform light from light-directing glass block over central corridor, as well as large window on opposite wall. Artificial light is supplied by fluorescent egg-crate fixtures. The native-pine sheathing provides unlimited tack surface. Simple mill-fabricated cabinets were designed for each room. Heating is by means of low-pressure steam, with individual room controls.

Library (below) follows typical classroom pattern with ceiling of glass fiber formboard, exposed cinder block walls, and asphalt-tile flooring.

Photos: Gottscho-Schleisner





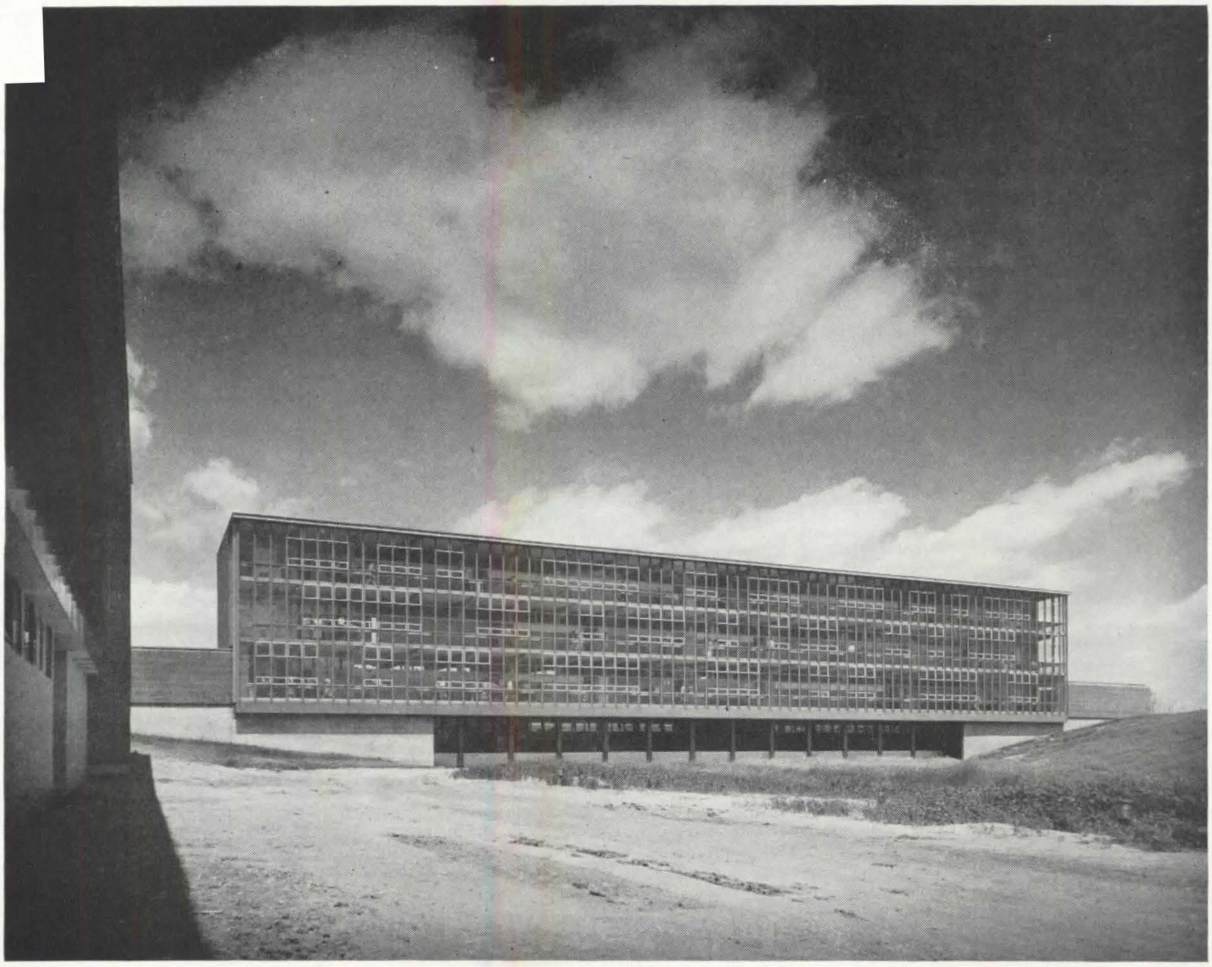
Main entrance in foreground (above) *leads directly between gymnasium and assembly hall. Supplementary entrance diagonally opposite serves kitchen, shop, and home-making lab.*

Roof deck for gymnasium (right) *consists of poured gypsum on glass-fiber formboards over rigid steel frame. Walls are exposed cinder block and pine sheathing.*

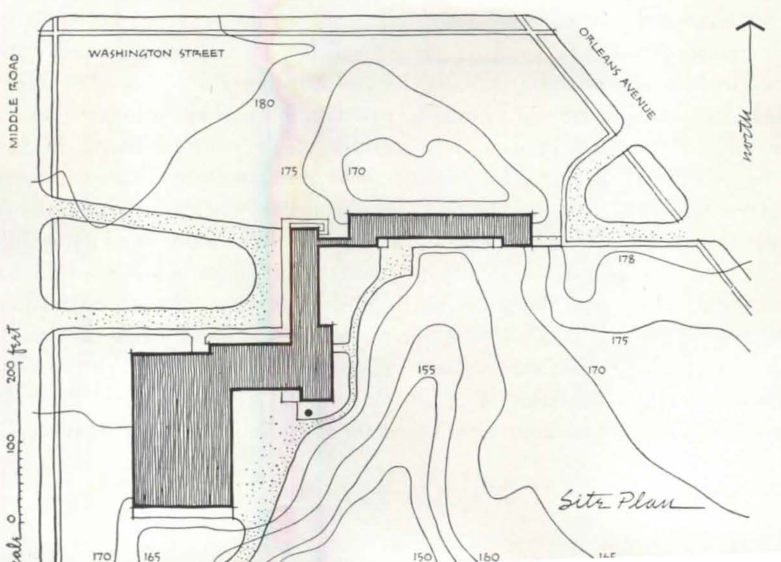
Canopy attached to gymnasium (below) *offers protection for unloading school buses. Exterior materials are brick, concrete, glass block and glass fixed in wood frames, with occasional operable wood sash.*

high school/community college

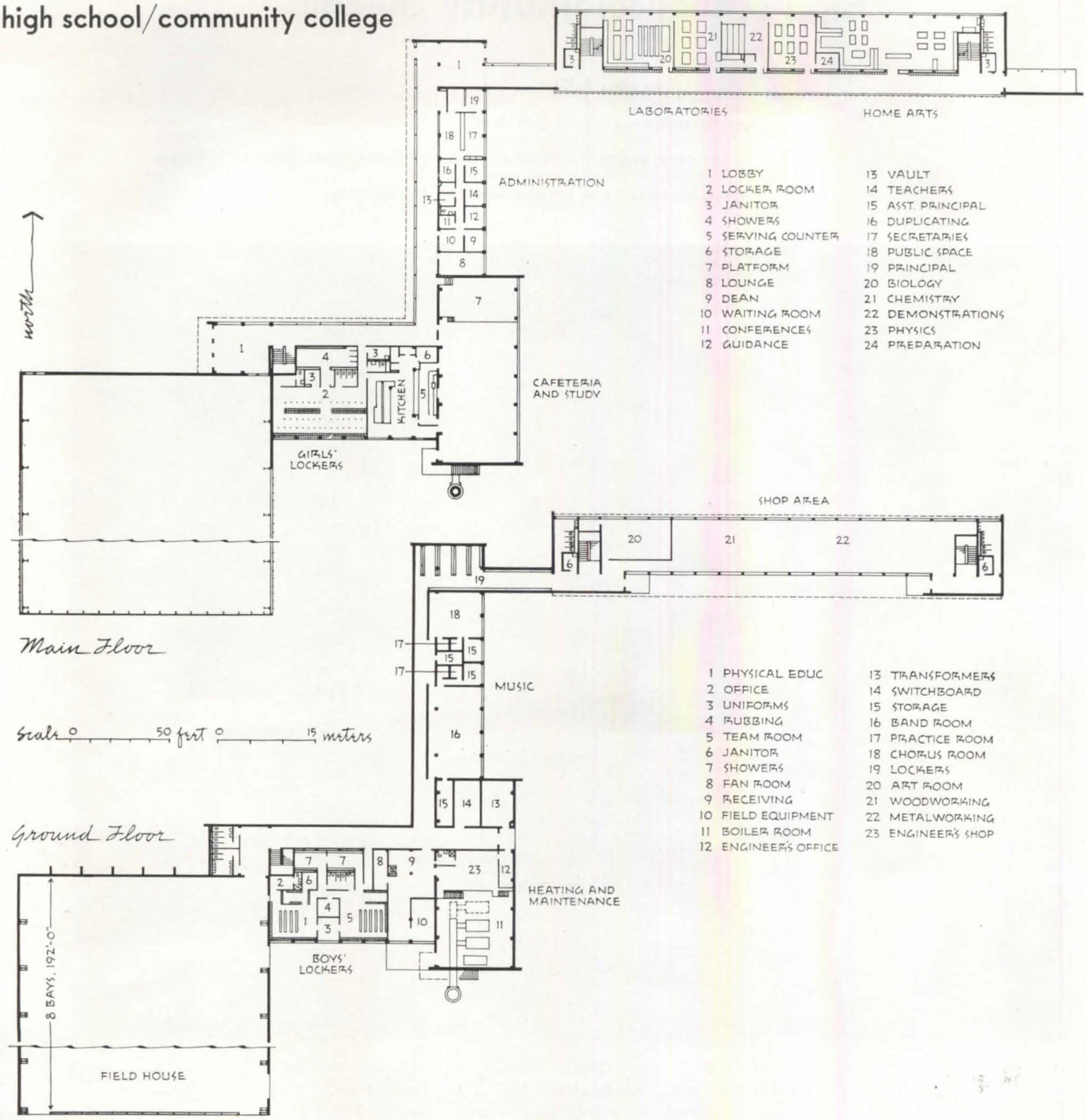
location	Keokuk, Iowa
achitects-engineers	Perkins & Will
landscape design	William A. Dean, William E. Rose, Robert W. Mudra
general contractor	Lovejoy Construction Company



Outstanding in this remarkable school is the brilliant organization of materials—steel, glass, concrete, brick. The classroom wing (below) *spans a ravine that bisects the 25-acre property. The cantilevered, south window wall* (across page) *borders classroom corridors.*



high school/community college

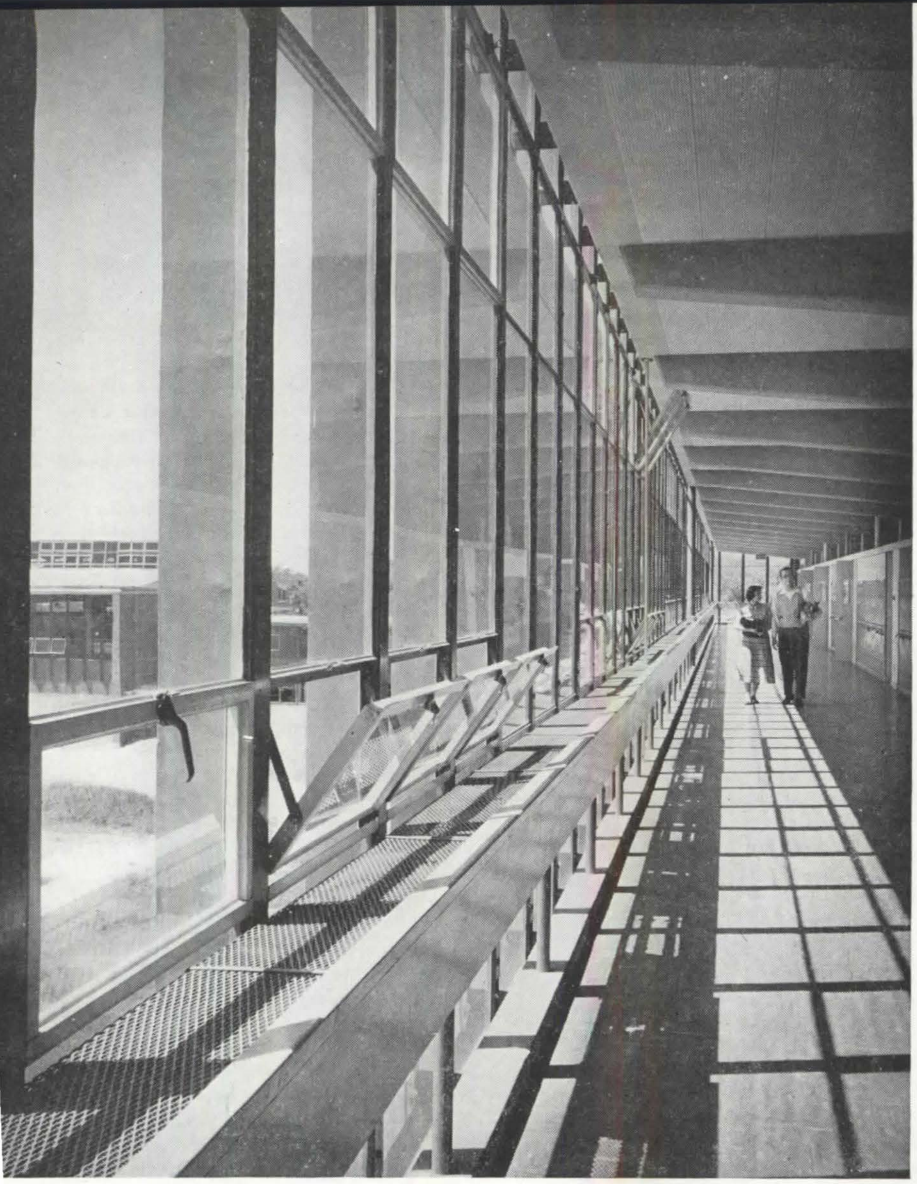


The Keokuk Senior High School and Community College is currently used in three ways—by students, as a high school; by the community, for shop and music classes; and by graduates, for special courses. Future units include a school library, to be built near the main entrance, and a special-shops unit, planned for the east end of the complex. Eventually, the school will serve both as a three-year high school and as a two-year junior college.

Three related elements constitute the present structure—the multistory classroom block, spanning the ravine; an L-shape administrative-cafeteria wing; and the gym-field house, at the southwest end of the group. Thus, administration is centrally located, and classrooms are separated from athletics, services, and other noisy activities.

The scheme developed for providing bilateral lighting for north-facing classrooms in a multistory structure is perhaps the most notable feature of the entire design. The reinforced-concrete structure uses an identical beam-and-slab system for all floors. Organized in 12-ft-wide bays, there are two rows of columns—one along the north wall; the other 28 ft south, in the line of the inner walls of classrooms. Two bays comprise the standard 24′ x 28′ classroom. A 12′-2″ cantilever from the south row of columns provides corridors along the entire southern front of the block. These are enclosed by an over-all steel-framed wall of glass (*see* ARCHITECT'S DETAILS). Only separation between corridors and classrooms is a 7′-6″-high partition, composed of lockers on the corridor side and tackboard in the rooms. The 3′-6″ space above is open, providing (with the glass north wall) high-level bilateral lighting and natural ventilation through the building. This has also proved satisfactory acoustically. No direct sun ever enters the rooms.

The two upper floors of the multistory block *(not shown)* contain classrooms for general studies and business education.

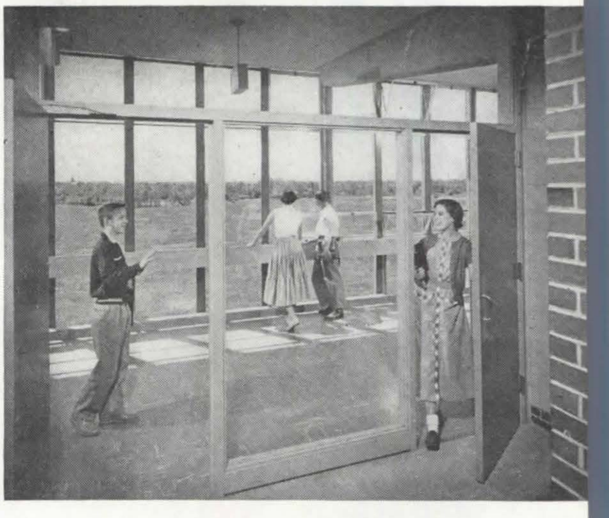


Tapered ends of the cantilevered beams that support the "boat deck" corridors (left) *form an orderly pattern along the ceiling.*

The 3" x 6" exterior vertical tees of the window-wall frame (above) *were made by splitting 12" junior I beams.*

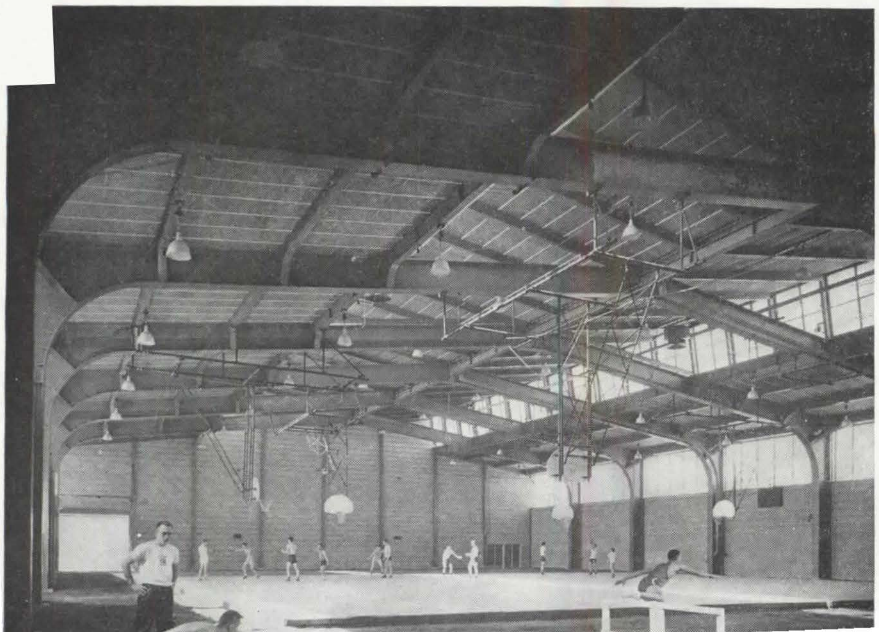
The corridors command a serene view across athletic fields, Keokuk, and the Mississippi River Valley (below).

Water-color sketch: C. W. Brubaker



Rigid steel bents frame the field house (below). *V-shaped purlins, supported on the girder separating the frames, continue out to form a central butterfly roof and provide clerestories for daylighting the interior. Eventually roll-out bleachers will provide seating for nearly 4000.*

Photos: Reynolds, Photography, Inc.



Materials & Methods

The standard classroom (top photo) *occupies two of the 12′ x 28′ bays. Other rooms, such as the home-arts unit* (bottom), *use as many as seven. Partitions are non-loading-bearing, 4-in. concrete block. Room air is conditioned by unit ventilators.*

construction

Foundation, frame, floors, walls, roof: foundation: compacted fill under concrete slabs; frame: structural steel and reinforced concrete: concrete — Universal Atlas Cement Company, reinforcing steel—Laclede Steel Company, structural steel—Johnson Machine Works; concrete floors, ceramic floor tile; poured-gypsum concrete, tar and gravel roof: gypsum concrete — United States Gypsum Company. **Wall surfacing:** exterior: face brick—Adel Clay Products, glass; interior: concrete block, glazed tile—Arketex Ceramic Corporation. **Floor surfacing:** asphalt tile, rubber tile (stairs)—Armstrong Cork Company, hard maple on mastic (field house), ceramic tile in washrooms. **Ceiling surfacing:** lath and plaster. **Waterproofing and dampproofing:** 2-ply bitumen-saturated cotton fabric mopped to masonry asphalt primer. **Insulation:** acoustical: perforated vegetable-fiber insulation on plastic board base—Celotex Corporation; thermal: rockwool blanket — Johns-Manville Corporation. **Roof drainage:** copper and galvanized-steel gutters and downspouts; cast-iron drains. **Partitions:** interior: concrete block, glazed tile, wood. **Windows:** steel sash—Ceco Steel Products Corporation; polished plate, wire, tempered, drawn, and structural glass. **Doors:** birch veneer, hollow-core interior doors; overhead doors—Overhead Door Corporation. **Hardware:** bronze cylindrical lock sets—The Schlage Lock Company; door closers—LCN Closers, Inc.; door stops—Glynn-Johnson Corporation; rolling door hardware—New Castle Products; panic exit — Vonnegut Hardware Company, Von Duprin Division. **Paint:** exterior and interior—The Sherwin-Williams Company.

equipment

Kitchen: steamer — Cleveland Range Company; steam kettle—Groen Manufacturing Company; refrigerator—Herrick Refrigerator Company; ranges, ovens, fryer—Magic Chef, Inc.; mixer—Hobart Manufacturing Company; peeler, dishwasher—Toledo Scale Company; cold storage refrigerator—Frigidaire Division, General Motors Corporation. **Public address:** The Rauland Corporation. **Lighting fixtures:** office, corridors—Solar Light Manufacturing Company; shops, boiler room — Benjamin Electric Manufacturing Company; display cases—Gotham Lighting Corporation; classroom area—Harry Nabut; stairs—General Lighting Company; exit signs, suspended reflectors (field house)—Hub Electric Company; exterior wall fixtures—Holophane Company, Inc.; sidewalk lights—Revere Electric Manufacturing Company. **Electrical distribution:** 3-phase service entrance switch; underfloor duct wiring; panelboards—Trumbull Electric Department of General Electric Company; copper bars and conduit; generating plant—Union Electric Products Company. **Plumbing and sanitation:** lavatories, water closets, laundry tub—Crane Company; storage-type water heater—Kewanee Boiler Corporation; hot-water circulating pump—Bell & Gossett Company; water system pumps — Chicago Pump Company; air compressor — Quincy Compressor Company; shower cabinets — Crane Company; shower controls—The Powers Regulator Company. **Heating:** low-pressure steam boiler—Kewanee Boiler Corporation; gas burners—Mettler Company, Inc.; convectors, unit heaters—The Trane Company; unit ventilators—Herman Nelson Division, American Air Filter Company, Inc.; controls—Minneapolis-Honeywell Regulator Company; finned-tube radiators—Kritzer Radiant Coils, Inc. **Air conditioning:** diffusers — Tuttle & Bailey, Inc.; heaters—The Trane Company.

prototype elementary school

Architects: The Architects Collaborative. **Partners:** Jean and Norman Fletcher, Walter Gropius, John and Sarah Harkness, Robert McMillan, Louis A. McMillen, Benjamin Thompson. **Associates:** Chester Nagel, Richard Morehouse.

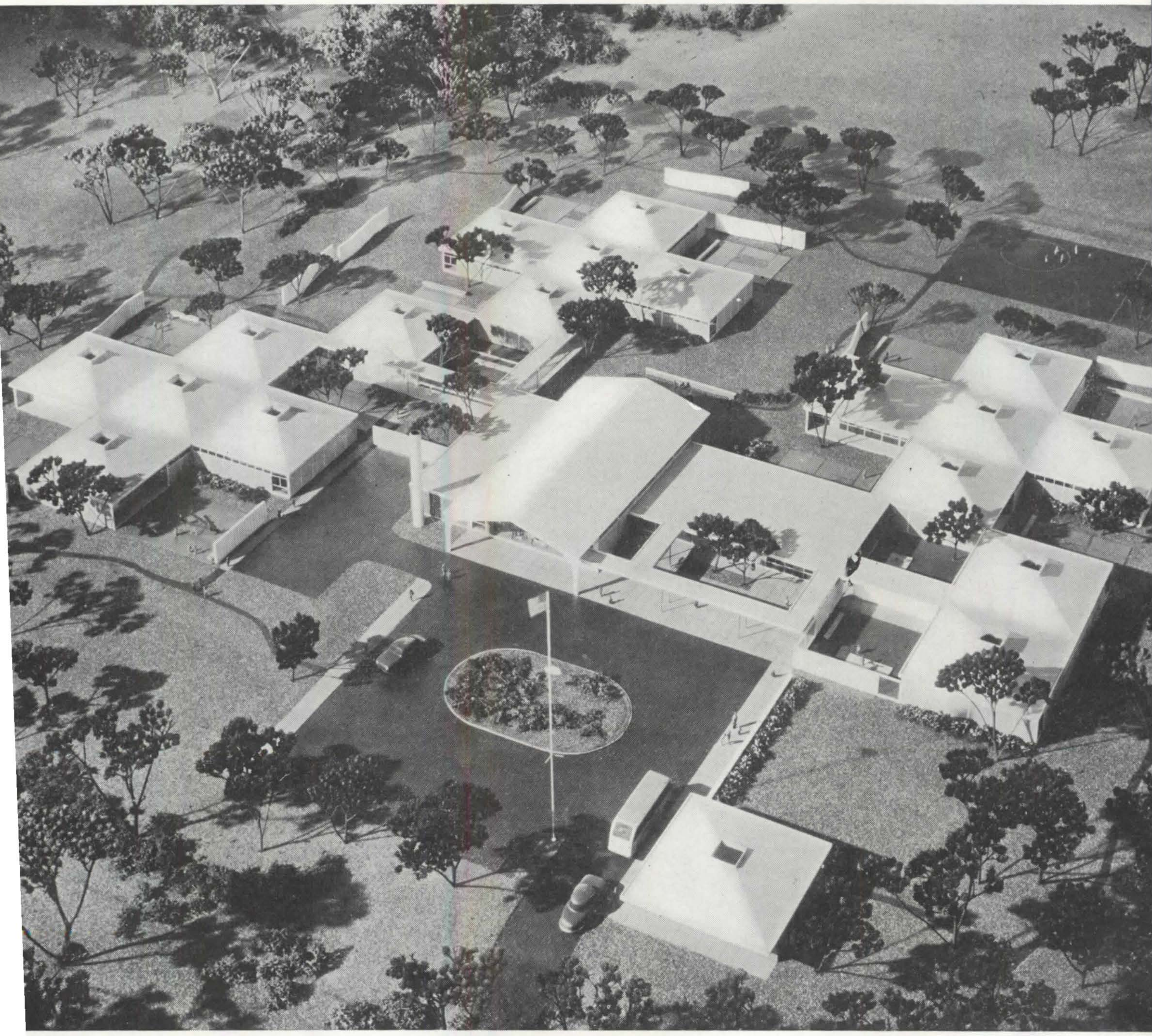


Photo: Louis Checkman

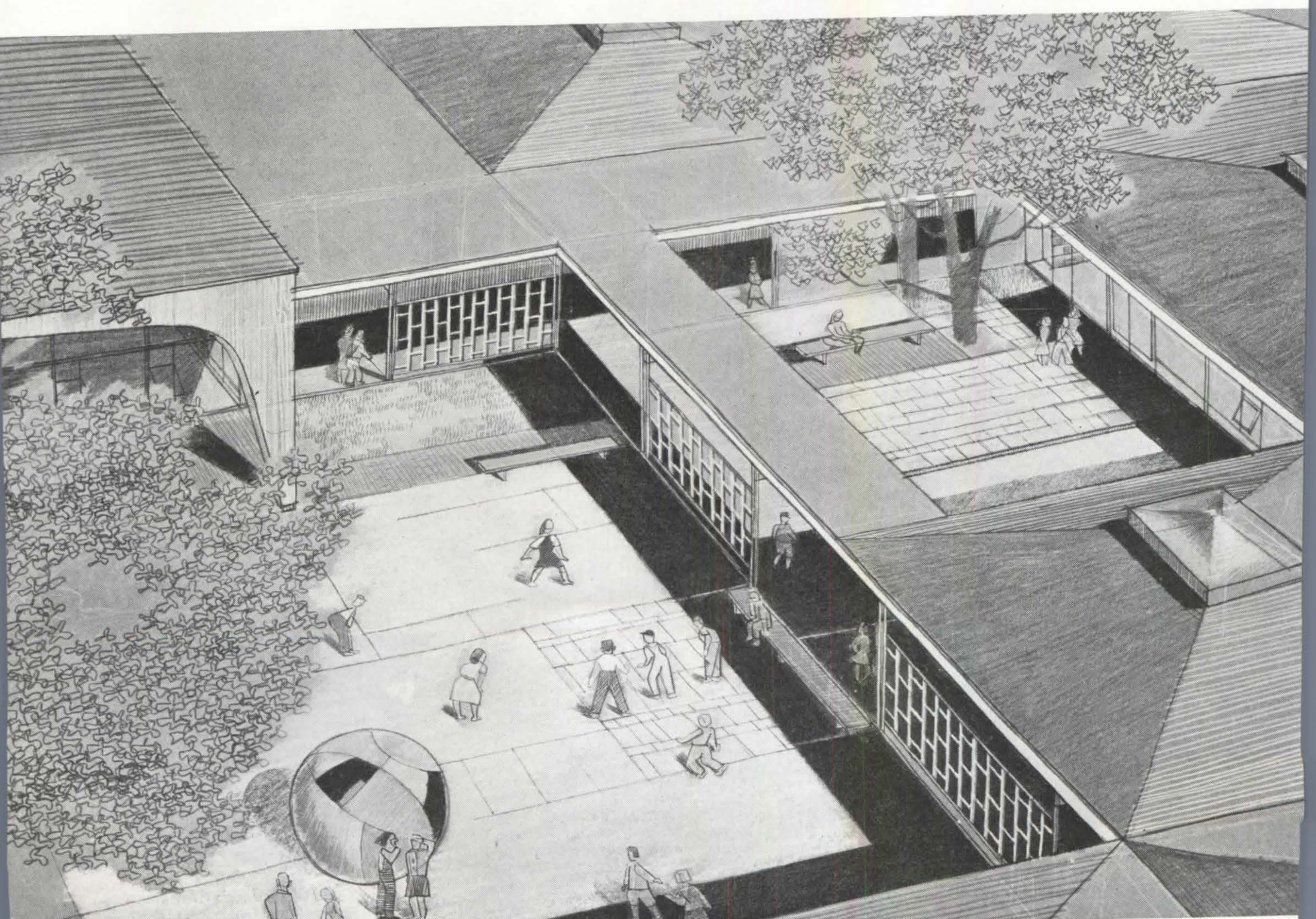
prototype elementary school

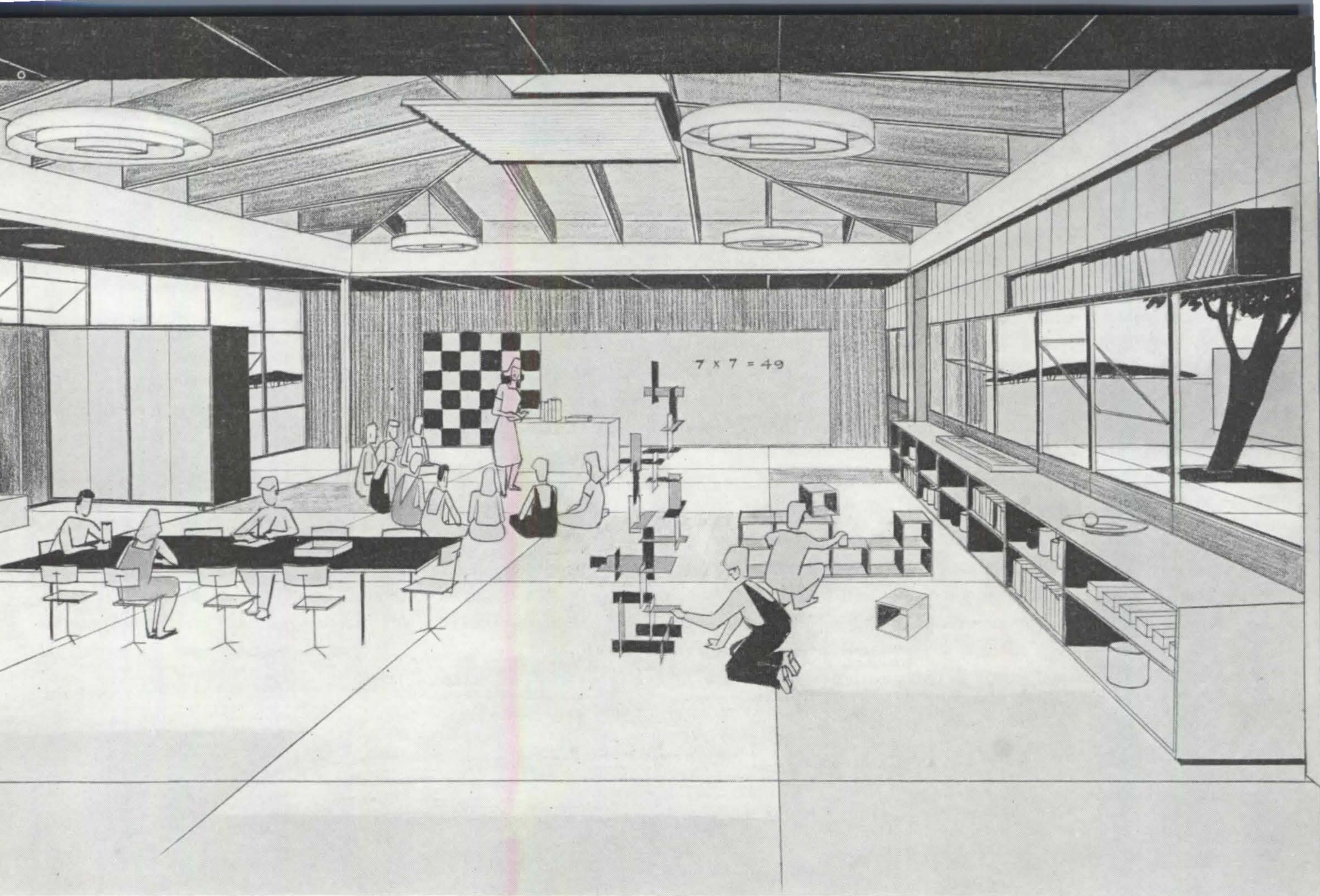
A heartening aid in solving the problem of providing urgently needed new schools is the increasing number of articles about contemporary school architecture in magazines of general circulation. One of the best and most informative—"You Can Build a Better School House," by Sey Chassler — appeared in *Collier's* last spring.

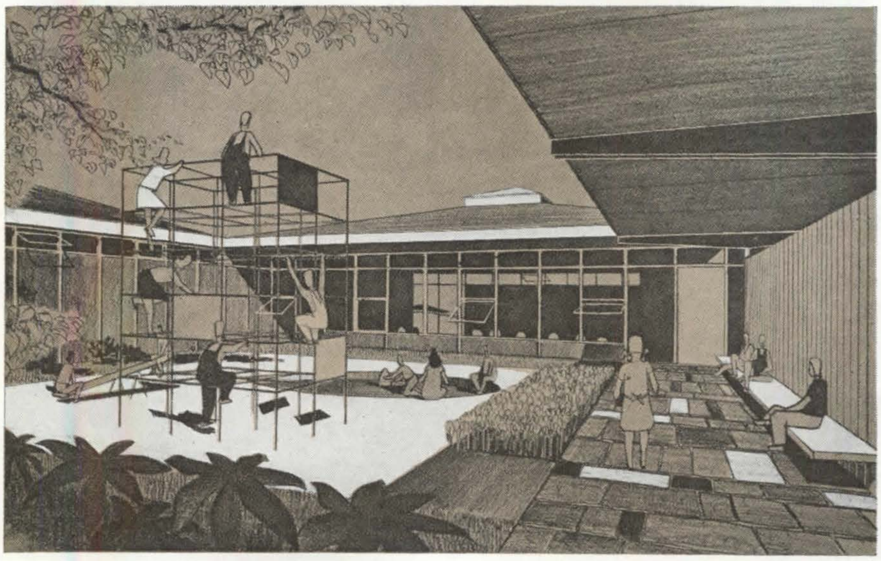
In an effort to help its readers solve their local school problems, *Collier's* commissioned The Architects Collaborative to design a prototype school (*model photo, page 127*) that would be economical to build and flexible enough in concept so that its elements could be adapted to practically any site.

Educational consultants for the project were Cyril G. Sargent and Donald P. Mitchell, director and associate director, respectively, of the Center for Field Studies of the Harvard Graduate School of Education.

The so-called cluster plan that TAC developed seems an excellent solution to the problem, since the plan is flexible in every sense. The typical units, consisting of four classrooms (*like the one shown acrosspage*), grouped around a central play area (*below*) may be joined in numberless arrangements, depending on the particular site and orientation conditions. The units adapt themselves to schools of almost any size, allowing for growth with minimum difficulty.



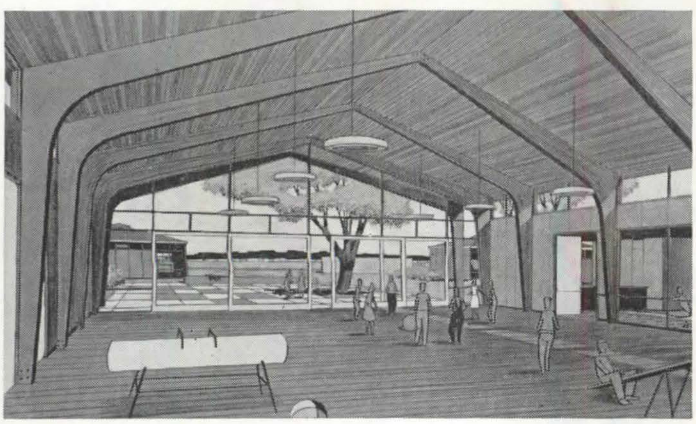




One of the typical play areas (right) *adjoining each classroom.*

Multipurpose room (below)*—the only special structure beside the administration wing, in the school project—is used as a gymnasium, rainy-day play area, auditorium, or for adult meetings in the evening.*

Drawings: The Architects Collaborative



prototype elementary school

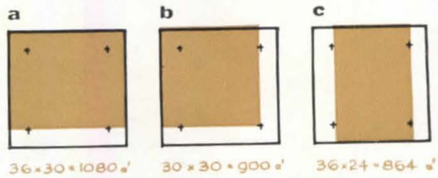
The drawings (*below*) show the progressive development of the cluster idea and the architects' experimentation with basic shapes. The square plan, in the final analysis, proved to be the most feasible and workable. Variations of the square plan (*lower left*) indicate the many possibilities of arrangement.

As these preliminary sketches show, each cluster originally incorporated a central unit to serve as an interior passageway for intercommunication between classrooms. This unit further acquired the function of a "common room" for the cluster, where all of the 120 pupils based in the classrooms forming the cluster could assemble for recreational, study, or other purposes.

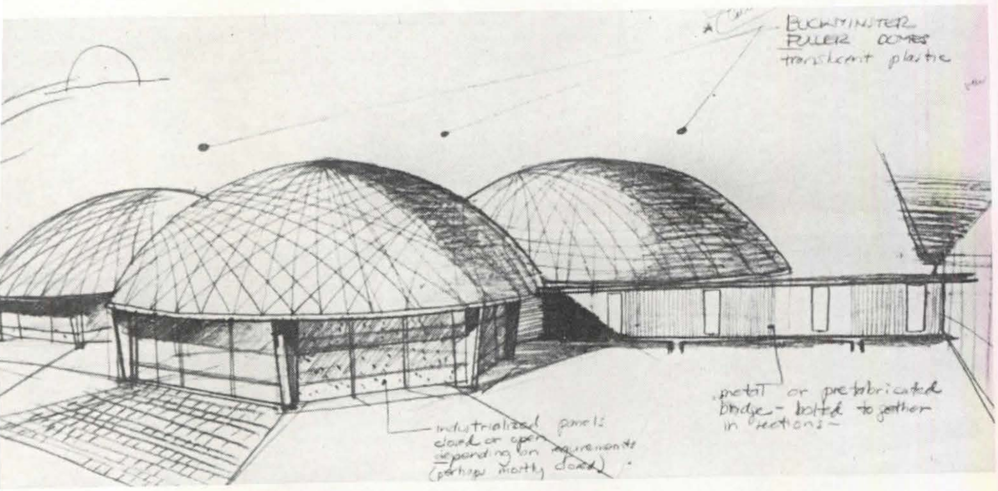
Perfected plans (*bottom acrosspage*) illustrate the great flexibility with which a four-classroom unit and its "common" can grow to whatever size is eventually required, without disrupting existing buildings.

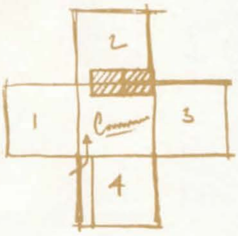
To explain the fundamental theory behind the cluster-plan, the architects state: "The basic idea is not a plan but a building system, whose module is larger than the usual panel—a plan unit 36′ x 36′. Furthermore, not merely a square but interrelated squares."

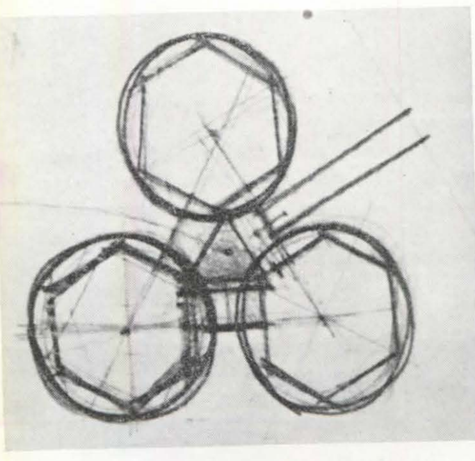
Thus size and arrangement of classroom is flexible with space for toilets, services, corridors at any point of the perimeter of the basic 36′ square. The total

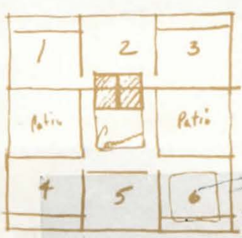


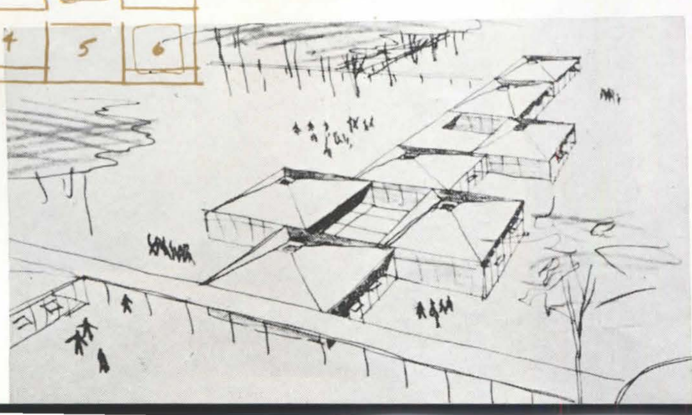
area of the square is 1296 sq ft of which any portion (shaded area in diagrams a, b, and c) may be used for the actual classroom space.

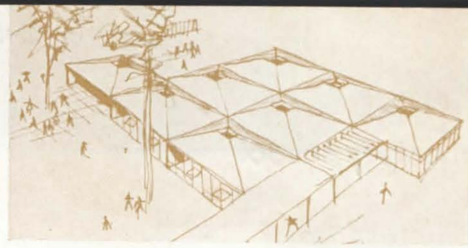












Plan and section on this page show the final stage in the development of this basic unit of which the entire project is composed—except for the large multi-purpose room (used as gymnasium, auditorium, and community center) and an administration building.

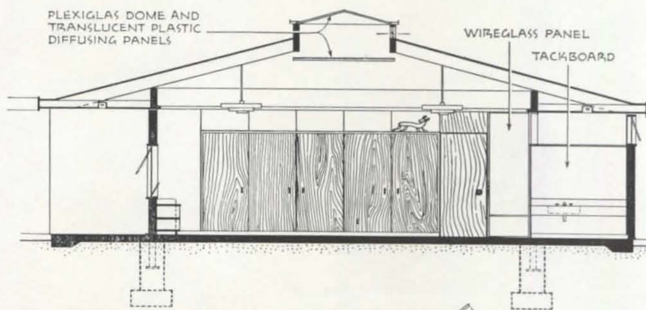
The basic structure consists of four square steel columns which support the laminated wood beams. The columns are embedded in concrete footings at the corners of a 24′ square. The roof, made up of lightweight, prefabricated, and insulated sections, forms a cantilever over the basic 36′ square.

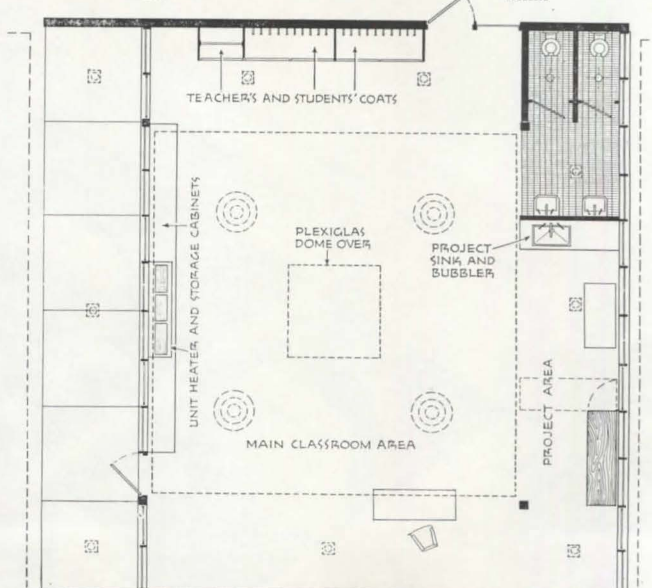
Since the walls are nonstructural, materials can be economical, prefabricated, and varied. On the following page is the architects' list of materials which are particularly suited for this type of construction.

For lighting during the daytime, classrooms and "commons" have both normal windows and a plastic skylight with light-diffusing shield to illuminate the whole area evenly. Each classroom has its own ventilation fan as part of the skylight unit, its own washroom, toilet, and drinking fountain. Wardrobes and storage cabinets are prefabricated and may be placed to form partitions of classrooms.

No exact estimate of the cost of such a school can be made since conditions vary in every part of the country. However, studies indicate that in New England, where construction costs are high, a four-classroom school with "common," administrative facilities, and all utilities would cost approximately $100,000, exclusive of land. The same school in a southern community could be built for considerably less.

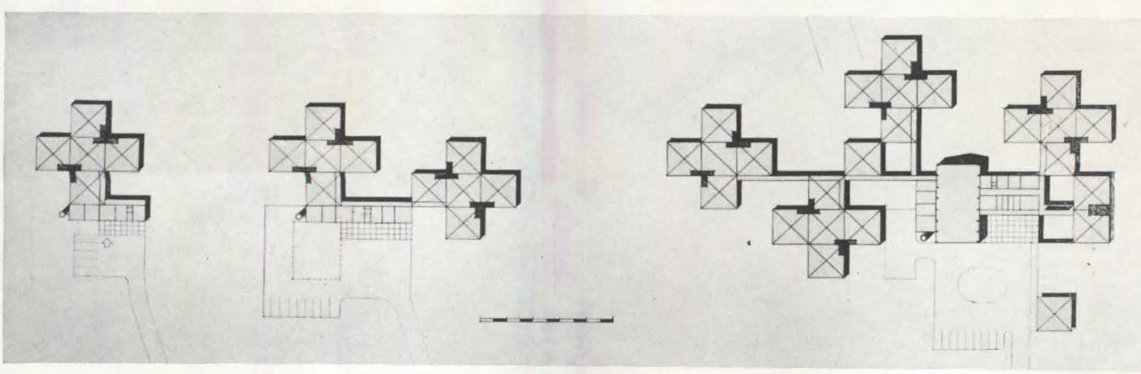
The architects emphasize, however, that beyond the considerable economies implicit in the design, the primary aim was to provide young children with a good school building with facilities best suited to meet modern educational needs.





Plan and section (right) *illustrate the basic structure but actual classroom layout and choice of materials may vary within this framework.*

Plans (below) *show how one cluster, consisting of four classrooms, one "common," and an administrative wing, could be added to without disrupting existing buildings.*



prototype elementary school

Except for the basic structural materials, most of the materials suggested here are interchangeable to suit specific requirements.

structural materials

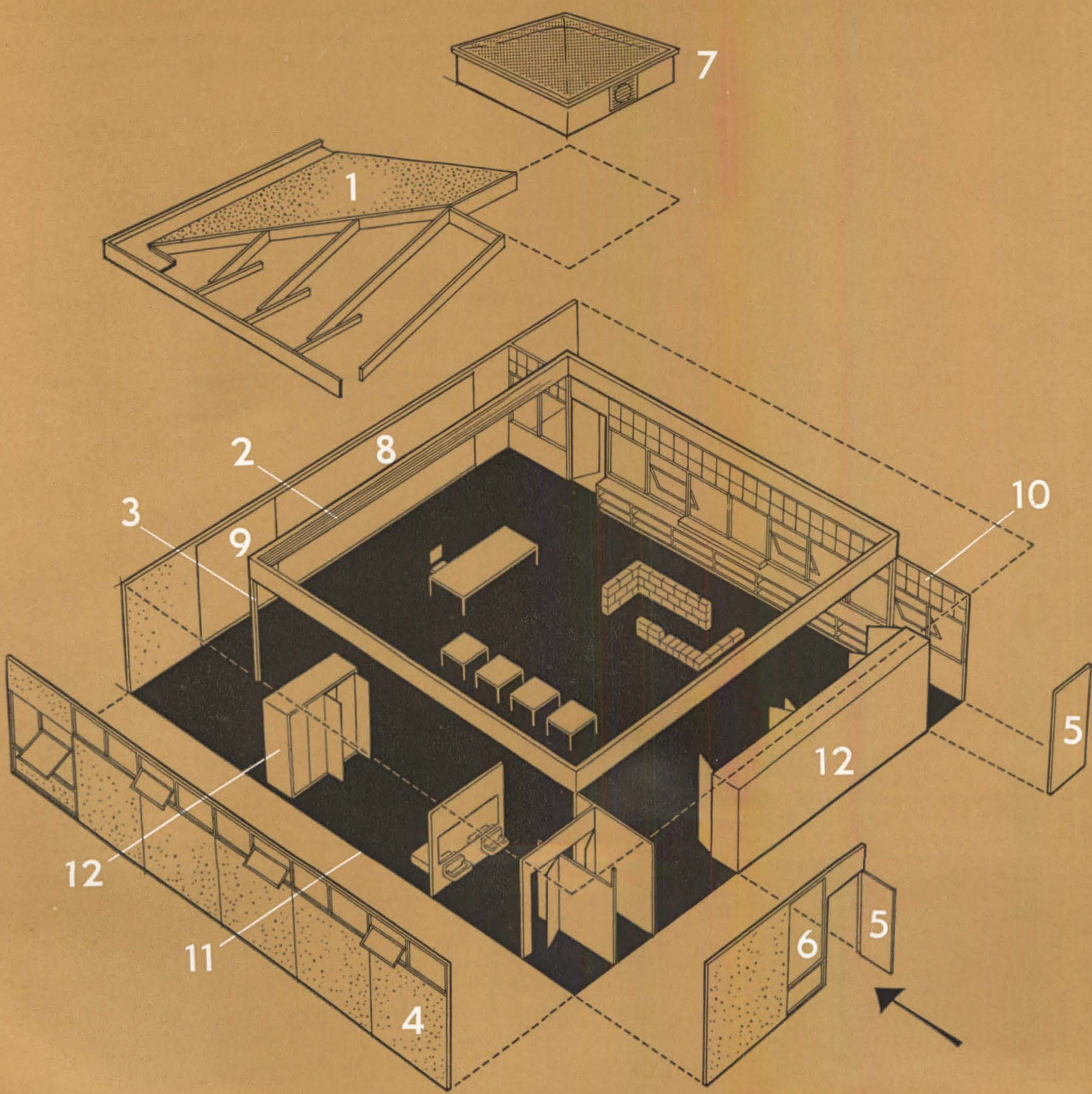
1. Stressed skin roof sections prefabricated of plywood, topped with tar and gravel.
2. Continuous laminated wood beam.
3. Square steel columns embedded in footings.

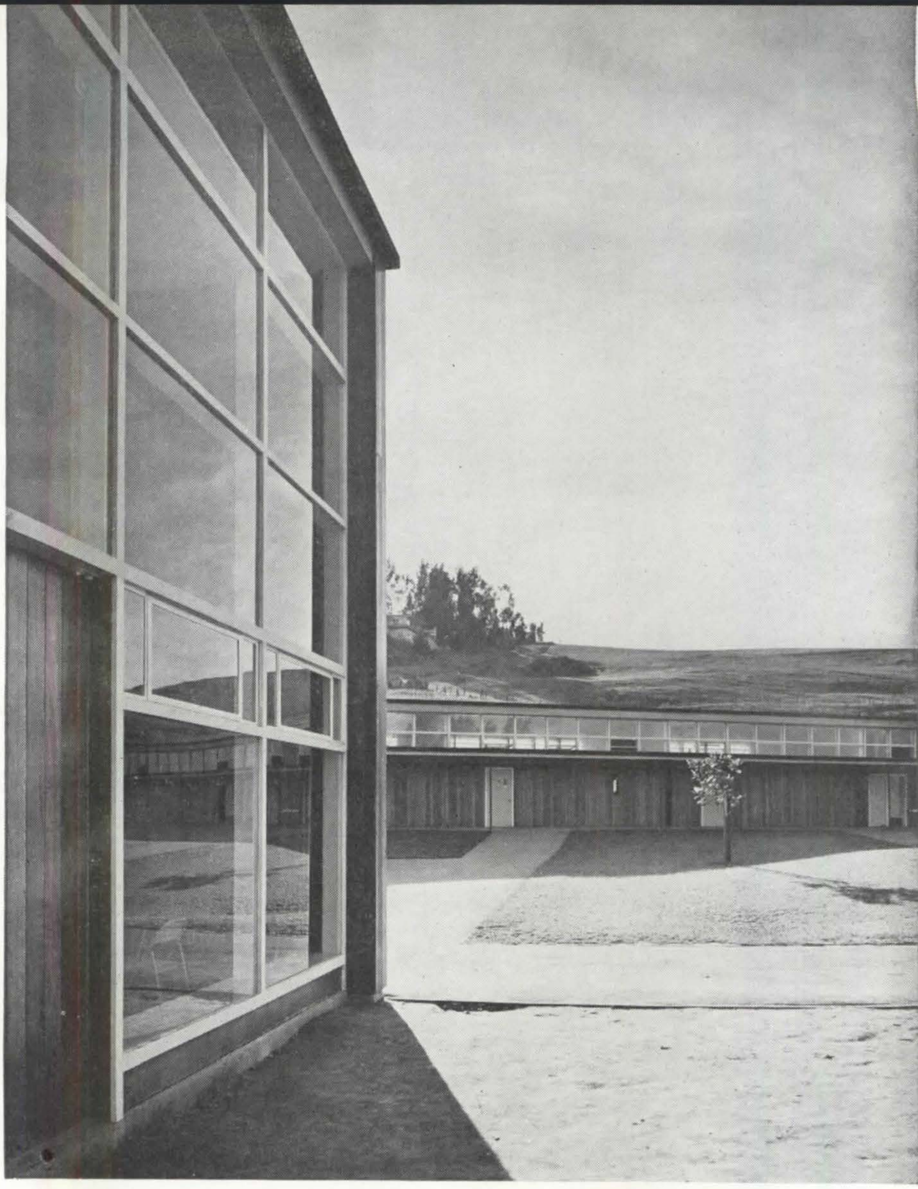
exterior materials

4. Wall materials: insulated plywood panels, cement asbestos panels, plastic or aluminum panels, laminated porcelain enamel panels.
5. Wood door panels.
6. Fixed wire-glass panel.
7. Plastic skylight dome with translucent plastic diffusing shield and unit ventilator.

interior materials

8. Chalk board (floor to ceiling): porcelain enamel, plastic, slate.
9. Tack board: cork, wood, fiberboard.
10. Acoustic tile.
11. Flooring: asphalt tile, linoleum, rubber tile, cork tile, vinyl tile, vinyl-cork tile.
12. Prefabricated plywood storage units.





elementary school

location	Millbrae, California
architects	John Lyon Reid & Partners
mechanical engineers	Coddington Co.
acoustical engineer	Dariel Fitzroy
general contractor	Wilfred H. May

elementary school

In contrast to the use of a multiplicity of new and unusual materials, this school is chiefly distinguished by the well-balanced juxtaposition of a limited number of materials.

Photographer Sturtevant compares this school to the smart young suburban housewife who knows how to dress well by choosing the simplest basic garment. She will not adorn herself with applied ornament but accent the basic costume with bold and consistent accessories. As Sturtevant states it, "The 'mode' is the form and the redwood siding. The 'accessories' are the big windows of the special rooms, placed to balance each other in the total design, giving punches of strong verticals against dominant horizontals. Obviously the 'perky hat' is the entrance canopy and clear-glazed baffle wall."

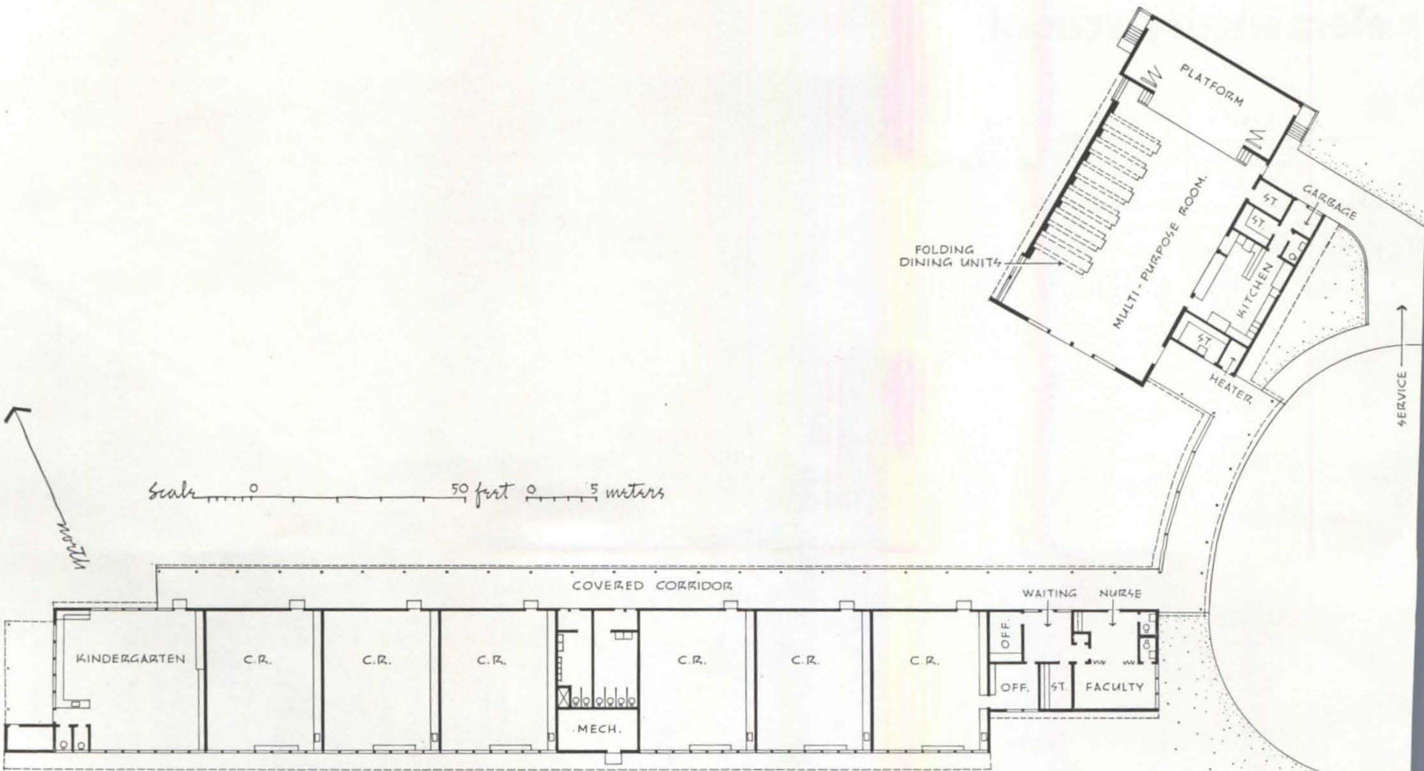
This distinguished little school was financed through the State Building Aid Program and therefore subject to many restrictions.

The basic area of 14,850 sq ft designated by the State of California had to be adhered to in the design of the six classrooms, kindergarten, administration area, multiuse room, toilets, storage and mechanical facilities.

The two main parts of the building complex—the classroom wing and the multiuse room—enclose a playground at the interior of the site. Toward the street, a covered corridor links the two elements and at the same time provides a sheltered school bus unloading area (*photo overpage*) with a glazed wind screen.

Due to restrictions placed on the use of steel during the Korean war, the structural system is almost entirely of wood.

Excluding site development, the cost of this well-planned school was $12.71 per square foot.

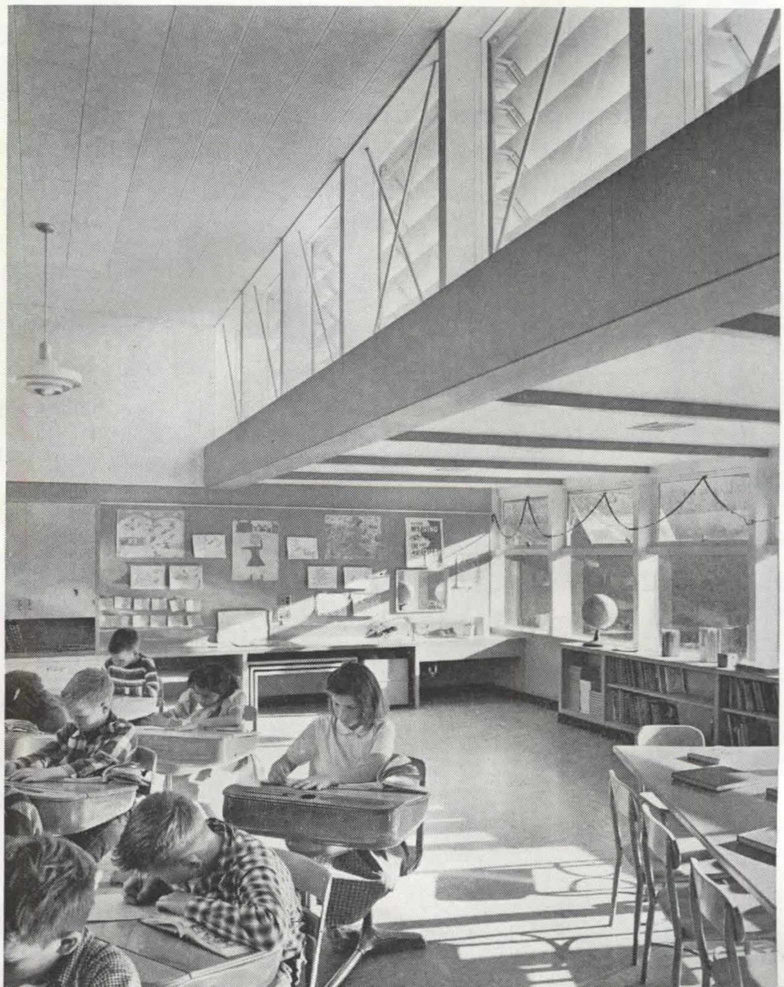


The wood split-ring trusses of the multiuse room (above) *span 40'-0" and are 12-0" on center. Perforated and plain tiles insulate the ceiling panel acoustically. Recessed fixtures and lighting coves bordering the ceiling panel provide illumination. Heating is by forced-air system. Redwood siding and, for sound absorption, perforated hardboard cover the walls, while wood block forms the floor surface.*

View from playground (above right) *shows multiuse room at left, connected by a covered corridor to classroom wing at right. Exterior wall material is redwood siding throughout. Window near the floor is tempered plate glass to protect against breakage.*

In the classroom (below right) *a continuous exposed wood truss with steel tie rods extends along the clerestory windows in order to transfer lateral earthquake stresses from the roof to the columns. The light from these clerestory windows is controlled by exterior aluminum louvers. Artificial light is supplied by concentric ring incandescent fixtures. Radiant-floor-panel heating serves the classrooms. Plywood acoustical tiles and asphalt tiles are the major materials.*

Photos: Roger Sturtevant



spec small talk

glassplexity

It is quite possible that you may remember my efforts, some months back, to clarify who-makes-what in resilient flooring. Like a good little ferret, I now bring you long-awaited shatterproof news regarding some glassy confusion. Now listen carefully, for there *will* be questions later. Here is a clear view of Owens-Illinois, Libbey-Owens-Ford Glass Co., Owens-Corning Fiberglas Corp., Pittsburgh Corning Corporation, Pittsburgh Plate Glass Company, and Glass Fibers, Inc. E. D. Libbey founded Libbey Glass Co. (Toledo, 1888). E. Ford, son of Capt. John Ford who had helped found "Pittsburgh Plate" (Creighton, Pa., 1883), founded Edward Ford Plate Glass Co. (Toledo, 1898). M. J. Owens (Libbey's superintendent) invented the glass-bottle-making machine and (with Libbey's backing) founded Owens Bottle Machine Co. Owens' brainchild in flat-glass production produced another mutual effort with Libbey: the Libbey-Owens Sheet Glass Co., which merged (1930) with Edward Ford Plate Glass Co. to form Libbey-Owens-Ford Glass Co. See? Meanwhile, Owens Bottle (Machine) Co. acquired Illinois Glass Co. (1929) and became Owens-Illinois Glass Co. Owens-Illinois bought (1935) Libbey Glass Co. which became Libbey Div. of O.-I. In 1937, Corning (N. Y.) and "Pittsburgh Plate" formed Pittsburgh Corning Corp. (Pittsburgh, Pa.) to make glass block and expanded-cell insulation. Owens-Illinois and Corning Glass Works, Inc. (Corning, N. Y.) formed Owens-Corning Corp. (Toledo, 1938) to make Fiberglas products. R. H. Barnard formed Glass Fibers, Inc. (Toledo, 1944) to make glass fibers his own damn way. L-O-F added confusion by creating Fiber-Glass Div. (Toledo, 1951) also to make fibrous glass. Production of fibrous glass was begun by "Pittsburgh Plate" the following year (Shelbyville, Ind.) and in 1954 the company was producing a different type of fiber glass at Hicksville, N. Y. These glass companies, many with similar-sounding names, have *no connection* with each other. To sum up:

Owens-Illinois. *Glass Container Div.* —"Duraglas" (containers); *Closure and Plastics Div.*—subdivision of Glass Container Div. (metal and plastic closures, other plastic products); *Pacific Coast Div.*—does in West what Glass Container Div. does in East; *Libbey Glass Div.*—descendant of Libbey Glass Co. (glass tumblers, stemware, tableware); *Kimble Glass Co.* (pressed, blown, drawn glassware); *Nonglass Units.*—Kaylo Div. makes fireproof insulating material; Glasco Products Co. (Chicago) distributes certain products of Kimble Glass Co.; another subsidiary, Owens-Illinois Plywood Co., sells hardwood veneer, plywood, lumber-core panels.

Libbey-Owens-Ford Glass Co.—Twin-ground polished-plate glass, "Vitrolite" (structural glass), bent glass, "Tuf-flex" (tempered glass), "Thermopane" insulating glass, safety glass, and window glass. L-O-F sells (this will kill you!) patterned and wire glass made by Blue Ridge Glass Corp.; *Liberty Mirror Div.* (formerly Liberty Mirror Works)—automobile mirrors, "Mirropane" (transparent mirror), front-surface mirrors, vacuum-coated glass parts, coated optical and electronic elements; *Fiber-Glass Div.*—"Super-Fine" (blanket-type fiber glass), twisted and plied yarns, plastic reinforcements; *Corrulux Div.*—glass-fiber reinforced-plastic panels.

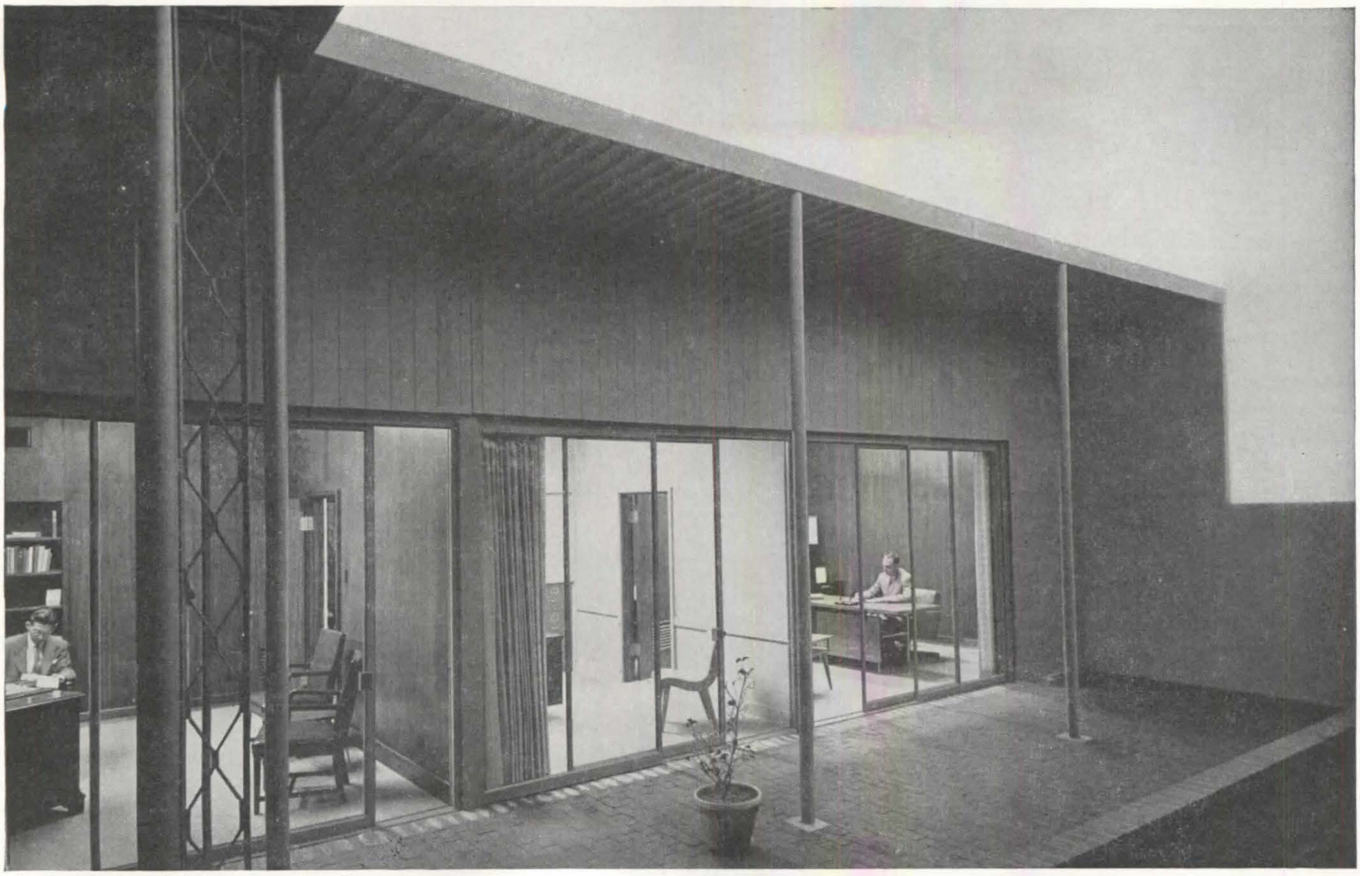
Owens-Corning Fiberglas Corp. *General Products Div.*—air filters, thermal insulation, sound control products, mats, clothing interliner; *Textile Products Div.*—Fiberglas filament and staple-fiber textile yarns for electrical insulations, plastic reinforcements, industrial papers, tapes and rubber, in combination with gypsum for wallboard, with vinyl for insect screening; *Pacific Coast Div.*—Fiberglas Engineering and Supply Co. (subsidiary company) handles industrial and sound control products in the West.

Pittsburgh Corning Corporation—PC glass blocks and "Foamglas" cellular-glass insulation for buildings, pipes, and many industrial uses.

Pittsburgh Plate Glass Company. *Glass Div.*—plate glass, "Carrara" (structural glass), bent glass, "Herculite" (tempered glass). "Pittsburgh Plate" sells special patterned glass made by Mississippi Glass Co.; *Fiber Glass Div.* —"Superfine" (blanket-type fiber glass) for automobiles, duct insulation, house-trailers, also continuous-glass filament for yarns and plastic reinforcements, special furnace filters; *Paint Div.*—"Selectron" plastic for fiber-glass laminating and impregnating.

Glass-Fibers, Inc. *Textile Products Div.*—yarns for electrical insulation, plastic reinforcements, fabrics; *Mat Products Div.* — underground - pipe wraps, mats, vapor barriers, liner materials; *General Products Div.*—"Microlite" (glass-fiber insulation), "Vitron" (glass micro-fibers filter medium, electrical insulation, laminating reinforcement), "Vibraglass" (glass-fiber material to absorb shock, vibration, and for packaging); *Western Div.*—glass-wool blankets for thermal and acoustical insulation of aircraft, insulation for jet-plane tail pipes, afterburners.

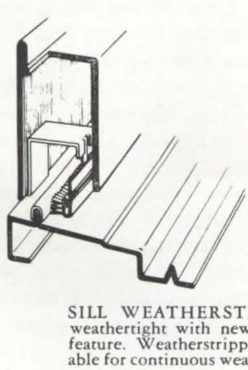
There, I *have said in* 663 words what any windbag would say in 223!



Avery Adhesive Label Corp. executive offices
George Vernon Russell, Architect, A.I.A.

NEW IMPROVED WEATHERSTRIPPING DEVELOPED FOR ARCADIA DOORS

HEAD OF DOOR is weathertight with mohair pile that provides continuous weatherseal protection in top channel guide of door.



SILL WEATHERSTRIPPING is weathertight with new mohair pile feature. Weatherstripping is adjustable for continuous weathertight seal.

Since November 1952, Arcadia Metal Products has featured mohair pile weatherstripping in the top channel guide of the sliding section of the door. Success of this feature, introduced first in the sliding door industry by Arcadia engineers, led Arcadia to develop a similar weatherstripping for the sill. Shown here is the new mohair weatherstripping for the bottom rail of the door and other Arcadia standard weatherstripping details. Arcadia doors are weathertight!

Architects and engineers are enthusiastic about adjustable feature of new mohair weatherstripping in bottom rail of door at sill. By means of a new spring-steel retaining clip, Arcadia engineers have devised a method for easy adjustment of weatherstripping to assure a continuous weathertight seal in all Arcadia installations. Write for complete details.

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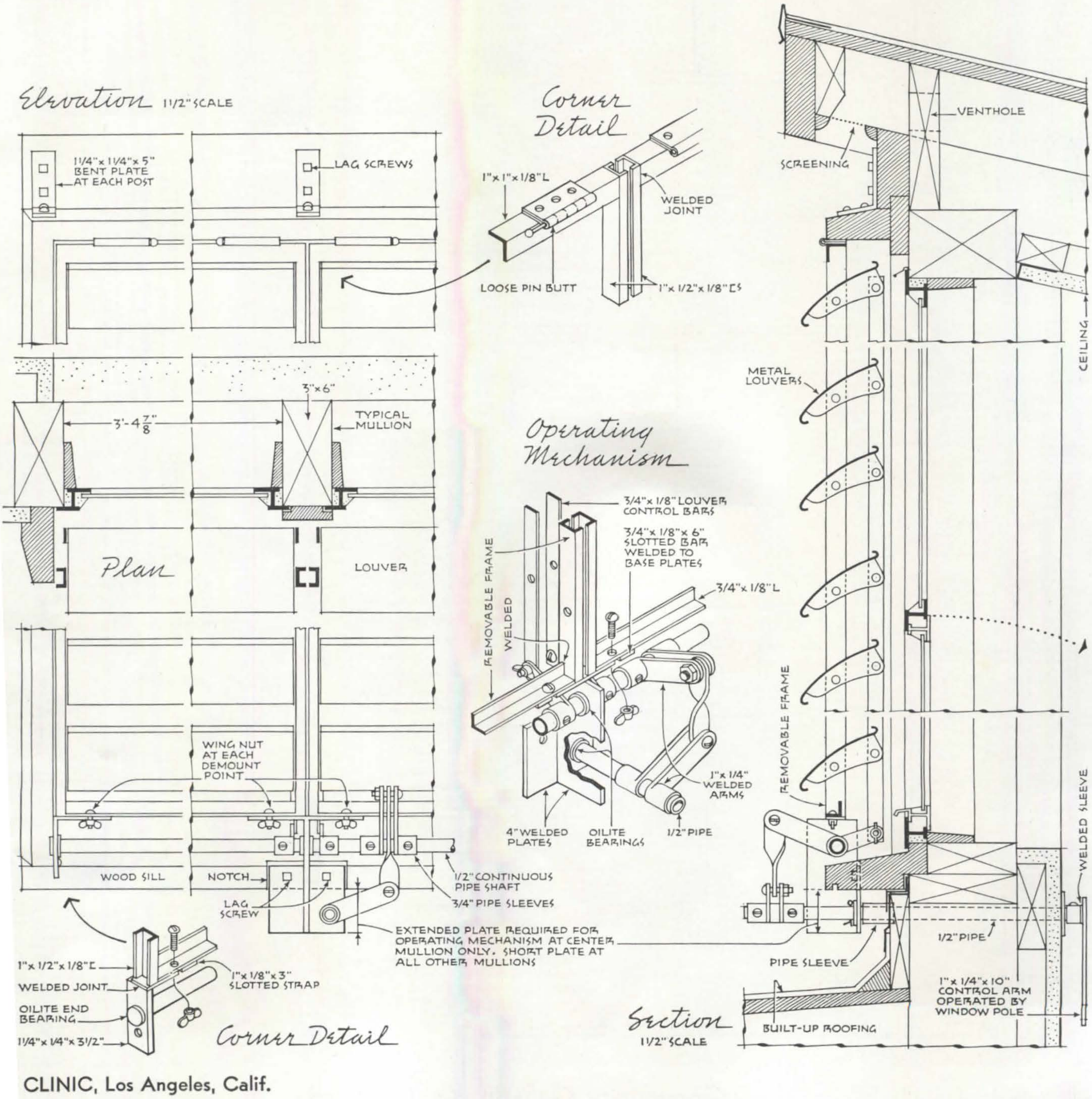
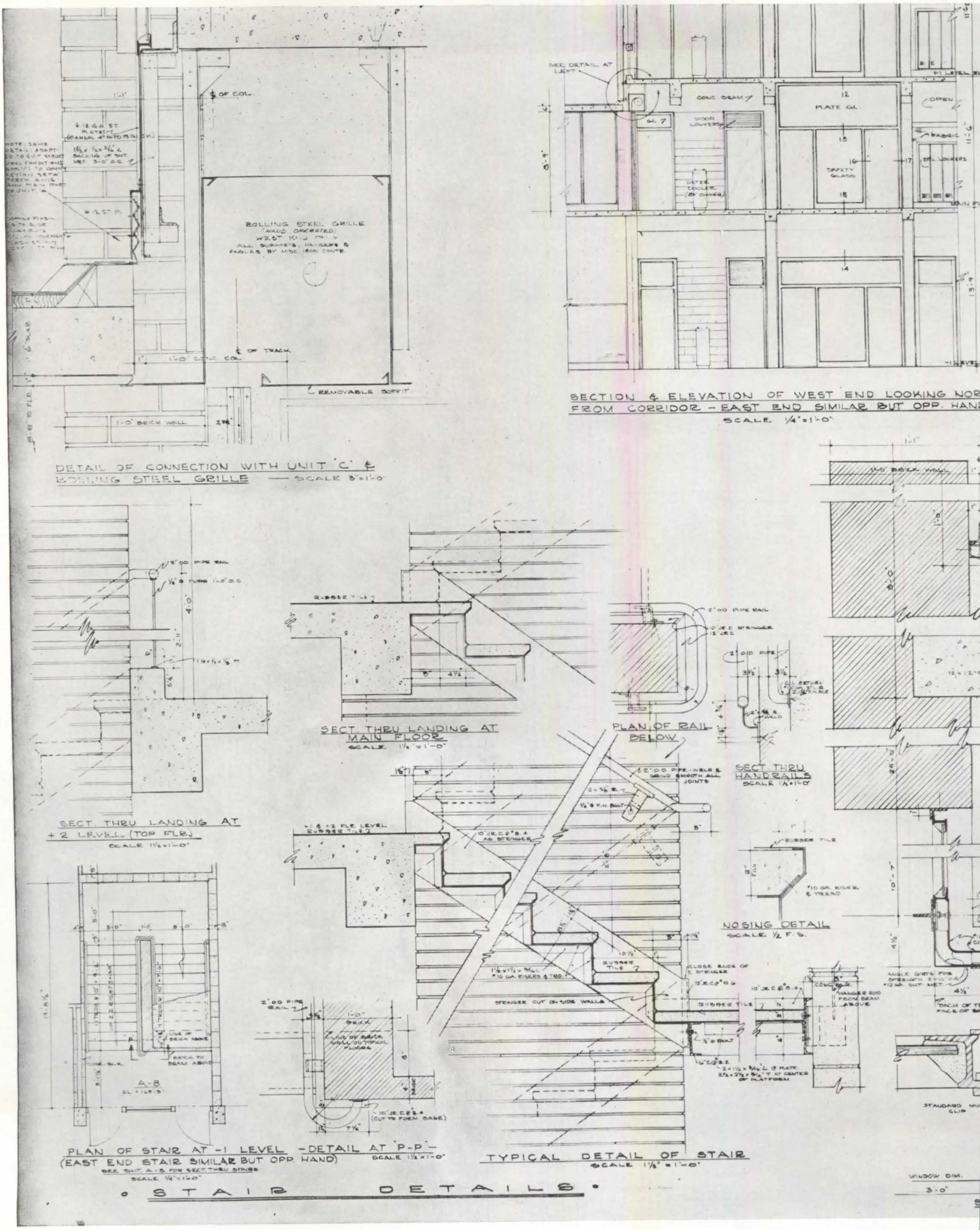
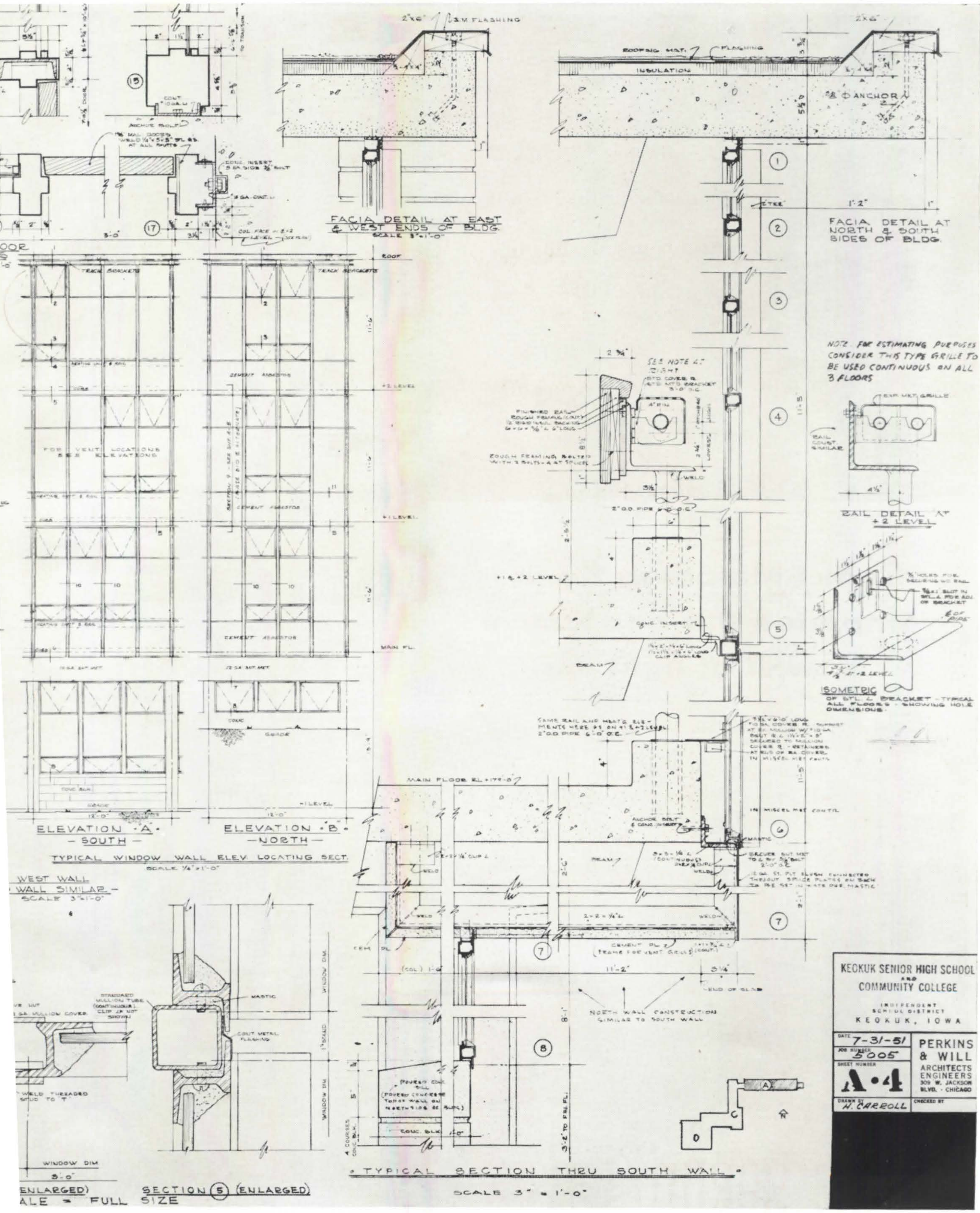


CLINIC, Los Angeles, Calif.
Walter L. Reichardt, Architect
H. Roy Kelley, Consulting Architect



corridor window wall: High School-Community College, Keokuk, Iowa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SCALE 3" = 1'-0"
SECTION (5) (ENLARGED)
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MASTIC
WINDOW DIM.
KEOKUK SENIOR HIGH SCHOOL AND COMMUNITY COLLEGE
INDEPENDENT SCHOOL DISTRICT
KEOKUK, IOWA
DATE 7-31-51
JOB NUMBER 5005
SHEET NUMBER A·4
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BRIEF DATA

Glass—3/8" thick. Muralex patterned on both surfaces.

Tempered—three to five times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—

2'6" x 6'8"	2' 5 11/16" x 6' 7 1/16"
2'8" x 6'8"	2' 7 11/16" x 6' 7 1/16"
3'0" x 6'8"	2'11 11/16" x 6' 7 1/16"
3'0" x 7'0"	2'11 11/16" x 6' 11 1/16"

Closers—when specified, the door can be shipped with a Sargent closer or prepared for use with an LCN concealed closer.

For more complete information, see the Securit Door insert in Sweet's Architectural File.

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Page Beauchamp

classrooms

Educational programs have changed so considerably in the last few years that design of the physical plants must change to accommodate them. Work projects, for example, now share importance with classroom lectures and recitations. The number of school-age children has increased rapidly, so that there is a tremendous demand for new schools and more classrooms. With the building of better and bigger schools, consider the changes that are indicated:

1. Furniture must be mobile and adaptable to various settings.
2. Storage space must be supplied to take care of materials (not textbooks).
3. Use of room dividers is often required to separate individual activities, yet allowing for larger space when the entire group is involved.
4. Adjustment and control of lighting and acoustics are necessary with the increasing use of audio-visual material.

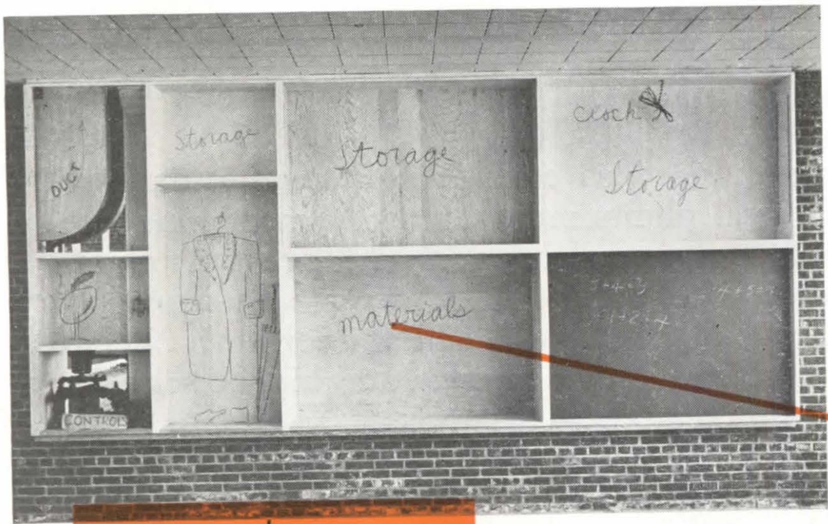
Tendency in design is toward larger classrooms which can house a number of activities—eliminating seldom-used special areas and the extra supervision. Budget-wise, of course, this is much more satisfactory.

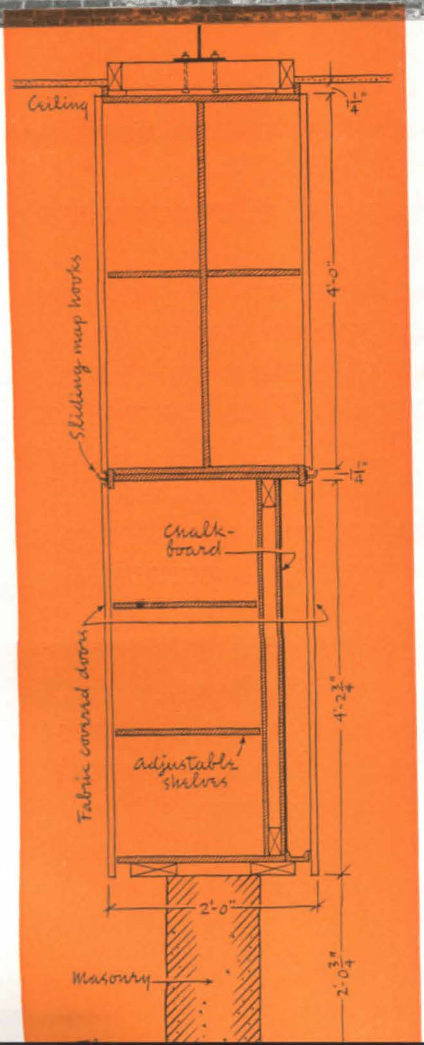
School furniture design has made advances. Desk areas are increased to be more useful for more purposes. The tablet arm is being replaced because it was adequate only for minimum use (and right-handed pupils). Chalkboards colored green to reduce eye strain, as well as magnetic or reversible to become tackboards, aid in presentation of explanatory material.

The larger self-contained classroom has many real advantages. The student is not separated from his group, although he may be engaged in different activities. Expenditures may be channeled toward equipment, rather than toward building more rooms. Since the number of teachers has not increased to take care of increase in pupils, the use of one supervisor for all activities has become a requisite, and has also proved effective.

classrooms

location	Holmes Elementary School, Darien, Connecticut
architects	Ketchum, Giná & Sharp





tackboard

acoustical ceiling

brick wall

data

cabinetwork

All Cabinetwork: custom-designed by architects.

doors and windows

Doors: flush-panel solid-core oak-face veneer, clear finish/ Roddis Plywood Corporation, Marshfield, Wis.

Windows: intermediate-weight aluminum projected/ J. S. Thorne Co., 8501 Negeman St., Philadelphia 36, Pa.

furnishings and fabrics

Seating and Desks: Heywood-Wakefield Co., Gardner, Mass.

Fabrics: Fiberglas curtains/ Owens-Corning Fiberglas Corp., 16 E. 56 St., New York, N. Y.

Vinyl Fabric Covering for Tackboards: "Strawtex"/ L. E. Carpenter & Co., Inc. 350 Fifth Ave., New York, N. Y.

lighting

Concentric Ring Incandescents: Sylvania Electric Products, 1740 Broadway, New York 19, N. Y.

walls, ceiling, flooring

Walls: unpainted brick masonry.

Ceiling: "Acousti-Line"/ Celotex Corporation, 120 S. La Salle St., Chicago 3, Ill.

Flooring: asphalt tile/ Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.

asphalt tile

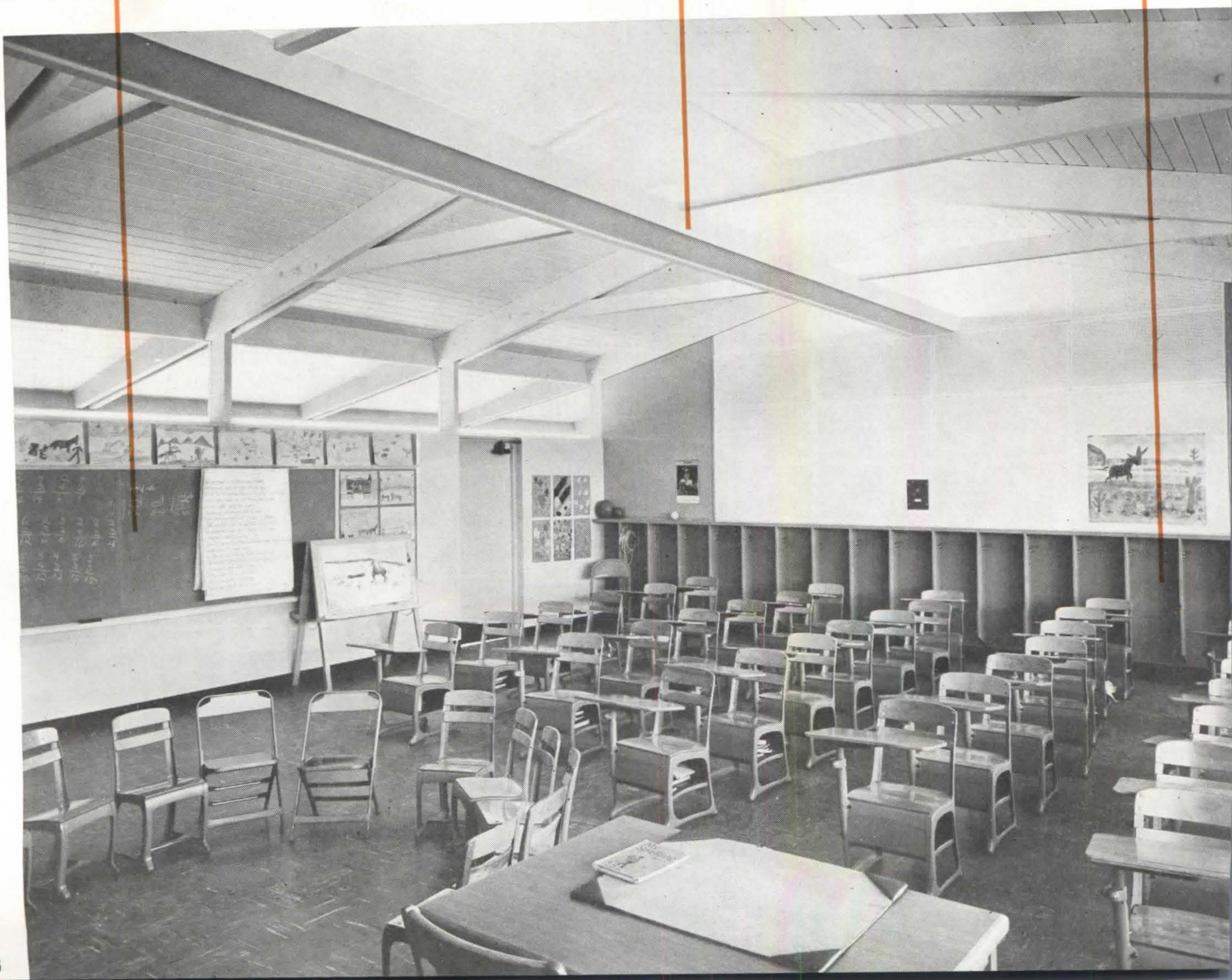
Planned simplicity and direct circulation combined with multiple uses of space, equipment, and surfaces have contributed to the economy and effectiveness of this school design. Sturdy yet inexpensive construction materials were used to permit budgeting for adequately controlled natural and artificial lighting. Finally, controlled color harmonies, to provide cheerfulness and desired spatial effects, were carefully studied.

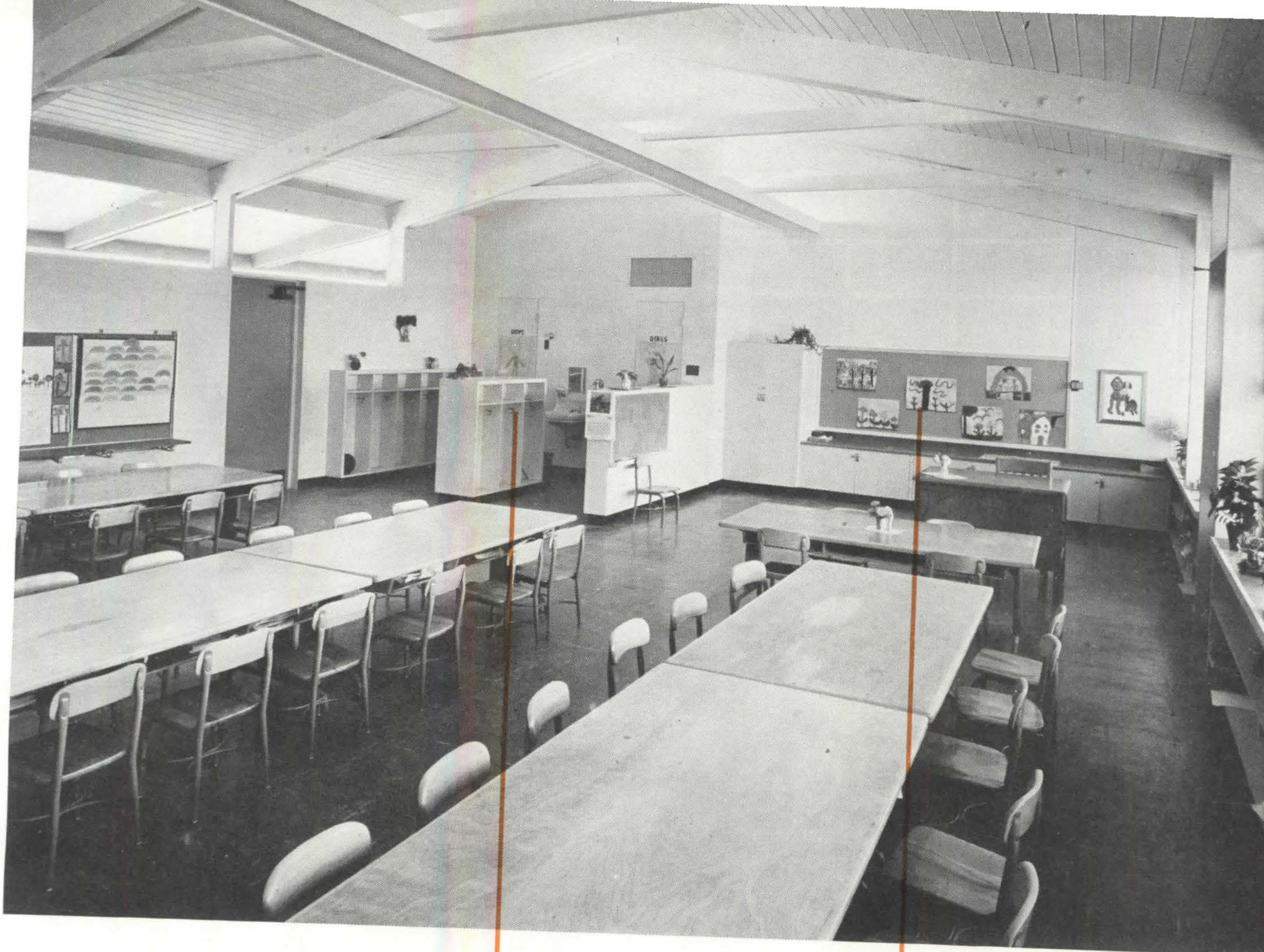
Walls are practically nonexistent, replaced by cabinets that provide storage, teacher's clothes closet, map rails, and chalkboards, while concealing heating controls, piping, and ventilating ducts. The cabinet doors are covered with a light plastic material which may be used for display. They slide to reveal chalkboards. The cabinets are attractive and easily maintained. Walls between classrooms and corridors are storage cabinets, with work tops on the classroom side and lockers on the corridor side.

classrooms

location | Harold W. Smith School, Glendale, Arizona
architects | Fred M. Guirey and Ralph Haver

The general atmosphere of this school is one of residential informality, desired by the client as a transition between the home environment of the small child and his first venture into the outside world. All classrooms are north-lighted, grouped in banks of four rooms to a building. The twelve-classroom plant has a finger-type arrangement. The lighting system allows three controlled levels of illumination.





data

doors and windows

Doors: "Kaylo Stay-strate"/ U. S. Plywood Corp., 55 W. 44 St., New York 36, N. Y.

Windows: Fenestra/ architectural projected/ Detroit Steel Products Company, 2250 E. Grand Blvd., Detroit, Mich.; glass/ D. S. B. and 3/16" crystal sheet Libbey-Owens-Ford Glass Co., Room 1038-T, Nicholas Bldg., Toledo, Ohio.

equipment

Chalkboards: "Litesite Sterling"/ Weber-Costello Co., 12th & McKinley, Chicago Heights, Ill.; "Austral boards"/ Austral Products Corporation, 225 Broadway, New York, N. Y.

Tackboards: Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.

Linoleum Counter Tops: Armstrong Cork Co.

Locks and Latch Sets: P. & F. Corbin Division of American Hardware Corp., 100 Orchard St., New Britain, Conn.

Hinges: The Stanley Works, 195 Lake Ave., New Britain, Conn.

lighting

Indirect Lighting: incandescent bulbs mounted in insulated bases in ceiling light trough.

walls, ceiling, flooring

Walls: pumice block/ "Superlite"/ Builder's Supply Corp., Phoenix, Ariz.; plywood/ U. S. Plywood Corp.

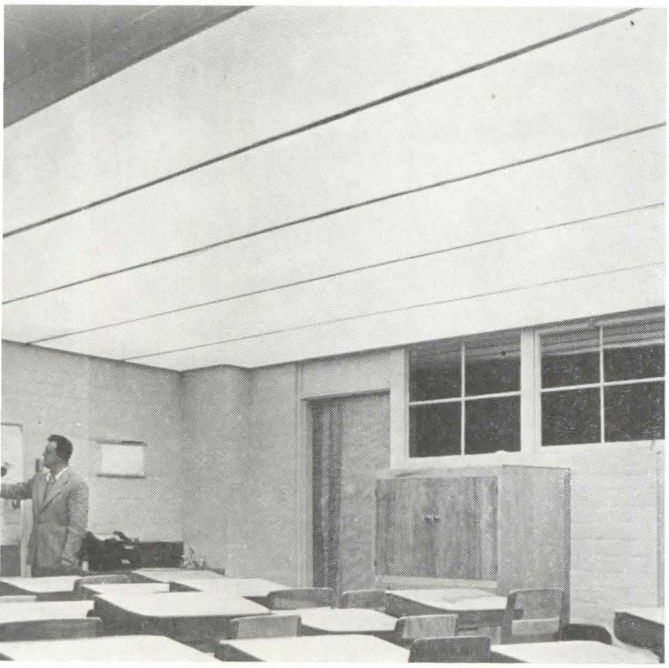
Ceiling: 2" Tongue and Groove Douglas fir mill-flooring.

Flooring: "Kentile"/ Napoleon Gray, #c-222/ asphalt/ Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.

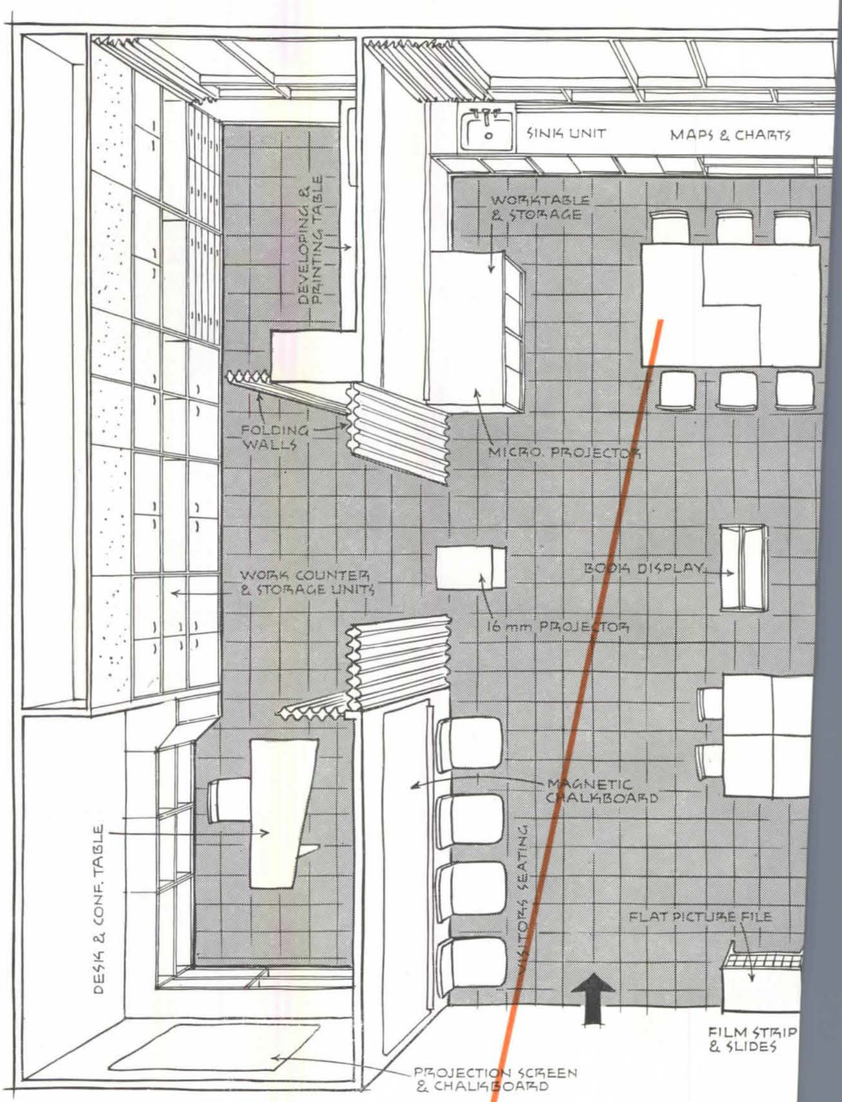
classrooms

This model of a secondary classroom was designed by Eggers & Higgins, Consulting Architects, as a 30′ x 50′ exhibit for a schoolmen's convention. It is intended to serve multiple uses and lays particular emphasis on audio-visual work. The furniture is adjustable to a variety of uses and needs. Chalkboards may be reversed in some cases, to become tackboards; in others they are of magnetized metal and may be used for display.

The model classroom is divided into two areas. The classroom section contains spaces for lectures and demonstrations, informal reading, television-radio-phonograph core, project center (with work tables and storage units), and a visitors' area. The conference section



CEILING "Acousti-Luminus"/ translucent, corrugated ceiling of thin "Lumi-Plastic" suspended below continuous rows of fluorescent or slimline light sources/ Luminous Ceilings, Inc., 2500 W. North Ave., Chicago 47, Ill.



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Ventilators: Herman Nelson units/ matching cabinets/ American Air Filter Co., Inc., Louisville 8, Ky.

Roll-Up Projection Screen: portable/ Beseler Visual Products Co., Inc., 210 E. 23 St., New York 10, N. Y.

Thermostat and Master Control Panel: Minneapolis-Honeywell Regulator Co., 221 Fourth Ave., New York, N. Y.

Television, Radio-Phonograph Unit, 16-mm. Projector: RCA-Victor, 36 W. 49 St., New York, N. Y.

Work Tables with Storage; Stainless Steel Work Sink; Developing and Printing Table; Wall and Base Cabinets: Hamilton Manufacturing Company, 424 Madison Ave., New York, N. Y.

Storage Cabinets and Racks: Neumade Products Corporation, 330 W. 42 St., New York, N. Y.

Book Trucks: Remington Rand, Inc., 315 Fourth Ave., New York, N. Y.

Draperies: double-track system/ Plastic Products Co., 1822 E. Franklin St., Richmond, Va.

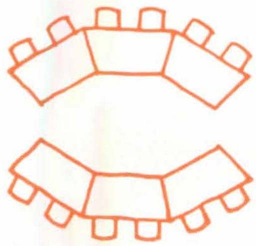
Walls: plastic fabric covering.

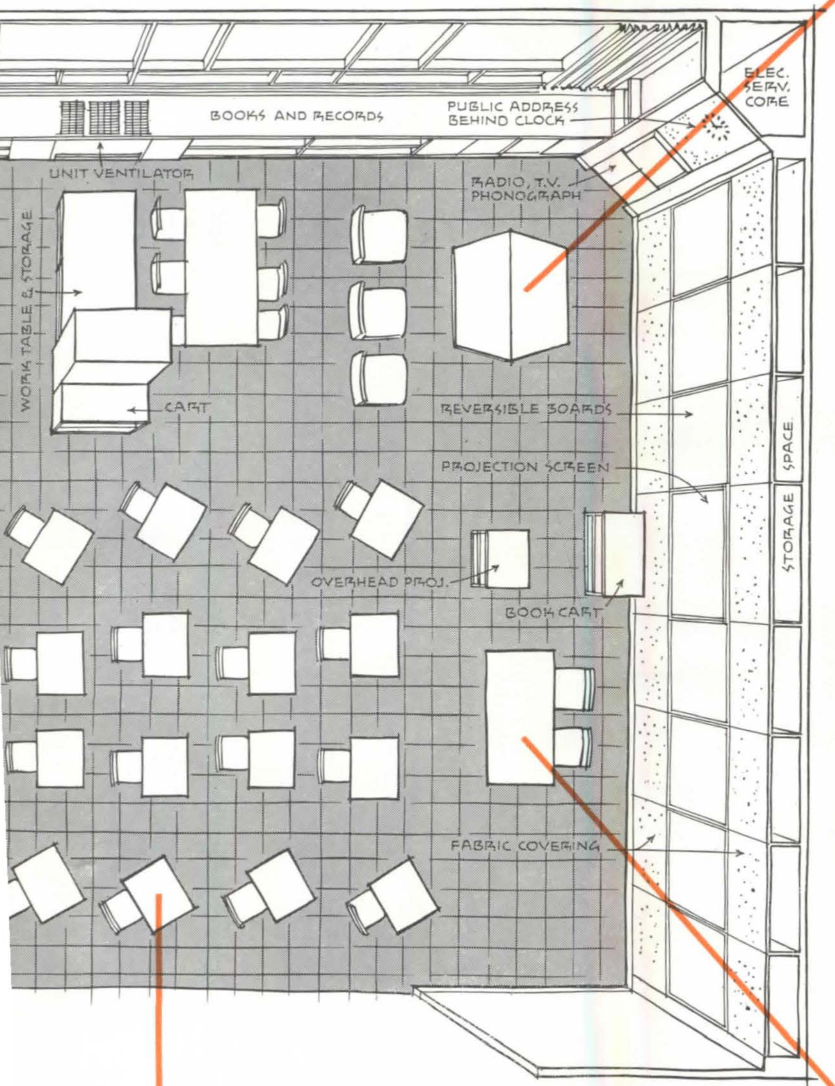
Flooring: vinyl tile/ gray/ Robbins Floor Products, Inc., Tuscumbia (Muscle Shoals), Ala.

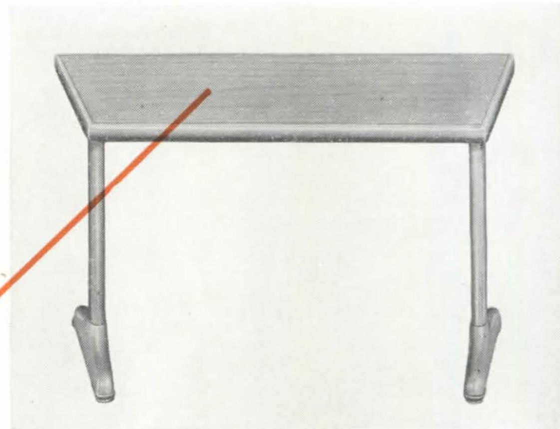
L-SHAPED TABLE #115/ American Seating Company, Grand Rapids 2, Mich.

provides for student conferences, as well as an area for working on illustrative material, such as slides and films.

This multiple-purpose room makes unnecessary a number of specialized rooms —and allows the class to operate as a continuous, unified group with better supervisory control.

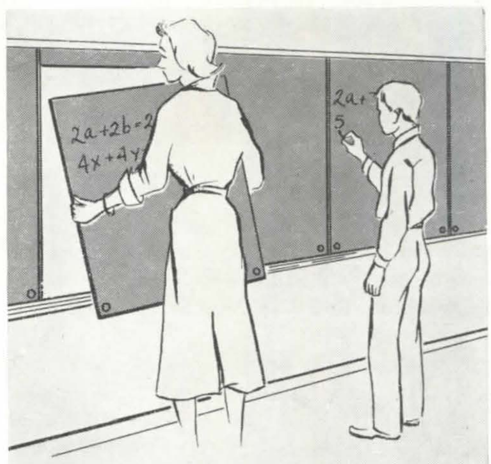






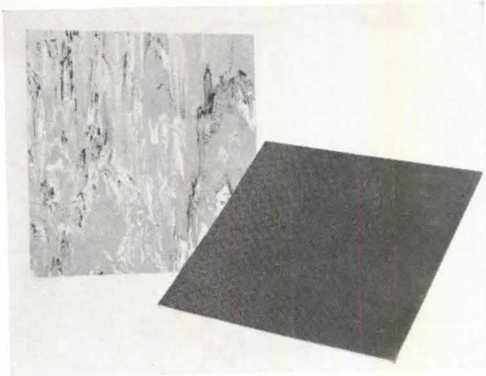
TRAPEZOIDAL TABLE #116/ American Seating Company, Grand Rapids 2, Mich.

CHALKBOARDS "Reverse-All Unit"/ with tackboard on reverse side/ "All-Steel Chalkboard"/ magnetic/ Austral Products Corp., 225 Broadway, New York 7, N. Y.



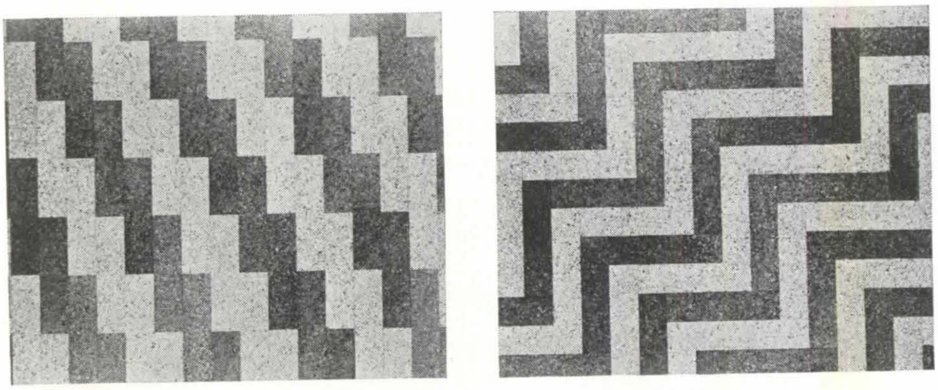
STUDY DESK #445, with chair/ 16" x 23" top with variable height settings of 28", 29", and 30"/ seat range of 16", 17", and 18" heights/ steel frame finished in beige baked enamel/ plywood top, seat, and back rails in natural-birch finish, available with plastic surface; **WORK TABLE AND CHAIRS**/ American Seating Company, Grand Rapids 2, Mich.

p/a interior design products



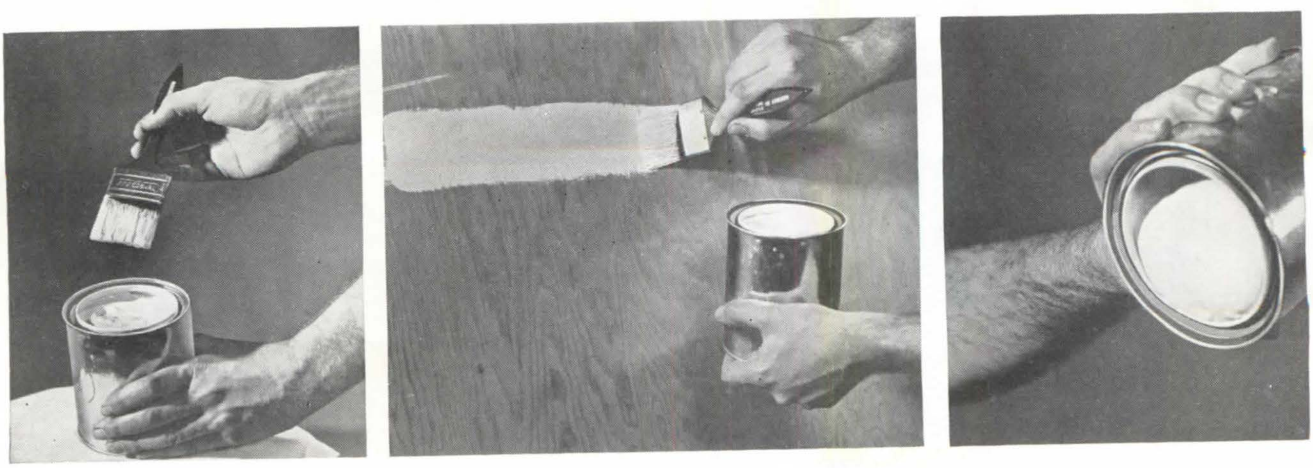
Self-Adhering Rubber Tile: may be applied to any type subfloor without special preparation or adhesive/ adhesive applied in manufacture/ polyethelyne-plastic sheet protects adhesive, by process called "Vacu-Seal"/ **Robbins Floor Products, Inc., Tuscumbia (Muscle Shoals), Ala.**

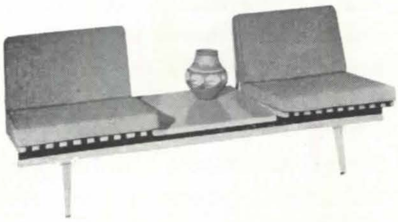
File Cabinet: "Konpakt"/ available in 3-drawer desk height, 4-drawer counter height, 5- and 6-drawer standard 51" height/ filing area can be reduced, with more drawers than in standard cabinets of same height/ **Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y.**

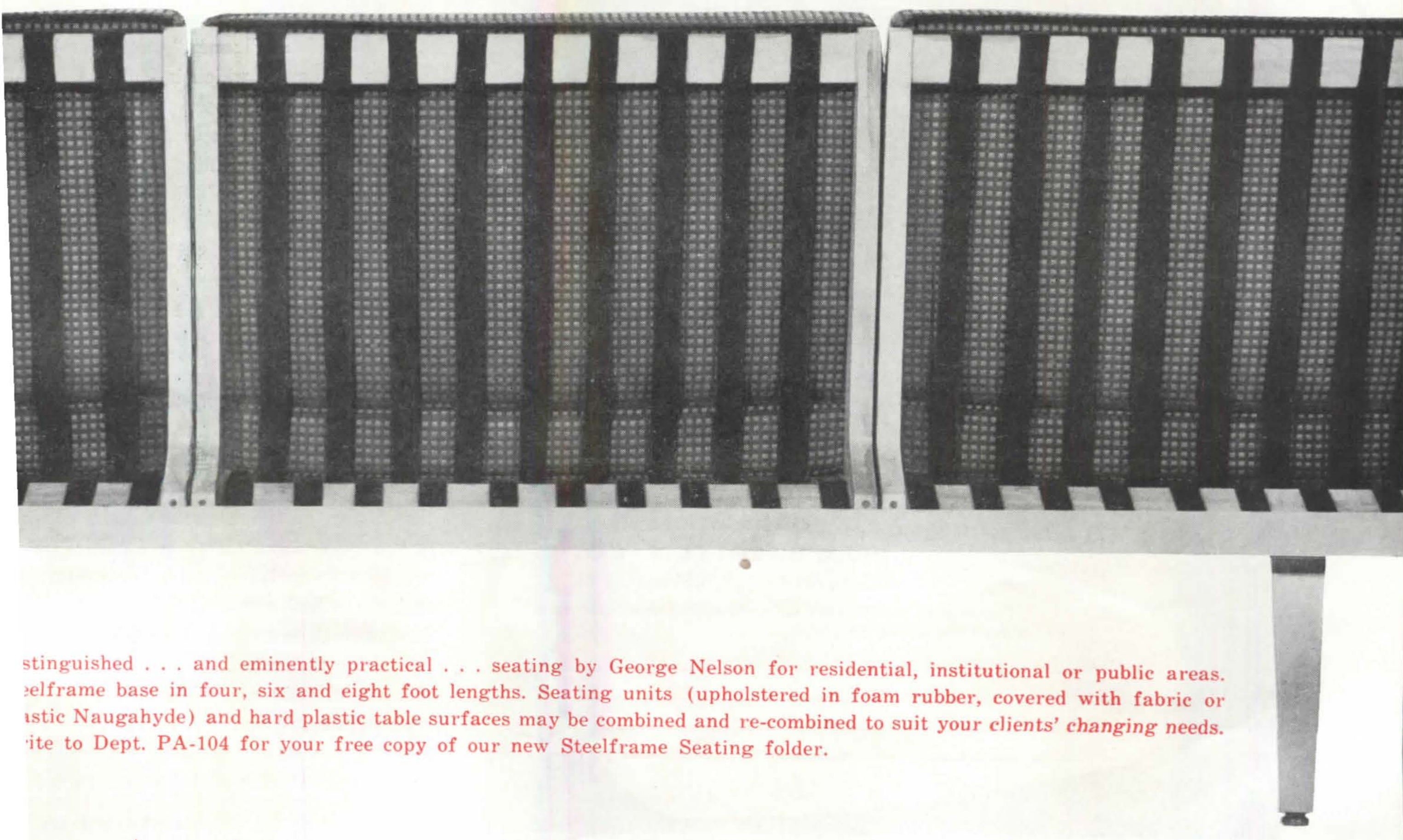


Cork Tile: "Custom Cork"/ two possible variations in installation shown/ 3" x 12" Mocha Tan and Coconut Brown unbeveled tiles/ 18 sq ft of each color packed in one carton/ eliminates necessity of cutting on the job/ **Armstrong Cork Company, Lancaster, Pa.**

Paint Stabilizer: "Thixotropic Alkyd"/ jelly-like consistency/ will not pour or drip from brush/ slight friction of the brush causes paint to change to the flowing state, as friction ceases, paint returns to thixotropic state, preventing sagging, curtaining, and beading/ **T. F. Washburn Company, Chicago, Ill.**







out of school

by Carl Feiss

"Sweet Auburn, loveliest village of the plain,
For years quite inaccessible by train,
Can in this Age of Progress without fuss
Be reached conveniently by motor-bus."

"Alas! the troubles that our Planners bring,
For modern traffic is a two-way thing."

"Ill fares the land, to hastening ills a prey.
Where dumps proliferate and then decay."

"Even now, as I stand pondering, I confess,
Naught greets the eye except a Splendid
Mess.
But thou, Sweet Poetry, thou loveliest maid,
Come to our rescue with a Grant-in-Aid."

Excerpts from an epic poem,
"The Decanted Village," by Christopher Hollis,
Punch, March 24, 1954

city planning education
as related to architectural education

The theories and practices of professional and technical training for planned and designed environment have been greatly assisted recently by the publication of two important reports. Last month I discussed briefly the *Report* of the AIA Survey Commission, which analyzed architectural education and practice. This month I am writing about another report just published and of great significance, *Urban Planning Education,* by Prof. Frederick J. Adams of MIT, a project of the Alfred Bettman Foundation of Cincinnati in collaboration with the Committee on Professional Education of the American Institute of Planners and the Committee on Education of the American Society of Planning Officials.

The *Urban Planning Education* report is short (only 58 pages), concise, and compact. It attempts and nearly succeeds in defining urban planning, as we now know the subject, by discussing its objectives and scope. There are two short chapters on "The Role of the Professional Planner" and "The Training of the Professional Planner," the meat of a meaty document, which is found in the three pages of Chapter IV, "Conclusions." Following Chapter IV are brief summaries of the training programs in the 21 planning schools offering professional degrees, options, or majors in the subject. On pages 16 and 17 of the report are lists of the schools and tabulations, as to enrolment for 1952-53, and the number of alumni per school, as of October 1952.

You may wish to enquire why I am writing about planning education in a journal devoted to architecture and the classically accepted allied arts. The fact that many of the 21 schools are connected with departments or faculties of architecture and landscape architecture and the allied arts and sciences, is of fundamental importance. Five schools are run at the graduate level by interdepartmental committees, with architecture represented in some cases. While the scene is constantly shifting, with more or less weight being added or subtracted

(Continued on page 174)

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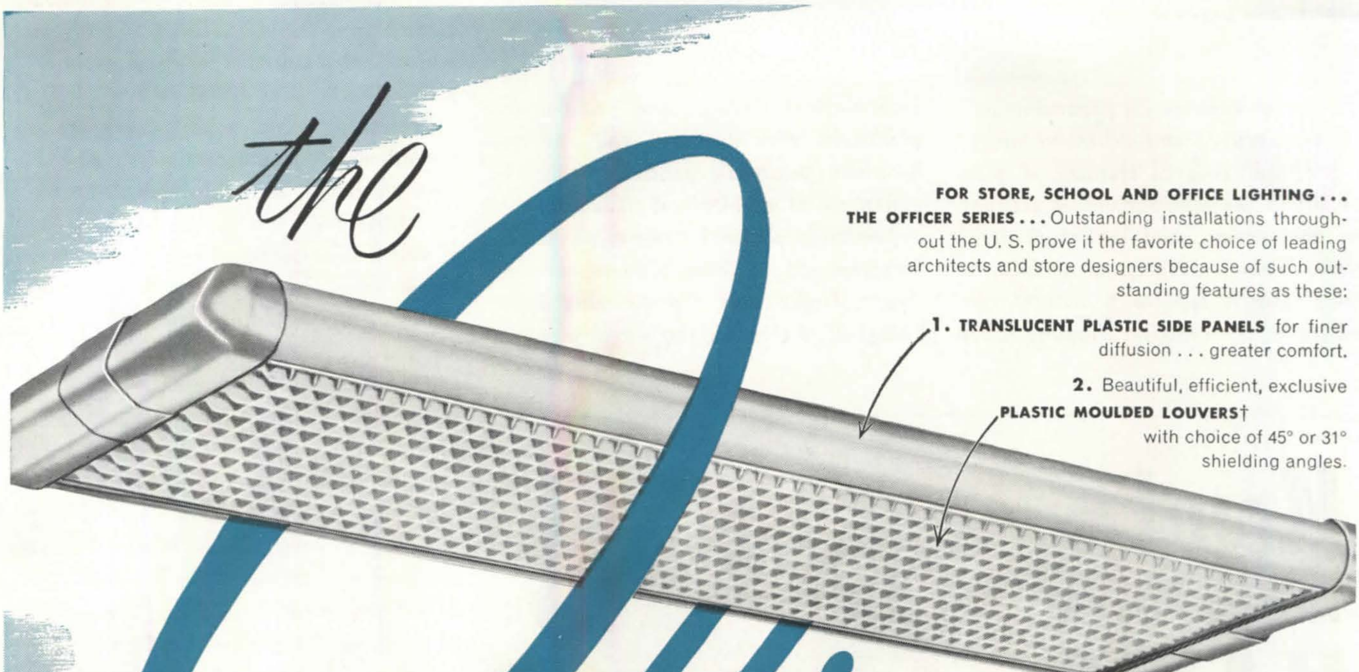

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(Continued from page 172)

in the social sciences (in particular, public administration and urban sociology) the preponderance of training of planners lies in the environment of architecture, engineering, and landscape architecture. This is largely an accident of history, but it is also a natural concomitant of the need for coupling urban technological analysis and problem explorations with designed and concrete solutions to social, political, economic, and physical problems of urban areas—expressed in physical terms as plans. The fact that all of these elements are, as Tracy Augur says, "inextricably intertwingled" makes for the complex job of the "generalist in planning," in contradistinction to the specialist, let us say, in school architecture, or hospital architecture, or residential architecture.

Professor Adams's report clearly states the dilemmas of the designers of planning curricula and the difficulties the student faces in mastering a wide variety of skills. The summaries of the various course offerings show plainly the transiency of this period of curriculum building and the problems of decision-making which are inherent in the early stages of training, for what is to all intents and purposes a new profession. Planned city building is nearly as old as architecture—perhaps as old. The history of city planning is every bit as fascinating as the history of architecture, but only half as well documented, to date. The names of the great city planners and city builders are just becoming part of our vocabulary. But as Professor Adams says *(page 21):*

"That there is so little agreement among top-level planning technicians and administrators concerning basic concepts of planning explains, at least partially, the confusion in the minds of students and the general public as to the true nature of the planning profession. It may even raise the question in some minds as to whether planning is a profession at all. The best that can be hoped for the future is that 'its leaders are in a mood to accept criticism and are prepared to move forward into that larger field of usefulness' which stands today as a real challenge to the city and regional planner."

What is more important than acceptance of criticism by the leaders of planning is the need for the public and the technical world to accept leaders with imagination and the courage of their imagination. The facts, as indicated in the Adams Report, clearly demonstrate the transitional stages through which planning and planning education have recently been passing. The tremendous scope of urban planning—slum clearance, urban renewal, metropolitan area development, new towns, and all of the rest of the jobs to be done—implies a soundly formulated curriculum system, or perhaps many such systems, of which the content should be directed by teachers with skill and imagination. It is the old story in technical education; no one has hit on the answer to where to find and

(Continued on page 176)

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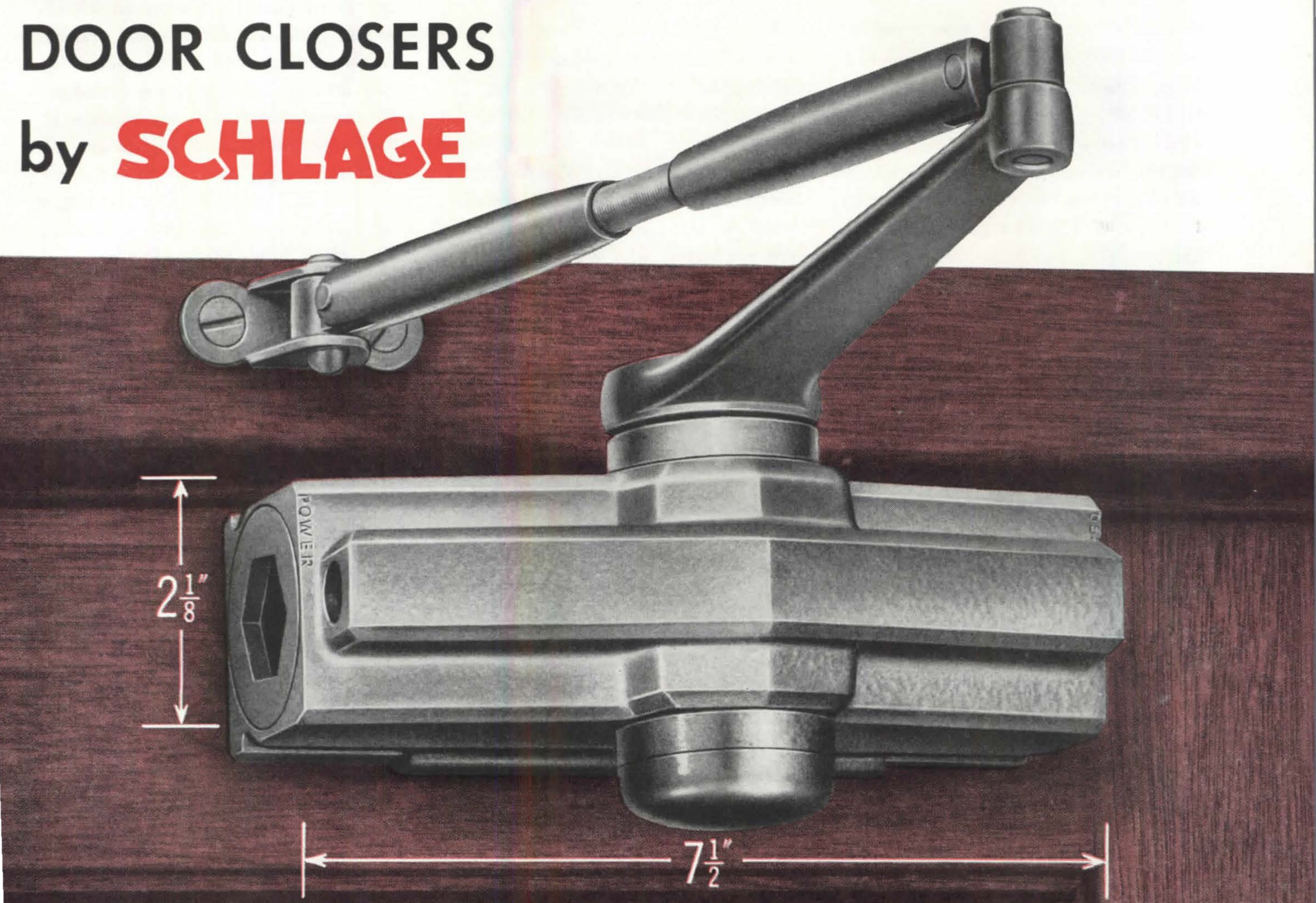

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For complete technical information on Schlage Door Closers, write for Booklet #680

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(Continued from page 174)

train such teachers. The more restricted and self-limited field of noncomprehensive architecture is just as bad off, as we all well know.

The Adams report brings out several very troublesome facts about the education of planners, the worst being that we are lucky if 125 men graduate in one year:

"Information received from the institutions offering degrees in city or regional planning indicate that not more than 125 college-trained planners are entering the field each year, having had anywhere from four to seven years of undergraduate or graduate work of varying quality. Several hundred positions are open to these graduates, who are thus not encouraged to stay in college longer than the minimum necessary to obtain a degree. The total enrolment of all schools offering planning degrees or options, graduate and undergraduate, is today approximately 300—including part-time students—or an average of less than 13 students per school. Even if present job opportunities did not rise above their present level during the next decade, a total enrolment of 500 and a national output of at least 200 graduates would be justified. If a serious attempt is made to meet this objective, schools offering professional curricula in planning will still be faced with this dilemma: How will it be possible substantially to increase enrolment and at the same time raise admission standards and improve the course requirements?

"Also, if the schools are to graduate 200 students each year they must attract at least as many annually, and if admission standards are to be maintained or increased there should be about half again as many applicants as there are students accepted. In other words, means must be found to interest more than 300 persons each year in the possibility of undertaking a program of professional education in the field of planning."

While the above statement highlights the problem, it does not suggest the establishment of more schools to solve it. The geographic distribution of schools granting planning degrees is not satisfactory (a spot map of this haphazard distribution would have been useful in the report). A co-operative effort on the part of planning educators to explore their common enrolment and other problems is clearly needed. Informal meetings on planning education and formal papers are usually presented at the four annual, national planning conferences, but there is no formal, continuing interchange between planning educators. There is not even an organization of planning schools as weak as the Association of Collegiate Schools of Architecture—meaning no offense. I would hope that if such an organization were to develop it would be a formal part of the American Institute of Planners rather than a separate body. The architects and engineers are always astonished and somewhat amused by the num-

(Continued on page 178)

(Continued from page 176)

ber of planning organizations there are, considering the minute number of practicing city planners to be found in the United States and Canada, and a separate Association of Planning Schools would cap the absurdity of the present proliferation. Planners, plan yourselves!

architectural design and city planning design

The famous Shuster Committee report, *The Qualifications of Planners,* the British precursor of the Adams report, considered planning as a function of the power of synthesis of many skills and used the word "design" in at least three distinct and confusing ways. I devoted nearly a whole OUT OF SCHOOL column to that report over a year ago. The Adams report is much clearer on the subject of design. In his statements on "Objectives and Scope" he says:

"The relationship of design for physical development to the social and economic aspects of urban planning may be clarified by making a distinction between the four major phases of the planning process: (1) Goal-formation; (2) Survey-and-analysis; (3) Plan-preparation; and (4) Plan-effectuation. Sound physical planning must be based on an accepted social purpose and the determination of such a purpose therefore becomes an important first step in a planning program."

Couple this with Recommendation No. 4:

"It is appropriate and desirable that all planning programs should give some degree of emphasis to those aspects of planning which deal with urban form in three dimensions. However, if such programs are highly specialized they should terminate with a degree in Architecture with a major in Planning rather than with a general planning degree. In general, graduate training for planning specialists should not be discouraged, but it should be made clear to prospective students the type of job for which they are being prepared."

This column through the past five years has devoted much space to the concept of *comprehensive architecture*—the architecture which embraces the community, and community building and rebuilding, rather than the single building (architecture, one at a time, in a vacuum, current concept). What Professor Adams has said is right in line with what I have been hammering here. This is the new role of the technical schools.

I personally question the separating of physical planning education from other technical disciplines at the undergraduate level. Adams says on this subject:

"Even in the United States there is not yet sufficient experience with professional education in planning at the undergraduate level to pass final judgment on its effectiveness. In the meantime it would seem advisable to encourage experimentation with the length and con-

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out of school

(Continued from page 178)

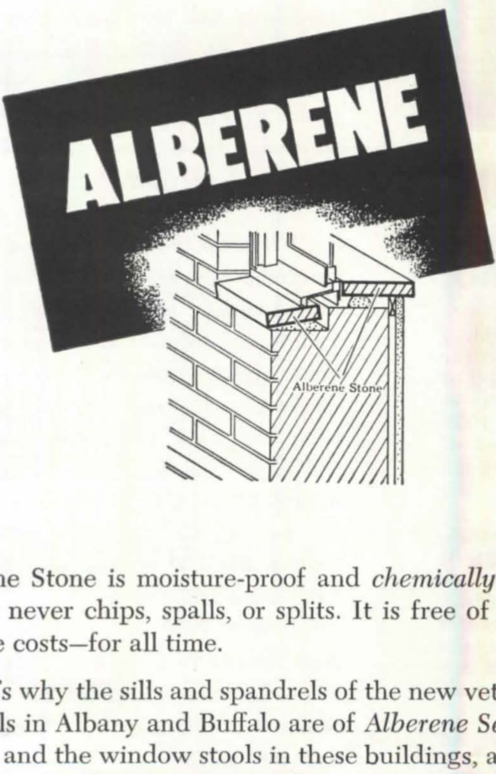
tent of such courses and to draw the attention of university administrations to the importance of undergraduate programs in planning as providing the soundest basis for advanced academic work in this field."

While I agree with the point, it seems to me that the design curricula at the undergraduate level *must* be tied into undergraduate architectural design, not as a separate discipline but as an integral part of the training of comprehensive architecture. There is no need for and no advantage to the dividing out of site planning, city planning, environment or space planning, from the other elements of the design training program. In fact, the self-conscious separation of these really nonseparable concepts leads to an artificial series of ideas which confuse rather than clarify the student's thinking. There is no need whatsoever for the undergraduate student to know that he is studying in his beginning years anything other than all the facets of architecture and city building. That is why I like the idea of naming our schools, "Schools of Architecture and Planning." Perhaps, in time, we may call them "Schools of Comprehensive Architecture" or something like that, although this really should not be necessary if we can ever accept the idea that architecture encompasses the broader concepts of city building.

There is every reason to permit city planning options in the later undergraduate years. When a student shows an interest and aptitude in any special technological field, he should be permitted to specialize and explore such a field in detail. In selecting an urban planning option at the undergraduate level, a student may add to his vocabulary and his future usefulness as an architect in urban redevelopment fields, even though he may never elect to take graduate planning instruction or set himself up as an urban planner. There is today, as there will be increasingly in the future, a vital need for architects trained in large-scale redevelopment design and construction (including housing) in con-

(Continued on page 182)

window sills and stools by



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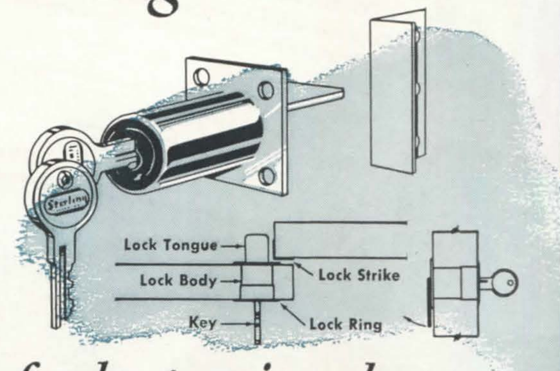

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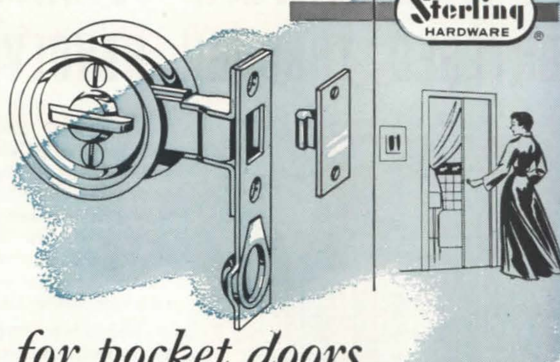

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out of school

(Continued from page 180)

nection with both development and redevelopment corporations and in a consultant capacity with city planning commissions and other public bodies. Urban Planning options and courses in the necessary social sciences in the fourth and fifth undergraduate years of a curriculum will, in time, help make up for the serious lack of skilled technicians which this country is now facing.

There is one other point I wish to make regarding separate undergraduate planning departments or schools with their accompanying bachelor's degree in planning. In my opinion, the complexity of the subject and the maturity required of its practitioners make such a degree appear to be evidence of greater knowledge and accomplishment than is mentally and physically possible in the time allowed. Carefully directed undergraduate training leading to graduate work, as Adams clearly states, is on the other hand the correct method of preparing for a career in urban planning. But I want to re-emphasize that training for comprehensive architecture at the undergraduate level may or may not lead to a professional urban planning career (with graduate training in the specialty), but that the opportunities today for work in urban architecture and large scale design are so varied and so great that the architectural schools are missing their greatest role in the modern world if they do not all expand their scope and activity.

I have omitted here, as not of immediate interest to the readers of this magazine, discussion of the training of urban planners in the nonphysical fields—the men who will serve as planning administrators, lawyers, urban sociologists, and public officials at large. This is another subject and for other discussions. However, their training is closely allied to that of the physical planners with whom they must work. Therefore interdepartmental and intercurricula committees in the universities are fundamental to the broadening and "generalist" approach. Many schools are already developing team projects in which students in other

(Continued on page 186)

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out of school

(Continued from page 182)

disciplines are working on urban planning problems in association with the design technicians. It is a good deal, and a precursor to such essential association in co-operative work in real life.

conclusion

We will discuss the two recent surveys of architectural and planning education frequently in the future. Neither exhausts the subject or points to final results. Unfortunately, as is so often the case, both surveys were run concurrently, both impinge on the other, and yet they were each written as though the other did not exist. They must both be studied together, and *faute de mieux*, this column, I suppose, must serve as the weak vessel to pull them together.

•

Note for historians: This issue of OUT OF SCHOOL begins the sixth year of this column on architectural education. Doesn't somebody else want to take the quill from my palsied fingers and carry on the torch? Even my metaphors don't mix well any longer. C. F.

notices

nightclub lighting

MAX BORGES, JR., Architect of Tropicana night club in Havana, Cuba, featured in June 1954 P/A, points out that designation of the lighting on page 137 was misleading since the ceiling fixtures labeled "spotlights" are adjustable units by Swivelier Company, Inc.; whereas the line to those should have stopped under the ceiling arch, because behind *that* are the Kliegl Bros. spotlights illuminating the curtained wall segment.

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books received

New Ways of Servicing Buildings. Edited by Eric de Mare. The Architectural Press, 9-13 Queen Annes Gate SW1, London, England, 1954. 228 pp., illus., 30s

Freehand Drafting for Technical Sketching. Anthony E. Zipprich. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York 3, N.Y., 1954. 176 pp., illus., $3.40

The Architecture of Humanism. Geoffrey Scott. Doubleday Anchor Books, Doubleday & Co., Inc., Garden City, N. Y., 1954. 197 pp., $.75

Space Heating with Solar Energy. Edited by Richard W. Hamilton. Albert Farwell Bemis Foundation, Massachusetts Institute of Technology, Cambridge 39, Mass., 1954. 161 pp., illus., $2.85

monuments to "universals"

Foundations of Modern Art. *Amadée Ozenfant (Translation by John Rodker). Dover Publications, Inc., 1780 Broadway, New York, N. Y. New American edition, augmented, 1952. 348 pp. $6*

Pedagogical Sketchbook. Paul Klee. *Frederick A. Praeger, Inc., 105 W. 40 St., N. Y. 1953. 60 pp. $3*

Not that this reviewer wants to arouse nostalgia for the Lost Generation—but, more and more, the period between the two World Wars, seen in retrospect, takes on the glow of a Golden Age. Despite economic-political chaos, art (where left to grow freely) was opening new realms, consolidating into new and meaningful styles, irrevocably adding to man's awareness. It is doubtful that the same fresh atmosphere of freedom survives anywhere in the world today. Ozenfant's *Foundations* sums up the Purist experience and is prophetic of Moholy-Nagy's late harvest, *Vision in Motion*, as it casts a roving eye over the hydra-headed movements of modern a up to 1928. Klee's *Sketchbook* is t quintessential outcome of his mat Bauhaus years. What both works try do is to present the world from t designer's viewpoint—to see art as way of life. For the 20th Century artist as also for many nonartists, art becom the Archimedes fulcrum from which t move the world.[1]

Ozenfant unconsciously (or ironica ly?) betrays the cultural Gold Rus temper of his time—when he writes fo the second edition (1930) ". . . in thes two years no movement *really* new ha taken place in the Arts, Letters, or i Thought."

Here he elaborates the stand which he and Ch. Jeanneret (Le Corbusier) had taken in 1918, in *After Cubism*, which was,

"an optimistic, lyrical song on beauty and lesson of machines and on some of their products, on buildings for use, and on the part to be played by science in art worthy of our time. It also criti-

(Continued on page 192)

[1] *On the decline of other ideologies (business, politics), see David Riesman's* The Lonely Crowd. *Yale University Press, 1950.*

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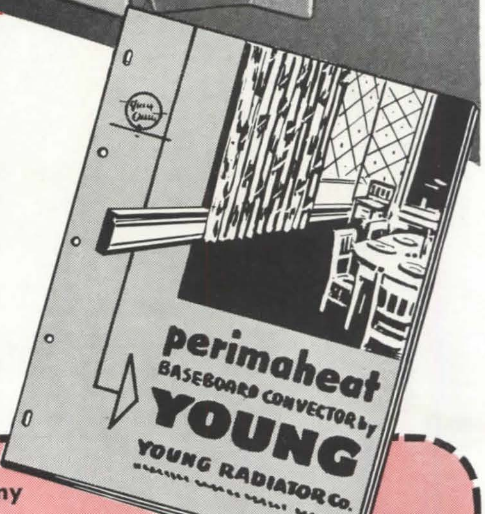

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reviews

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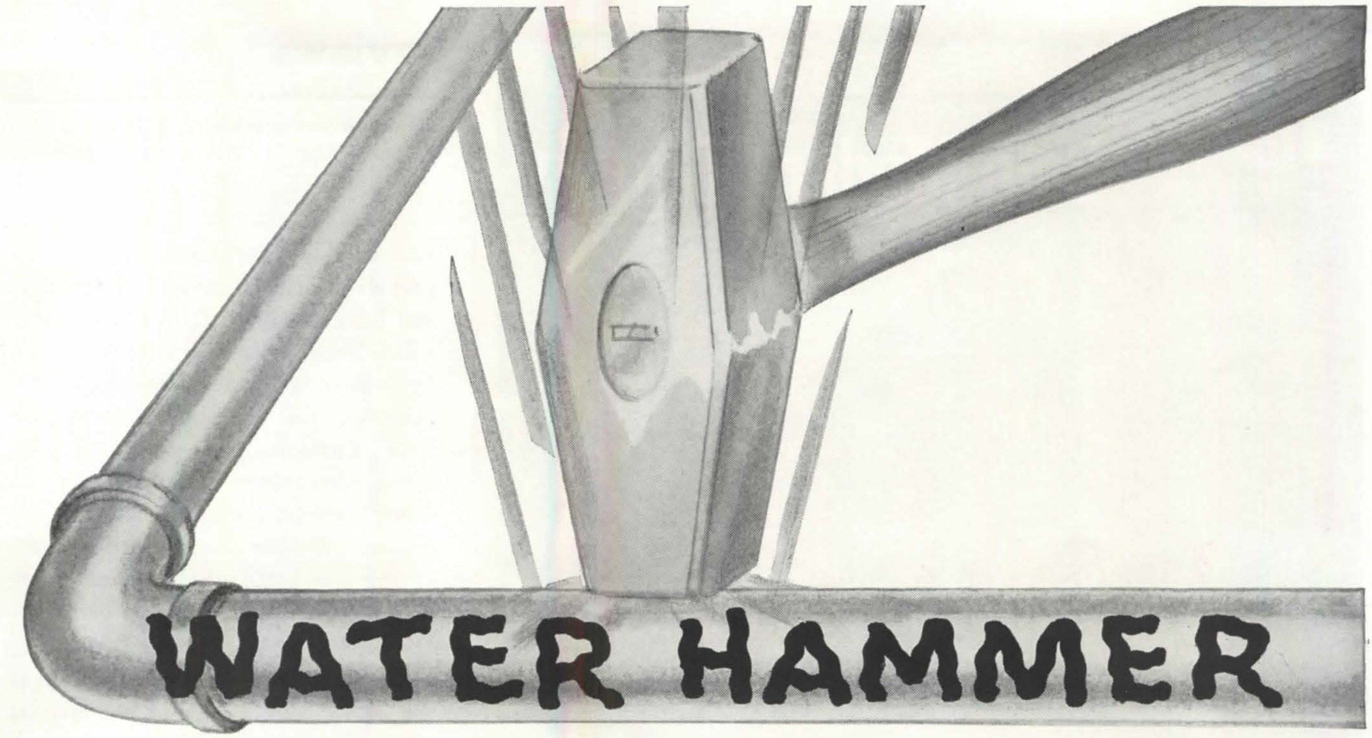
cised the condition of Cubism at the time, but principally it criticised the followers of the Cubist masters. We gave our Tablets of the Law of Purism, stating that what we wished to express in art was the Universal and the Permanent and to throw to the dogs the Vacillating and the Fashionable."

This viewpoint, reiterated in their influential journal, *l'Espirit Nouveau* (from 1920 to 1925), paralleled the efforts of *De Stijl* and of other movements but took on a highly French cast. The Purist works, with their cool, thin, parallel planes, tasteful curves, the majestic functional intimacy of their pipes, bottles, or mandolins — breathed the classicism, the mature self-assurance that is Le Corbusier's hallmark. Such a humanized classicism not only has been at home in France but had become deeply inbred, from Descartes and Poussin to Ingres and Seurat. (Ozenfant almost exclusively refers to French art and to French thinkers.) Classicism supporting a machine esthetic is doubtless what helped the French designers to avoid the pitfalls of naive functionalism. Ozenfant's father, incidentally, worked with the ferro-concrete pioneer, Hennebique.

Two further themes rooted in French experience weave in and out of the text. Paleolithic art, still admired and marvelled at today, is a symbol of man's constancy, his unchanged sensibilities, and the central role of art in culture—art as psychic control. The other theme is Revolution, a tradition in art as in politics. Its magic weapon was reason; its target was the Academy (and ready-made ideas); its strategy was satire. And so we are given a fantastic visual inventory of civilization "from the origins to 1928," a wittily selected "time capsule," an uninhibited "art students' ball" shot with mercurial streamers of irony and persiflage. Parading across the pages of the book are naked Africans with saucer lips; the obese Great Mother or "Venus" of the cave dweller, who rivals in voluptuousness the Coney Island Momma; Picasso paintings and

(Continued on page 194)



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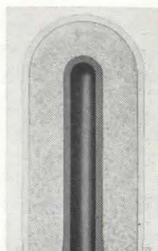

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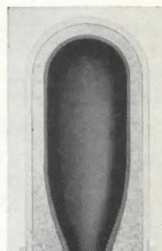

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reviews

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Roman sculpture; Sir Austen Chamberlain seen in a distorting mirror; the poet-statesman, Gabriele d'Annunzio, and his dried-up twin, Pharoah Seti I; ladies being painted by students; cows, by ladies; a horse contemplating his portrait; also magnetism, electricity, freak furniture, air views, telescope views, micro views. The transitory—hat advertisements, commercialized fads, and fashions: also the constant—an Egyptian chariot wheel and its descendant of today, the wheel of a Bugatti racing car.

And the goal of all symbol and thing-making? Of art? Of science? Of all the flying and tunneling, engineering and manufacturing? To cheat death, to create an illusion of *order*, of immortality: Man's temporary triumph over the all that is chaotic and elusive in life. "Science, like other arts, is an art of illusion: its crystal clear apparatus is so diaphanous, that the beholder imagines he grasps the image of the universe. That illusion is beneficent. The aim both of science and art is to create fantasies which solace us for reality. For an instant of time we can be wholly occupied by them: evasion."

"Once upon a time," Ozenfant reminisces, "God was God . . . Beauty was Beauty. Good was Good, and two and two made four on earth, in heaven, and every possible universe . . . Scientists, at least the majority of them, no longer seek to discover the secret of things . . . They are no longer even very sure they understand what such an expression means."

Witty, eloquent, informative, and *sympathique*, Ozenfant's survey of his time is hardly scholarly or well balanced: no detached spectator he, try as he may to take the long-range view. There is too much praising and condemning of Picasso and the Picassoids (by the Purist canon). Constructivism ("interesting") and *De Stijl* ("ornamental") come in for no more than a half page. A jarring note sounds in the new edition where the author unnecessarily, I think, tries to set history right

(Continued on page 198)

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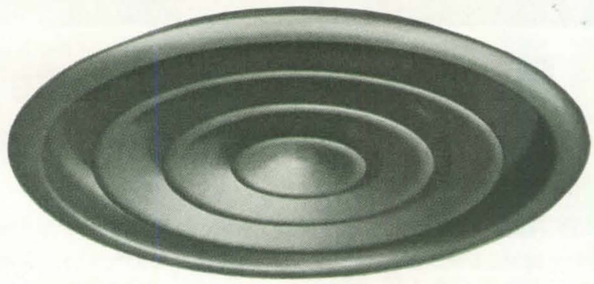

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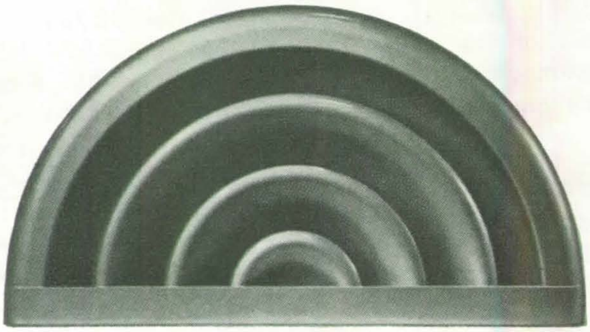

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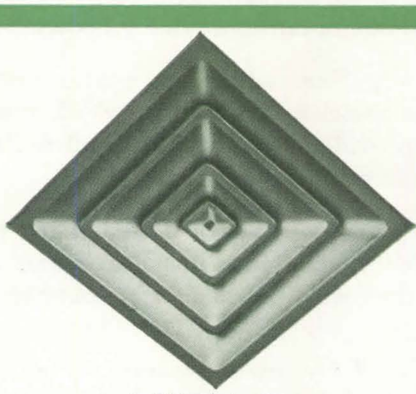

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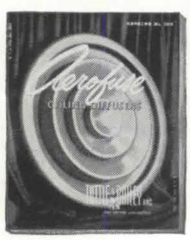

reviews

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with regard to himself and Leger and Mondrian and Le Corbusier—but the *Ozenfant terrible's* imbalance and ramblingness are easily forgiven, in view of his verve and stimulativeness. The epigrams—and there is one in every paragraph—are not only verbal but, more significantly, pictorial. The *Foundations of Modern Art* is a *tour de force* of visual editorship (more apparent then, than now); an epitome of modern consciousness; a monument to Man the Symbolizer; a collage that has become a milestone.

•

Paul Klee's *Pedagogical Sketchbook* appeared in 1925. It was the second of the 14 Bauhaus books and describes the content of Klee's course there. It could profitably be read today by many who, when talking about Bauhaus, are referring to an image more in their own mind than in reality. Where Ozenfant is ambitious, encyclopedic, and diffuse; Klee is modest, slender, and concise. This is typical of the man who, as Sibyl Moholy-Nagy points out in her excellent short introduction, spoke of his art as *devotion to small things.* "In the Microcosm of his own visual world he worshipped the Macrocosm of the Universe. . . Through observation of the smallest manifestation of form and interrelationship, he could conclude about the magnitude of natural order. . . He loved the natural event; therefore knew its meaning in the universal scheme. . . The phenomenon perceived and analyzed was investigated until its significance was beyond doubt." Such a view of the world occurs among the English and American writers: in Wordsworth, in Thoreau, in Meredith's remark, "You of any well that springs, may unfold the heavens of things," and in Whitman's,

"I believe a leaf of grass is no less than the journey-work of the stars,
And the pismire is equally perfect, and a grain of sand, and the egg of the wren . . .
And the narrowest hinge in my hand puts to scorn all machinery . . ."

(Continued on page 202)

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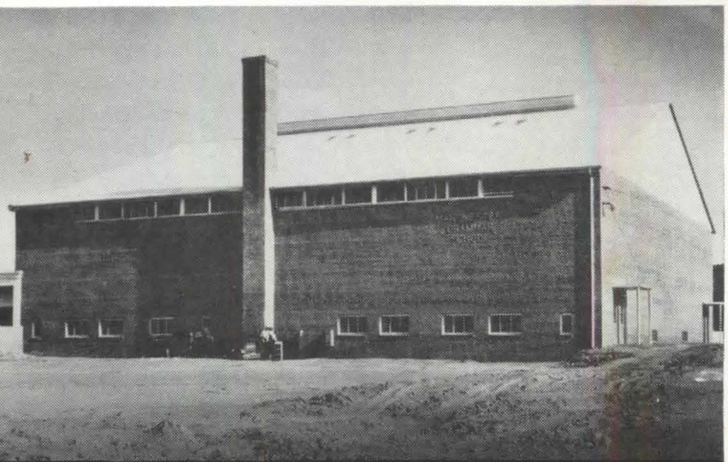

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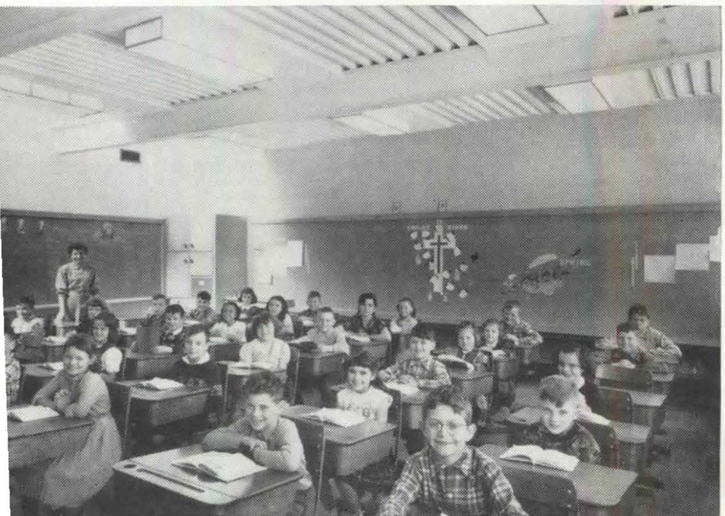

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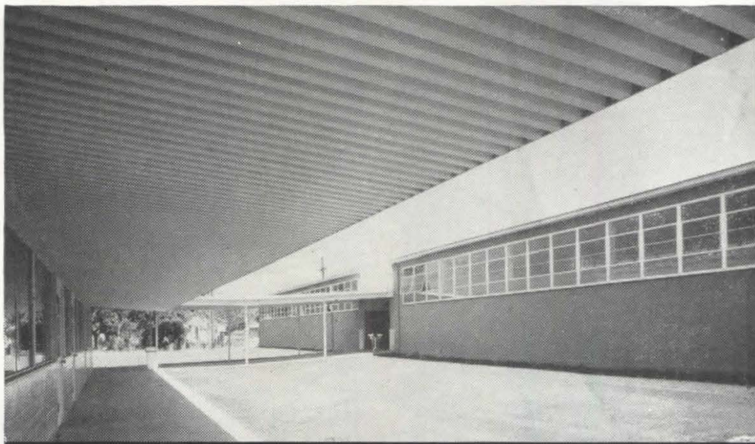

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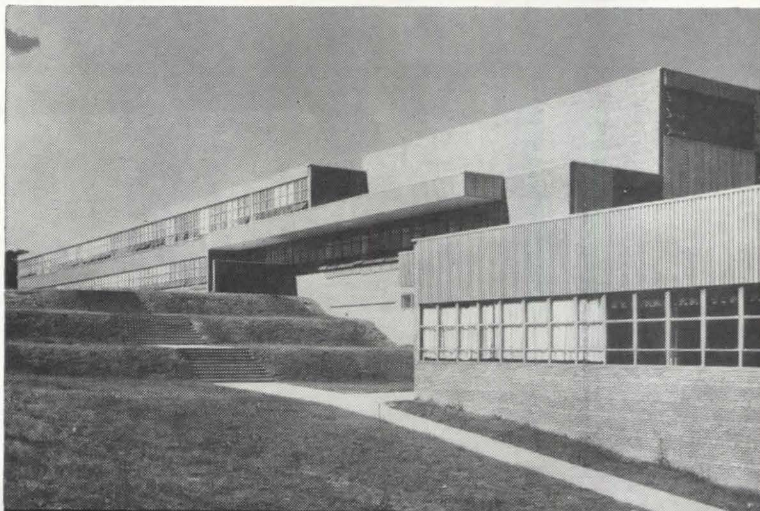

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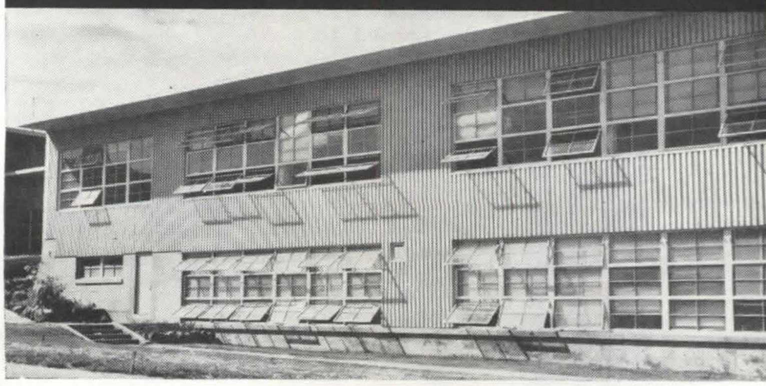

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reviews

(Continued from page 198)

But that which is in the specifically German tradition, expressed by Klee, is the Faustian feeling that Nature's secrets are of untold depth, that phenomena are surrounded by an aura of spiritual meaning, yet by toil or fervor the initiate may find the key. There is something of mystic yearning in the nostalgia and memories, the exotic and archaic drawings of a Klee; Klee is indeed the perfect illustrator of the 18th Century German Romantic (later Surrealist-acclaimed), Novalis:

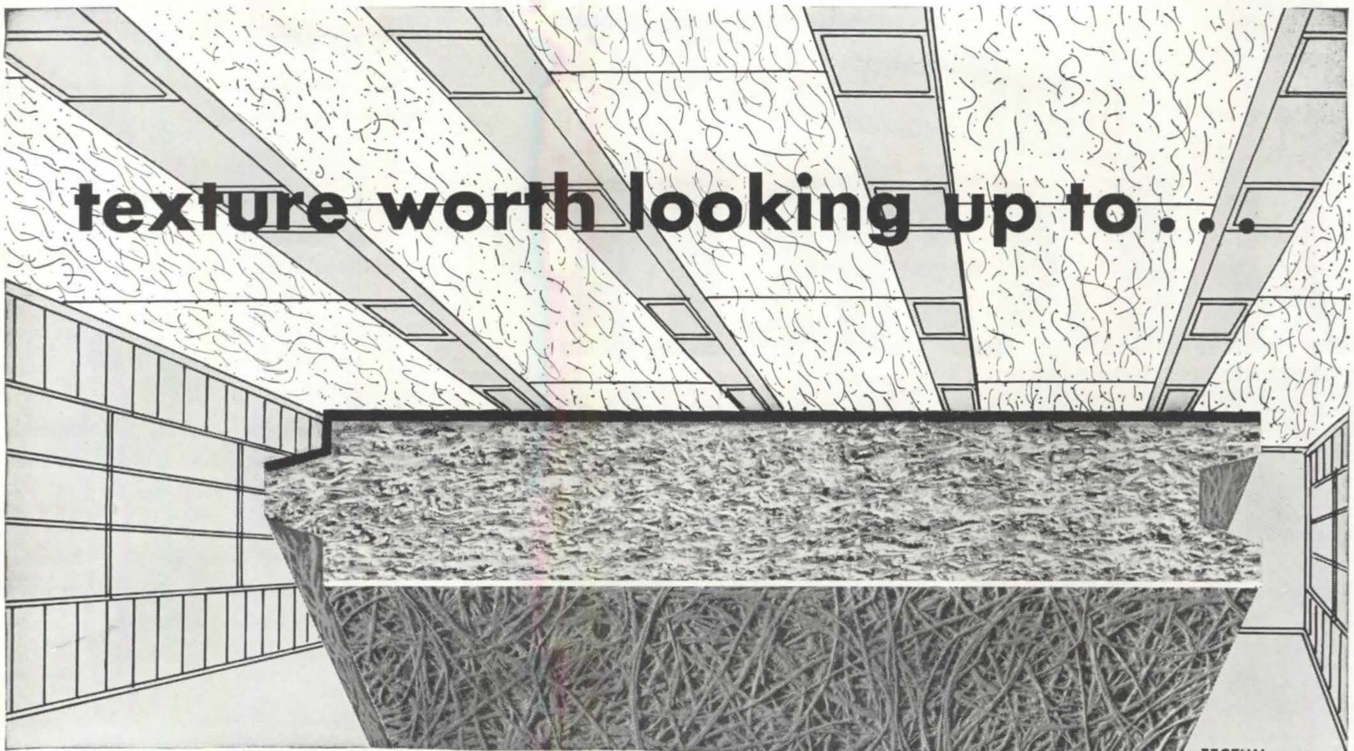
"Various are the roads of man. He who follows and compares them will see strange figures emerge, figures which seem to belong to that great cipher which we discern written everywhere, in wings, eggshells, clouds and snow, in crystals and in stone formations, on ice-covered waters, on the inside and outside of mountains, of plants, beasts and men, in the lights of heaven, on scored disks of pitch or glass or in iron filings round a magnet, and in strange conjunctures of chance. In them we suspect a key to the magic writing, even a grammar, but our surmise takes on no definite forms . . ."[2]

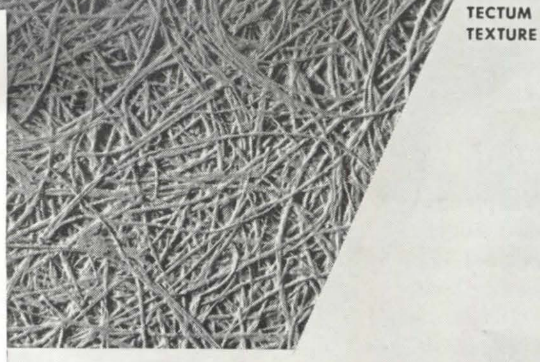
The *Pedagogical Sketchbook,* which should be read *after* one has come to know and love Klee, outlines a course of study which should make nature yield some of its hidden but universal laws. It is a lyrical, allusive Euclid of the dynamics of form, starting from simple elements. Form, here, is seen in its fullest meaning: not form as against content and significance, but form considered as inherently meaningful, expressive, symbolic. It is, indeed, in a theater of form that the drama of our existence unfolds.

Mrs. Moholy-Nagy characterizes Klee's methods as "inductive." I am not sure that this description is adequate. If we are to look for philosophical parallels, we had perhaps best think of those investigators who broke down the barriers between subjective and objective worlds: the worlds of Freud and of the Swiss child psychologist, Piaget. Klee's whole manner of thinking, with its animism

(Continued on page 204)

[2] *Novalis,* The Novices of Sais, *with Sixty Drawings by Paul Klee, Preface by Stephen Spender. Curt Valentin, 32 E. 57 St., New York, N. Y., 1949.*





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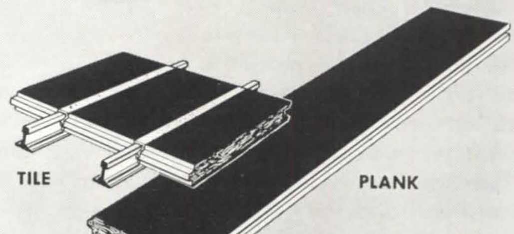

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reviews

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and playfulness and instinctualism, links it to the world of the child—or rather to that world that previously had been relegated to the child. This is the world that Piaget explores: the child's dreams, his elementary notions of matter, number, and causation, his "metaphysics." One thinks of the German philosophers, such as Meinong and Husserl, whose *eidetic realism* tries to describe and universalize the "givens" of consciousness. Or, again, there comes to mind the neovitalist, H. Driesch, who is said to have elaborated an entire philosophy of order from the reproductive behavior of the sea urchin.[3]

The *Sketchbook* consists of four parts. Part One deals with Line and Structure. The line is a point taking a walk. This most active line may move freely, circumscribe planes, or merely passively delimit planes. Various kinds of structures are considered: additive, repetitive in a single direction, or along two (the chessboard). In nature, such structural situations occur in cells and fibers of bones, tendons, and muscles. These, in turn, are organized into kinetic groups of which the muscles are active, the bones passive, tendon mediary. This triadic analysis is worked out in the lovely sketch of Waterwheel and Hammer, again in the Watermill, in the Plant, and in the Circulatory System where activity is assured by the beating Heart.

Part Two deals with that ineluctable given: the three-dimensionality of the world (top-bottom, left-right, front-back). Vertical, horizontal, and shifting axes are demonstrated in relation to the human seeking his balance in the world. Asymetrical Balance is demonstrated in the Scale and the Tower of Masonry.

Part Three deals with movement: the Gravitational Curve; *the* Plummet sim-

(Continued on page 208)

[3] *In similar spirit, the German educational pioneer, Froebel (1782-1852), invented his hand games for children. For instance, the Bridge where "the two thumbs make the piers, the fingertips of the right and left hand meet to form a bridge. . . . To find or create a bond of union between seemingly opposed and antagonistic objects is always a beneficent and rewarding deed.*

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Germs of thought are being planted
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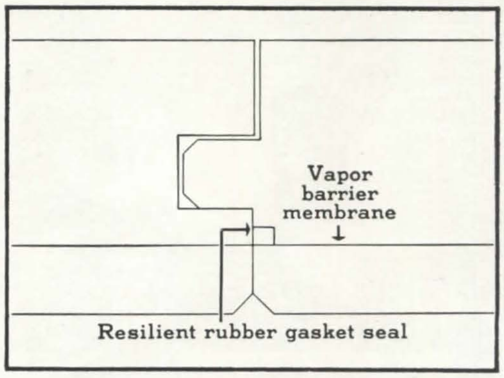

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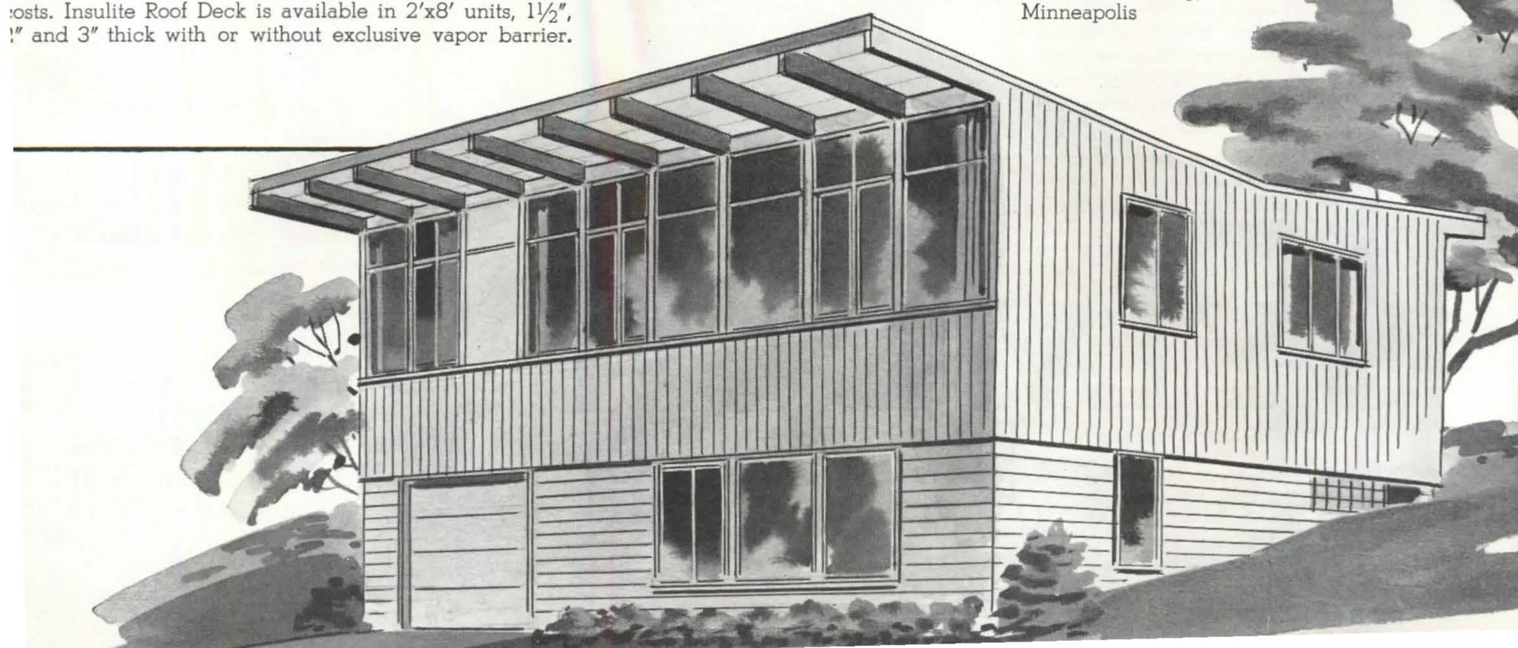

reviews

(Continued from page 204)

ple-mindedly seeking the earth's center. But interaction with diverse elements and regions (earth, air, water) determine more varied forms of behavior: the Bullet's orbit of changing speed; the downward bouncing Stone, the Meteor which "barely escapes the peril to be tied forever to the earth, and moves off into the stratosphere, gradually cooling off and extinguishing."

The Symbols of Form in Motion bring us to the Spinning Top, the Pendulum, the Circle, and the Spiral; as well as various visualizations of the movement of color. "Shortening the radius (of the spiral) narrows the curve more and more, till the lovely spectacle dies suddenly in the static center . . . direction determines either a gradual liberation from the center through freer and freer motions, or an increasing dependence on an eventually destructive center. This is the question of life and death; and the decision rests with the small arrow." The Arrow itself is analyzed as a symbol of human striving. "Be winged arrows, aiming at fulfillment and goal, even though you will tire without having reached the mark."

The book in its present form is faithful to L. Moholy-Nagy's design and typography for the original Bauhaus book—and the translation has been much amended since the first English edition. The result is not so elegant as the earlier, unfaithful horizontal format, while the English lettering of the sketches inevitably loses the refined, spidery, scrawly, delicateness of Klee's own hand, so familiar to lovers of his graphic work. But most important is the message! Pointing up an inherent symbolism in the small and trivial phenomena that collectively form everyday life, Klee makes us aware that the slightest thing done or designed holds deeper, more universal meaning than we are wont to admit.

•

A hidden link between Ozenfant, Klee, and many other artists active around 1925 was their belief that their art could express *universals*. Ozenfant finds them in history and technics, Klee in the world

(Continued on page 214)

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of phenomena, Mondrian in the artistic means, the Surrealists in the unconscious. It may be that looking back to 1955 the critics of 1985 will detect a similar hopeful sure-mindedness. Whether we will appear as free is a far mooter question.

MARTIN JAMES

factor of success

Design for Modern Merchandising. Architectural Record *Editorial Staff*. Architectural Record, *F. W. Dodge Corp., 119 W. 40 St., New York 18, N. Y. 1954. 247 pp., illus. $8.95*

More people than ever before are engaged in wholesale and retail trade which, in turn, means increased and stiffer competition. In the endeavor to get more business by planning expansion or alteration of an out-moded establishment, the merchant of today is confronted with serious problems, first of which is the cycle of high rents and taxes and high building costs in both material and labor. Another question facing him is whether the expense of good design—that is, engaging a talented architect or designer—will pay off in increased trade. In view of the all-time record figures in retail sales and the current unprecedented volume and planning of new building for merchandising purposes, the subject of this book is especially pertinent. The aim is to show that good design is important—even a necessary factor—in raising sales potential, and that the expense of appealing and effective design to display one's wares is well justified in marketing those wares to advantage.

The material in the book is the result of six years' research and all the examples have been publishd in the *Architectural Record*. However, as presented in this volume, they constitute, an informative and timely survey of stores, shopping centers and showrooms. A wide variety of establishments is included—from small retail shops for an optometrist, a watchmaker, a pharmacist, a music shop to medium-sized ladies' and men's specialty shops, luxury shops, wholesale-display rooms right up to entire department stores and the large shopping centers developing so rapidly on the fringes of our urban centers. The coverage is nationwide and eclectic as to style, ranging from the new Lord & Taylor establishment in Westchester County, New York, to Bullock's Palm Springs store in California. Accompanying the explanatory text are more than 600 photographs, plans, and diagrams to illustrate in an interesting manner how good design can mean more successful selling.

Aside from being of value as a guide and source for designers and architects who are undertaking new construction or alterations, this book has decided interest for owners, investors, store managers and any others who are concerned with the selling of merchandise of any kind.

FRANK A. WRENSCH

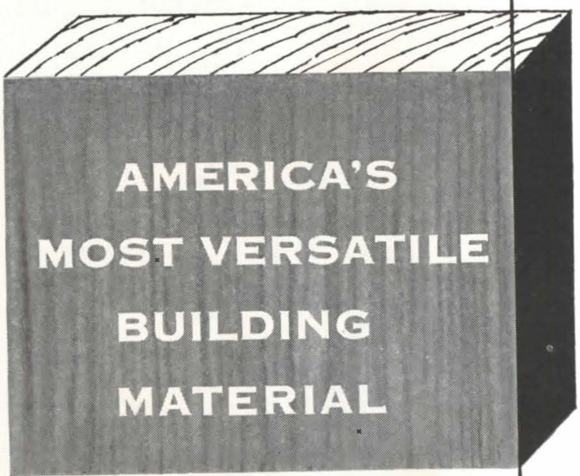
review from England

The New Small House. *F. R. S. Yorke and Penelope Whiting. The Architectural Press, London S.W. 1, England. Published in United States by British Book Centre Inc., 112 E. 55 St., New York 22, N. Y., 1954. 144 pp., illus., $5.50*

For the first time since 1939, residential construction restrictions in England are being eased; however, as yet a building license will not be granted for an area of more than 1500 square feet. In the light of such restrictions, this review of small house planning and design will be interesting to English readers; and because of the special, regional nature of most of the work illustrated, its appeal will be almost exclusively to English readers.

Of the 65 examples pictured, six are American houses, six are on the Continent. One example of trailer planning and two of conversion of river barges are included. Details of construction, materials, equipment, finishes are described; the cost is given in many cases. The illustrations are well reproduced. The text is brief and concise.

LAWRENCE E. MAWN



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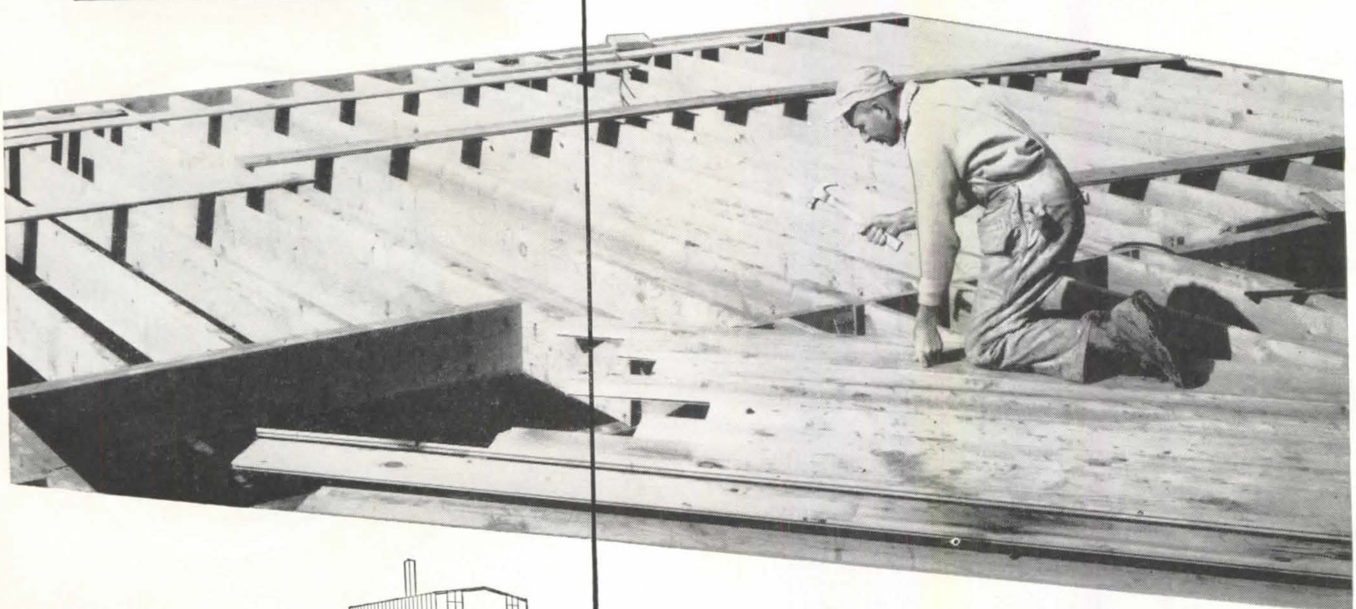

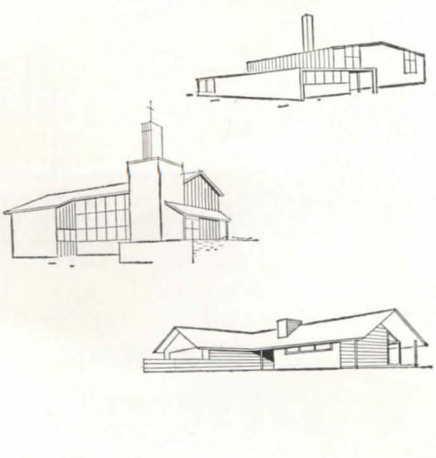

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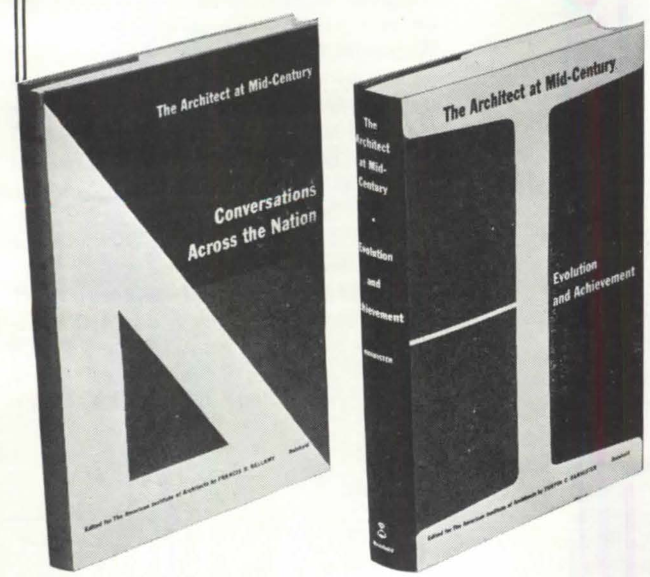
Throughout the book there are many specific recommendations for improving educational courses and facilities, and for continuing growth in professional competence among practicing architects.



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PROGRESSIVE ARCHITECTURE P.S.

GOSSIP

Victor Gruen, who is now in Europe recovering from an operation which was more serious than he or the doctor intended, is consoled by a new commission shared with **Oscar Stonorov** and **Minoru Yamasaki.** Job is redevelopment project in downtown Detroit; client is "Mayor's Committee," composed of auto industry bigwigs, chairmanned by **Walter Reuther,** CIO head. Architects say that Detroit business and labor, realizing that the automobile has caused new urban problems, want to show how good planning can help solve them. **Carl Feiss,** P/A columnist, has left HHFA; last several columns have emanated from Maine retreat. **Raphael Soriano** writes that he has found the ideal setting for a pleasant practice—water, rocks, earth, sky—in Tiburon, California. **Thorshov & Cerny,** serving a client with headquarters in New York from their Minneapolis office, found him so hard to please that they sent Design Associate **Newton Griffith** to the big city to make new sketches, until one was approved. P/A Drafting Editor, **Elmer Bennett,** lending space and materials to Griffith, got the earliest possible look at some future SELECTED DETAILS. **Walter Gropius** writes from Japan that architecture there intrigues him, but that he'll be back for P/A Design Awards Jury service. **José Luis Sert** sends post card from Spain, alarmed at news of out-of-context quotes in *House Beautiful.* **Al Aydelott** calls from Memphis on Sunday afternoon to report a hot idea on a hot day—that a good syndicated column on architecture is needed to educate the public in benighted areas. **Bill Deitrick** of Raleigh, North Carolina, telephones on his way through town from Maine vacation to report business good, resting in New England better.

David Henken calls to report difficulty with project of moving to Dobbs Ferry the **Frank Lloyd Wright** house which was part of exhibit seen by many thousands at Guggenheim Museum site last year. Client who bought house and wanted it relocated was turned down by Architectural Board of Review, which decided it would be "excessively dissimilar" to adjacent houses, "thereby impairing the stability of values of said improved properties and preventing the most appropriate development of this area." The decision has been appealed. **Ed Stone,** recently divorced, took off for Lebanon on a hotel project, remarried, went on to India on a State Department job, then decided to continue honeymoon trip around the world.

Speaking of State Department work, Advisory Committee, including architects **Pietro Belluschi, Ralph Walker,** and **Henry Shepley,** has recommended and had approved commissions to a distinguished but not at all obvious group of architects. The committee, after thoughtful analysis of design abilities, interest in wedding local environment to contemporary needs and potentials, and professional responsibility, suggested appointment of the following, all now under contract: **Gardner Dailey,** Staff Quarters in Manila; **Michael Hare,** Embassy in the Honduras; **Chloethiel Smith** and her firm **(Keyes, Smith, Satterlee & Lethbridge),** Embassy at Asuncion, Paraguay; **Moore & Hutchins,** an Office Building in Dakar; **Paul Rudolph,** Embassy in Aman, Jordan; **Ed Stone,** an Embassy job at New Delhi; **Hugh Stubbins,** a Consulate in Tangier; **Bob Weed (Weed, Russell, Johnson),** a Consulate in Leopoldville; **Bill Wurster's** firm **(Wurster, Bernardi & Emmons),** an Office Building in Hong Kong; **Yamasaki, Leinweber & Helmuth,** a Consulate in Kobe, Japan. This represents the program for the 1955 fiscal year—all the funds available at present for building work. The whole program is a pleasant surprise to those who feared that **Lee King's** abrupt departure from the State Department's FBO office implied a reactionary design swing. **Alan Jacobs,** who headed FBO's Paris office so effectively, has gone back to private work and is reported in Africa. **Henry Lawrence** is now Technical Director in the Washington office.

Louis Gohmert reports on the pleasures of practice in a small community —in his case, Mt. Pleasant, Texas, population 6500. Gohmert says that he had always wanted to "settle in a town where I could walk down the street and call people I met by name." In this he was encouraged by **Bill Caudill,** during his school days. He's done it, finds that "low overhead makes it possible to enjoy a reasonable living from few commissions," and is very proud of being the town's "arch-e-tet." Well he might be: his work, which, without his presence in the community would largely have been done without benefit of an architect, is first rate. Enthusiastic, like others who feel satisfaction in a general practice in a smaller community (I remember so well the missionary attitude of the late Sheldon Brumbaugh of Klamath Falls, Oregon, who started us on our "Architect and His Community" series), he believes that dispersion of the profession would benefit the public as well as the architects. He believes sincerely that "other beginning architects might find an outlet for energies and talents in small communities." After working with **Richard Colley** in Corpus Christi, and a "short stint" in Dallas offices, he prefers the hard work ("by day I talk to clients, salesmen, check shop drawings, supervise the work . . . at night I do my drawing") and the satisfaction ("after three and one-half years I feel that my practice is well grounded, with lots of room for improvement") of his present location.

Lots of individual architectural travel to Europe this year, in addition to the guided and sponsored tours. **Morris Ketchum,** for instance, made a store-design consultation job an excuse for visiting current Scandinavian work. It all makes me restless again. Incidentally, I was sad to read that the sculptor, Laurens, whom we met on our last trip abroad, had died. He and his wife were with us on our visit to the St. Lo Hospital of **Paul Nelson,** along with a charming Italian designer named **Madeleine,** now Madame Nelson and the mother of a bouncing boy. I wonder what language(s) he will grow up to speak—English, French, *and* Italian probably. It was in a combination of those tongues that we all spent an evening playing poker in Varangeville.

Now that I'm on the subject of sculptors—and women—I should report that I have just seen the **Gwen Lux** piece for a school by **Kelly & Gruzen**—one of the strongest things she's done, boldly conceived, beautifully detailed. Which reminds me that **Mitzi Solomon** (Cunliffe) writes that she's coming back to the States for a visit this fall, after a period of considerable accomplishment producing sculpture for contemporary English architecture.

As soon as the last **Saarinen** chair for the lobby arrives from **Knoll Associates** we will photograph the new Reinhold and P/A offices and show them to you. We're really enjoying the space laid out for us so ably by **Lou Shulman,** in this building remodeled almost from scratch by **Emery Roth & Sons,** who seem, at this writing to be redesigning most of mid-Manhattan. That's not entirely true, though—**Harrison & Abramovitz** have one office building going up now, and another in design stage, which the client announces will be "institutional" rather than "commercial" in character. A nice trick. **Bill Lescaze** has one to go over on Lexington Avenue, and an "artist's conception" of a **Pereira & Luckman** design for a spot a few blocks below us has been circulating. Perhaps, *ultimately,* some pattern of harmony will appear, but at the moment the consistent scale which did exist on Park Avenue's façades is being lost to scattered, completely various design efforts.

Thomas H. Creighton