General Hospital Neurological Building, Philadelphia, Penna.


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.
Principal addresses at AIA Convention in Minneapolis this month will be delivered by HHFA Administrator Cole and Commissioner Follin of Urban Renewal Administration. Leading architect-planners will further develop convention theme, DESIGNING FOR THE COMMUNITY, at two seminars—"Rebuilding the City" and "The Architecture of Community Expansion." Other panel groups will deal with problems of office practice and the architect and his client.

Five buildings won First Honor Awards in AIA's Seventh Annual Competition for Outstanding American Architecture. Awards will be presented at convention to: Ernest J. Kump for North Hillsborough School; Eero Saarinen & Associates for Central Restaurant Building, General Motors Technical Center and for Women's Dormitories and Dining Hall, Drake University; Charles B. Genther of Pace Associates for General Telephone Company of the Southwest; and Ralph Rapson and John van der Meulen for American Embassy, Stockholm, Sweden (a project of Foreign Buildings Operations, Department of State, Leland W. King, Supervising Architect).

Gold Medal for 1955 will be awarded to Willem Marinus Dudok, distinguished Netherlands architect and city planner. Dudok has been invited to address the convention and to receive AIA's highest professional honor.

American Society of Landscape Architects will hold its 56th Annual Conference in Detroit this month, June 26-29. Featured speakers discussing the future obligations and opportunities for landscape architects will include Clair W. Ditchy and Conrad L. Wirth, Director of National Park Service.

The AIA stands opposed to proposed midcity bridge across the Potomac (WASHINGTON PERSPECTIVE, November 1954 P/A) and fully supports Commission of Fine Arts in favoring a tunnel instead. Pres. Clair W. Ditchy emphasized the Institute's interest in restoring basic elements of L'Enfant design for Washington besides preserving beauty of Potomac River and dignity of the many monuments.

P/A was awarded two Certificates in the 1955 Industrial Marketing Editorial Competition, Professional Class. June 1954 issue on "Structural Concepts" won in Best Single Article Category; portrayal of Yale Art Gallery and Design Center, May 1954, won in Best Graphic Presentation Category.

Sen. J. W. Fulbright, receiving Friedsam Medal for service to Arts, May 26, at Architectural League of New York, made an eloquent plea for peace through education. . . . National Institute of Arts and Letters presented Prize in Architecture—first for architecture exclusively—to Gordon Bunshaft, partner and chief of design, Skidmore, Owings & Merrill, New York. Minoru Yamasaki, Detroit, received honorable mention. . . . Dr. Kenneth John Conant, Professor at Harvard University, was awarded Guggenheim Fellowship for studies in Romanesque architecture.
Monuments are built by an Administration not at the beginning but near the end of its term of office, and the Eisenhower Administration is just now directing its attention to the great arrears in public building. Renewed Congressional interest in extending the East Front of the Capitol and authorizing new museum facilities for the Smithsonian Institution are straws in the wind that reveal Congressional sentiment. But of all the new building projects, the $10-millions headquarters building of the Atomic Energy Commission is the first to be authorized, and probably will be the most indicative of government architectural trends. New buildings for the Central Intelligence Agency’s 8000 employees, the Geological Survey, and other offices are also planned. In the aggregate, these ought to reduce the capital’s abnormal central-area congestion and free much park land encumbered by temporary buildings during the war. Decentralized sites are contemplated in most cases. While these and other planning aspects are important, it is the shift in the method of handling public buildings work that is of special significance to architects.

The Atomic Energy Commission’s building to house its more than 1200 employees here will be designed and constructed by the Commission itself. This by-passing of the Public Buildings Service is justified in Congress because of presumed security and other special requirements of the building, none of which have yet been really established. It is further strengthened by AEC’s position as an experienced large-scale building agency. It carries out the nation’s largest construction program, and in recent years has been responsible for as much as five percent of the total national building output. Congress feels that, like the military establishments, AEC should do its own construction work. There are deeper implications. Compelling underlying reasons are the Congressional belief that the Public Buildings Service is unable to produce the building that AEC wants and Congress wants it to have; and the Commission’s fear that PBS would give them either “just another government office building” or, worse, would continue its long flirtation with neo-classicism.

This spectacle of a government in search of an architecture is a very illuminating one, even when it formally denies what it is doing. The report of the Joint Committee on Atomic Energy insists that economy will be the AEC’s watchword, and “its construction will not entail any special ornamentation or monumental construction”; but the headquarters design will still have to reflect purposes so special that it cannot be built by lease-purchase financing. These unusual design features are needed to deal with the large volume of classified documents and the special security requirements of the AEC, with the perils of wiretapping, the Commission’s large technical library, and even Commissioner Libby’s small personal laboratory. Plainly, these are not design features so esoteric that PBS could not deal with them, and just as obviously, the private architects who will be retained to work on this project will very likely be the same kind of architects that PBS would engage. What is the difference? Why has PBS been so “well and truly” passed over? The architects here will be working under different direction, and they will be able to give themselves solely to the problems of the AEC, without compromising reference to design standards, specifications, and the presumed requirements of hypothetical other agencies of government who may at some future time be assigned to occupy the building.

The hope for architectural advance comes from the re-establishment of a direct architect-client relationship in which requirement can inspire design. For 20 years the value of such a relationship has been denied by PBS and the Bureau of the Budget. The victory of functionalism over traditionalism is being accomplished in the name of economy and suitability, but there can be no doubt that it is a more far-reaching victory. The AEC building exhibits a desire to do something that “fits the need” and reflects the fear that general-purpose building design won’t do it; and it betrays a feeling that PBS (especially under lease-purchase) has become a specialist in cheap utilitarian building and is not competent to direct a job like this where, in the words of one member of the Joint Committee, “we are spending a bit more to get something in the fine arts field.”

No plans have yet been drawn, and a site for the AEC building is still to be announced. Very likely it will be in the northwest quadrant of the capital metropolitan area, some 30 miles from the Capitol and accessible by rail and express bus from the central city. The stage is thus set for some expression of public architecture in terms of decentralization, expressways, future helicopter transportation, and the values of comprehensive planning and large-scale construction—the architecture of a nation with consolidated schools, shopping centers, and single-story industrial plants, whose capital is known to most of its citizens through the windows of a school bus.

These potentialities are scarcely a sure thing. If we are to have monuments without stuffy, boring monumentality, some original architectural thinking is in order. Little that AEC has done in architecture commands respect or confidence. Its labs have been anti-architectural; its housing worse. But the President has scored a propaganda coup with his international atomic bank proposal, and followed it up with a scheme for a round-the-world tour of an atomic ship. The design of the international atomic laboratories in Switzerland has left an impression here. So the simple propaganda value of the design of the AEC headquarters cannot be overlooked—and the chance that it will chart a new direction strikes me as excellent.
More and more architects every day are taking advantage of the low-cost permanence of light weight Stainless Steel or Aluminum curtain wall construction. New buildings and complete industrial plants with bright metal exteriors are appearing all over the country. In the past five years, one industrial concern alone has built nine complete new plants employing Mahon Metal Curtain Wall construction throughout—the plant illustrated below is typical. When you plan your next building, call in a Mahon engineer and let him tell you more about Mahon Insulated Metal Walls... let him show you some outstanding examples of architectural treatment in ALL-METAL exterior design, or, if you prefer, some attractive exteriors with metal in combination with brick, glass block or other materials. Have him give you cost figures, too... because, in this type of construction, important building economies are realized through lower material cost, lower labor cost, and the cumulative savings and advantages deriving from reduced construction time. Mahon Insulated Metal Walls are available in the three exterior patterns... the "Fluted" or "Ribbed" wall can be field constructed up to sixty feet in height without a horizontal joint—a feature of Mahon Walls which, from an appearance standpoint, is extremely important in powerhouses, auditoriums or other types of buildings where high expanses of unbroken wall surface are common. See Sweet's for complete information including specifications, or write for Mahon Catalog B-55-B.

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The Standard Oil Company of Ohio, Cleveland, Ohio. Architects: Garfield, Harris, Robinson and Schafer

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A FIRE Started in this School.....
Its Path was Barred by Multiple Accordion Aluminum!

This is the New Bridge Elementary School in New Milford, N. J. When it was built, Arthur Rigolo, the architect, had specified Infra multiple accordion aluminum insulation, Type 6, and it was installed in the ceilings.

In July 1953, the roof of this school was set on fire from the outside. Most of the roof area ABOVE four classrooms was destroyed, but Infra Insulation protected their ceilings. The fire did not penetrate below the insulation.

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To obtain maximum, uniform-depth protection against heat loss and condensation formation, it is necessary to use the new edge-to-edge multiple aluminum,* each sheet of which stretches from joist to joist, and also all through the flanges for further vapor protection as well as permanent attachment of each sheet of aluminum.

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Condensation on or within this type of insulation is minimized by the scientific construction of multiple layers of aluminum, fiber and air spaces.

A very useful and interesting “Radiation Table” listing the Emissivity, Absorptivity and Reflectivity of the Surfaces of a long list of materials has been prepared by Alexander Schwartz, president of Infra Insulation, Inc. It is yours for the asking.

Also yours for the asking is an illuminating discussion of why and how aluminum insulates, even under extreme conditions. It will be found in the booklet “Thermal Test Coefficients of Aluminum Insulation for Buildings,” published by the American Society of Heating & Air-Conditioning Engineers. A free copy, and samples of the new insulation sent by us on request.

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*Patent applied for
Inland Steel Company's new 19-story office building will be located within the Loop, close to transportation and the facilities of the central business area. The main feature of the building, designed by Skidmore, Owings & Merrill, Architects-Engineers, will be unobstructed office floors measuring 177' x 58', completely clear of columns and utility lines. This will permit total flexibility in planning office layouts. The large unhampered rental area, unequalled in previous multi-story structures, has been accomplished by locating the columns on the exterior face of the building, and by housing elevators, fire stairs, washrooms, and all utilities in an adjacent windowless stainless-steel tower. Heating, air conditioning, wiring, and piping will rise in the service shaft and be distributed to office areas through cellular floors. The all-welded structural steel frame employs a new type of torsional connection at the spandrel beams, which are faced with stainless steel. Window frames are also of stainless steel, glazed with double panes using blue heat-absorbing glass on the exterior surface. Heating and air-conditioning lines will be carried through the cellular flooring to slots around the perimeter of exterior walls, and through ducts above ceilings to interior spaces. Interior partitions made of steel will be based on a modular system for ease of rearrangement. Cost is estimated at $6 millions; completion is expected in 1957.
A new 13-story office structure identified as the 3325 Wilshire Building will be erected and owned by the Tishman Realty and Construction Co., Inc., of New York and Los Angeles. Plans by Victor Gruen, Architect, of Los Angeles, New York, and Detroit, consist of two major building components—a 12-story office tower, and a broad structure at its base which will contain garage space for approximately 350 cars, mechanical equipment rooms, rental areas, and entrance lobby. The roof deck of the low structure will provide additional parking and a landscaped terrace accessible from offices at the second story. Typical office floors will have 16,000 sq ft of space with their center areas devoted to elevators, stairs, washrooms, and lobbies. Rental space surrounding this utility core will be divided according to tenants' requirements. Since the building will be completely air-conditioned, windows on all four sides are fixed. Projecting horizontal sunshades on the south and north ends, and vertical louvers on the east and west sides will admit maximum natural light into the office areas but will also protect from direct sunlight. Outriggers supporting the louvers will act also as runways from which outside of windows and walls may be washed. In this steel structure, main girders are to be supported by columns 20' on center. Completion of this $5-million building is scheduled for the end of 1955.
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New 36-story office building for New York has been announced by builder-owners, Tishman Realty and Construction Co., Inc. It will be adjacent to Rockefeller Center to the north, occupying the westerly block front of 200 ft between 52nd and 53rd Streets and extending west 300 ft on each street. Rendering (left) by Architects Carson & Lundin. New York, suggests a structure in harmony with the Center though based on a new double module utilizing windows 6 ft wide and 2½ ft piers. This design permits a greater variety of practical room sizes than the standard 4½ ft window. Another outstanding architectural feature will be an open street floor with pedestrian arcades. Completion of this $40-millions project is scheduled for 1957.

New 38-story office building for New York (below) will feature a plaza along its Park Avenue frontage between 52nd and 53rd Streets. The building will serve as headquarters for Joseph E. Seagram & Sons, Inc., who will occupy about one third of the space. Demolition of the buildings on the site will begin immediately and completion of the $20-millions structure is scheduled for 1957, when the firm will celebrate 100th anniversary. Architects are L. Mies van der Rohe and Philip Johnson, with Kahn & Jacobs as Associate Architects. George A. Fuller Company will be General Contractor; Severud-Elstad-Kruger, Structural Engineers; Jaros, Baum & Bolles, Mechanical Engineers.
ENCLOSED HARDWARE  Redwood cover plates enclose hardware in jambs and sill. Offers proven advantages of Gate City's sturdy dual-action hardware PLUS beauty.

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down with ugliness!

Dear Editor: New York City has the tallest buildings in the world and our skyline is fabulous. Visitors to our shores receive an index to our heritage and future capabilities in all phases of human effort. Rockefeller Center is an example of the art of building tall buildings with dignity. Furthermore, it is one of our most outstanding tourist sites and a successful investment as a development. However, it represents a definite point of departure in the use of Art in Architecture.

As Architect Frank Lloyd Wright remarked, “Any box is more a coffin for the human spirit than an inspiration... Sterilization is again mistaken for refinement.”

The thought behind the barrenness in the projects of today is that form follows function. Buildings, like people, should in a sense have some personality. We are swamped into false functionalism. What is functional need not be ugly, but can have grace and beauty; what is ugly is not necessarily functional. Beauty enhances the dignity of man and serves a human need.

If we continue to live in this ugliness and monotony, we shall lose all sense of beauty. The Architect has a definite obligation and should do his best to create as beautiful an environment as he can. There are certain fundamental concepts which mankind has considered beautiful and which actually satisfy basic human needs. Elegant and pleasing structures just seem to grow old gracefully, whenever the deeper insight and appreciation of Art has been used.

It so happens that I am trained and believe with strong conviction that Architecture is the mother of all the Arts, having personal experience with them all. It is fundamental today that the Architects have a working knowledge of real-estate economics and even the hard-boiled approach by the toughest investors, as well as the modern concepts of art, architecture, and engineering. Real-estate restrictions and values, space limitations, and the New York City Building Code demand that our buildings become more vertical. To obtain the maximum building for the minimum cost, with the least actual capital outlay, more than 75 percent of our efforts are spent in solving structural and mechanical problems for these projects. It is the Architect’s main responsibility to co-ordinate the wishes of his client for these definite requirements, to make the projects successful and also to inject his own, personal, aesthetic touch. Yet, as I look at the UN, Lever House, recent hospitals, and numerous office buildings, now completed or publicized to be soon started, the percentage of Art in the general scope is completely insignificant.

Our multistory designs and new construction advances are spoken of as architectural milestones, in the terms of a new order of function with utility, economy, and beauty. These monstrosities, whether covered with glass, metal, or strips of brick, and possibly two sides with marble for appearance, are still sterile and barren boxes, no matter how you look at and what you do with them. Where are the architectural dignity, elegance, and personality?

I am asking for thought, esthetics, and reflection, and for the Architect’s personal expression of these in his work. If we Architects forget our prime esthetic function in the art of building beautifully, we have sent ourselves down the drain. As it is now, the results confronting us are deadening and degrading. Somehow in the development of these coffins without inspiration, having used Rockefeller Center as a concrete example to show where thought went off the deep end, Art has been completely ignored. I am convinced we should bring Architecture back into Art.

As Architects, therefore, we have a definite obligation to the profession and should do our best to create as beautiful structures as we can. I think it is high time we Architects take hold of ourselves and cease being afraid to make a stand which is expected. When we do this we shall also coincidentally provide opportunities for painters, sculptors, and other artists. It will be a healthy sign to the populace and visitors seeking the simple joys of living while growing old gracefully. We can help if we try hard enough.

W. FONTAINE JONES
New York, N. Y.

Dear Carl Feiss: I guess I’ve read over 60 of your OUT OF SCHOOL articles since I developed the habit, around five years ago. During this time I have never found myself in disagreement with you on important matters, particularly architectural education. But I frequently find myself disagreeing with some of our fellow educators and the thought has begun to disturb me: is it possible that your courses (about Theleme especially) are so subtle, or so ambivalent, that everybody agrees with you? Or have your readers dropped off so that only those who agree keep up with you? Surely you must know that you have had, regretfully, small impact upon the collegiate schools.

The following is a development of my theory about Basic Design:

1. Our students come to us with 18 years of experience with “Man in His Environment,” and to treat this student as if he were just born or just arrived on another planet is to ignore the marvelous opportunity to channelize, to mold, to graft upon a growth already strong. His experience may be mixed and dimly realized, and there lies our first task: to clarify, to compare, and to select. If, as

(Continued on page 14)
is so often true, the student is not sure why he has come to us, it is in the past and present inadequacies of his environment that we must find a challenge for him which alone can stimulate him to a creative effort. If this cannot be found, the student should be transferred to another field without the delay of even a year.

2. To maintain the interest through which alone the student will develop, he must be confronted with a problem which is concrete and immediate, and which therefore he can see some reason for attacking. This can only be a problem which refers to him as a Man having physical and psychological requirements, or to persons with whom he has intimate contact, and likewise can only be based on activities with which he is at least becoming familiar. Here is no place for the abstract, the exotic, or the esoteric. A student has no desire for, feels no need of (and therefore will not learn cold) isolated principles of form, of structure, or of anything. But... and this is most important for it is the only way he ever will learn or retain anything... he does have the capacity to generalize these or any other principles from a concrete and significant experience which requires their use for a successful solution.

3. There is no assurance that fundamental principles are valid starting points for anything. If we will recall the way we learned our mother tongue, we will see a very effective response to the challenge of the environment, with no recourse to principle until a much later age. A clear grasp of principles, then, is an ultimate refinement, not a beginner's lesson, as the failure to produce fluency in a second language by older high school methods will amply demonstrate.

4. Assuming that a student has been challenged by the inadequacies of his environment, he will see significance only in activities directly devoted to its improvement. He will regard a year's detour into other exercises as a waste of time and a thwarting or dulling of his objectives. He will learn architecture best in all its ramifications by starting with architecture not, say, with Sculpture. To ignore this suggests the ruse of the Latin teachers who, when they couldn't sell their subject for its own intrinsic merit, used to say that it was an excellent foundation for the study of French, etc., which was sometimes true, except that French was an even better foundation for French! This form of educational deceit was apprehended and went into discard along with the flapper (or so I had thought). I have nothing against the arts of which Architecture is the mother (do they all have fathers?) but their place must be parallel and secondary... they are inferior substitutes.

5. In the abstract approach, there is great danger of undergoing an experience in which the criteria for success are too few. Shall the student be measured by some impossible notion about his spiritual development, or by the product of his hands? In the latter case only a martinet, an over-refined specialist, or a charlatan would claim to see the degree...
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Give your buildings the finest protection. Mississippi Wire Glass will not only prevent damage from exterior causes, it also tends to battle up small, internal fires, keep them from spreading into costly conflagrations. Specify Mississippi wire glass, the original wire glass upon which the Underwriter's Standard was based, the standard today by which all others are judged.

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views of successful development attained by each student. The earnest student has had an experience in space, form, etc. (however devoid of purpose, function, or structure), but his lesser brother has only conformed to requirements and gone through certain motions, has learned nothing at all, and we can hardly tell the difference! Having succeeded once with what can only be described as a fake experience, this student may go on confusing form with fake for the rest of his life. Here, perhaps, is the chief origin of the prima donna and the cliche.

6. At any level of education we obviously must be preparing for the future, for the next stage of development, and it is not enough that the professor sees this, the student must be quite clear about it himself. Should he sense that he is progressing down a blind alley, he will not try very hard to get to the end of it. We cannot explain to his satisfaction (because there is no explanation) why everything is reshuffled at the end of Basic Design when, at last, human need, human scale, human functions and structure are introduced. (They are, aren’t they?)

ANTHONY ELLNER, JR.
Associate Professor, Architecture
Clemson College
Clemson, S. C.

Alas, I have no illusions about my influence on architectural education but then it would be egotistical indeed to believe that I could be. My role as a commentator these past five years has been only to encourage a little thought on the subject and possibly to stimulate discussion where apathy is the byword. In some measure this has been accomplished. Of course you must not discount my personal pleasure in writing the column—a self indulgence for which I crave no support.

Anthony Ellner, Jr.

revealing commentary

Dear Editor: This is the first time in my young life of 60 years that I manage the audacity to write a letter to the editor. But your column OUT OF SCHOOL (November 1954 P/A) is so challenging that I can no longer stay put and just read.

It is, to my way of thinking, a sad if revealing commentary on how those of us in the driver’s seat are afflicted with shortsightedness verging on complete blindness to the forces which, in our materialistic era, are working overtime to demolish the structure of our school system stone by stone, and consequently the faith that all good Americans should have in their Democracy, lest dictatorship take over and render us helpless by spreading ignorance through our ranks.

It is rather unfortunate that, through fear and hysteria, we should be constantly seized with an inferiority complex that always uses Russia as the yardstick by which to measure our intellectual and productive capacity.

While it is right not to lose sight of Russia’s war potential, it is utterly naive, if not stupid, to attempt to fashion our school system after Russia’s imperial and compulsory system. If we are ever to

(Continued from page 16)

r/1co views

(Continued on page 20)

(Continued from previous page)

June 1955

RAYMOND E. LIPPENBERGER, architect, of Manhattan, Kansas, writes “One of the finest materials that the architect has to use as a medium of expression is laminated wood as a structural material . . . Since the development of wood laminates it has extended the use of wood as an economical structural material . . . keeping a simplicity of line and form.”

Rilco arches, beams, rafters or trusses add beauty and strength, offer economy and fire safety. Because of the complete freedom of design offered, Rilco glued laminated wood structural members are rapidly becoming the favorite with architects for school, church, gymnasium, store, industrial or commercial structures.

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"ONE of the finest materials..."

Beautiful in its simplicity, gratifying in its low cost. Shelter House, Sunset Park, Manhattan, Kansas, Raymond E. Lippenberger, architect.
being improvement to our own system it will not be accomplished by compulsion but by recognizing, first, the fact that our teachers are an integral part of our social entity and as such must share fully in the blessings of our higher standard of living. If our industrialists and producers must have an incentive to give us the better things of life it is equally essential that our teachers have an incentive to enable them to give us a school system worthy of the name. Something along the lines of a balanced merit system free from politics and selfish interests—remembering that this is still a free country where our youngsters are free to choose their own vocation; whereas, in Russia, it is the wish of the high authorities that guides their destinies regardless of their greater aptitudes in professions of their own choice. General Sturgis' assertion that youth only has the monopoly on inventive genius is rather fantastic, childish, and, to say the least, very unfair to the older hands of the engineering profession whose brilliant accomplishments are reflected in the modern machinery that we enjoy today. His implication that a college degree is all that is required for the engineer's completion of his education doesn't hold water. We come out of school with some fine watch-precision theories, masters of mathematical braintwisters that would stump the greatest of atomic scientists. Yet, we are unable to assemble a watch with all its component parts in their proper places so that it can run. The result is that if we want to go into the watchmaking business we must start our studies all over again in order to comprehend what makes it tick, and by the time we become proficient in that specialty, age will have crept up on us considerably. Thus, willy-nilly, we come to realize that the evolution of time and experience is the measure, not only of our greater wisdom but also of our ability to fashion mechanisms of great complexity. An ability that always extends into good old ripe age.

Such are the facts of life in every walk of our society. Now we come to the defense of this country:

The intemperate waste of engineering talent and ability inherent in the old-timers of this country, as suggested in the

General's dissertation, cannot but have the most injurious effects upon the morale of the population as a whole, as unwittingly it tends to create an unfillable void between the cradle and the grave out of which the very soul of the nation could not be extricated in its time of greatest peril, because it ignores that the home of the humble toiler is the foundation upon which rests the structure of this great Republic. Then by denying the old-hand engineer the opportunity to maintain his home and raise his offspring in decency and honor; to work up a competence for the twilight of his life; is, by its own ignorance of human values, destroying the very incentive youth needs plenty of before choosing engineering as a career. The way it looks now we have a great many handlers of bread and milk routes and many others operating oil stations who have their homes decorated with college degrees.

JOSEPH A. ROY
Cleveland, Ohio

**CONSTRUCTION DETAILS**

for LCN Overhead Concealed Door Closer Shown on Opposite Page

The LCN Series 200 Closer's Main Points:
1. Efficient, full rack-and-pinion, two-speed control of the door
2. Mechanism entirely concealed; arm disappears into door stop on closing
3. Hydraulic back-check prevents door's being thrown open violently to damage walls, furniture, door, hinges, etc.
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LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page

Suren Pilafian and Frank Montana, Architects
Factors that influence the selection of . . .

ADHESIVES FOR RESILIENT FLOORING

The life and serviceability of any resilient flooring installation depend greatly upon the proper application of the correct adhesive which will meet its specific installation requirements. Frequently, the selection of the proper adhesive is as important as the selection of the floor itself. To bond properly, the adhesive must hold the flooring material to the subfloor by surface attachment. This surface attachment, or bonding strength, must be great enough to prevent the separation of the flooring material from the subfloor under stresses slightly greater than those encountered in normal use. At the same time, the bond must not be so strong that it will be too difficult to remove the resilient flooring at a later date if necessary.

Factors to Be Considered

The type of subfloor, its condition, and the kind of resilient flooring material to be installed are important factors in the selection of the adhesive. Below-grade subfloors, for example, may require a different type of adhesive than suspended subfloors, and asphalt tile must be installed with a different adhesive than linoleum. The adhesive selected must also bond the resilient floor securely to the subfloor without chemical or physical damage to the flooring material. It should also be easy to handle and apply. It should develop and retain the correct "tack" or gripping power throughout the desired working period. The adhesive must have correct viscosity. If it is too thin, it will penetrate too deeply into the material and the bonding power will break down due to lack of sufficient adhesive at the surface. For this reason, resilient flooring adhesives should never be thinned except as specified by the manufacturer.

Because the various types of resilient floors available are designed to meet specific flooring requirements, it is necessary that the adhesive used in their installation meet the same requirements. As a guide in the proper selection of adhesives, the Armstrong Research and Development Center has prepared the chart shown on the opposite page as well as a brief description of each adhesive.

Armstrong No. S-128 Paste is an all-purpose adhesive developed for the installation of linoleum, Linotile, Corlon, rubber tile, Service Gauge Excelon Tile, the various linoleum and Corlon tiles, and lining felt over suspended subfloors. It has a sulphite liquor base and is water soluble.

Armstrong No. S-130 Resilient Tile Paste was formulated especially to simplify and speed the installation of Linotile, rubber tile, cork tile, linoleum tile, Corlon tile, and lining felt over suspended subfloors. It develops a quick tack and keeps tiles from sliding or moving while mechanics work over finished areas.

Armstrong No. S-225 On-Grade Cement is an alcohol base cement which is both alkali- and moisture-resistant. It is designed for installation of both rubber tile and Custom Corlon Tile over on-grade floors. It should not be used below grade.

Armstrong No. S-80 Primer is used to minimize moisture as well as to seal porous and dusty concrete subfloors for asphalt tile and ¾" Excelon Tile installation. It also prepares the subfloor for the proper adhesive selected for the installation of asphalt tile or ¾" Excelon Tile. It is a very thin "cut-back" asphalt.

To insure adhesives of uniform quality, the Armstrong Research Laboratories continually test the bonding strength of adhesives before and after "setting." Below, is the "stripping test," one of many used. It measures the bonding strength between the subfloor and the flooring material after setting.
<table>
<thead>
<tr>
<th>Type of Resilient Floor</th>
<th>Wood Hardboard &amp; Plywood</th>
<th>Concrete Suspended</th>
<th>Concrete On Grade</th>
<th>Ceramic Tile Terrazzo or Marble Sanded</th>
<th>Terrazzo or Marble Smooth</th>
<th>Steel</th>
<th>Magnesite</th>
<th>Floor Fill</th>
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</thead>
<tbody>
<tr>
<td>Linoleum Corlon</td>
<td>S-128</td>
<td>S-128</td>
<td>Don’t Install</td>
<td>Rough S-128 or S-128</td>
<td>S-214</td>
<td>Special Recommendation by Armstrong</td>
<td>S-128 or S-128</td>
<td></td>
</tr>
<tr>
<td>Linolite</td>
<td>S-130 or S-128</td>
<td>S-130 or S-128</td>
<td>Don’t Install</td>
<td>Rough S-130 or S-128</td>
<td>S-214</td>
<td>S-128 or S-225 or S-128 or S-128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubber Tile and Custom Corlon Tile</td>
<td>S-128 or S-128</td>
<td>S-104 or S-225</td>
<td>S-104 or S-225</td>
<td>S-104 or S-214</td>
<td>S-128 or S-225 or S-128</td>
<td>S-128 or S-225 or S-128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cork Tile</td>
<td>S-130 or S-128</td>
<td>S-130 or S-214</td>
<td>Don’t Install</td>
<td>S-214</td>
<td>S-214</td>
<td>Special Recommendation by Armstrong</td>
<td>S-130 or S-214</td>
<td></td>
</tr>
<tr>
<td>Linoleum Tile</td>
<td>S-128 or S-128</td>
<td>S-128</td>
<td>Don’t Install</td>
<td>Rough S-128 or S-128</td>
<td>S-214</td>
<td>Special Recommendation by Armstrong</td>
<td>S-130 or S-128</td>
<td></td>
</tr>
<tr>
<td>Asphalt Tile and Excelon Tile and 1° Excelon Tile</td>
<td>S-80 Primer or S-160</td>
<td>S-160 or S-90</td>
<td>S-160 or S-90</td>
<td>S-160 of S-160</td>
<td>S-160 or S-90</td>
<td>S-160 or S-90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conductive Asphalt Tile</td>
<td>S-80 Primer</td>
<td>S-80 or S-90</td>
<td>Don’t Install</td>
<td>S-90</td>
<td>S-90</td>
<td>S-160 or S-90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Gauge Excelon Tile</td>
<td>S-128 or S-130</td>
<td>S-130 or S-90</td>
<td>S-130 or S-90</td>
<td>S-130 or S-90</td>
<td>S-130 or S-90</td>
<td>S-130 or S-90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lining Felt
- Install with No. S-128 or S-128
- Install with No. S-128 or S-128
- Install with No. S-128 or S-128

- Dusty and porous concrete subfloors should be primed with No. S-80 prior to the installation of asphalt tile or both types of Excelon Tiles with S-90 or S-160. Asphalt tile and both Excelon Tiles should be installed over lining felt on wood subfloors. S-80 Primer is not required with lining felt. Where asphalt tile and both Excelon Tiles are installed direct to plywood or hardboard, it is necessary to use S-80 Primer.

Armstrong No. S-90 Asphalt Cement is recommended for below-grade installation of asphalt tile or Excelon Tile, especially if the subfloor is subject to signs of dampness. It is a cut-back asphalt-type cement and is especially resistant to both alkaline and moisture.

Armstrong No. S-160 Emulsion is an all-purpose adhesive for the installation of asphalt tile and Armstrong ¼" Excelon Tile over suspended, grade-level, and below-grade subfloors. It is a water emulsion of asphalt and is resistant to both alkaline and moisture.

Armstrong No. S-104 Chemical-Set Waterproof Cement is a special-purpose adhesive developed for the installation of Armstrong Rubber Tile and Custom Corlon Tile over below-grade concrete subfloors. It is also used to install certain floors to steel, terrazzo, ceramic tile, and other non-porous surfaces, and where excessive surface moisture is unavoidable. This adhesive consists of two elements, one a liquid, the other a powder, which are mixed on the job and must be installed within a specified time.

**Special Problems**
Frequently, unusual conditions such as extra-high alkalinity in concrete or magnesite subfloors will necessitate special adhesive recommendations. In such instances, Armstrong will be glad to furnish additional information which will be of help in determining the proper adhesive. In order for architects to be sure that the proper adhesive is being used, it is suggested that they specify the adhesive or specify that the flooring contractor use the adhesive recommended by the manufacturer of the flooring being installed.

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<table>
<thead>
<tr>
<th>PLASTICS</th>
<th>CUSTOM CORLON® TILE</th>
<th>EXCELO® TILE</th>
<th>MORESQ® CORLON TILE</th>
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<tr>
<td>RESILIENT TILES</td>
<td>ASPHALT TILE</td>
<td>Standard</td>
<td>Greaseproof</td>
</tr>
<tr>
<td>Conductive</td>
<td>RUBBER TILE</td>
<td>LINOTILE®</td>
<td>CORK TIE</td>
</tr>
</tbody>
</table>
No two of these buildings are alike in architectural concept. Each has an individual cooling and heating problem. But all have one thing in common: in every one of these outstanding buildings, and others like them, Tuttle & Bailey High Pressure Air Distribution Units are providing maximum comfort for occupants, efficiently and economically.

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4 Reasons why you save with Wheeling Metal Lath . . .

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Kentucky State Capitol Annex Office Building, Frankfort, Ky.
architectural news

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WHEELING, WEST VIRGINIA

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Dante Place Housing Project, Buffalo, N. Y.
Architect: Backus, Crane & Love, Buffalo, N. Y.
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it's an ENTIRELY NEW TYPE VITREOUS ENAMEL Chalkboard

Porcenell is a patented, vitreous process developed by Vitreco, Inc., a research organization jointly owned by Youngstown Sheet and Tube Co. and Poor and Company. The Porcenell development is the result of over 15 years and three quarters of a million dollars of research. In this product there has been achieved an entirely new, non-warping, lighter weight, finer, vitreous, hard chalkboard surface never before commercially available.

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Writing and Erasing are a Pleasure!
Chalk "flows on" with minimum pressure due to micro-fine, super-hard, "suede-coated" surface which also facilitates erasure; eliminates ghosts.

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Never needs replacement due to age... will not become shiny in a lifetime of normal use; cannot fade... completely resistant to moisture... cannot warp.

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Here's how the New Fenestra TAC Panel System works!
Troffer or acoustical panel units—each 24 inches wide—may be arranged in any combination.
A noncombustible acoustical element is "built in" the acoustical panels. Minimum-cost fluorescent fixtures and plastic diffusers are installed in the troffer panels to provide recessed lighting.
Long-span design makes for quick erection, and the panels need support only on the ends and at mid-span while concrete is being poured. This reduces cost of shoring usually required.
Complete erection service under Fenestra supervision is available in many areas.
Since the TAC Panels carry no building loads after the concrete has cured, all fire-resistive ratings are based on the reinforced concrete structural system.

PROVEN IN MICHIGAN SCHOOL BUILDINGS

TAC Panels in place, ready for pouring concrete at one of 14 Michigan schools now under construction with this new system. See how the long span design reduces shoring requirements to only mid-point support. Marsh School, Detroit, Michigan. Architect: C. Gabler. Detroit Board of Education, George L. Schulz, Consulting Architect. Contractor: Ellis Construction Co.

Here's a quiet, well-lighted classroom ... the result of TAC Panel construction. Maintenance costs are low, because the ceiling can be washed or painted as needed, without reducing the acoustical efficiency. The plastic diffusers are easily removed for servicing lighting fixtures. Pasteur School, Detroit, Michigan. Architect: Leo M. Bauer. Contractor: Maurice Strandberg Co.

FENESTRA TROFFER-ACOUSTICAL PANEL SYSTEM CUTS COST OF REINFORCED CONCRETE SCHOOL CONSTRUCTION

Multi-purpose Steel Panels provide long-span forms for concrete joists plus acoustical ceilings and recessed lighting troffers built right in!

Multi-purpose is the key to economy in school construction. The NEW Fenestra* Troffer-Acoustical Panels (TAC Panels, for short) are designed for multi-purpose use of materials and construction labor. They permit you to have acoustical treatment and lighting—features that usually require extra time and labor—built right in the structure itself.

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NEW! TROFFER PANEL for Fenestra “D” Panel Construction in one-story schools

Now you can have built-in troffer lighting in one-story school buildings designed with Fenestra Type "D" Acoustical-Structural Building Panels.

Standard troffer lighting fixtures may be installed flush with the acoustical ceiling in this new Type "D" Troffer Panel, eliminating hanging fixtures and exposed wiring conduits.

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Superior weather resistance

This "accelerated" weathering test proved Aquadam to be nearly twice as resistant to excessive exposure as other bitumens. Samples of many types of bitumens were subjected to continued cycles of radiation, waterspray and refrigeration. Aquadam showed no signs of deterioration or other effects long after other samples failed.

High ductility helps prevent roof cracking

This test demonstrates the high ductility of Aquadam that permits it to withstand continual weather stress better than other bitumens. At left, a typical asphalt is shown (arrow) at average breaking point of 12cm. At right, Aquadam is shown (arrow) at a 25cm stretch—100% beyond the average breaking point—and will not break when stretched to 110cm.

SOME OF THE TESTS THAT PROVE THE SUPERIORITY OF J-M AQUADAM BUILT-UP ROOFS!
an important new development
in dead level* Roof Protection...

Johns-Manville

Aquadam
(SLAG-SURFACED)

Built-Up Roofs

*for deck inclines from dead level to ½" per foot

The new Johns-Manville Aquadam Built-Up Roof for dead level or low pitched decks has been specifically designed to give the best possible protection to a building and its contents.

J-M Aquadam Built-Up Roofs owe their proven superiority to Aquadam—the newly developed bituminous asphalt cementing agent employed in the application of the roofing felts.

J-M Aquadam offers these important advantages
to provide longer roof life at no extra cost:

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- Improved self-healing properties
- Greater kettle stability
- Greater adhesion—stronger bond
- Greater resistance to water
- Excellent uniformity

J-M Aquadam is produced to the most exacting specifications in the built-up roofing field. Its rigidly controlled properties assure high product quality and result in better application of the finished roof. When applied, the excellent adhesive properties of Aquadam permit a firm permanent bond to the felts and to either gravel or slag surfacing. Its excellent flow properties assure easier mopping and thorough coverage.

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Johns-Manville

June 1955
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34 Progressive Architecture
Better schools need better floors. Vina-Lux is designed to meet that requirement. It is an effective answer to the need for a better performing resilient floor for modern school houses. Vina-Lux combines the virtues of vinyl resin and asbestos fiber. The result is an exceptionally smooth-surfaced floor with a remarkable resistance to abrasive wear in fresh new light-reflecting colors. Its vinyl resin binder makes it greaseproof and highly resistant to acids and alkalis. It is quiet and safe to walk and work on and its easy-cleanability is a boon to school custodians.

We honestly believe Vina-Lux will out-perform any other type of resilient flooring in school houses on a dollar and cents basis. Over a period of years it costs less per square foot per year.

School folks are mighty enthusiastic about this new, more efficient school flooring. Get all the facts about Vina-Lux for school use — ask us for a copy of the new Vina-Lux brochure — complete with color chart and factual data.
Which is the best way to air condition a SHOPPING CENTER?

Acme Supermarket in Shoppingtown, De Witt, N. Y., features a modern, year-round Carrier air conditioning system. Peripheral ducts carry cooled air from a 30-ton Weathermaker, warm air from two gas-fired duct-type unit heaters.

The Addis Company is an exclusive specialty shop in this new shopping center. It has its own 40-ton Carrier system complete with an evaporative condenser for 95% water saving, and gas-fired unit heaters for economical winter heating.

Candlelight Shop, Shoppingtown’s gift center, packs a self-contained Carrier Weathermaker* into a side wall. The unit taps into ductwork previously installed for warm air furnace. New air-cooled Weathermakers require no water.

Carrier is the quickest way to the right answer

JUST 1-2 AND THE JOB IS THROUGH!

Carrier has all the ways to control the temperature on any job, summer or winter—and all Carrier equipment is engineered to the same uniform standard. So short-cut hours of selection by (1) using the Carrier line as your shopping guide and then (2) comparing values. Get in touch with your Carrier dealer or distributor—listed in the Classified Telephone Directory. Or write to us directly. Carrier Corporation, Syracuse, New York.


Carrier air conditioning • refrigeration • industrial heating
ONEONTA GOES MUTSCHLER...all the way!

ENTIRE HOME ECONOMICS BUILDING OF STATE TEACHERS COLLEGE AT ONEONTA, NEW YORK, IS MUTSCHLER EQUIPPED.

Like so many schools of the nation, Oneonta State Teachers discovered they could get more for their money with Mutschler.

The comprehensive services of Mutschler sales engineers cover consultation and advice on the latest in homemaking department design and equipment...as well as planning the installation. This service costs nothing extra. In fact, you may consult a Mutschler specialist at any time without obligation whatsoever.

If you are planning a remodeling or building program, may we suggest you contact your nearest Mutschler sales representative listed below.

MUTSCHLER BROTHERS COMPANY, Nappanee, Indiana

ARCHITECTS: See Sweet's Architectural File, 22d/Mu and 23b/Mut, for complete specifications.

NORTHWEST
CARIBO INC.—Boston, Mass., Maine, Vermont, New Hampshire
W. S. BLOOM & CO.—Philadelphia, N.J., New York City, Long Island
SCHOOL EQUIPMENT, INC.—Jacksonville, 3, N.J., New York State

ARCHITECTS: See Sweet's Architectural File, 22d/Mu and 23b/Mut, for complete specifications.

NORTHEAST
W. S. BLOOM & CO.—Philadelphia, N.J., New York City, Long Island
SCHOOL EQUIPMENT, INC.—Jacksonville, 3, N.J., New York State

ARCHITECTS: See Sweet's Architectural File, 22d/Mu and 23b/Mut, for complete specifications.

SOUTHWEST
R. L. DAVIDSON, INC.—Salt Lake City, 2, Utah, Nevada, New Mexico

ARCHITECTS: See Sweet's Architectural File, 22d/Mu and 23b/Mut, for complete specifications.

SOUTHEAST
R. L. DAVIDSON, INC.—Charleston, S.C., South Carolina, Georgia, Alabama, Tennessee, Mississippi

ARCHITECTS: See Sweet's Architectural File, 22d/Mu and 23b/Mut, for complete specifications.

CENTRAL
AMERICAN SCHOOL SUPPLY CO.—Salt Lake City, 2, Utah, Nevada, New Mexico

ARCHITECTS: See Sweet's Architectural File, 22d/Mu and 23b/Mut, for complete specifications.
Aetna brings a New

AETNA STEEL PRODUCTS CORPORATION

Its engineering skill... its service facilities... its half century of experience... its versatility... its ability to deliver in huge quantities or to custom produce one unit — combine to bring an entirely new integrated operation of vast scope to the field of design. The world's largest manufacturer of hollow metal products, Aetna produces doors, door frames, trim, elevator and convector enclosures. Working with every leading architect in the country, Aetna has engineered and manufactured products that are in use in hospitals, schools, office buildings, housing developments and military installations.

E. J. BOYLE DIVISION

A specialist in the manufacture of movable walls and partitions, bank screens and gates (AETNAWALL), this division is responsible for many of the latest developments in soundproofing, installation procedure and appearance of floor-to-ceiling partitions. AETNAWALL installations found in all types of buildings are specified by America's foremost architects and designers, including Emery Roth and Sons; York and Sawyer, Michael Saphier Associates and Designs for Business, Inc.

ARNOT - JAMESTOWN DIVISION

Manufacturers of PARTITION-ettes† and OFFICE-ettes‡, in steel or wood, now in use in thousands of offices where space division and efficiency of operation have been planned by leading designers and architects. Its other principal activity is the execution of ship interiors. During 1954 and again in 1955, Arnot-Jamestown will have participated in the completion of: U.S.S. Forrestal, world's largest aircraft carrier; World Glory, world's largest tanker; George M. Humphrey, world's largest ore carrier. This division works closely with designers such as Raymond Loewy, Henry Dreyfuss, Jack Heaney, James Russell Patterson, H. Clifford Burroughes, Karl H. Lengfeld, and naval architects such as Gibbs & Cox, Inc., George Sharp, Inc., J. J. Henry.

*Pat. Pending
†Trade Mark
‡Licensed under DuPont Patent
Dimension to Design...

AETNA STEEL PRODUCTS CORPORATION
EXECUTIVE OFFICES: 730 FIFTH AVENUE, NEW YORK 19, N. Y.

PLANTS: Pottsville, Pennsylvania • Jamestown, New York • Burbank, California (Kahr Bearing Division) • Brooklyn, New York
One of the most important features of his 1000 bed hospital valued highly by patients and staff alike is: It is completely air conditioned throughout and Powers controlled.

Left View of Entrance Lobby with Portraits of the Founder, John Sealy, Sr., and John Sealy, Jr.

Below: Post Operative Recovery Dept. has nine beds.

Below: Research Laboratory

Below: Surrounding Corridors for Central Operating Rooms
Behind the scenes . . .
in this modern hospital  **POWERS**

**Automatic TEMPERATURE** and **HUMIDITY Control**
is contributing to the quality of patient care

**Radial Type Surgical Department**
shown in drawing below, is one of
the many new concepts incorpor­
ated in this center for healing.
The radial type plan is based on a
theory of centralization permitting
a compact layout to increase
nurses' efficiency by reducing their
steps. Powers automatic control of
the working climate further in­
creases staff efficiency and contrib­
utes to the health and comfort of
the patients.

Being completely air conditioned
the building requires 1250 tons of
refrigeration.

Almost 700 Powers Gradual Acting
Thermostats here control 125
Damper operators and 930 PACK­
LESS Valves on air conditioning
units and convectors. Other con­
trols consist of 7 Series 100 Master-
Submaster Controller Recorders,
Pressure Indicating Controllers
and 70 Powers FLOWRITE Dia­
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Consult Powers when you want
thermostatic control for any type
of new or existing building. No
other firm makes as big a variety
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ing and air conditioning systems,
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Offices in chief cities in U. S. A., Canada and Mexico
See your phone book

More than 60 years
of **Automatic Temperature**
and **Humidity Control**
Schools: New Long-Span Q-Deck greatly simplifies the design of covered walkways and cantilevered canopies in modern schools, as well as allowing corridors to be included in the same span with classrooms.

Supermarkets: As in the case of schools, much greater latitude of design is allowed by increasing deck span. Considerable saving in structural steel is made possible, and time and labor are cut down in the erection of the deck.
After considerable testing and research, H. H. Robertson Company is pleased to announce the availability of a new product much needed in modern lightweight construction—a deck which will span greater distances without loss of load-carrying capacity. New Long-Span Q-Deck, now being manufactured in quantity for the first time, carries with it all the basic quality and advantages of Robertson's famous Standard Q-Deck. Side laps become standing seams and are mechanically fastened at regular intervals for structural stability. Units are easy to handle and erect with a minimum crew. They install quickly and tightly because of precision manufacture. Long-Span Q-Deck is best adapted for use in schools, supermarkets and other building types where longer single spans indicate positive economies. Use the coupon to write for literature concerning this new Robertson product.

Individual units are 12" wide by 7½" high rolled from metal-coated steel in 18, 16, 14 and 12 U.S. Gage.
Sinclair uses Day-Brite lighting...

The new 10-story Sinclair Oil Building in Chicago is completely lighted with Day-Brite glass-enclosed recessed Troffers—nearly 4,000 of them! Their over-all performance fully justifies the confidence of Architects Holabird & Root & Burgee.

As is amply evidenced by the photographs, Day-Brite Troffers provide lighting at its best. Evident, too, is the fact that Day-Brite Troffers are extremely flexible, both in terms of architectural design and in maintaining required illuminating intensities. They give employes high work-level visibility without eye strain. Can be quickly and economically installed in virtually any type ceiling—are easy and inexpensive to maintain.

SEE! EXAMINE! COMPARE! Many architects, before final decision, are making point-by-point and side-by-side lighting-fixture comparisons. More and more, they are choosing Day-Brite on the basis of their many superiorities.

CALL YOUR DAY-BRITE REPRESENTATIVE! He is thoroughly qualified to consult with you on any lighting problem.

Day-Brite Lighting, Inc., 5405 Bulwer Avenue, St. Louis 7, Missouri.

In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.

Designed by Holabird & Root & Burgee

Installed by Fiebach, Moore & Morrisey, Inc., for John W. Galbreath & Co., Inc.
A STRIKING EXAMPLE of the over-all illuminating possibilities with Day-Brite Troffers in large areas is illustrated in this general office expanse in the Sinclair Oil Building. Note the uniformity of desk-top illumination throughout.

gets "see-ability" plus design

THE DIGNIFIED EFFECT and comfortable illumination in Sinclair executive offices are typified by this view. The fixtures are unobtrusive, harmonious in design and completely functional.

ADEQUATE LIGHTING is certainly an essential "tool" in any drafting room. Here again, the versatility of Day-Brite Troffers is apparent—placement of the fixture runs provides a most satisfactory degree of visibility on the boards.

THIS CONFERENCE ROOM again illustrates the flexibility of Day-Brite Troffer placement. Note especially the ample illumination provided throughout the room area by placing fixtures parallel to the narrow dimension.
Increasing numbers of architects and other safety-minded officials the country over specify Von Duprin exit devices to provide "the safe way out!" And for good reason: Von Duprin's unequalled record of performance! Even under the most adverse conditions, these devices operate efficiently . . . with only normal maintenance.

Since originating fire and panic exit devices in 1908, Von Duprin has consistently paced the field in new designs, incorporating new materials and production methods.

Whether effectively handling the daily flow of traffic ... or standing ready for that "once-in-a-lifetime" emergency, Von Duprin-equipped doors are your answer to safe, sure exit.
WAY OUT!

The vertical rod Type B^2 device, illustrated here, is a part of the complete Von Duprin line of exit devices and auxiliary hardware designed to meet every exit requirement.

For complete information, or for expert advice on specific exit needs, call on your Von Duprin "Exit Specialist"—either a factory representative or a selected builders' hardware distributor.

VONNEGUT HARDWARE CO.
VON DUPRIN DIVISION
Indianapolis 9, Indiana

FIRE AND PANIC EXIT DEVICES

Type B^2
terrible rod or mortise lock
FOR GYPSUM LATH WALLS — The system is simple to erect, requiring minimum parts and labor. Gypsum lath can be attached firmly and quickly with Gold Bond clips. Lowered dead load of this hollow wall system offers savings in structural framing.

FOR METAL LATH WALLS — Holostuds are designed for fast application of metal lath, too. One-man construction is possible — complete system is erected with ordinary lather's tools and all connections are made with wire ties.
HOLOSTUD" WALL SYSTEM

NEWEST ADDITION TO THE GOLD BOND LINE—
Gold Bond's new Holostud Wall System for non-load bearing partitions. In addition to excellent fire, sound, and shock resistive benefits, this strong, lightweight Holostud System is designed for fast construction and simplified routing of ducts, plumbing and electrical conduits. Made up of prefabricated Holostuds, steel tracks, and shoes, this low cost system is adaptable to either gypsum or metal lath application.

PREFABRICATED HOLOSTUDS—The open strut-type construction of Holostuds provides exceptional strength and rigidity to partitions besides allowing two-way accessibility for vertical or horizontal routing of utilities. The studs are fabricated with $\frac{1}{2}'' \times \frac{1}{2}''$ angles securely braced by struts welded at 8'' intervals. Floor and ceiling tracks are one piece channel-shaped units with $\frac{1}{2}''$ legs, perforated for easy lath attachment. Holostuds are available in $2\frac{1}{2}''$, $3\frac{1}{4}''$, $4''$ and $6''$ widths permitting use of the system in four different partition thicknesses.

For complete technical data on this new Gold Bond Holostud Wall System, write:

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

Build better with Gold Bond • LATH AND PLASTER PRODUCTS
NEW

Janitrol

Large Capacity
Central Heating Units
S-T-R-E-T-C-H CONSTRUCTION MONEY

Ideal for school house, church, super-market installations, or any other large volume heating or heating and air conditioning applications. Designed for use with central system, or as free standing unit heaters.

Capacities: 250,000 Btu to 1,750,000 Btu per hour. - 7 sizes.
Factory assembled and tested.
Fuel: Natural, manufactured or LP gas.
Long life and reduced weight achieved through use of well known Janitrol ceramic coated Multi-Thermex heat exchangers and quiet ribbon burners.
See how ease of installation is greatly improved. Investigate our important installation cost savings.

FOR UNIT HEATING
With outlet nozzles attached, this 1,250,000 Btu free-standing combination is used as a factory unit heater. Capable of a wide variety of air and temperature distribution patterns.

FOR CENTRAL SYSTEMS
This, 1,500,000 Btu installation is in a church. System is zoned for different activity areas. Unusual quietness and economy have been reported for this system.

FIND OUT HOW MUCH YOU CAN SAVE:
Just send your plans to your nearest Janitrol office, or to Columbus, Ohio, for a free cost estimate. Send for specifications.

Janitrol Heating & Air Conditioning Division
Surface Combustion Corporation
Columbus 16, Ohio
You work for more than just the money you make on the job—there is a lot of satisfaction from that pleasant surprise of the owner when you turn on KIRLIN built-in lighting.

Your customers are getting adequate, diffused light from above. They are satisfied, and so are you, for the Kirlin installation method costs less! . . . The frame is always flush with ceiling even though the box is not level or flush.

NO LIGHT-LEAKS

**Why You Profit with Kirlin**

**INSTALLATION COSTS ARE LESS**

REGULAR BUILDING WIRE RUNS DIRECT TO HEAT-INSULATED JUNCTION BOX

NO CARPENTER WORK IS NEEDED

- Made in all sizes—square or rectangular—and in fluorescent
- Alzak GlasSurfaced Aluminum reflectors
- Hinged Rust-resisting Doors in Die-cast Frames
- Individually packed for shipping
- Spread-type or concentrating lens
- UL and IBEW labels

IN STOCK AT LEADING WHOLESALERS EVERYWHERE

LARGEST SELLING RECESSED LINE—MILLIONS IN USE EVERYWHERE

The KIRLIN CO. 3435 E. JEFFERSON AVE. DETROIT 7, MICHIGAN

June 1955 51
Built-in telephone conduit is low in cost. Yet it (1) gives lasting protection to interior beauty, (2) provides the convenience of well-placed outlets, (3) helps assure client satisfaction. Specify conduit for telephone wiring.

Your Bell telephone company will be glad to help you work out economical conduit installations. For details on home telephone wiring, see Sweet's Light Construction File, catalog 81/Be, or just call your nearest business office. BELL TELEPHONE SYSTEM
It's Modern! It's Distinctive! It's Hardwood!

There's high style in this Bruce Block Floor to complement the most modern interior. The parquetry design is beautiful everywhere . . . giving full play to the delicate coloring and interesting grain of durable oak. Installation is simple . . . blind-nailed over wood sub-floor or laid in mastic over concrete. Famous Bruce factory-applied "Scratch Test" Finish saves time and money. Bruce Blocks are also available for on-the-job finishing. Write for color booklet. See our catalog in Sweet's.

E. L. BRUCE CO., MEMPHIS 1, TENN.

BRUCE BLOCK Hardwood Floors
Naturally Beautiful!
Duriron® vs. Corrosion is 'NO CONTEST' at Howard!

Duriron Acid Proof Drain Pipe will probably outlast the new Science Building at Howard College. At least, this has been the history of Duriron installations. The reason is that Duriron’s extremely high resistance to corrosion is present through the entire thickness of the pipe wall. Installed by ordinary plumbing methods, the first cost is the last cost. For the life of the building, insist on Duriron. Available from stock in principal cities.

The Science Building
Howard College
Birmingham, Alabama

Architects:
VanKeuren, Davis & Co.

The Duriron Company, Inc.
Dayton, Ohio
R/C DUCT FLOORS provide complete electrical flexibility...

Yet cost 19% less than cellular steel floors!

To provide complete flexibility of office space, the new NEA Building is being equipped with movable partitions... plus R/C Duct Floors. These are standard concrete joist floors with a system of electrical distribution ducts buried in the structural slab. No special "fill" is required. Ducts are placed on centers of about 7'. Electrical outlets for power, telephone, and intercommunication systems can be connected every two feet, if desired, in a matter of minutes.

R/C Duct Floors resulted in an estimated saving of 19%—60¢ per sq. ft.—over cellular steel floors. R/C Duct Floors also eliminated the need for additional fireproofing and saved 6" in height per floor!

Write for new 16-page bulletin.
Sign Material for Architects—

PLEXIGLAS

When signs are made of PLEXIGLAS® acrylic plastic, you and your clients can count on:

Pleasing Architectural Appearance. PLEXIGLAS makes possible signs that are in harmony with architectural designs. It can be formed to almost any shape and is available in a wide range of colors.

Night and Day Effectiveness. At night the large luminous areas of backlighted PLEXIGLAS signs command attention. In daytime they are equally effective, with the same appearance and color values as when lighted.

Durability. The weather-resistance of PLEXIGLAS has been established through years of service as the standard outdoor plastic. Maintenance costs of PLEXIGLAS signs are low; light sources are protected from dirt and damage. Use the coupon for full information on how PLEXIGLAS can give buildings—present or planned—proper identification.

Red PLEXIGLAS letters on translucent white panels, back-lighted, identify the Wallachs store, Cross County Shopping Center, Yonkers, N. Y. Architects: Ketchum, Gina and Sharpe.

ROHM & HAAS COMPANY
Washington Square, Philadelphia 5, Pa.

Please send me:
• Your booklet "PLEXIGLAS—the Outdoor Plastic—for Signs."
• The names of PLEXIGLAS sign companies in this area.
• Samples of the colors in which PLEXIGLAS is available.

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ROHM & HAAS COMPANY
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Canadian distributor: Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.
Slam... Slam... Slam... 642,934 Times...

But it couldn't faze a New Londoner door!

After slamming a Curtis New Londoner hollow-core flush door 642,934 times with their special slamming machine, the "torturers" got tired—but the door didn't! Banged 72 times per minute with a force of 192 foot-pounds per second—the equivalent of a lifetime of slamming—the New Londoner door failed to show the slightest injury.

What's the reason for this amazing stamina? It's the patented locked-in, all-wood gridlike core that keeps the Curtis New Londoner door hale and hearty through long years of use—eliminates warping and sagging—gives the owner more for his door dollars.

And that, in turn, is the reason why so many architects and builders consider these superior doors the mark of a better built home. And why, too, they are so widely used in schools, hospitals and other public buildings.

Curtis New Londoner doors and all Curtis Woodwork are sold by retail lumber and building-material dealers everywhere. For complete information, write Curtis Companies Service Bureau, Clinton, Iowa.
On Springs Cotton Mills’ 16-acre bleachery roof

FOAMGLAS insulates effectively because it stays dry

On this 16-acre roof of their Grace Bleachery, The Springs Cotton Mills has found that FOAMGLAS insulates effectively because it can’t absorb moisture and lose insulating efficiency.

Installed in 1947 on the original bleachery roof, FOAMGLAS has effectively kept down condensation on the roof slab and conserved heat in the winter. Seven years later it was picked again to insulate the roof of a major addition to this bleachery, the largest in the world.

This unique cellular glass insulation has been used extensively by the Springs Mills in other ways . . . on 330° steam lines . . . in cold storage spaces . . . and on 20 additional acres of mill roofs including one in Lancaster, S.C. covering more looms (7,500) than any other roof in the world.

It will pay you to get the full story on the use of FOAMGLAS for buildings, cold storage space, piping, or tanks and equipment. Please write today for a sample and literature indicating your specific interest.

Pittsburgh Corning Corporation
Dept. AB-65, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario
Emery Roth and Sons, New York, designed the first Penn Center building. Owner and Builder: Uris Brothers; General Contractor: Caldwell Wingate Co.; Engineer: James Ruderman, all of New York. Steel erector for joists: G. & H. Steel Service, Philadelphia.

FIRST PENN CENTER BUILDING HAS
17 STORIES OF OPEN-WEB JOISTS

Built on the site of downtown Philadelphia's old Broad Street Station, where the demolished "Chinese Wall" once began, is this 20-story, multimillion-dollar office building, first unit in the city's new Penn Center.

This heart-of-the-city redevelopment program includes the entire 8-acre area between City Hall and 18th Street, from Market Street to Pennsylvania Boulevard. The completed Center will include additional office buildings, similar to the one shown, and a 1000-room hotel, all flanking a 1000 by 80 ft landscaped esplanade. Modern shopping facilities will be located on the ground floors of the buildings, and an underground shopping concourse is planned.

Scheduled for occupancy later this year, this first office building is a glass and limestone structure providing approximately 400,000 sq ft of office space.

Continuous windows surround the building with glass bands, giving maximum natural lighting.

For floor and roof construction, from the third to the 20th story, Bethlehem Open-Web Steel Joists were used.

The advantages of using Bethlehem Joists were many. They were delivered to the job site tagged and ready for placing at an approximate rate of one floor a week, with no delays to the construction schedule. They required only field welding to secure them in place, and to provide a rigid, permanent construction. Pipes and conduits could be run right through the open webs, and installation of recessed lighting fixtures was simplified. In addition to these advantages in construction, the use of Bethlehem Open-Web Joists also gives added fire-protection to the entire structure.

BETHLEHEM OPEN-WEB STEEL JOISTS
THEY WANTED QUIET OPERATION!

B & G UNIVERSAL PUMP

designed specifically to operate QUIETLY in hot water heating systems

NEW ROTARY INTERNATIONAL BUILDING SELECTS B & G UNIVERSAL PUMPS AND HEAT EXCHANGERS FOR HEATING AND COOLING SYSTEM

The advantages of mechanically circulated water for both heating and cooling are well illustrated in this installation.

To assure quiet operation, B & G Universal Pumps are used to circulate all water, including that in the chiller and cooling tower circuits. The same piping system is used to circulate hot water in winter and chilled water in summer. Convectors with adjustable-speed fans act as room distributing units.

For ventilation, fresh filtered air from a main ventilating fan is introduced to the convectors through small flexible tubes. This air passes over the convector coils and is either heated or cooled.

Water for the heating system is heated with steam in a B & G Type "SU" Heat Exchanger. Steam is also used to heat the service water by means of a storage tank with a steam coil installed.

for the critical lighting professional

LOUVRON
by LIGHTOLIER

Crisp, clean design. Broad yet shallow light source. Direct and indirect light. Side panels of pure white enameled steel, ribbed luminous polystyrene or Perfalux (translucency of plastic with the strength of steel). Two varieties of louver shielding. Spring-lock and safety chain louver hinging. Interlocked, rattle-free louver construction. E.T.L. approved ballasts. 4' or 8' lengths, 2 lamp or 4 lamp widths. Three stage, pure white semi-gloss finish. Lightolier quality construction.

These are just a few of the many features you will find in the new Louvron by Lightolier, features that make Louvron the proper specification where permanently superior performance is required. Write on your professional letterhead today to Dept. PA-65 for the full facts on Louvron and for Lightolier's complete Architectural Lighting Portfolio.

LIGHTOLIER
JERSEY CITY 5, N. J
New England Mutual Life Insurance Company

This impressive home office of a large insurance company is located in Boston, Mass., and was designed by Architects Cram & Ferguson, also of Boston.

Washrooms of another notable building finished in Carrara Glass

The durability of Carrara® Structural Glass and its ability to retain its lustrous, gleaming beauty are well demonstrated here. This washroom, with the Carrara Glass partitions, was originally completed in 1942; and in 1952 additional Carrara partitions were installed. So enduring is the beauty of Carrara Glass that the original partitions look just as nice today as the newer ones.

The answer to the long-wearing qualities of Carrara lies in its basic material and its manufacture. Carrara is all pure glass, with a mechanically ground and polished surface that is highly impervious to attack by steam, water, acids and cleaning compounds. Carrara will retain its beauty indefinitely, without checking, staining, fading or crazing.

The large sections in which Carrara Glass is made have true, even edges that make neat, true joints to discourage the collection of dust and dirt. An occasional wiping with a damp cloth is all that's usually required to keep Carrara clean and sparkling.

For more information on Carrara Structural Glass, write Pittsburgh Plate Glass Company, Dept. 5281, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.

...the quality structural glass

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for homes . . . offices . . . stores . . .

T-M thermal-magnetic
trip circuit breaker

LOAD CENTERS and
SERVICE EQUIPMENT

(Panel Base Assembly Type)

Include these new assemblies in all plans for new or modernized residential or commercial construction — wherever safe, dependable automatic circuit protection is desired.

Approved by the Underwriters' Laboratories, Inc., for label service, these assemblies provide automatic circuit protection against service interruptions caused by short circuit, harmless or dangerous overloads.

The new units are of the "panel base assembly" type, which means that all components are available in one complete package from © distributors' stocks for quick and easy assembly on the job. Circuit Breakers individually packaged also.

Features of the new assemblies are: © T-M thermal-magnetic trip circuit breaker with quick-make and quick-break operation on manual or automatic trip and © design magnetic blow-out; screwless assembly (just slip the breakers in); one pressure type connection between circuit breaker and bus bar, and "sequence bussing" to balance the load and permit double pole, individual trip combinations.

Use these new assemblies on all lighting and branch circuits. For additional information, consult your nearest © representative listed in Sweet's.

© T-M Load Centers and Service Equipment are available in four basic combinations to afford maximum of 4, 8, 12 and 20 poles (all single pole or combinations of single and double pole).

Circuit Breaker capacities are: 10, 15, 20 and 30 amps, 120 volts AC single pole or 120/208 volts AC double pole, individual trip; 40 and 50 amp capacity furnished with © QP Quicklag P Circuit Breaker. Main lugs for 100 amp, maximum 115/230 volts 3-wire single phase or 120/208 volts 4-wire three-phase mains.

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Circuit Breaker capacities are: 10, 15, 20 and 30 amps, 120 volts AC single pole or 120/208 volts AC double pole, individual trip; 40 and 50 amp capacity furnished with © QP Quicklag P Circuit Breaker. Main lugs for 100 amp, maximum 115/230 volts 3-wire single phase or 120/208 volts 4-wire three-phase mains.
No one knows better the value of CERTIFIED CBM BALLASTS than the manufacturers of fluorescent tubes. For the satisfactory performance of their lamps is vitally dependent on the ballasts that operate them. They know CERTIFIED CBM BALLASTS are Tailored to the Tube.

**CHAMPION says:**
"Fluorescent lamps are designed to operate at specific electrical values. The use of auxiliary equipment that has been proven to meet these agreed upon standards will assure the user maximum value for his lighting dollar with a minimum of operational failures. Certified Ballasts are inexpensive insurance."

**SYLVANIA says:**
"The light and life ratings of fluorescent lamps are based on three hour burning cycles under specified conditions and with ballasts meeting American Standards Association specifications. Ballasts marked with the CBM emblem and certified by Electrical Testing Laboratories, Inc., meet ASA specifications."

**GENERAL ELECTRIC says:**
"The life and light output ratings of fluorescent lamps are based on their use with ballasts providing proper operating characteristics. Ballasts that do not provide proper electrical values may substantially reduce either lamp life or light output, or both. Ballasts certified as built to the specifications adopted by the Certified Ballast Manufacturers (CBM) do provide values that meet or exceed minimum requirements. This certification assures the lamp user, without individual testing, that lamps will operate at values close to their ratings."

**WESTINGHOUSE says:**
"Use ballasts that are tested and Certified by Electrical Testing Laboratories or ones that are otherwise known to meet the specifications of the lamp manufacturer. These will give best results with Westinghouse fluorescent lamps."

That's why CERTIFIED CBM BALLASTS merit the slogan—Tailored to the Tube.

Certified CBM Ballasts are built to assure quiet operation and long trouble-free life.

**CERTIFIED BALLAST MANUFACTURERS**

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO
The only quarried marble that is lightweight because it is thin.

**Genuine** MARKWA marble WALL TILE

At last, for the first time, magnificent marble, with all its lustrous beauty and vibrant color, is now available in lightweight, half-inch thickness for wall or floor covering.

**Here are the facts:**

MARKWA marble wall tile is a true quarried marble, produced exclusively by America's foremost marble producer and fabricator, the Vermont Marble Company.

MARKWA marble wall tile is half the thickness and half the weight of conventional marble slabs—1/2 inch thick, 7-1/2 lbs. per square foot. It is cut to three sizes: 8” x 8”, 8” x 12”, and 12” x 12”. It is absolutely flat, uniform in size and thickness to a close tolerance.

Modular sizes (3/32” less each dimension) are also available at no extra cost. It is set by tile layers in exactly the same manner as clay tile, either with mortar or by adhesion.

MARKWA marble wall tile costs as little as $2.85 per square foot set in the wall depending on variety of marble and type of installation. It is stocked in a wide variety and color range.

MARKWA marble wall tile is ideal for wall or floor, in bathroom, kitchen, living room or foyer, for countertops or fireplace facings, in residential or commercial buildings, for interior or exterior. It comes polished with cushion edges; matte finish available for floors.

SEE MARKWA NOW! Specify it for your next job.

More information and complete specification data are available by writing the Vermont Marble Company, Proctor, Vermont, or any of its branch offices.
Does your school or parish need “multi-purpose” dollars?

**FLOOR WITH NORTHERN HARD MAPLE**

When your multi-purpose areas are floored with Northern Hard Maple, your building dollars do double duty. You have a floor that is superior to all others, on every count, for every sports, social and schoolroom function. It is bright, cheerful, resilient. Its endurance is prodigious. It adds to the building’s structural strength (which no mere floor covering can do). Architect William J. Bachman observes, of this floor: “We find it gives proper resilience for all types of play—the only satisfactory floor for basketball and similar sports. Given reasonable care and proper finish it will outlast all composition flooring.”

JUST OUT—latest list of MFMA-approved floor finishes; write for your copy. All listed Maple Flooring finishes tested by Timber Engineering Company, Washington, D.C., official testing laboratories for MFMA-approved floor finishes. See SWEET’S—12J-Ma—for full facts on MFMA-millmarked, inspected flooring, or write—

**MAPLE FLOORING MANUFACTURERS ASSOCIATION**

Suite 583 Pure Oil Building, 35 E. Wacker Drive, Chicago 1, Illinois

---

New St. Mary’s School and Parish Hall, Hammond, Ind. Architects: Bachman and Bertram, Hammond, Indiana.

Dancing

Class Activity

Gatherings
Marietta precast concrete wall panels were used in this Peconic River plant of the Grumman Aircraft Engineering Corp., Calverton, L. I., producers of the famous Supersonic Tiger, Transonic Cougar, S2F Sub-Killer and the Albatross Amphibian.

HURRICANE TESTED!

Here's proof of how Marietta concrete wall panels withstood the severe blasts of a real life laboratory test as reported by a leading engineering magazine. During Hurricane Carol . . . "Marietta precast concrete wall panels suffered no damage and evidenced no leakage even though two anemometers registered winds as high as 133 M.P.H."

PRECAST CONCRETE WALL PANELS

From the ground up . . . time-saving, labor-saving Marietta precast panels for curtain wall construction reaches new heights in beauty, design and durability. On any commercial or industrial project, Marietta concrete wall panels offer unlimited design and construction possibilities. Easy to handle and erect . . . lets you close in faster. Choose Marietta concrete wall panels with broomed finishes or with new architectural facings in a wide range of colors and textures. The modern beauty and hurricane-tested durability of these handsome Grumman buildings are further reasons why architects and builders specify concrete wall panels by Marietta.

Write today for complete information on Marietta solid or insulated precast panels.

CONCRETE CORPORATION Marietta, Ohio


MARIETTA . . . first choice for the finest in precast concrete wall panels

June 1955 67
Everlasting shopper appeal with built-in COLOR

Drab store fronts today do not pay! Customers are attracted by colorful Kawneer Zourite (porcelain-enameded or alumilited aluminum). It is a facing material that resists chipping, cracking and fading, providing years and years of shopper appeal. Use it as a sign backing, and as a covering for columns, pilasters, bulkheads, soffits and pylons. Plan now to remodel store fronts with practically no interference to normal operations using Kawneer Zourite, doors, store-front metal and sun-control products. See your Kawneer dealer or write for additional information.

Kawneer Aluminum Zourite Facing in ten attractive colors

- Velvet Black
- Alumilite
- Alumilite Gray
- Academy Blue
- Marine Blue
- Harvest Brown
- Spring Green
- Sunset Red
- Winter White
- Flame Orange
Dramatize School Entrance

Wm. B. Itner, Inc., St. Louis architects and engineers, created this highly dramatic lighting effect at the main entrance to the Academic Building of the new Clayton High School, Clayton, Missouri.

Only three ART METAL Elipticone Light Multipliers, using 150 watt reflector lamps, were required to produce this striking effect. Obviously, it suggests many other applications.

We suggest you write to The ART METAL Company, Cleveland 3, Ohio, for full data on this remarkable equipment.

The above illustration is a completely unretouched photograph, showing how this unusual lighting equipment highlights the remarkable architecture of the building.
Job-preferred, job-proved
...for the nation's roofing needs

RESISTOL HAT COMPANY, Fur Felting Plant, Longview, Texas. Most modern in the world. Architect specified two car-loads of Celotex 1” Preseal Roof Insulation applied over vapor barrier (two fifteen-pound felts) on a steel deck.

Architect: Wyatt C. Redrick, Dallas, Fort Worth, Houston
Roofing Contractor: H & C Sheet Metal Works, Longview

CELOTEX CANT STRIP
Strong, light, easy to handle and cut. Low in cost. Made of tough, rigid cane fiber board. Extends 4” up from deck and 4” out from wall—size 5½” x 46½”. Cut-off right angle corner assures snug fit of roofing to wall, deck. Protected against dry rot and termite attack by exclusive Ferox® Process.

CELOTEX ROOF INSULATION
Leader in efficiency, durability, and economy...for over a third of a century

Because The Celotex Corporation pioneered roof insulation, you get the benefits of its broad research and production experience. Today, Celotex Roof Insulation is providing sound, dependable protection on buildings of all types across the country...in countless cases even after two and three decades of service.

It doesn't pay to gamble. It's unwise to specify untried materials that might lead to costly trouble after installation. Be sure to specify job-proved Celotex Roof Insulation...to help insure lasting, trouble-free roofs requiring less maintenance, fewer repairs.

Write today for detailed information: The Celotex Corporation, Dept. PA-65, 120 S. LaSalle St., Chicago 3, Illinois.

RESISTOL HAT COMPANY, Fur Felting Plant, Longview, Texas. Most modern in the world. Architect specified two car-loads of Celotex 1” Preseal Roof Insulation applied over vapor barrier (two fifteen-pound felts) on a steel deck.

Architect: Wyatt C. Redrick, Dallas, Fort Worth, Houston
Roofing Contractor: H & C Sheet Metal Works, Longview

Only Celotex Roof Insulation Provides all these Important Features:

1. Resists Compression and Defies Rough Handling—So tough, loaded carts can be wheeled over it without damage.
2. Provides Excellent Bond—For hot mopped roofing felts of either asphalt or coal tar pitch type.
3. High Insulation Value—Reduces heating and air-conditioning costs, provides greater comfort the year 'round.
4. Low-Cost—Low initial cost, low applied cost, low maintenance cost.
5. Long Life—It is the only roof insulation made of tough, strong, interlocking Louisiana cane fibers, protected by the exclusive Ferox® Process against dry rot and termite attack.
6. A Type for Every Job—Exclusive Channel-Seal, Preseal, Preseal "30", and regular.

It pays to specify genuine CELOTEX ROOF INSULATION

THE CELOTEX CORPORATION • 120 S. LASALLE STREET • CHICAGO 3, ILLINOIS
43-Story all-copper plumbing... in Mexico's tallest building

Main pipe shaft. Note compact assembly made possible by the trim, space-saving copper tube and fittings. See pipe sizing diagram below, left.

100,000 pounds of copper tube, Types K, L and M, provide lasting protection against rust in the plumbing system of this beautiful, ultramodern office building of the Latino Americana Insurance Company, Mexico City. Tube sizes ranged from 3/4" to 12" incl. Anaconda tube was used throughout, with Nacional de Cobre of Mexico furnishing the smaller sizes.

For a skyscraper or a small home, copper tube plumbing saves installation time and effort... often the over-all cost is less. Its light weight makes it easy to handle. Standard 20' lengths eliminate many joints. Assembly work with solder-type fittings is quickly and easily accomplished.

For economical, non-rusting plumbing specify ANACONDA Copper Tubes and ANACONDA Solder-Type Fittings. A wide range of sizes are stocked by Anaconda distributors throughout the country. Descriptive literature is available. Write to The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

for copper tubes see your ANACONDA® distributor
What keeps a rest room like this looking so new and spic and span over the years while other rest rooms become obsolete? Good planning. Planning for improved sanitation. Planning for attractive decor. Planning for lowest maintenance. Planning for construction economies.

You achieve all 4 of these desirable points when you use open expanse design. And the key to this is a fixture-free floor.

The pleasing effect of uncluttered spaciousness in this rest room was obtained by using American-Standard wall-type plumbing fixtures installed with and supported by Zurn System behind-the-wall carrier fittings. This combination of superbly designed fixtures, and rigid supporting fittings especially engineered to relieve the wall of all the load, gives you an "age-proof" installation that insures against the untimely obsolescence of your rooms.

If you would like to know more about the advantages of American-Standard wall-type plumbing fixtures and the Zurn System, we would be pleased to send you two interesting booklets which contain up-to-date information on these essential products. Just ask for the American-Standard "Better Rest Room Guide" and the Zurn booklet, "You Can Build It For Less A New Way."


J. A. Zurn Mfg. Co. (Plumbing Division), Erie, Pennsylvania
Here is the answer to several of the Architect’s major problems. The VAMPCO SERIES “T-500” Window.

This series of windows provides strength with comparative lightness due to the tubular construction of the component sections. It is designed to meet the demands for the larger expanses of glass areas in modern architecture.

Ventilators are of tubular construction 1-7/8" deep with two point weather stripping. Series “T-500” windows are manufactured in standard and custom sizes—Write for catalog... Department PA-65.
Nearly a million pounds of Alcoa® Aluminum will be used in building Chicago’s newest skyscraper, the modern mid-American home office of The Prudential Insurance Company of America. When completed in 1956, the 41-story structure will be the fifth largest office building in the United States, with more than one million square feet of rentable space.

From an architectural standpoint, the new skyscraper presents a striking appearance. Its exterior facing features the use of 2,650 gleaming aluminum panels set in continuous vertical lines. Combination window-and-spandrel units, the panels have flanges that cap adjoining masonry columns.

The use of aluminum panels on the new Prudential Building is an outstanding example of the rapidly increasing trend toward aluminum as an exterior wall-facing material. Easy to erect, aluminum panels offer long-lasting beauty, high insulating value and virtually maintenance-free service. Aluminum Company of America, 1890-F Alcoa Building, Mellon Square, Pittsburgh 19, Pennsylvania.
Mr. Soffer’s many years of experience as a store owner has made him well aware of the influence of proper store design on increased sales and properly directed store traffic.

“In my opinion,” states Mr. Soffer, “the single most important element in a well-designed store is the lighting. Mitchell ‘Polaris’ fluorescent units were chosen for my store because of their modern design and their economical adaptation to pattern lighting installations. I have found that these fixtures provide a soft lighting effect with no disturbing glare upon glass showcases and displays.”
A MODEL FOR EVERY TYPE OF DOOR IN ANY TYPE OF BUILDING

DOR-O-MATIC
CONCEALED-IN-THE-FLOOR DOOR CONTROLS

• BUILT-IN HOLD-OPEN DEVICE
• POSITIVE BACK STOP
• POSITIVE CENTERING
• BUILT-IN LEVELING DEVICE
• NO ACCIDENTAL HOLD-OPEN
• TWO SPEED CLOSING ACTION
• PERMANENT HYDRAULIC OIL SEAL
• POSITIVE UNIFORM CONTROL
• NO SEASONAL ADJUSTMENT
• EASY INSTALLATION

Precision-built Dor-O-Matic door controls are at work in thousands of buildings from coast to coast... where they are providing more positive door closing action. There are twenty-five models in all. Each is designed for long service life under all conditions and complete adaptability to contemporary design and function. Only Dor-O-Matic provides all ten of the service advantages listed at left.

Write for Detailed Information and Literature

MADE BY THE BUILDERS OF THE INVISIBLE DOR-MAN

SEE SWEET'S ARCHITECTURAL FILE

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DIVISION OF
Republic Industries, Inc.
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June 1955
Growing idea for non-residential roofing, too—

**CERTAIN-TEED WOODTEX ASPHALT SHINGLES**


**SCHOOLS**—"Garfield Center" at the Erie College for Women, Painesville, Ohio. Woodtex Shingles provide wind resistance and a pleasing pattern for this long, low pitch roof. Roofing Contractor: Guaranteed Roofing & Sheet Metal Co.


**TAVERNS**—Valley Forge Tavern, King of Prussia, Pa. Woodtex Shingles in handsome gray blend add distinction to this popular stopping place. Woodtex Shingles come in a beautiful range of popular new colors and pastel blends. Applicator: Thomas Lord, Collegeville, Pa.

Look where you'll find Woodtex Asphalt Shingles today. On churches, shopping centers, apartment houses, college and school buildings, motels—as well as on many of the finest homes.

It's an important trend...this increasing use of Woodtex in non-residential construction. Don't overlook it. Certain-teeed Woodtex is the fire-resistant asphalt shingle with the genuine built-up graining. This graining acts as reinforcing ribs, which add strength, rigidity and weight—give extra protection against wind and weather you can't get with ordinary asphalt shingles. Woodtex Shingles are heavy and durable, and their handsome, massive appearance and beautiful range of new colors can add distinction to any building.

Are you using Woodtex Shingles for non-residential roofing? A line to Certain-teeed now will bring full information on why it pays.

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**CERTAIN-TEED PRODUCTS CORPORATION**
Write in the specification that keeps out failure . . .

CAST IRON SOIL PIPE

When house drainage and sewer lines run under basement floors, under driveways, landscaping and lawns there are just four words to write into your specs for permanence: Cast Iron Soil Pipe (with lead-locking ring in hub and beaded spigot).

And with the same tried and tested words, you'll guard soil stacks, drainage branches and vent stacks against costly repairs and replacement. Using cast iron, the plumbing drainage system you plan has the same life expectancy as any structure in which it is housed. It's good to specify Cast Iron Soil Pipe from sewer to rooftop.

PERMANENT CAST IRON SOIL PIPE has all these advantages:

• Rugged metallic strength
• Zero moisture absorption
• Permanent tightness of joints, with flexibility
• The only pipe accepted in all codes for use from street to roof

CAST IRON SOIL PIPE INSTITUTE

THE MARK OF QUALITY AND PERMANENCE

Dept. PA-6, 1627 K Street, N. W.
Washington 6, D. C.

☐ Send me _______ copies of your new 12-page booklet “Best in the Long Run” that shows—with actual photographs and authenticated captions—what can happen to lines that aren’t Cast Iron.

Name __________________________
Address __________________________
City __________________________ Zone ______ State ______

June 1955 79
Like Easy Bending?

**GET NE Sherarduct**

**RIGID STEEL CONDUIT**

Easy bending and fast installation go hand in hand. That’s why so many cost-conscious contractors prefer National Electric Sherarduct rigid steel conduit. They’ve found the gradual heating and cooling of NE’s Sherardizing process of dry galvanizing normalizes the metal in an annealing-like process that assures easier working, forming and bending on the job.

And they like other Sherarduct features as well. For example:

**EASY FISHING ...** In addition to a smooth inside surface, Sherarduct’s accurately cut threads let conduit ends butt inside the coupling ... eliminate gaps that interfere with easy fishing.

**LIFETIME PROTECTION AGAINST CORROSION ...** The Sherardizing process that alloys zinc with the conduit wall, plus a baked-on Sher-enamel coating fortifies Sherarduct against rust and corrosion for life. All surfaces, including the hill and valley of every thread, are securely protected against corrosion.

Write for a free copy of our Sherarduct facts book. You’ll see why Sherardizing makes Sherarduct “galvanized conduit at its best.”

**Sherardizing is galvanizing at its best ... Sherarduct is galvanized conduit at its best**
NEW DUNHAM BLOWER UNIT HEATERS...
IN TYPES AND CAPACITIES TO FIT EVERY NEED

Dunham's newly redesigned line of blower unit heaters is one of the most broad and complete in the industry. Seventeen different sizes ... in 170 ratings from 125,000 to 1,500,000 BTU ... 1,430 to 20,800 CFM.

Dunham Blower Unit Heaters can be mounted on ceilings, walls or on floors. They solve any heating, ventilating, air cleaning, process heating or drying problem. A wide variety of nozzle and nozzle-extension arrangements lets you "pinpoint" or widely diffuse warmth where needed. Heaters can be used with or without ducts ... with bypass damper, filter section and mixing dampers to handle any of your client's usual ... or unusual ... space or process heating and ventilating requirements.

And For Spot Heating, Dunham offers an unusually complete line of propeller fan unit heaters ... cabinet types for floor—or wall-mounted installations ... horizontal and vertical discharge heaters for overhead applications.

For full information, clip and mail the coupon.

Dunham Cabinet Unit Heater, for steam or hot water, capacities from 10,000 to 108,000 BTU.

C. A. DUNHAM COMPANY
Dept. PA-6, 400 W. Madison St., Chicago 6, Ill.
Please send Unit Heater literature.

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Company_______________________________________
Address________________________________________
City_________Zone______State___________________
Bayley Projected Windows
IN PANEL WALL ARRANGEMENTS
Meet A Modern Trend

Without the costliness of special window designing you can now execute many of your design treatments in modern panel-wall or “skin” construction. With Bayley sub-frame design, which accommodates separate window units, standard Bayley Aluminum Projected Windows (with channel frames) of any standard size can be used — offering wide flexibility in the use of newer panel decorating materials, plus the desired window area for providing maximum air, light and vision.

Bayley Projected Windows provide the modern school with better ventilation, vision and natural daylighting

The “better-serve” policy that, for so many years, has keynoted Bayley’s client relationship is readily apparent in numerous ways. Constant improvement in product detail and quality is one. Another is exemplified in the Bayley Aluminum Projected Window (offered also in steel) that was designed to provide the window features requested by school authorities. Such features as:

- Modern appearance
- Economy — painting unnecessary
- Permanence — long carefree life
- Simplicity — no complicated mechanism
- Adaptable to all types of construction
- Glazing outside — flat surface inside
- Easily washed from inside
- Prepared for screens
- Permits use of accessories, such as draperies, shades, curtains, venetian blinds or awnings.

Whatever your window requirement may be, Bayley’s years of specialized window experience can undoubtedly be of value to you. Write or phone.

See Bayley in Sweet’s. Complete catalogs on aluminum windows, 16a/Bay; steel windows, 16b/Ba.
Operating-Maintenance Costs Cut with Kewanee Boilers

Noel Spannagel, Chief Engineer, Famous-Barr Company

Back in 1928, the Famous-Barr Company, St. Louis, installed 2 Kewanee Stoker Fired Boilers in a warehouse... so began an experience with Kewanee Boilers that has extended over the past quarter century. As they expanded, as new buildings called for more power, Kewanee was the preferred boiler installation every time. But let Noel Spannagel, Famous-Barr's chief engineer, tell the story:

"My previous experience proved Kewanee offered important savings in operating and maintenance as compared with other boilers."

Famous-Barr long has known the advantages assured by Kewanee Reserve Plus Rated Boilers such as provision for expansion—"cruising speed" operation which lowers operating and maintenance costs and lengthens boiler life. So when you consider boilers, be sure they are rated on nominal capacity to operate at "cruising speed."

Don't be misled by promises that a boiler delivers steam to meet average daily requirements. Only a boiler rated on nominal capacity can guarantee performance beyond the call of usual duty.

You can depend on Kewanee engineering.
How* to get highest quality at reasonable cost in light institutional construction

Penmetal LIGHTSTEEL structural sections are the answer.

These steel sections are scientifically designed for maximum economy strength-to-weight ratio. No longer must you pay for load carrying capacity which you don't need. Yet LIGHTSTEEL sections carry all the benefits of conventional steel framing, and then some. Example: Precisely engineered openings in the sections which simplify through-frame installation of wiring and plumbing.

You save on erection, too. Joists, studs, track and bridging are designed to fit together for ease of assembly and welding in the shop or at the job site. Because of the light weight of the sections complete wall panels and roof trusses can be readily trucked to the job site and erected in a few hours.

Send for catalog SS-6, which gives complete specifications, engineering data and safe loads for all stud and joist sections.

PENN METAL COMPANY, INC.

General Sales Office:
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Plant:
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PM-77
HEAT ONLY THE OCCUPIED ROOMS—CUT FUEL COSTS
with JOHNSON DUAL TEMPERATURE CONTROL

In most buildings today, certain offices continue to be occupied after regular working hours. Keeping those few offices comfortably warm, without the expense of heating the entire building, is a serious problem to building owners and managers. Installing separate steam mains is usually both impractical and too costly. Manual control of radiators in unoccupied offices is equally unsatisfactory.

The simple, effective answer to this “after-hours” heating problem is a modern Dual System of Johnson Automatic Temperature Control. Briefly, here’s how it works:

During regular working hours, a Johnson Dual Thermostat in each office automatically maintains every space at the ideal comfort level. At the end of the day, all Dual Thermostats in the building may be reset, from a central control panel, to operate at reduced, non-occupancy temperatures.

In those offices which continue in use, merely pressing the button on the Dual Thermostat restores them to normal occupancy temperatures, without changing the economy settings of the other thermostats in the building.

Johnson Dual Control offers the finest in modern individual room temperature regulation—and at a tremendous reduction in fuel costs. Heating only the occupied rooms quickly saves enough fuel dollars to pay for the cost of the entire system!

These and many other important comfort and money-saving advantages of Johnson Dual Control are readily available to any new or existing building. Conversion of existing single temperature systems to Johnson Dual is both simple and inexpensive. An engineer from a nearby Johnson branch will gladly give you all the facts without obligation.

JOHNSON CONTROL
TEMPERATURE & AIR CONDITIONING

PLANNING • MANUFACTURING • INSTALLING • SINCE 1885

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I’d like more information about Johnson Dual Temperature Control.

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NEW Smooth-Fin Aerofin Coils
for Greater Capacity—Lower Resistance

Aerofin extended-surface heating and cooling coils now offer you an even greater area of effective surface — even greater capacity — per square foot of face area. Airway resistance is lowered; higher air velocities can be used. The result is extremely high heating or cooling capacity in a given space.

Compact, sturdy, standardized encased units arranged for simple, quick, economical installation.

Write for Bulletin S-55

AEROFIN CORPORATION
101 Greenway Ave., Syracuse 1, N. Y.

The new Aerofin smooth fins are tapered with wide base that conducts sufficient heat between fin and tube to make the entire fin effective transfer surface.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.
Selected for the U.S. Gypsum Research Village...

GOLD SEAL Cork Tile

Featured in the famous U.S. Gypsum Research Village, Gold Seal Cork Tile is being used in more and more homes and businesses throughout the country. It's the tile that takes all the warmth, beauty, quiet and resilience of top quality natural cork, and binds it together into a highly superior product.

Unsurpassed in resistance to soiling by any other cork tile on the market—proved by laboratory tests. You can actually feel the super-smooth factory finish of Gold Seal Cork Tile by running your hand over the surface.

Carefully blended cork granules make each tile look handsomer—and as natural as if it were planed from the original tree.

Tremendous durability of Gold Seal Cork Tile is due to the use of superior synthetic resins and top quality cork.

Ideal for floors and walls in residential areas; offices, reception rooms, libraries, churches—any place where quiet luxury is the prime requisite. Can go on-grade, even over radiant heat, as an excellent basic floor.

Satisfaction guaranteed—or your money back; that's the way the Gold Seal protects you and your clients.

Specifications: 6" x 6", 6" x 12", 9" x 9", or 12" x 12" tiles in either 1/8" or 1/16" gauges. Beveled edges for easier installation. Packed two ways: light only... or a random combination of light, medium, dark. Installation over concrete or wood, on or above grade, with or without radiant heat (on-grade, specify Gold Seal "Three-Twenty" adhesive).

For home or business... you get the finest choice of all in...

INLAID LINOLEUM • RANCHTILE® LINOLEUM • VINYLFLOR • VINYLTOP • LINOLEUM, VINYL, VINYLBEST, RUBBER, CORK AND ASPHALT TILES • CONGOLEUM® AND CONGOWALL® ENAMEL-SURFACE FLOOR AND WALL COVERINGS

GOLD SEAL FLOORS AND WALLS
CONGOLEUM-NAIRN INC., KEARNY, N. J.
All-air high velocity units for hospital air conditioning

In successful use in many hospitals throughout the country, Anemostat HV round, square and straight line units are adaptable to a wide variety of architectural designs. Diagrams and photographs show typical applications of straight line units.

The All-Air High Velocity system of draftless air distribution offers many important advantages for hospital air conditioning. High velocity units, used with smaller than conventional ducts, save space and money. They substantially reduce sheet metal required, can be installed faster, with less labor. Since there are no coils in All-Air HV units, clogging and odors are eliminated. They operate entirely with air processed in the main equipment room; no fans, filters or electric motors are needed with All-Air HV units.

For latest data on All-Air High Velocity units, write on your business letterhead for new Selection Manual 50 to Anemostat Corporation of America, 10 E. 39 Street, New York 16, N. Y.
By George A. Sanderson

COLORADO SPRINGS, COLO., MAY 14, 1955—The architectural design for the permanent United States Air Force Academy, to be built on an unparalleled site seven miles north of here, was unveiled today for the first time to Senators, Representatives, newsmen, and others. I was one of the fortunate editors to fly out
from New York as a guest of the Air Force to attend the ceremonies, held at the Colorado Springs Fine Arts Center, where detailed models and renderings of the design were on display.

In my opinion, Skidmore, Owings & Merrill as architects-engineers for the Academy have developed one of the most remarkable and natural accommodations of an architectural complex to terrain that has ever been achieved in any major project. And they have reached that goal, which Nathaniel Owings, one of the partners, has defined as the wish “to produce for generations to come—not just for today or for fifty years hence—an efficient, flexible, and simple solution . . . and yet, and above all, beautiful, lastingly beautiful.” Of the $126 millions authorized by Congress for construction of the Academy, the amount allocated for buildings is $58 millions.

I had known that the site for the Academy was 17,500 acres in extent. But this statistic conveyed to me no inkling of either the vastness or grandeur of this campus setting. It is one of the largest areas ever chosen for an institutional institution—7½ miles north to south and an average of 5½ miles east to west.

The western boundary consists of the rugged heights of the Rampart Range of mountains that thrust violently upward 2000 to 3000 feet above the Academy site—a permanent natural protection and barrier for the campus. Extending eastward from the mountains are five promontories of land, considerably wooded with ponderosa pine, with gentle grassy valleys between studded here and there with yucca and cactus in the ruddy earth. Yet farther east is more-or-less level land, and near the eastern boundary—that contained within the Academy site to provide a permanent buffer against the commercial inroads of the usual highway ribbon slum—is the main highway from Colorado Springs to Denver. Beyond the eastern boundary are the endless tawny plains of eastern Colorado, which become part of the breathtaking view from upper reaches of the campus.

Side Plan

To understand how superbly the architects have co-ordinated the site with the buildings, one must first know the basic “problem” and the major areas for which provision had to be made. To oversimplify, there were four major functions that had to be implemented in the design:

1. Cadet Area, or academic group proper—Cadet Quarters for the presently authorized Cadet complement of 2496 men, but expandable, should this ever become desirable, up to 5000; Classroom-Library building; Cadet Dining Hall; Administration Building; Social Hall; Court of Honor; and Cadet Chapel; athletic facilities, and parade and drill ground. Also related to this basic group in the

90 Progressive Architecture
Looking down to the Court of Honor at the western end of Cadet Area (above), one sees the Chapel on its eminence at left; the Social Hall, with theater, ballroom, and lounges, at right; and the Administration Building, in the background.

General view from the northwest (below). Starting at top and reading clockwise: Classroom-Library Building; Dining Hall; Base Hospital; Chapel; Administration Building; Social Hall; and Cadet Quarters.

Ziggurat-like, the different levels of the Cadet Area are joined by ramps (left). Topping the rampart at far left is the huge Cadet Quarters Building. Note the central open floor, with two enclosed levels above and below. The mass of the Social Hall towers in the background. At right of photo, the basketball arena, with its glass cage enclosing a bowl-shaped stadium.

planning are the Superintendent's house; Base Hospital; and Academy guest house.

2. Housing Neighborhoods for members of the Academy staff and support personnel and their families, complete with elementary schools and provision for future secondary schools.

3. Airfield—including an 8800' x 200' runway; hangars; maintenance facilities; etc. An adjacent Supply and Base Services Area will serve the entire Academy.

4. Community Center for the residential areas, with shops, stores, and recreational facilities. Also included in this group are quarters for unmarried support personnel, who may work in either the academic area or at the airfield.

Five Ridges

The disposition of these elements follows closely the conditions of the extraordinary site, with the five ridges (and four valleys) of the western portion, and the flatter land to the east. The Airfield and its attendant facilities are placed on the relatively level land in the southeastern corner of the area. Between the mesas, the two southern-most valleys are assigned to contain the Housing Neighborhoods; on the ridge between is the Community Center and accommodations for unmarried personnel. As the site plan shows, these fall just about midway between the Airfield and the Cadet Area, equally accessible from both.

Crowning all of the areas and located on the most eminent of the land promontories—second ridge from the top—is the Cadet Area, to be built on several quite level areas, of varying size, that step up the escarpment. At the lowest level, toward the east, is the Parade Ground. Above this, on an extensive space—currently a grazing pasture for a handsome herd of Black Angus cattle—are organized the Dining Hall; Classroom-Library building; and Cadet Quarters. Slightly higher, westward toward the towering mountains, are the more public facilities—Court of Honor; Administration Building, and Social Hall. On the most prominent spot of all, with awesome views of the mountains to the west; Cathedral Rock to the north; and down the slopes and out to the eastward stretching plains, is the Academy Chapel, containing separate places of worship for Protestants, Catholics, and Jews.

As planned, the various levels or stepbacks are joined by masonry ramps. Little has been definitely decided as to structural systems or building materials to be employed. But mention was made of steel and glass, aluminum, reinforced concrete, marble, and stone. Almost certainly there will be considerable use of the reddish native stone, and one person who should know indicated that some sort of prefabricated wall panel system would be widely employed. Owings suggested that the Chapel might be steel.
framed, with marble surfaces, and stained glass in both the roof segments and side bays.

**Plan Proposals**

Detailed plans are likewise undetermined at this juncture; but a few of the unusual plan proposals might be of interest.

In the Cadet Quarters building, for example, the structure is so placed on a sloping grade that there are two floors of double rooms above the entrance level, and two floors below. Thus, though the building has five levels, no Cadet need climb more than two flights of stairs. And the entrance level itself will be a totally open sheltered pavilion, except for day rooms for each class. This open floor provides an undercover assembly area for use in inclement weather as well as a vista from the campus through to the playing fields to the north.

As presently schemed, rooms in the Classroom building will be arranged back to back and windowless, with bordering access corridors, perhaps glazed; perhaps left open.

The basketball arena is likewise designed as an open-and-shut scheme, with the arena itself, like a large round bowl, centered within a glass-enclosed rectangular structure.

An element of the total scheme that received most painstaking study was the road circulation. There will be two major entrances to the grounds from the main highway on the east. And a perimeter road will allow the public to tour the Academy and see all major units, without the necessity of invading them. Similarly, within the housing neighborhoods, roadways will lead around the main clusters of houses. In all areas, if one has actual business within, secondary roads penetrate the various groups. At the Administration Building, at the west end of the Academic group, the public may pass through to the Court of Honor, between the Chapel and Social Hall, and from this great, elevated platform, look down over the entire group of Academic buildings and to the distant view beyond.

Toward the eastern side of the property, but west of the Airfield group, two major railroad lines—the Atchison, Topeka & Santa Fe, and the Denver, Rio Grande & Western—traverse the property. By moving a portion of track of the former, a single railroad station will serve both lines, and the existing tracks will provide a siding to serve the Supply and Base Services Area.

**Design Team**

Preliminary talks at the Fine Arts Center explaining the purposes behind this great project and the principles on which its design are based were given by Secretary of the Air Force Harold E. Talbott; Pietro Belluschi, Dean of the MIT School of Architecture and Planning; Eero Saarinen, Bloomfield Hills, Michigan; and Welton Becket, of Los Angeles, California. Associated with Skidmore, Owings & Merrill are Robert & Company Associates, Atlanta, Georgia; Moran, Proctor, Mueser & Rutledge, New York; and Syska & Hennessy, also of New York, who are advising on utilities, soils and foundations, and electrical and mechanical work, respectively. Nor could the project go forward without the contributions of the U.S. Air Force Construction Officials, and the Air Force Construction Agency, one member of which, Architect Ellery Husted, who serves as Special Consultant to the Air Force on sites and master plans of air bases, developed the original master plan for the Air Academy.

**Seen from the north (top, below)** the giant stair-case effect of the scheme for the Cadet Area is strikingly apparent, with the interdenominational Chapel dominating the whole—symbolically as well as physically.

**Looking southwest across the Community Center (bottom)** located on one of the five main ridges, a group of the housing neighborhoods stands out in the valley beyond.
It augurs well for construction of all kinds, with Summer as clerk of the works, economic blueprints still expanding, and industrial production at record heights. Nevertheless bankers and financial men are beginning to wonder where the money is coming from to sustain the present building rate, particularly residential.

These gentlemen see difficulties beyond the $1 1/2 million units fixed for 1955 by the Home Loan Bank Board chairman as a limit beyond which “shortage of funds” might develop. Irrespective of financing, the Housing Administrator estimates that identical total as the year’s probable accomplishment, with a greater number possible, now that the annual rate has passed 1.4 million units.

Returning to the money side, tighter interest is already reflected in “fringe value” areas of the VA mortgage market. Mechanics of the rise are simple, despite the 4 1/2% legal rate. The borrower gets less than the full amount of his loan—say $9,500 on a $10,000 face value—and the lender adds the difference to the interest yield on his money.

If this discounting habit spreads throughout the home-financing domain it could act as a curb upon residential construction. In expert opinion, FHA and VA loan patterns are becoming unrealistic, both as to terms and interest. Such patterns are labeled “ultraliberal” and their use is deemed “injudicious” by top executives of U.S. Savings & Loan League. They deplore the “no equity” ownership of so many houses and warn of “serious consequences” unless a sounder basis is achieved. Big lenders are more selective and some are turning to Government bonds for the time being. Rumors of a possible reduction in the specified interest rates on FHA-VA mortgages further befog the lending atmosphere.

Conversely, there has never been a time when more families were planning to buy new homes with better prospects of being able to pay for them, Federal Reserve research indicates. Official survey shows 10% of the spending population as planning to build or buy, 23% to make improvements, during the twelvemonth-

The months ahead will see homebuilding and general business reacting favorably upon each other. This is in compliance with the economic law that a multitude of relatively small units impart and absorb stability, to and from other categories. Home construction creates a demand for the goods and services of more than 50 major industries embracing 20% of the nation’s workers. Employment conditions are bettered thereby, thus bringing more homebuilders into view.

Factualy, out-of-work claims are dropping week by week, averaging some 30% below comparable 1954 figures. The Labor Department at outset of current quarter reported unemployment claims as touching a year-and-a-half low. Other heartening signs, bearing indirectly upon the architect’s well-being:

Checks cleared through banks in 26 key cities are averaging 6% ahead of last year;

Corporation profits are picking up and Wall Street observers see a market increase for the current quarter;

Steel mills are operating at around 97% of capacity, a near-record;

American Bankers Association has devised ways for mortgage lending aid to small “country” banks by their large city correspondents;

New factory equipment outlay should touch $28 billions and surpass that of last year, say Securities & Exchange Commission and U.S. Commerce Department;

Consumer credit and FHA Title I collections show marked improvement over ’55, with average delinquencies ranging from 1% to 2%, banking survey reveals.

Harmonizing pertinent factors — always minus international disaster — the resultant scene discloses more light than shade. There will be no “crash” this fall, nor, in any likelihood, this year. Private construction will taper off, but not much more than seasonally. The benign circle of earnings and earning power will tend to hold in check both inflation and recession — at least through 1955.
urban university redevelopment
Wayne University: Detroit, Michigan
Suren Pilafian, Architect

An almost incredible transformation is taking place a few blocks north of downtown Detroit, in the area adjacent to the city's long-established cultural center, which includes Detroit Public Library, Institute of Arts, Rackham Foundation, International Institute (see August 1954 P/A, page 98), and Historical Museum.

For here the new campus of Wayne University is arising, literally carved out of 85 acres that had previously been almost wholly occupied by houses in rows along a gridiron street pattern (see color background behind the campus drawing).

As Suren Pilafian, chief architect of the Wayne buildings shown in this issue, puts it: "We haven't designed a single building that hasn't required at all stages consideration of how it could be built in pieces, or added to, or connected with other units."

This all started back in 1942 when the Administrators of Wayne and the governing Detroit Board of Education, realizing the University's enormous growth and need for expansion, determined to develop the new campus in an orderly, integrated manner. To that end, a design competition was held (the campus proposal at that time involved only 15 acres), and Pilafian won the award. It was soon decided that the designated three-block area was inadequate for the needed buildings, and the larger area was allocated.

The State of Michigan appropriated $3 millions for two new buildings for the campus—a General Science Building, for which Ralph Calder was architect, and a classroom building (see page 100), for which Pilafian received the commission.

Next buildings were the first unit of the College of Engineering (Pilafian & Montana, Architects), built with money raised through taxation imposed by the
State Hall, a classroom building (right) was the first of Pilafian's completed buildings on the campus. It is shown in detail on subsequent pages.

The five-libraries-in-one, of which the Kresge Science Library is a vital unit (center) is also discussed fully on following spreads.

First unit of the College of Engineering (bottom), is about one fourth of the eventual scheme.

Photos (except as noted): Bill Hedrich, Hedrich-Blesing

Board of Education; the General Library (similarly financed), with its important Kresge Science Library wing built with money provided by the Kresge Foundation; and the Community Arts Building (partly constructed), financed with money obtained both through taxation and from gifts to the City made by interested citizens.

The close relation between the emerging new campus and the developing cultural center should be noted on the composite drawing. The Detroit City Plan Commission (at one time assisted by Buford L. Pickens, and more recently by Pilafian's office) has been fully aware of the inter-relationship. Additions to the Library have been designed by Cass Gilbert and Francis Keally, of New York, while Pilafian is working on the remodeling and additions to the Institute of Arts.

Although Wayne had long been located in this general area—in old buildings and some of the existing houses—many originally argued that it should move elsewhere. But the advantage of accessibility to the existing near-by facilities outweighed the disadvantages of higher land costs, and the fact that the area was built-up.
urban university redevelopment

libraries: Wayne University

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A most painstaking program was developed for the architect; stressing "wisdom" as the end that the libraries should serve, and accumulated knowledge (the books) as a primary means to that end. Hence optimum access, rather than storage of the books, was the major design consideration. It was further predetermined that the libraries should be organized on a subject-division basis into a series of sublibraries, rather than as one huge storehouse. Hence, the Wayne group consists of five, practically independent libraries under one roof—in the General Library (the forward portion of the group); the Law Library (first floor); Humanities (second floor); Social Sciences (third floor); and Education (fourth floor). In the attached wing (the Kresge Science Library) are housed the science and technology collections. Common general services co-ordinate all units. All libraries follow the open-stack scheme, in line with the program requirement of maximum individual access to the books. Carrels (mainly for graduate students) are among the stacks, while shelves of the books more regularly in demand (mainly for undergraduates) are arranged in the reading areas. A modular structural scheme and movable stacks and furniture provide maximum flexibility for possible future rearrangement.
The first-floor reading and study area of the Kresge Science Library (above) occurs in back of the open stacks bordering the entrance lobby (bottom acrosspage).

At the exit from the General Library (left) checking of books is handled at special desks; one-way turnstiles serve entering students. Book-return slots are provided outside the building, for use after hours.
Each of the five major sub-divisions of the library includes a central control core, with circulation desk, reference desk, catalog, and book conveyor and pneumatic-tube connection for quick handling of books to any area of the building.

Frame of the General Library is concrete, while steel frames the Kresge wing. Exterior materials are beige brick, with aluminum sash, greenstone spandrels, a pink stone trim and—at the entrances—columns of Swedish black granite.

Most interior walls are of cinder block, plastered where acoustical considerations required. Flooring, in general, is of asphalt tile, though terrazzo occurs on stairs and in lobbies and toilets. Most ceiling surfaces are acoustical tile, but in main reading areas flush-mounted plastic panels occur, with fluorescent lamps above. Other lighting is chiefly semi-indirect fluorescent, while bare cold-cathode tubes are used in stack areas.

The General Library is air conditioned, with most windows sealed; in peripheral areas conditioning units operating at high velocities are used. In the Kresge wing, convectors along outside walls and windows heat the building, and ventilation is handled by a duct system.

Capacity of the present libraries is approximately 2200 readers and 800,000 volumes. The basement contains a photographic suite, receiving-unpacking room, book-repair room, archives, vault, general storage spaces, and mechanical equipment.

Collaborating with Pilafian on the design of the Libraries were Frank Montana, Associate Architect; Smith, Hinchman & Grylls, Inc., (Consulting Architects for the Kresge Science Library); Paul Calkins, Civil Engineer; and Bolt, Beranek & Newman, Inc., Acoustical Consultants. Mechanical and Electrical Engineers for the General Library were Hyde & Bobbin, Inc.; for the Kresge Science wing, Snyder & McLean, Howard Sharp was Lighting Consultant for the Kresge unit. C. H. Reinders & Sons was General Contractor for the entire job.
This classroom building, which is less than half its eventual size, was—like the other campus buildings—built in the midst of existing houses. It was completed in 1948, but only recently have enough of the old houses been taken down so that it has been possible to take photographs. The second floor is similar to the third, and the building contains a total of fifteen classrooms each accommodating 32 students; ten, seating about 40; three lecture rooms with room for 80 each; and a large lecture room for 250. An unusual feature is the provision of study lounges, which are used by students who live too far from the campus to go home to study between classes. With completion of the addition at the east end of the building (see campus plan), one of the semienclosed landscaped courts schemed for the campus will be formed.

The building is of concrete construction, with brick exterior walls, cinder block or glazed tile walls within. Sash are fixed steel, with directional glass block above (on the south front). Flooring is asphalt tile. The building is steam heated from a central power plant. Lighting is cold cathode.

Snyder & McLean were the Mechanical and Electrical Engineers for the job; Ray W. Covey, Civil Engineer; and Eslinger Misch Company, General Contractor.

Photos: Elmer L. Axelford
Harlingen, Texas: Founded in 1904 by Lon C. Hill (population, 340; pistols, 341); 1940 population, 13,306. Today's estimated population, 30,000 with 45,000 to 50,000 in the metropolitan area.

Photos: Purnell

The further one dips into the State of Texas, the more one finds the extraordinary. In studying the firm of Cocke, Bowman & York, of Harlingen—in the Lower Rio Grande Valley just 35 miles north of Brownsville and the Mexican Border—we are dipping just about as far south as one can go in that fabulous State. And, as might be expected, the resources of the area and the growth of the city are both phenomenal. But most extraordinary of all, from our point of view, is that Cocke, Bowman & York have been able to contribute such remarkably refined architecture (subsequent pages) to a region that is so hustling and youthful.

Actually, the fact that Harlingen is a young city was a prime reason why Bartlett Cocke, Walter C. Bowman, and John G. York decided to practice there. As Bowman puts it: "The advantages of this area lie largely in the fact that it is new territory . . . that it is progressive and not bound by a long period of tradition." All three partners comment that there is some disadvantage in comparative geographic remoteness; but, as Harlingen is the fast-growing center of the Lower Valley, this is slight and will diminish as the region continues to prosper. Now, oil and cotton and the tourist trade vie with the
and his community

Cocke, Bowman & York: Harlingen, Texas

well-known agricultural and food-packing industries of the region. As someone scribbled on a piece of Chamber of Commerce literature that was sent to us: "It is now a landscape of beautiful citrus orchards . . . afraid oil is going to ruin our handsome farms; but, you know, oil can sure make a cornfield pay off!"

Cocke, serving chiefly as business adviser for the firm, received his B.S. in Architecture from the University of Texas. Subsequently he attended MIT for two years as a special student. After working in several offices and entering a partnership with Marvin Eickenroht, he conducted his own practice in San Antonio.

Bowman came to work with the firm in 1939, and in 1945 the firm of Cocke & Bowman was established in Harlingen.

Bowman, whose chief responsibilities are in the engineering end of the firm's work, was born in Waterproof, Louisiana. He received his B.S. in Engineering from Louisiana Polytechnic Institute, studied for a year at Tulane, and was graduated from the University of Texas, where he was graduated with the degree of B.S. in Architecture. Bowman was established in Harlingen in 1939, and in 1945 the firm of Cocke & Bowman was established in Harlingen.

York's training included two years at North Texas Agricultural College and five years at the University of Texas, where he was graduated with the degree of B.S. in Architecture. York's main function is design. After working with various architects in Austin, the State Parks Board, and the National Youth Administration (Architectural Department), he was with The Austin Company in their Houston office for a time, and, later, with the U. S. Air Force. Following this tour of duty, he worked in the offices of C. Meredith Musick and of James Roger Musick in Denver for two years, during which he also taught design at the University of Denver. At the end of this period, he migrated to Harlingen where he conducted his own practice, until joining Cocke & Bowman as a partner, in 1949.

York tells us that with Cocke, as business adviser; Bowman, as engineer; and himself, as designer, "we are able to carry a job through completely with close coordination in design, materials, structure, and mechanics." During the time the work shown in this issue was produced, they were assisted by a secretary and five draftsmen—two of the men holding Texas architectural licenses. "On large projects," York reports, "once the program was set and preliminary talks terminated, the job was processed with very little consultation among the partners. However, during this phase, the engineer and designer worked in close harmony and, in many cases, engineering improbabilities dictated the design trend."

Possibly York sums up the firm's architectural goals most acutely when he comments: "My design philosophy has, from school days, stemmed from the idea of expressing structure, simplifying details, omitting unessentials, and striving for economy with stability by avoiding the use of too much 'architecture.' I am not at all in accord with monumentality of stylized period work for any reason whatsoever. . . . Thus our society need not be burdened with heavy, ornate buildings which it cannot afford to destroy."

Whether or not this is a full statement of the case, the firm's completed work exemplifies the wisdom of this fundamental approach—and clearly demonstrates their ever-present concern with structural expression.
These fine new library facilities have proved invaluable to the younger pupils of nearby schools who have their own special entrance for attending planned study and reading periods. Local residents and winter tourists find the building within easy reach from the Harlingen business district. The building is very well liked for its open and light quality, made possible by the large glass areas opening onto Travis Park and the planted and screened terraces opening off the reading rooms along the south and east walls. Designed in “T” form, the library allows for expansion in three directions. The structural system—steel wide-flange columns and beams left exposed, concrete decking insulated on top with rigid insulation—will permit future extensions without structural difficulties. This system also allows an interior which may be rearranged if future changes in library technique should occur. The General Contractor for the library was W. B. Uhlhorn.
Children from nearby schools enter library through special door (left) on west side of building. Other entrance (below and across page) serves the general public. North wall of stack room (bottom) uses sandblasted corrugated glass with clear glass panels above and below. Generally, large glass areas have been oriented south and east; masonry walls, north and west. The building is heated and air conditioned year-round through wood plenums suspended below the steel beams. Plenums are also used for indirect light shelves. All steel has been painted a deep blue to contrast with the red-orange brick and the white ceilings.

Photos: Ulric Meisel—Dallas
“Designed house as open as possible,” writes John G. York, who was the architect for his own house. “Since we entertain informally, the living area was left quite free of partitions; bamboo screen divides kitchen, living, and dining spaces. The house has been very satisfactory for our family, although small children are a bit hard on the open living idea from the standpoint of tidiness.” A lot with narrow street frontage, widening toward the back, determined the placement and shape of the house. The present plan will later be expanded to accommodate maid’s quarters, an additional bedroom with bath, and a fireplace. “The structural system,” York continues, “consists of 1-1/4” pipe columns detailed to fit neatly into bar joists made of 1” pipe and reinforcing rods. This detail enables the glass to travel full height into 1/2” x 1/2” aluminum channels, set flush with metal decking. Doors were hung directly to pipe columns, by shaping and welding standard butt hinges around the columns. Weatherproofing was accomplished by round sponge-rubber weather stripping, similar to that used in automobile manufacture. All exterior walls (except those of glass) were built of 1-9/16” structural insulating panels, attached top and bottom only, joined vertically with redwood spline strips and cover pieces.”

Others contributing to the success of this house were: Walter C. Bowman, Engineer; George Pletcher, Landscape Architect; Today’s Living, interior furnishings; W. B. Uhlhorn, General Contractor.
In contrast to the simple lines of the structure, the surrounding trees create a soft and ever-changing pattern of light and shadow. Entire southeast side of the house features an 8-ft roof overhang edged with screens for protection from insects. Night photo (view into living room at left and screened terrace at right) illustrates York's observation that "one gets the feeling of the absence of construction."
Unique foundation (above) was designed by York and engineered by partner Bowman to produce a smooth surface against which soil could freely move both vertically and laterally. This design, afterwards used for schools and other projects in the Harlington area, reduces the cracks at juncture of beam and slab commonly found in ordinary floating-slab foundations.
Brick paving (across page) extends along the entire northwest side of the building. Living room and bedrooms have cork floors. A bamboo screen separates kitchen from living-dining room. This area may be arranged to appear even more open and spacious by sliding axle folding screen partitioning off adjacent bedroom (above), located five steps above living room level.
Another facet of the firm's practice is revealed in this ingeniously planned shopping center for Corpus Christi, Texas. The clients wished to develop a downtown site not only for immediate revenue but also with an eye to the future growth of the city and the resulting increase of land values. Anticipating this trend the architects designed a structure completely demountable for removal to another location when the present site becomes too valuable for this operation. Excepting foundation and roof covering, all parts of the structure—1-1/2" I.D. pipe columns; 18" bar joists; steel decking; 1-3/8" structural insulating panels installed with redwood "T" splines—will be reusable. The first two phases, comprising small offices and shops with terrace display, have been completed. Virginia Hartman designed the interiors; Childers Engineering Service developed the air-conditioning system; O. J. Beck & Sons and Huddleston & Seaman were General Contractors.
Wide, screened overhang (photo below), a device often used by the architects, protects against insects and the hot climate, and in this case serves also as a pleasant circulation and display space. Corrugations of metal decking assist in breaking sound. Interior partitions containing flax straw were also selected for their acoustical value. Artificial lighting is by slim-line tubes mounted on porcelain brackets nesting in top of inverted channel stiffener under bar joists. The first two phases were constructed for an average sq ft cost of $7.35. Phase Three, an office or apartment building (drawing below) is estimated at $8.50 per sq ft. This multi-story structure will be at the highest point of the site, overlooking the shopping center and Corpus Christi Bay beyond.
Typical of so many offices everywhere, this firm is heavily engaged in the design and construction of schools. To illustrate the wide range of solutions emanating from this office we have chosen two: 1. An elementary school in Harlingen (above and across page) employing concrete; 2. An elementary school in Brownsville (page 114) employing steel. Though the architects do not consider one solution adequate for all requirements, they firmly believe that each school plant must have a “common denominator”—a pattern which will tie all of the parts together to form one harmonious whole. The common denominator in the Harlingen building is the uniform span-height relationship of the concrete parts. Rectangular concrete columns occur regularly 10' 5 1/2" on centers. Flat marginal beams, running longitudinally at the top of window walls, tie both columns and precast decking together. Foundations are similar to York house, described on previous pages, using an integral beam and slab on fill, with grade beams along the column lines. A fireproof building at a low unit cost was the main advantage of this structural system. Meritt & Roe was the General Contractor for this school.
Classroom walls facing north (left) have casement and projecting-type windows, set on low cavity walls which use brick on the exterior and tile on the interior. On the south corridor side (below) classroom walls have sliding plywood ventilators at the floor line, lightweight concrete panels above. Narrow strips of fixed glass extend up to the corridor canopy, and projecting sash to the roof line. Exterior sunshades and canopies (see SELECTED DETAIL, page 143) are of .032" corrugated aluminum. Interior partitions employ 12"x12"x4" face tile. Lighting is provided by slim line strips mounted in 9" reveals in concrete decking. Free-standing, concrete canopy (bottom) was used to cover the point of juncture between the administration, auditorium-cafeteria combination, and classrooms.
In its major planning features the elementary school in Brownsville, Texas closely resembles the Harlingen school shown on previous pages. Again the plan is decentralized into smaller classroom units, administration building (foreground above), and auditorium-cafeteria combination (background above). Classrooms face north and south and building units are connected with corrugated aluminum canopies. However, for ease and speed of erection the architects chose steel as the structural material.

Here the regular pattern of the steel frame, brightly painted to lend a cheerful atmosphere, is the “common denominator” tying together the various parts of the school. Pipe columns (2" I.D.) welded to 14" steel joists occur 7' 8½" on center. The roof decking is composed of 2" gypsum concrete, faced on the underside with glass-fiber formboards, left exposed to provide an acoustical ceiling. Unique foundations, specially developed by the architects to reduce slab cracks were again used in this instance. This project, more than any other, sums up the firm’s objectives: omission of unessentials, maximum economy combined with structural stability, and logical use of materials allowing the elements of the structure to speak for themselves. W. D. Ferguson & Sons was General Contractor.
Treatment of north and south walls is similar to Harlingen school. South wall of classroom (above left) features 16-gage G.I. sheet metal set into aluminum sliding sash at the floor line. The center panel is faced on the exterior with 3/8" asbestos cement panels, on the interior with blackboards or tackboards (above right). The window extending up to the corridor canopy is aluminum sliding type. Clerestory above canopy has fixed glass. North wall (right) has large window partially operable. Interior partitions are of 1-9/16" structural insulating panels; endwalls are brick cavity construction. Lighting is by slim line fixtures; heating by suspended unit heaters.
The function of a solar window is to admit heat and light, during the winter months, and to admit light but exclude heat, during the summer months. This objective requires that the window be exposed to direct sunshine for a large fraction of the day during the winter, but shaded from direct sunshine for as large a fraction as possible of the summer day. Shading can, of course, be obtained through manual operation of blinds, draperies, louvers, adjustable drops, or variable types of roof overhang; in many such cases, however, such special devices are unnecessary due to the fortunate circumstance that solar mechanics assist the designer in providing automatic seasonal control of shading for south-wall windows.

In midwinter, the sun rises south of the east-west line and describes an arc which brings it to a maximum elevation (within the latitude range of the United States) of from 20° to approximately 40°, the value of the maximum varying with latitude. In midsummer, the sun rises north of the east-west line and describes an arc which brings it to a maximum elevation (again for the range of latitude of the United States) of from, roughly, 65° to 85°. The ratio of maximum summer elevation to maximum winter elevation varies with latitude, but is of the order of from 2 to 3. Hence, it is evident that by designing an overhanging roof in conjunction with a south-wall solar window, it is possible to exclude the high midday summer sun while admitting the much lower midday winter sun.

Control of shading during the morning and afternoon hours is less complete, but does retain a high degree of effectiveness due to the fact that from April 21 to August 21 the sunrise and sunset are

north of the east-west line; hence, throughout this warm season, the sun does not irradiate a south window just as it crosses the horizon. In mid-June, for example, sunrise on the 40th parallel of latitude (corresponding roughly to the location of Denver, Columbus, and Philadelphia) is before 5 a.m., yet the sun does not shine on a south wall until after 8 a.m. and by that time it is already at an elevation of nearly 40°; thus, in this case, the minimum elevation for midsummer is higher than the maximum for midwinter. This factor becomes of even greater significance when it is realized that (again at latitude 40°) throughout the greater part of May, June, and July, the minimum elevation at which irradiation of a south wall occurs is always greater than the elevation at solar noon throughout November, December, and January.

basis of overhang design

The limiting cases of roof overhang obviously correspond to the extremes of excluding all summer sun or admitting all winter sun. Thus at latitude 40° the sun could be excluded from mid-April throughout mid-August, if a sufficient length of overhang were provided to shade the window when the solar altitude is 20°. If, however, complete irradiation is desired from mid-September through mid-March, the overhang would have to be short enough to admit sunlight for all elevations below 50°; obviously these two conditions are mutually incompatible. Thus some type of compromise is necessary if a fixed length of roof overhang is to be used. The basis for such a compromise is arbitrary and must, therefore, remain largely a matter of judgment and of esthetics.

In localities where the summers are particularly hot, greater amounts of overhang will often be used with resultant partial sacrifice of winter heating effect, whereas in localities characterized by cold winters and moderate summers, the overhang may be designed to provide a greater thermal gain in winter at the expense of some undesirable heat gain in summer. The latter difficulty often is not of appreciable practical importance, since it is probable that the undesirable summer irradiation will be avoided by manual adjustment of shading. In this respect, it is well to note that where doubt or indecision exists as to the amount of overhang to provide, it is always preferable to use too little rather than too much. Correction for insufficient overhang is relatively simple and can be accomplished by many types of seasonal or manual adjustments such as awnings, drops, etc., but correction for excess overhang would necessarily involve a major alteration of the structure.

In establishing a basis for design of roof overhang, two relatively independent decisions must be made. The first is to select the solar elevation corresponding to which the entire window is to be irradiated, whereas the second is to select the elevation at which the window is to be entirely in the shade. A common selection for complete irradiation is the solar elevation, at the latitude of the particular installation, which occurs at solar noon on the shortest day of the year, December 21; on this basis the window would be partially shaded at noon on all other days of the year. A common alternative is to select the solar elevation at noon on the 21st of October or November. On either of these bases the window would be completely irradiated for all sunshine hours from October 21 through February 21, or from November 21 through January 21, but would be partially shaded at noon throughout the remainder of the year.
The decision with respect to complete shading may be based on the solar elevation at noon on the longest day of the year, June 21; in this event the entire window would be in the shade only (at solar noon) on this one day. If shading is based on the noon elevation for some later month, as the 21st of July or August, the window would then be completely shaded at noon from May 21 to July 21, or from April 21 to August 21. For times when the window is partially shaded, the fraction receiving direct sunshine will depend on the full-radiation design condition as well as the full-shade condition, since for a fixed basis of full shading the height of the window will vary with the condition for complete irradiation.

**design constants**

Developed from the principles outlined above, Table I gives the required geometrical relationship between length of overhang and base of the window for the more common summer-design criteria. Thus if full shading of a solar window is to be obtained at solar noon on June 21, for a structure located at latitude 30°, the value of \( b' \) is read from Table I as 878. This number is equal to the required vertical distance from underside of overhang to bottom of window, the distance being expressed as a percentage of the overhang. Thus if the overhang for a particular window were 10", the vertical distance would have to be 87.8". Reversing the procedure, if the vertical distance is fixed as part of the architectural design, the required length of overhang, \( b \), for June design can be readily calculated. Example: In the previous

<table>
<thead>
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<th>Latitude</th>
<th>30°</th>
<th>35°</th>
<th>40°</th>
<th>45°</th>
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<tbody>
<tr>
<td>June</td>
<td>878</td>
<td>514</td>
<td>327</td>
<td>254</td>
</tr>
<tr>
<td>July</td>
<td>598</td>
<td>401</td>
<td>282</td>
<td>219</td>
</tr>
<tr>
<td>Aug</td>
<td>317</td>
<td>236</td>
<td>192</td>
<td>156</td>
</tr>
</tbody>
</table>

Table II is similar in form to Table I, but gives the vertical distance, \( c' \), expressed as a percentage of length of overhang, from underside of overhang to top of window for common winter-shading criteria. Example: In the previous

<table>
<thead>
<tr>
<th>Latitude</th>
<th>30°</th>
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<th>45°</th>
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<td>97</td>
<td>81</td>
<td>67</td>
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<tr>
<td>Nov</td>
<td>84</td>
<td>70</td>
<td>55</td>
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<tr>
<td>Dec</td>
<td>75</td>
<td>60</td>
<td>47</td>
<td>40</td>
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Table III—Latitude: 30°

<table>
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<tr>
<th>Solar time</th>
<th>Angle of solar incidence</th>
<th>a</th>
<th>June</th>
<th>b</th>
<th>July</th>
<th>Aug</th>
<th>Oct</th>
<th>c</th>
<th>Nov</th>
<th>Dec</th>
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<td>0</td>
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<td>53</td>
<td>825</td>
<td>545</td>
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<td>0</td>
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<td>0</td>
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</tr>
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<td>51 33</td>
<td>65</td>
<td>813</td>
<td>533</td>
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<tr>
<td>10 am, 2 pm</td>
<td>45 37</td>
<td>74</td>
<td>804</td>
<td>524</td>
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<td>0</td>
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<tr>
<td>8 am, 4 pm</td>
<td>64° 36°</td>
<td>72</td>
<td>806</td>
<td>526</td>
<td>245</td>
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<td>0</td>
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<td>92</td>
<td>786</td>
<td>506</td>
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<td>0</td>
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<td>0</td>
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<td>439</td>
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<td>79</td>
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<td>10 am, 2 pm</td>
<td>65 59</td>
<td>166</td>
<td>712</td>
<td>432</td>
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<td>82</td>
<td>91</td>
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<td>60 59</td>
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<tr>
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<tr>
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<td>71 71</td>
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<td></td>
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</tr>
<tr>
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<td>80 80</td>
<td>567</td>
<td>311</td>
<td>31</td>
<td>0</td>
<td>482</td>
<td>483</td>
<td>492</td>
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</tr>
<tr>
<td>9 am, 3 pm</td>
<td>78 78</td>
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<td></td>
<td></td>
<td>0</td>
<td>482</td>
<td>483</td>
<td>492</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 am, 2 pm</td>
<td>75 75</td>
<td></td>
<td></td>
<td></td>
<td>31</td>
<td>482</td>
<td>483</td>
<td>492</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 am, 1 pm</td>
<td>75 75</td>
<td></td>
<td></td>
<td></td>
<td>482</td>
<td>483</td>
<td>492</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>12 noon</td>
<td>75 75</td>
<td></td>
<td></td>
<td></td>
<td>527</td>
<td>527</td>
<td>527</td>
<td>527</td>
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</tbody>
</table>

Example 11° of overhang were required for June shading of the window. If this same window were to be fully irradiated at a solar noon on December 21, the window height would be determined as follows: From Table II for December and for 30° latitude the distance c is read as 75; then, since overhang is already established as 11°, it follows that the vertical distance from underside of overhang to top of the window must be .75 x 11 or 87°; the required window height to meet the selected design conditions is therefore 96—87° or 87°. (In practice a standard window height would be selected giving an approximation to the theoretical value.)

Partial shading and partial irradiation

The selection of the boundary shading values—as discussed above—is a very simple matter, since the actual elevation of the sun at solar noon is equal to its elevation measured in a vertical plane normal to a south-facing window. For any time of day other than solar noon, however, the effective solar altitude differs from the actual value and can be obtained only by trigonometric computation. Thus at solar noon on December 21, latitude 30°, the actual elevation is 37° and this is also equal to the effective elevation. At 9 a.m., 10 a.m., and 11 a.m. (correspondingly at 1 p.m., 2 p.m., and 3 p.m.) on this same day the actual solar altitudes are 21°, 29°, and 35°, respectively, whereas the corresponding effective solar altitudes are 28°, 33°, and 36°, respectively (refer to 3rd column of Table III). Thus not only do the effective altitudes differ from the actual, but the variation increases nonlinearly as a function of the number of hours on either side of solar noon.

Insofar as the authors are aware, no
published data exist on seasonal variation of effective solar altitude. Lacking such data it is a time consuming task to calculate the effectiveness (whether with respect to partial shading or to partial irradiation) of a solar window. To correct this difficulty Tables III through VI have been prepared for latitudes 30°, 35°, 40°, and 45°, respectively. Each table provides hourly values, on the 21st day of each month, of the angle of incidence, \( I \), of direct solar radiation on a south-facing window and of the effective solar altitude, \( H \), with respect to such a window.

To further reduce the effort needed in computing the instantaneous effectiveness of solar-window overhang, the tables give values of three instantaneous constants, \( a \), \( b \), and \( c \). By use of these constants, together with \( d \) from Table VII, the architect or engineer can immediately determine the fraction of a solar window that is "working" at any time during the winter months and the fraction that is directly irradiated (thus increasing cooling load) at any time during the summer months. Example: A south-facing solar window at 40° latitude is so designed that complete shading occurs at solar noon only on June 21 and complete irradiation at solar noon only on December 21. At solar noon of any month other than December this window will be partially shaded; considering February, for example, the shading constant, \( c \), is read from the 10th column of Table V (for 12 noon in either February or October) as 34. From Table VII the value of \( d \) for June-December design conditions is read as 280. The shading condition for this window at solar noon in either February or October is then:

\[ \text{Shading Condition} = 280 \]

Table VII—Values of window height, \( d \), for summer-winter overhang designs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>30°</td>
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<td>477</td>
<td>201</td>
<td>200</td>
<td>152</td>
<td>174</td>
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<td>111</td>
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<tr>
<td>35°</td>
<td>754</td>
<td>492</td>
<td>214</td>
<td>214</td>
<td>156</td>
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<td>115</td>
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<td>220</td>
<td>160</td>
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<td>121</td>
<td>121</td>
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<tr>
<td>45°</td>
<td>906</td>
<td>586</td>
<td>224</td>
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<td>164</td>
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<td>123</td>
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<td>123</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar time</th>
<th>( \text{Effective angle of solar window height, } H )</th>
<th>( a )</th>
<th>( b )</th>
<th>( c )</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 am, 1 pm</td>
<td>30° 17°</td>
<td>30</td>
<td>454</td>
<td>371</td>
</tr>
<tr>
<td>9 am, 2 pm</td>
<td>30° 23°</td>
<td>32</td>
<td>472</td>
<td>359</td>
</tr>
<tr>
<td>10 am, 1 pm</td>
<td>30° 27°</td>
<td>36</td>
<td>546</td>
<td>343</td>
</tr>
<tr>
<td>11 am, 1 pm</td>
<td>30° 30°</td>
<td>40</td>
<td>454</td>
<td>341</td>
</tr>
<tr>
<td>12 noon</td>
<td>31° 35°</td>
<td>45</td>
<td>449</td>
<td>336</td>
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<tr>
<td>1 pm</td>
<td>31° 40°</td>
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<td>366</td>
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<tr>
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<td>3 pm</td>
<td>31° 50°</td>
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<td>4 pm</td>
<td>31° 55°</td>
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<td>336</td>
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<td>5 pm</td>
<td>31° 60°</td>
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<td>6 pm</td>
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<td>32° 10°</td>
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<tr>
<td>10 pm</td>
<td>32° 25°</td>
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<td>307</td>
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<tr>
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<td>32° 30°</td>
<td>100</td>
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</tr>
<tr>
<td>12 pm</td>
<td>32° 35°</td>
<td>105</td>
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</table>

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Table V—Latitude: 45°

<table>
<thead>
<tr>
<th>Solar time</th>
<th>Angle of solar incidence</th>
<th>a</th>
<th>b</th>
<th>c</th>
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</thead>
<tbody>
<tr>
<td>Dec</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 am, 4 pm</td>
<td>55° 15'</td>
<td>27</td>
<td>300</td>
<td>255</td>
</tr>
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<td>9 am, 3 pm</td>
<td>44 19</td>
<td>34</td>
<td>293</td>
<td>248</td>
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<tr>
<td>10 am, 2 pm</td>
<td>35 23</td>
<td>42</td>
<td>285</td>
<td>240</td>
</tr>
<tr>
<td>11 am, 1 pm</td>
<td>28 25</td>
<td>46</td>
<td>281</td>
<td>236</td>
</tr>
<tr>
<td>12 noon</td>
<td>25 25</td>
<td>47</td>
<td>280</td>
<td>235</td>
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<td>Jan or Nov</td>
<td></td>
<td></td>
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<tr>
<td>8 am, 4 pm</td>
<td>56° 16'</td>
<td>28</td>
<td>299</td>
<td>254</td>
</tr>
<tr>
<td>9 am, 3 pm</td>
<td>46 22</td>
<td>40</td>
<td>299</td>
<td>242</td>
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<tr>
<td>10 am, 2 pm</td>
<td>38 27</td>
<td>52</td>
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<td>230</td>
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<tr>
<td>11 am, 1 pm</td>
<td>32 29</td>
<td>55</td>
<td>272</td>
<td>227</td>
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<td>272</td>
<td>227</td>
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<td>Feb or Oct</td>
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<tr>
<td>8 am, 4 pm</td>
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<td>57</td>
<td>270</td>
<td>225</td>
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<td>9 am, 3 pm</td>
<td>53 34</td>
<td>68</td>
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<tr>
<td>10 am, 2 pm</td>
<td>46 37</td>
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<td>206</td>
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<tr>
<td>11 am, 1 pm</td>
<td>41 38</td>
<td>79</td>
<td>248</td>
<td>203</td>
</tr>
<tr>
<td>12 noon</td>
<td>39 39</td>
<td>81</td>
<td>246</td>
<td>201</td>
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<td>Mar or Sept</td>
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<td>7 am, 5 pm</td>
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<tr>
<td>8 am, 4 pm</td>
<td>72 48</td>
<td>110</td>
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<td>172</td>
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<td>9 am, 3 pm</td>
<td>63 48</td>
<td>111</td>
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<td>171</td>
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<td>12 noon</td>
<td>50 50</td>
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<td>Apr or Aug</td>
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<td>9 am, 3 pm</td>
<td>74 67</td>
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<td>11 am, 1 pm</td>
<td>63 62</td>
<td>189</td>
<td>93 93</td>
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</tr>
<tr>
<td>12 noon</td>
<td>61 61</td>
<td>188</td>
<td>102 102</td>
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</tr>
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<td>May or July</td>
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<td>81 77</td>
<td>844</td>
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<td>10 am, 2 pm</td>
<td>75 73</td>
<td>318</td>
<td>9 0</td>
<td>0</td>
</tr>
<tr>
<td>11 am, 1 pm</td>
<td>72 70</td>
<td>281</td>
<td>46 1</td>
<td>0</td>
</tr>
<tr>
<td>12 noon</td>
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<td>0</td>
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<td>June</td>
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<td>74 74</td>
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<td>11 am, 1 pm</td>
<td>74 73</td>
<td>334</td>
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</table>

% Window shaded = 100(c/d)
= 100(34/280)
= 12.2%

If the seasonal effectiveness of this window as a source of winter heating is being investigated the shading factor would indicate that only 87.8 percent of the window area would be transferring direct solar radiation at solar noon in February. Conversely, if October cooling load were being checked the overhang would be only 12.2 percent effective in preventing the direct transmission and/or absorption of solar energy.

The irradiation percentage (87.8 percent) could also be obtained directly by noting from Table V that the b value equals 246, hence:

% Window irradiated = 100(b/d)
= 100(246/280)
= 87.8%

Referring to the fifth column of Table V, the b value at 9 a.m. in January (or November) is 287. Then:

% Window irradiated = 100(b/d)
= 100(287/280)
= 102.5%

Since values in excess of 100 percent are obviously impossible, the above result must be interpreted as meaning that the shadow line is above the top of the window; hence an opaque wall depth of 2.5 percent of window height is subject to direct irradiation. Conversely, from column 10 of Table V, the b value at 9 a.m. (or 3 p.m.) in May (or July) is 397. Then:

% Window shaded = 100(c/d)
= 100(397/280)
= 142%

This result indicates that the shade line is below the bottom of the window; hence not merely is the window wholly protected from solar irradiation, but an opaque wall depth below the window...
(equal in distance to 42 percent of the window height) is likewise in shadow.

**Summary**

Although the design of overhang for solar windows is based on boundary conditions for which the window is to be fully irradiated or fully shaded, the performance of such windows—either in admitting solar energy in winter or excluding such energy in summer—largely depends on seasonal conditions of partial shading. Evaluation of partial shading requires knowledge of the “effective” solar altitude, that is, the sun’s elevation as measured in a projected vertical plane normal to the surface of the window; so far as the authors are aware this paper represents the first publication of seasonal hourly values of the effective solar altitude.

Tabular values of solar constants are presented for south-facing windows located at 30°, 35°, 40°, and 45° of latitude (values for other latitudes can be readily obtained by either interpolation or extrapolation). From the constants given in the tables the instantaneous and the seasonal performance—either with respect to winter advantage or to summer disadvantage—of a solar window can be obtained based on exact shading conditions at any hour of any clear day; seasonal values can be obtained by summation of hourly effective transmission rates or of daily averages.

In practical use the data presented should assist the architect in selecting and evaluating the effectiveness of overhang for a particular size and type of solar window; it should also assist the heating and air-conditioning engineer in calculating the seasonal effect, either for summer or winter, of south-facing glass areas.
With the effective solar elevation known, it is evident from Figure 1, hence the unknown Figure 1a, and the vertical distance is x (as apparent elevation when projected on a vertical plane through the normal to the window.

The effective solar altitude, H', is the sun's angle H' is that angle for which the tangent vertical leg of the right triangle of Figure 1b gives Figure 1b where the distance out to the window along the normal is y and the corresponding hypotenuse of the indicated right triangle is then y. By observation:

\[ y = x / \cos B \]  

Now taking an elevation in a direction normal to y gives Figure 1b where the distance out from the window along the normal is y and the angle H is the true solar elevation. The vertical leg of the right triangle of Figure 1b is then:

\[ z = y \tan H \]  

The effective solar altitude, H', is the sun's apparent elevation when projected on a vertical plane through the normal to the window. Referring to Figure 1c the horizontal distance out along the normal is x, (as evident from Figure 1a), and the vertical distance is z (as evident from Figure 1b), hence the unknown angle H' is that angle for which the tangent is z/x:

\[ H' = \tan^{-1} \left( \frac{z}{x} \right) \]  

Substituting from equations b and c:

\[ d = \frac{b' - c'}{b' - c'} \]  

With the effective solar elevation known, it

\[ a = 100 \left( \tan H' \right) \]  

is now possible to determine the extent of either shading or irradiation for any selected solar overhang at any time of any day. Referring to Figure 2, let 0 be the length of horizontal overhang extending out over a south-facing solar window of height d where b' is the vertical distance from the underside of the overhang to the bottom of the window and c' is the vertical distance from the underside of the overhang to the top of the window. Note that:

\[ b' = 0 \tan H' \]  

The fractional shading of the window (from Figure 2) is given by:

\[ \% \text{Window irradiated} = 100 \left( \frac{b}{d} \right) \]  

on any day, is given by the expression

\[ a - c' \) \]/(b' - c') \]  

where a is the actual position of the shade line at the time in question. But,  

\[ a = 0 \tan H' \]  

and for a selected 0 value of 100,

\[ b' = 100 (\tan H') \]  

where a is now expressed as a percentage of the length of overhang. Values of a are given at every hour on the 21st of every month in the fourth column of Tables III, IV, V, and VI. From Figure 2 it is evident that:

\[ d = b' - c' \]  

Hence, by substituting from f and m into expression j, and multiplying by 100,

\[ \% \text{Window shaded} = 100 \left( \frac{b}{d} \right) \]  

The value of c depends on the selected winter-shading criterion; tabular values are given for October, November, and December in Tables III through VI. The value of d depends on both summer and winter design conditions; tabular values for nine such sets of conditions are given in Table VII.

The fractional shading of the window (from Figure 2) is given by:

\[ \% \text{Window shaded} = 100 \left( \frac{b}{d} \right) \]  

The value of d depends on the selected summer-shading criterion; values based on June, July, and August are given in the fifth, sixth, and seventh columns of Tables III-VI.

See Table I for values of c' for design dates of October 21, November 21, or December 21.

Figure 1abc provides a graphic visualization of the method used for evaluating the effective solar-window overhang. The sun's elevation, H, at solar noon on the selected winter day. Table ni gives values based on June, July, and August are given in the fifth, sixth, and seventh columns of Tables III-VI.

The tabular a values are exact for September through March. For April through August the tables were set up from available calculations which were based on the first rather than the 21st of the month, hence for these months slight error—usually less than five percent—will sometimes occur.

A recent result of Aladar and Victor Olgyay's continuing research in bioclimatology (they are now professors at Princeton's School of Architecture) has been the development of the Shade-dial—an instrument which readily enables one to reproduce on models the actual conditions of light, shade, and shadow produced by the sun. These conditions can be simulated for any geographical location, any day of the year, and any time of the day.

Although the effects of insolation can be studied by calculation methods, the process is generally laborious and time consuming. A fair number of heliodons (sun machines that move a light source by calibrated mechanical adjustments) have been developed for this kind of study; however, all have suffered from two disadvantages: the divergence of lamp rays makes accurate measurements difficult; the excessive size and construction cost has limited their use mainly to institutions and experimental stations. Several sundial-type devices have also been used to measure shading on models, but these, too, have had their limitations.

Sundials are familiarly used to tell us the time of day for a given location of the sun. If, however, they are used in reverse, they can tell us where the sun's relative position in the sky should be for a given location and time. The Shade-dial operates on this latter principle and overcomes most of the disadvantages associated with other methods. Here's how it is used.

Place the Shade-dial on the base of the model (as shown in photo above) so that the bottom of the instrument is parallel with the horizontal plane of the model. The latitude knob (on right of the instrument) should be set to correspond with the latitude where the building is to be constructed. A "north" sign, located on the latitude knob, should point in the same direction as that of the model. Note that the instrument has a semicircular dial calibrated for seasonal and hourly changes (like chart below but without shaded areas). In the center is a small ball which, when illuminated, casts a shadow on the dial indicating the month and hour corresponding to the position of the sun (or simulated sun). The light source can be either an ordinary table lamp or the sun itself. In the case of the former, the lamp is moved until the shadow on the dial indicates the day and hour at which shading on the model is to be studied. If the sun is used as the light source, then the model and Shade-dial are tilted and turned together until the shadow indicates the desired time for measurement.

Dial charts, like the one illustrated (below), have been developed for representative areas of the country to indicate overheated or underheated periods where different shading conditions are required.

Shade-dials are now manufactured and distributed by Universal Corporation, 6710 Denton Drive, Dallas 9, Texas. They have been produced for architects, engineers, and designers to help promote the proper design of shading devices. Approximate cost is $9.
This immense assembly plant and flight-testing facility was designed and built for assembly and testing of jet planes manufactured by the Grumman Aircraft Engineering Corporation for the U.S. Navy. For security reasons, details of operation do not concern us here. But the design and construction of this unusually distinguished group of industrial buildings, where noise exclusion was a major design factor, hold much architectural interest.

The 4400-acre site, well out on Long Island, was selected because (1) the huge unbuilt-on acreage was available in that area; (2) location in the country was considered best from the safety angle; (3) the high-noise-level problem would confront as few as possible; and (4) the land was dotted with trees and scrub oak, which, in themselves, were considered useful in keeping noise to a minimum.

Major buildings of the installation are (a) a 646-ft-long, L-shaped assembly building, to which the administration-cafeteria building is connected; (b) a 528-ft-wide hangar and operations building; (c) paint shop; (d) steam plant; (e) warehouse; and (f) service structures. Except for such open areas as hangars, the buildings are air conditioned.
Behind the long, low administration building (detail below) is the giant assembly building, where subassemblies are received by either truck or rail and proceed to the assembly area. A 40-ft-long passage joins this unit with the administration building.

A courtyard (right) separates the administration building (left of photo) from the assembly building.

On an upper level of the assembly building is the plant cafeteria (bottom).

Photos: Gottschu-Schleiner

All units are steel framed (because of huge spans involved; also for erection speed). Exterior wall surfacing, except in the administration wing (where aluminum-faced, galvanized steel backed, insulated sandwich panels are used), consists of precast, reinforced concrete sandwich panels with a core of glass-fiber insulation (chosen over masonry for speed of erection in winter; relatively low cost and for their insulative properties that assist both thermal conditions and the very serious problem of noise exclusion). Above the concrete panels, where less weight was desired, insulated aluminum cellular panels were used. In the roofs, between concrete-plank roof decking and built-up roofing, is 1-1/4 in. of insulation.
When the assembled planes are ready for flight testing, they move to this huge hangar and operations building, with two hangars in each of the wings of the courtyard plan. Joining the hangar wings is the two-story, flight-operations section of the building, containing rooms for company and Navy inspection; visiting pilots; stock room; receiving room; and garage (on the ground floor) and the chief pilot's room, a ready room, cafeteria, stock room, and space for electrical equipment and radar preparation and stock on the second floor. The control tower for the field occurs at the northeast corner.

The scale of the Grumman buildings is difficult to grasp. Each of the hangars in the building shown here is 140 ft wide and 150 ft deep by 40 ft to the under side of the trusses. The hangar doors are 140 ft wide by 36 ft high and are of the side-sliding type, with provision for motor operation so that each leaf can be operated separately. The doors, like the walls and roof, are insulated; and, further assisting noise exclusion, double-insulating glazing is used.

In the design of the Grumman plant, the architects and engineers wish special credit given to the following: Guy B. Panero, Consulting Engineer for Mechanical Work; Fred J. Biele, Consulting Sanitary Engineer; Albert Homer Swanke, Project Manager for the Architects and Engineers; William E. McKay, Plant Engineer for Grumman Aircraft Engineering Corporation; L. G. Defelice & Son, Inc., General Contractor for Runways and Railroad Work; Grove-Hendrickson, General Contractor for Buildings and Site Utilities; Bethlehem Steel Company, General Contractor for Structural Steel; and Combustion Engineering Super Heater, Inc., General Contractor for Boilers and Steam Plant Equipment.
Two leaves of each of the 140-ft-wide hangar doors contain a pass door, and all leaves have glazing above eye level. To prevent freezing in winter, steam pipes are provided under the tracks of the doors. The doors are painted a brilliant yellow.
Coming around to the north side of the hangar and operations building, one sees the six-story control tower for the airfield. The height of the tower makes it possible to oversee the full length of both of the major field runways; and it was projected from the rest of the building so that the Chief Pilot (on the second floor) would have a view down both faces of the building, for optimum viewing of the movement of planes and automotive equipment. Construction, as elsewhere, consists of a steel frame with exterior walls of insulated, precast concrete panels.
The control room is exceptionally well insulated for obvious reasons—acoustically treated; double glazing, separated by a 4-in. air space (outer pane, of heat-absorbing glass); acoustic pan ceiling; and heavy carpeting. Roof is of stainless steel to reflect heat; and stainless steel mullions were used to minimize obstruction to view.
The steam plant (this page) contains three water-tube boilers, two rated at 50,000 pounds of steam per hour and one at 25,000, all equipment to operate at 150 pounds per square inch pressure.

The paint shop (across page) is for spray painting the planes as they come off the end of the assembly line and before they are towed or taxied to the hangar for flight testing. Ventilating system is so designed that air flows through the painting area at a velocity of 150 ft per minute.
materials & methods


equipment

related design fields
symbols of modern education

Two works of art expressive of the goals of modern youth and education adorn the entrance of General George W. Wingate High School, largest of the new public schools being built in Brooklyn, New York. The sky-pointing metal sculpture, "Aspiration," (acrosspage) by Gwen Lux stands in front of the building and at the top of the entrance steps is the large mosaic panel, "Tools of Education," (above) by Max Spivak.

Warm friends of contemporary art are the architects of this much-discussed "banjo shaped" school, Kelly & Gruzen, whose buildings of recent years have been designed to incorporate the works of some of our most talented sculptors and painters. The sculpture and mosaic shown here were both commissioned by the architects and won approval of the New York Board of Education and Municipal Art Commission.

The 30-foot steel shaft of the Lux sculpture represents the soaring hopes of youth and the three large bronze fins are decorated with symbols of celestial bodies, of air currents, and of student activities. The concrete base from which the sculpture springs was poured in a wood form, in which some of the markings had been ground and to which fossil forms had been fastened. The base represents the elemental origin of life on earth.

Venetian-glass tessaract ranging through some 500 hues were employed by Spivak for his mosaic mural, 10 feet high and 14½ feet wide, in the entrance loggia. The symbols of artistic and scientific pursuits are brilliant, in effective contrast to the light background harmonizing with the general exterior color scheme. The mural suggests the broad scope of curriculum and student interests in a modern educational plant. Photos: Gottardo Schleisner
Nearing completion in Charlotte, North Carolina, this 332-ft diameter coliseum for sports events and exhibitions is roofed by an aluminum-sheathed dome, which covers an area of two acres, yet requires only 48 columns on its circumference for support.

The dome is basically an arched steel web supported by a center compression ring and a circumferential tension ring. This structural system is "considered to be the most economical roof framing as well as enclosing a greater sq ft area than any other perimeter" ("Engineering Forecast," January 1953 P/A).

For erection purposes, the 24 WF compression ring, 45 ft in diameter, was mounted on scaffolding; the tension ring, 32" x 2" and 1000 ft in circumference, was placed on top of columns. Both rings were fabricated of welded-steel. Arched ribs were ground welded and individually positioned on the two rings in three-rib groups. Initially, one group was placed in each quadrant to insure a balanced load, since the prefab assemblies weighed 14 tons each. Steel WF members, framing into ribs in concentric circles 22-1/2 ft apart, support 10 WF purlins. On this framework were laid 3" precast-woodfiber planks, topped by a 1" layer of poured concrete. An overlay of 30-lb tarred roofing felt is rendered watertight and maintenance-free by a covering of aluminum sheet. The entire roof assembly, which is designed to withstand winds of 125 mph, rests on concrete columns, 53 ft high, sloped outward on top to keep rain off the exterior wall. Precast-concrete panels are used for exterior wall above spandrel beam, which supports seating. Remaining area between columns will be glazed.

Aluminum sheeting, .032" thick, provided the solution for a lightweight roof covering—it weighs only one lb per sq ft. Topping the dome, a one-piece cap, 60 ft in diameter, is made of welded-aluminum sheet, while the rest of the 3650 pieces are seamed in a manner which allows for ample expansion and contraction (see details acrosppage).

Architects and Engineers for the coliseum were A. G. Odell, Jr. & Associates of Charlotte; Consulting Engineers were Severud-Elstad-Krueger of New York. Aluminum sheeting was supplied by Aluminum Company of America; Aluminum Structures, Inc., fabricated and installed the sheeting.

Construction photos show application of aluminum roof sheeting and the completed dome (lower right and above). Coliseum, accommodating up to 13,500 persons, as well as an auditorium seating 2,500, will constitute eight-acre civic project, pictured in photo of model (above right).
One-eighth plan of roof is drawn above; center point rises 113 ft above floor level, sloping down to height of 53 ft at perimeter. Detail of coping also shows steel plate, which contains thrust of dome. Aluminum sheeting is joined laterally by standard flatlock seams; joints radiating from center are specially designed batten seams.
Selection and specification of hardware is an area of architectural activity too often treated casually. Lock sets, in particular, have today so many functions—methods of operation, keying, and control, on one or both sides of the door—that their specification can become extremely complicated. To clarify these basic functions for the architect, The American Hardware Company, manufacturer of the Russwin and Corbin lines, has prepared for P/A the diagrammatic chart which appears on these pages. The Editors believe that this should be useful specification data for the architect’s office.

Materials used in the manufacture of cylindrical lock sets are of major importance. As in the case of any product specified, the criteria of strength, appropriateness, durability, and appearance are the controlling ones. Hardware manufacturers today recommend the copper alloys—brass and bronze—for quality installations. The reasons are: the copper alloys have a solid “feel” in the hand; their weight provides a sense of security when grasped; these metals lend themselves to close-tolerance manufacture and plating with other materials; moving parts will not seize or gall; service will be long-term without maintenance nor replacement. Finally, of course, the warm tones of copper, brass, and bronze are appealing. Except for atmospheres where salt or high humidity might corrode ferrous parts, certain of the interior working parts can well be made of steel. Steel and brass are good “bearing pairs”; there is no danger of corrosion caused by the galvanic action of dissimilar metals.

### SYMBOLS

<table>
<thead>
<tr>
<th>CYLINDER &amp; KEY</th>
<th>PUSH BUTTON</th>
<th>TURN BUTTON</th>
<th>LATCH</th>
<th>RIGID KNOB</th>
<th>EMERGENCY</th>
<th>ACTION</th>
<th>THROW OFF</th>
</tr>
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</table>

### Materials and Methods

**Front or Office Door**

- Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by turn button in inside knob. Latch bolt automatically deadlocks when door is closed.

**Communicating**

- Latch bolt operated by knobs from either side except when key in either knob locks opposite knob. Latch bolt automatically deadlocks when door is closed. To prevent accidental lockout this lock should not be used on doors between rooms which have no other entrance.

**Rest Room or Public Station**

- Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob. Turning key outside, knob inside, or closing door releases locking button. Outside knob can also be locked by full turn of key from outside. Latch bolt automatically deadlocks when door is closed.

**Utility Closet**

- Latch bolt operated by thumb turn from inside and by key from outside; outside knob always rigid. Latch bolt automatically deadlocks when door is closed.

**Fixed Knob**

- Latch bolt operated by knobs from either side except when key in either knob is locked by full turn of key in either knob. Latch bolt automatically deadlocks when door is closed.

**Closet**

- Latch bolt operated by thumb turn from inside at all times and by knob from outside except when outside knob is locked by full turn of key. Latch bolt automatically deadlocks when door is closed.

### Notes

automatically releases locking button/ In case of emergency pressure of emergency knob releases locking mechanism.  

Key or other pointed instrument against emergency device in center of outside deadlocks when door is closed.

Turning key outside or knob inside releases locking button; closing door does not release locking button/ Latch bolt automatically deadlocks when door is closed.

Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Latch bolt automatically deadlocks when door is closed.

For doors used mostly for exit where entrance is not required when locked/ Latch bolt operated by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Latch bolt automatically deadlocks when door is closed.

For doors that require locking only when room is occupied/ Latch bolt operated by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning inside knob or closing door releases locking button preventing accidental lockout/ Latch bolt automatically deadlocks when door is closed.

Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Latch bolt deadlocks when door is closed.

Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning inside knob or closing door releases locking button/ Latch bolt automatically deadlocks when door is closed.

Latch bolt operated by key from outside at all times and by knobs from either side except when outside knob is locked by pushing in button in inside knob/ Turning inside knob or closing door releases locking button/ Latch bolt automatically deadlocks when door is closed.

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Say, did I mention to you that I attended (and spoke at) the 35th Annual Convention, last January, of the National Concrete Masonry Association in Cleveland, Ohio? Wasn’t that a sneaky introduction? Subtle as a landslide. What do you suppose they talk about at these shindigs? More members! (They have 800 of them.) More business? (It is at an all-time high: $400 millions.) What are the means of improving concrete masonry unit products? Indeed, yes! I never saw so many variations of blocks. There were blocks with such dense aggregates as sand and gravel, crushed stone and air-cooled slag, and with such light aggregates as cinders, expanded slag, granulated slag, expanded shales and clays, pumice, scoria, vermiculite, perlite, diatomite, and heaven knows what. Then there are blocks which have been faced in a variety of ways, such as the special-finish units having faces glazed to produce an allegedly permanent surface requiring no paint or other treatment (they say it is stainproof, color-fast, free of hair lines, chemically resistant to acids, alkalies, and doubting architects). Also in the running is a ceramic glaze. It is claimed that this baby will withstand hydrostatic pressure of 15" of water without any signs of peeling. Then there are the “locked-in-the-block” coatings developed by the paint industry. I could go on and describe units in many colors and surface textures, but I won’t because my feet gave out at this point. Barely made the plane back home.

**brain washers**

On the train the other day, I got into a friendly hassle—well, let’s just call it a discussion—with my neighbor, Arthur Morgan, of Erdos & Morgan. I had just received a questionnaire from Wynn and I wanted to know why they were so interested so persistently in architects. “It’s because you specify,” said Morgan. “That’s why you’re such important people.” “Isn’t it because we translate music into stone, like the man said?” I asked. “No,” Morgan shook his head, “it’s because you specify unpeeled billion-dollar worth of building materials.” “Is it perhaps because I’ve worked for many years on streamlining specifications?” I ventured timidly. The marketing man was blunt: “I don’t give a hoot what the wind resistance of your specification is; you can round it off or cut it square. Architects get questionnaires because they specify.” Once back at my office, subdued and obedient, I hauled out and answered the brainwashing questionnaire... like the man specified.

**aluminum survey**

Many American architects are using more aluminum in school buildings than they realize, preliminary findings of a nationwide survey of leading architects indicate. More than 150 architects who are currently responsible for the design of about 80 percent of America’s public school buildings were interviewed in connection with Kaiser Aluminum & Chemical Corporation’s extensive study of present and potential uses of aluminum in school construction. Typical was the comment of a Philadelphia architect, who stated flatly that he doesn’t specify much aluminum. But then, after a few moments’ thought, he rattled off some 20 building components for which he almost always specifies that metal. Across the nation, in San Francisco, another prominent architect made the same initial comment; but after checking through a list of applications, expressed astonishment at the large amount of aluminum he is using. Similar views were recorded in virtually all sections of the United States by representatives of the Los Angeles architectural-engineering firm of Daniel, Mann, Johnson & Mendenhall, who were conducting the survey on behalf of Kaiser Aluminum. The interviews, now concluded, have laid the groundwork for further studies designed to establish as far as possible where aluminum products may make significant contributions to school architecture, building, and equipment. The studies will require several months to complete.

In the course of the interviews, each architect was presented with a list of 130 present applications of aluminum in schools. He was then asked to indicate which ones he “always,” “sometimes,” or “never” specifies, and which ones (if any) he is unfamiliar with. Frequently, after expressing surprise at the number of applications, the architect checked the list and found many familiar uses of aluminum. In fact, it was found that one third of the applications were specified, sometimes or always, by a majority of the architects. Architects are as individual in their attitudes toward materials as they are about design concepts, the interviewers concluded. In no case was there unanimous agreement among the architects. In a few cases even general agreement regarding the use of aluminum in a specific application. For example, while 86 percent “never” specify aluminum for fencing, 10 percent “sometimes do” and four percent “always do.” On the other hand, 89 percent “sometimes or always” specify aluminum for hand and pipe rails, but 11 percent “never.” The architects are almost evenly divided on some applications. This is true, for example, of gutters, downspouts, solar shading, and awning windows.

The interview phase of the survey completed, members of the Daniel, Mann, Johnson & Mendenhall staff are now coordinating the data obtained and making detailed studies of such matters as cost, durability, workability, ease of construction and upkeep, heat control, light control, acoustics, color and structural design, all with reference to aluminum and other available materials of construction.

**access doors**

Access doors are a pain in the neck. Access doors are orphans. Access doors wander about in that no-man’s-land, so despised by those who have to specify them, particularly in the case of multiple contract projects. Who furnishes and installs them? The Contractor for General Construction? He howls, “How am I to know where the separate contractors for plumbing, heating and ventilating, and electric work want them? I have a limited time to get my bid in—and certainly not enough to conduct a research project!” So you specify them in each of the separate contracts. Are they all, in the final result, consistent? Usually not. Listen lads, button this one down carefully. Ask Karp Metal Products Company of New York to send its little oldchure on the subject, including its story on the new acoustical access doors, Type DSC-210. You’ll love me for this tip.
Have you ever started to say something and then stopped halfway through, realizing that what you were trying to say could have been more carefully thought out before you tried to say it? Of course you have; we all have. Multiply that by the man-hours invested in a set of working drawings and specifications and you get a rough idea of the importance of preplanning drafting room production.

How many jobs do you care to remember that started out to be 10 sheets and ended as 15, or started out to be 50 sheets and ended with twice that many? It would seem, objectively, that with all your drafting room experience you should have been able to estimate closer than that. Surely you could if you could afford to take the time. Yet, the few hours involved may make a lot of difference 1-ter, both in man-days of wasted effort and in confusion somewhere in the drawings.

production analysis

Production people in industry have a technique of analyzing a production on the basis of what are familiarly known as the “six W’s”: “what exactly are we trying to do, why should it be done, where is the best place to do it, when is the best time to do it, who is needed to do it, and what is the best way to do it?” As lost motions are weeded out, so are complete processes at times. An objective assessment of production processes has discovered many an operation kept on more from inertia and lack of imagination than from any effective contribution to the finished job.

We have a growing counterpart of that in our drafting rooms today. Naturally, no one has to sell us on “planning.” Planning is our profession. But planning our own production is a refinement we might not bother with except that compe-

drafting room efficiency-2:

by Hans W. Meier*

*Chief draftsman for Benedict, Becker & Kocher, Architects-Engineers, Downey, Calif.
production planning

the great physicist, once said: "You only begin to know your subject when you learn how to measure it." Any budget for drafting is based on some assumption as to the complexity and cost of the drafting. If this assumption exists at all, they say, then we should be able by experience, knowledge, and perceptive observation, to make it into a more accurate estimate.

Time-standards

Time-standards are units by which one generally can predict how long it will take to perform a certain piece of work. They are the product of careful recording of actual time used on previous, similar work, plus an insight into the differences between previous work and the job at hand.

The repetitive nature of mass-production has brought "time-study" to considerable eminence in industry. Once it brought chaos as well! That was in the early days of scientific management when the time records of the fastest men were used as the standards for everyone to produce by. Now it is recognized that differences exist among human abilities. Not only may one man have a particular ability with turning lathes and another man have a particular ability with horses, but varying shades of ability exist among all the lathe operators and among all the horse handlers, and among all the other crafts and specialties which make up our economy. Now certain lower and upper limits of ability are specified and the average of those abilities used as the standard. Along with "motion-study," which tends to overcome lost motions on the assembly line, time-study has contributed immensely to industry's being able to meet, and beat, stiff competition.

In the drafting room, our custom-made product gives us less chance to establish time-standards. How are we going to compare the drafting time of a residence to the drafting time of, say, a theater? Projects are conceived, designed, drawn up and built; sometimes with variations, often with a new theme, yet always played on the same instrument. So there is a pattern established which can certainly be reduced to something better than an assumption.

Those of us who have worked on time-standards in the drafting room have had to invent techniques to fit our own situations. Knowing that what we were trying to do was to maintain an accurate record of how long it took to do certain drafting, we have tried various schemes. One method has been to break any large drafting project into several components, giving each a decimal part of the job number. Thus, if the job number is 5425, then site work becomes 5425.1, foundation drawings become 5425.2, floor plans 5425.3, etc., on through door and window details, schedules, specifications, and the total job. These decimalized numbers are then entered on the time card in place of the regular job number and a tabulation is made for future estimating purposes. Those who use the system say it works well, as long as it is used for projects of a fairly similar nature. One firm specializing in schools uses the system almost exclusively.

Another firm uses an amazingly simple (though hardly as accurate) technique. It divides the total man-hours logged against drafting specific jobs, during the period of a year or more, by the total number of finished sheets of working drawings produced in that time for those jobs. This comes up with an average man-hours per sheet of drawings which can be used to estimate drafting costs in advance. This system may work adequately if the total number of sheets to be drawn is also worked out precisely at the same time. It must still be hard to predict, by this method, the balance of junior to senior men needed or to pin down just where costs get out of hand.

My own method is slightly different from either of these. Naturally, I am convinced of the value of preplanning. In fact, I have not yet found the limit, in a large project, where preplanning ceases to be of value. I now break the job down into sequences of operation—plans, elevations, sections, details of various kinds, schedules, and the like—and, combining a study of the present job with records of previous jobs, the department heads and I estimate the number and kind of man-days needed. Alongside the estimate for each sequence is another column titled actual, left blank until the sequence has been completed in the drafting room. A tabulation is then made and the actual man-days entered. This record of the estimated and the actual time spent on past jobs helps establish a fairly sound method of predicting just what is going to be needed on new jobs. We have found our more recent estimates coming closer and closer to actual results.

Effective control

The effective value of production scheduling seems to lie in its control of the production process. By knowing in advance just what it is we are trying to do, we can better evaluate our methods of doing it. We have a chance to eliminate those methods which make no real contribution to the finished job. We can say with some accuracy that we are going to have so many sheets of drawings and that we will need so many men for so long to draw them. We can tell our contractors and our clients that the job will be done on such a date and not have to resort to alibis or overtime whose productivity is questionable. We can allocate the number of persons needed for the job and not have to expand a good production crew hastily and wastefully. Best of all, it gives us a plan to work to, a view of our goal, and a gage by which we can measure our progress to that goal.
ELEMENTARY SCHOOL, Schenectady, N. Y.
Skidmore, Owings & Merrill, Architects
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In the two offices shown in this section—for Reinhold Publishing Corporation, publisher of P/A, and for an investment brokerage firm—it is easy to see at a glance the way the present-day wind blows in office interior design. That direction is obviously toward the "home away from home" atmosphere, with color, texture, furniture, and even accessories handled deliberately to resemble a residential setting. Only in lighting does the purely functional supersede, and even here, the overall lighting scheme is supplemented by decorative fixtures.

Superior appearance of practical materials, sturdy enough to take the everyday usage of office activity, together with notably improved design in office furniture, have made this interior design approach considerably simpler to execute. Client acceptance has fortunately widened for the office that invites instead of over-awes—for the office that relies on taste rather than tradition to impress.

For the attention of those benighted critics of contemporary design who will accuse the modernist of creating home interiors "so functional that they look like offices," we offer these offices so dedicated to comfort, color, and convenience that they look like homes!
A reception area that clearly states the contemporary design principles for which the company stands. This room welcomes the visitor with vivid color, is alive with light reflected in polished surfaces. The all-glass door wall invites entry from the elevator hall. A free-standing wall of walnut panels with white-painted uprights displays books and also acts as a divider between reception area and working offices beyond. The conference area is defined by an olive-green rug, repeating the color of one wall. Chairs are natural birch with blue-striped upholstery, sofa is bright orange. The other wall in this area is bright blue, against which hangs a walnut-and-white bookcase. The wall behind the receptionist’s desk, carrying the names of all Reinhold publications, is light gray. Ceiling is white, as is the plastic fabric on walls at either side of the glass door wall. Tile floor is black. Photos: Ben Schnall
Offices of the President of Reinhold Publishing Corporation. Window wall and facing wall are white and end walls are deep blue. Carpeting is gold and sheer draperies are gray. Desk and wall-length storage cabinet are walnut. Chairs and sofa are upholstered in blue-with-black texture.
Executive office in an investment brokerage firm's quarters reflects the "living room look," with all storage concealed, furniture chosen and arranged for a relaxed, unofficial atmosphere. Carpet, drapery, and wall colors are natural and white. The seven-foot desk and small occasional tables are teak, as is the storage wall (*not shown*). Adjoining office for private secretary completes the executive area, secluded at farthest end of total office plan. Other interiors are shown on the following pages. All furniture and fabrics from Knoll Associates, New York, N.Y.
Requirement was an open plan with work areas defined by suggestion. Diversified area-dividers include: solid partitions of pandanus-covered plywood set in channels of cold-rolled steel; sheer curtain fabric (ceiling-hung); and transparent partitions of stretched split bamboo.

Serving the double-purpose of area-divider and storage enclosure is a white-Formica-topped filing unit, accessible from both sides. As in all of the custom-built storage in this installation, interiors were dimension-designed to accommodate the company’s own special printed forms. Colors throughout are gray, natural, and white; with one brilliant color introduced in the vertical-siding storage wall, lacquered clear yellow. Furniture is walnut and black oxidized steel. Photos: Scott Hyde
Ceiling Fixture: "Starfire"/ textured disks, gold, white, and crystal/ ceiling canopy brass/ 13-light design/ 25" wide, 10-3/4" long/ design by Carl Moser/ retail: $108/ Lightolier, Inc., 11 E. 36 St., New York, N. Y.

Aluminum Draw Drapery: "Flexalum"/ vertical venetian blind/ single-cord operated to close completely or set at angle for light and ventilation control/ in 15 colors, combinations, or printed patterns/ Hunter Douglas Corporation, 150 Broadway, New York, N. Y.

Ceramic Tile Patterns: "Pan-O-Ramic"/ factory-assembled designs/ composed of various-size tiles/ available in 31 porcelain-type colors, 14 clay-type colors/ indentation-proof/ illustrated: #3003-11A, three-color, 1-1/16" squares in a straight joint setting/ American-Olean Tile Co., Lansdale, Pa.


Wood Folding Door: (left) "Panelfold"/ vertical solid panels of real wood/ connected with color-fast, flame-resistant, noncracking Goodrich vinyl resin/ hinged with pantograph self-aligning aluminum mounting units/ doors supported at top only/ nylon wheels, heavy brass bearings in extruded aluminum overhead track/ available in many woods, finishes, colors/ Panelfold Doors, Inc., 4951 E. 10 Court, Hialeah, Fla.
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Upholstery Texture: "Bahia"/ power-loom duplicate of hand-weave/ 48% wool/ 64" wide/ designed by Lyda Way/ retail: $10.80 per yd./ Know-wiser, Inc., 1 E. 53 St., New York 22, N. Y.
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"Basket-Weave" Sliding Doors: of Canadian Basswood or Philippine Mahogany/ factory-finished in clear lacquer/ decorative wood-slat weave permits air circulation/ top track and bottom threshold screw-installed/ nylon-wheeled roller hardware/ stock sizes: 6' 8", 8' 0"/ units: 2-panel, 3-panel, 4-panel wardrobes/ Robin Wood Products Co., Pomona, Calif.

Appliance Paint: "Colorage"/ high-gloss porcelain finish paint may be used to refinish air conditioners, refrigerators, washers, dryers, freezers/ also semi-gloss for woodwork/ five colors, matched to General Electric appliances: pink, brown, green, yellow, blue/ A. C. Horn Division, Sun Chemical Corporation, 10 St. and 44 Ave., Long Island City 1, N. Y.

Knobless Door Latch: "Lev-R-Latch"/ 3-1/2" high, 4" long, face extension 1/2" outward from door/ beveled edges, flush surface/ face-plates of heavy gage, rust-proof zinc alloy, plated in various finishes/ three-step installation simplified for labor cost reduction/ new operating mechanism of heavy-duty material/ available with or without locking mechanism/ Soss Manufacturing Co., 21777 Hoover Rd., Detroit 13, Mich.

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Architects' Planning and Purchasing Service: to aid in selection and purchase of furniture, lighting, fabrics, floor coverings/ showroom available to clients/ catalog system/ follow-through to final installation/ Euster Associates, 248 E. 49 St., New York, N. Y.

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9017 Blue Ash Rd., Rossmoyne, Ohio
Please send me complete information on Steelcraft Hollow Metal Doors.
Name ____________________________
Company ____________________________
Address ____________________________
City ____________________ Zone _____ State ______
Editor's Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.

**Air and Temperature Control**

1-29. Venturatin Unit Heaters (5/17), 48-p. booklet on unit heaters designed for use with steam or hot-water heating systems. Outlines advantages of unit heaters in commercial or industrial buildings; gives step-by-step procedure for estimating number and location of heaters. Also provides data and specifications on all component parts. Tables of heat-loss coefficients and capacities of different types of heaters; wiring and plumbing diagrams. American Blower Corp., Detroit 32, Mich.

1-30. Armstrong Heating and Air-Conditioning Equipment (114), 48-p. catalog covering both winter and summer temperature-control equipment. Describes winter air-conditioning furnaces fired by oil, gas, or coal; shows companion summer cooling units and, also, packaged conditioners. Drawings, dimensions, and specifications accompany description of each model. Armstrong Furnace Co., Columbus, Ohio.


1-32. Airtemp Air conditioners, 20-p. bulletin containing information on line of summer and winter air-conditioning equipment. Describes air- or water-cooled units to be used in conjunction with winter-heating system for year-round temperature control; gives data on packaged units and window models. Drawings, dimensions, and specifications for each type. Airtemp Div., Chrysler Corp., Dayton 1, Ohio.


**Construction**


2-41. Grating and Stair Treads, AIA 14-P21 (1105), 16-p. pamphlet illustrating gratings made in steel, bronze, aluminum, and many alloys. Photos show patterns available in gratings fabricated of interlocking pieces or welded members; includes data on stair treads, flooring, and flooring. Design tables list recommended sizes of bearing bars. Machinery Div., Dravo Corp., Pittsburgh 22, Pa.


2-43. Mills Movable Metal Walls, AIA 35-H-4 (55), 68-p. catalog on steel partition walls. Lists features of wall system designed for flexibility; gives data on fire resistance and sound transmission. Describes two types of office walls and, also, industrial partitions. Includes section on accessories, hardware, and wiring facilities; photos, details, and specifications. The Mills Co., 965 Way-side Rd., Cleveland 10, Ohio.


Do glass blocks make a building look CHEAP?

When the all-glass block was first introduced by Pittsburgh Corning back in 1938, it was frequently misused. Tavern keepers bought them, and put red and blue lights behind them. Thanks to the almost indestructible quality of PC Glass Blocks, many of these installations are still in existence to plague us.

Today, as you know, PC Glass Blocks are radically different from the early blocks. PC Functional Glass Blocks are engineered optical units that give the architect a wonderful new light-controlling tool. And when sound design principles are followed, a panel of glass blocks has a delightful, pleasing texture.

The whole technology of glass-making has been up-graded. An increasing variety of patterns and sizes is being made available, until today many architects consider the glass block panels to be an important part of the aesthetic effect of the building. Imaginative design, daringly applied, has resulted in glass block panels that literally seem to float in air.

In matters of design, no two architects think alike (thank heaven!). But we think that the photograph on this page proves that glass blocks can look mighty attractive when properly used.

PC Glass Blocks

Pittsburgh Corning Corporation, Pittsburgh 22, Pa.

ALSO SKYTROL* AND FOAMGLAS®

In Canada: 57 Bloor St. W., Toronto, Ontario
doors and windows

3-31. Barcol Overdoors, AIA 16-D (F4644-5), 16-p. catalog on residential and commercial overhead doors. Outlines construction and operation of doors; gives details and recommendations for installation. Also includes data on special accessories such as electric operators and radio controls. Photos, dimensions, specifications. Barber-Colman Co., Rockford, Ill.


3-34. Solar-Selecting Glass Block No. 80-F, 4-p. folder featuring special-purpose glass block for use in areas with severe sun conditions. Charts indicate amount of brightness control, light transmission, and solar-heat transmission; table predicts quantity of illumination for various locations in U. S. Owens-Illinois, Toledo 1, Ohio.

electrical equipment, lighting


4-23. Hospital Lighting (16), 12-p. brochure illustrating lighting fixtures for hospital rooms. Shows several different types of wall and floor lamps; pictures recessed night lights. Contains photos, description, and mounting diagrams for each lamp. Luminous Equipment Co., 1325 W. Webster Ave., Chicago 14, Ill.


gives recommendations for design of system, with guide for selection of proper model. Drawings; dimensions; performance charts. Industrial Sound Control, Inc., 45 Granby St., Hartford, Conn.


NEW...

Full Color Ceramic Tile Booklet

Valuable planning help on School and Hospital jobs

Color photographs and tile descriptions for a variety of actual installations in schools and hospitals. The many ideas it contains for planning school and hospital jobs make this new booklet valuable for architects.

Send for your free copy today!

See our Catalog in Sweet's Architectural File.
properties of material; gives drawings showing its installation; provides specifications. Baldwin-Hill Co., Trenton, N. J.


sanitation, plumbing, water supply


7-10. Answers to Many Cleaning Problems (154), 12-p. publication explaining operation of stationary vacuum-cleaning system in large buildings. Outlines advantages of system; gives comparison of costs between stationary and conventional methods, based on initial outlay, maintenance, and labor. Also includes data on special cleaning apparatus for swimming pools, garage-exhaust systems, and special portable vacuums. Drawings, graphs. The Spencer Turbine Co., Hartford 6, Conn.

specialized equipment


8-10. Schmidt Commercial Refrigerators, AIA 30-F-6, file folder containing 25 pages of data on refrigerators for commercial and institutional use. Describes freezers and cold-storage units, refrigerated display cases, and dual-temperature units. Also includes data on special cases for bottled drinks. Drawings, dimensions, and specifications. The C. Schmidt Co., 1712 John St., Cincinnati 14, Ohio.

vertical traffic


interior furnishings

11-4. Hil-Rom Contemporary Hospital Furniture, 130-p. catalog of hospital furniture designed by Raymond Loewy and color-styled by Howard Ketchup. Photos, some in color, show four distinct lines of wood furniture finished in walnut, maple, cherry, oak, or korina. Includes information on safety items, ceiling tracks for curtains, and geriatric furnishings; gives data on line of institutional furniture for hotels or dormitories. Hil-Rom Co., Inc, Batesville, Ind.
all eyes are on
WESLOCK'S
Black Rose

Here is unique custom-styling at budget prices for
every door in the house. All Westlocks in all finishes
are now available with black rosettes at no extra cost.

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NEW! The "butter" that holds a ton per tile!

The easy-to-use clay tile adhesive that saves time, cuts costs up to 20% and more!

Here's the new, clean, quick way to set clay wall tile—the modern way to get luxury-tile results while cutting costs in the bargain.

It's CTA 11, the easy-spreading adhesive that is ready to go to work right out of the can. No premixing. A trowel is the only tool needed. And once this "butter" takes its grip on a tile, a full ton of stress can't remove it!

Now, you can specify a beautiful, lifetime clay tile installation on virtually ANY plumb surface—plaster, metal, cement block or dry wall—for new installations or remodeling jobs. CTA 11 is resilient and durable, too...resists cracks, moisture and settling. Architects, builders and tile contractors can start cutting costs by specifying and using CTA 11 now. For details on CTA 11—and its companion adhesive for tiling floors, CTA 12—write 3M, Dept. 156, 417 Piquette Avenue, Detroit 2, Mich.

MINNESOTA MINING AND MANUFACTURING COMPANY ADHESIVES AND COATINGS DIVISION
recent Ludman developments

Ludman's new intermediate, projected, aluminum windows (left) claim the following exclusive features: (1) truly modular window sizes as recommended by the AIA; (2) white-bronze corner braces for vents; (3) vent arm attached to jamb through threaded inserts; (4) mullion bars that provide caulking pocket for weather-tight construction; (5) mullions fluted vertically for appearance and strength; (6) glazing beads in vent that do not require hold-down screws; and (7) intersecting muntin joint securely locked by screw for added rigidity and proper glass clearance.

Making their new aluminum sliding-glass doors suitable for practically all climatic conditions are such features as the exclusive two-piece sill, bulb-type weather seal in jamb frame, and unique latching system on both sides of doors (below). Ludman Corp., 14100 Biscayne Blvd., No. Miami, Fla.

Designed for use with gypsum wallboard constructions, this new Snap-On Trim (below) is said to reduce the cost of trimming window and door openings by as much as 50%. No nails or special tools are required for installation. Snap-On Trim is delivered to the job with side sections having right and left mill-cut copings. Head sections are rough cut on the job from standard lengths. United States Gypsum Co., 300 West Adams St., Chicago 6, Ill.
Cabinets of Steel for lasting appeal.
This kitchen sparkles with beauty and efficiency—and it's made of steel to give long years of service. These new kitchen cabinets are easy to install...a unique Snap-Lock assembly channel aligns the cabinets, clamps them together, and fastens the base cabinets to a separate, telescoping sub-base. Only a pair of pliers is needed for assembly!

Wide Selection of cabinets and accessories. You can get American-Standard kitchen cabinets in a range of sizes and styles for greater flexibility in planning. New features include: handy hanging shelves, adjustable wire shelves in wall cabinets, corner cabinet with revolving shelves, high utility cabinet with sliding shelves for appliances, cabinets for built-in oven and range surface units.

Color Accents. For an extra and easy-to-change touch of color, cabinet handles are backed up with plastic color-guards. These attractive color-guards are available in six colors, to harmonize or contrast with colors of the Micarta counter tops and famous American-Standard sinks. They protect the cabinet finish, can be quickly changed at any time, offer flexibility in kitchen decorating.

Cabinet Convertibility. This exclusive American-Standard feature lets the housewife change the shelf and drawer arrangements in her base and undersink cabinets, quickly and easily to meet her storage requirements. Sliding wire shelves and drawers can be added or rearranged at any time in dozens of combinations. And wall cabinet shelves are adjustable at one-inch intervals.

All-New American-Standard Kitchen

Cabinets of Steel for lasting appeal. This kitchen sparkles with beauty and efficiency—and it's made of steel to give long years of service. These new kitchen cabinets are easy to install...a unique Snap-Lock assembly channel aligns the cabinets, clamps them together, and fastens the base cabinets to a separate, telescoping sub-base. Only a pair of pliers is needed for assembly!

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Another example of the many quality products made by the Plumbing and Heating Division of American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KENANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS
...a study in function and design
p/a products

(Continued from page 171)

air and temperature control

Herman Nelson "Light Stop": enameled-steel strip, five in. high, prevents light infiltration in classrooms equipped for audio-visual aids. Designed as accessory for unit ventilators, steel strip runs entire length of windows. It blocks glare from under blackout curtains and prevents them from flapping. Herman Nelson Div., American Air Filter Co., Inc., Louisville 8, Ky.

Third-Way Air-Conditioning System: efficient, low-cost air conditioner is designed to provide summer cooling in most-used portions of home. Minimum amount of ductwork is needed for air-cooled unit, even when located in basement, attic, or garage. One cabinet houses all equipment required for conditioning air; manufactured in three sizes ranging in capacity from 11,600 to 22,000 Btu per hr. Remington Air Conditioning Div., Remington Corp., Auburn, N. Y.

Year 'Rounder Air Conditioner: centralized unit offers greater heating and cooling economy in homes through efficient use of relatively small equipment. Automatic zone control enables unit usually rated for 1000 sq ft to condition 1800 sq ft by diverting air to living area during day and to sleeping quarters during night. Entire unit requires floor space of only 26" x 30". Rheem Mfg. Co., 7600 S. Kedzie Ave., Chicago, Ill.

"Royal-Aire" Conditioner: water-cooled air-conditioning unit is completely redesigned to give dependable service. Greater fan capacity, larger blower plenum, and thermal insulation are engineered with addition of duct system and heating coils in mind. Special safety feature insures minimum of gas remaining at low pressure in coils when machine is shut down. Manufactured in capacities of 3, 5, 7½, 10, and 15 tons; housed in newly styled cabinet. Heating and Cooling Div., Union Asbestos & Rubber Co., 332 S. Michigan Ave., Chicago, Ill.

Cyclotherm Boiler: new hot-water generator is easily converted to steam operation by adjusting automatic controls. For use in industrial plants heated by hot water, but occasionally requiring steam, boiler is fired by light oil, gas, or combination of both. As hot-water generator, unit delivers two million Btu per hr, working at 30 psi; as steam generator it gives 2000 lb per hr at operating pressures of 15 to 200 psi. Cyclotherm Div., U. S. Radiator Corp., Oswego 1, N. Y.

construction

"Steplap" Fiberglas Panel: translucent building panel features addition of scientific formula to screen heat and glare. To facilitate fastening to structural framework, stepped panel is formed with one-in., flat surface on each lap. Glass-fiber panels are 1¾" long, 31½" or 41½" wide, with 5" steps; available in five new shades of yellow, coral, blue, green, and white. Alsynite Co. of America, 4654 De Soto St., San Diego 9, Calif.

Load-Bearing Wall System: prefab, aluminum wall panels are engineered to carry roof loads without additional supporting members. Available for one- or two-story buildings, panels include integral structural framing, windows, doors, and insulation; specially made trusses for flat, shed, or ridge roofs rest on panel heads. Variety of exterior facings in extruded or sheet aluminum, as well as selection of interior panels, is offered. Building components can be dismantled and reassembled for moving. Aluminum Structures, Inc., 633 Washington Rd., Pittsburgh 28, Pa.

doors and windows

Ualco Sliding Window: extruded-aluminum sliding sash is designed for installation in horizontal bands at eye level. Frames are assembled with stainless-steel screws to insure strength and rigidity; continuous weatherstripping is firmly attached to sash tracks. Windows lift out for complete ventilation and ease of cleaning. Southern Sash Sales & Supply Co., 818 Twentieth St., Sheffield, Ala.

what they do

means a lot to you

when specifying

DRINKING-WATER EQUIPMENT

Here you see men testing, hour after hour... for capacity, for leakage, for accuracy of temperature and refrigerant controls, for correct setting of expansion valves... for every factor that can mean the difference between dependable and uncertain performance.

It's factory-tests like these that make the Halsey Taylor nameplate your guide to assured performance, no matter what cooler or fountain you specify!

THE HALSEY W. TAYLOR CO., WARREN, OHIO

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It's factory-tests like these that make the Halsey Taylor nameplate your guide to assured performance, no matter what cooler or fountain you specify!

THE HALSEY W. TAYLOR CO., WARREN, OHIO
marble teams with aluminum in this unusual curtain wall by CUPPLES

The versatility of Cupples aluminum "skin" construction is dramatically demonstrated in this magnificent building now under construction in Topeka.

Entire framework and interior lobby treatment are aluminum in clear alumiite finish—designed and fabricated by Cupples. Panels are marble set in aluminum frames.

Specially designed aluminum windows are Cupples 1300 Series—top-hung, inswinging, double weather-stripped, with tubular sash. Clean from the inside.

Structurally sound and economical, Cupples aluminum curtain walls are equally effective with panels of aluminum, stainless steel, structural glass, porcelain enamel and other acceptable materials.

High standards of design and manufacture have established Cupples' leadership in engineering curtain walls as in the fabrication of aluminum windows, doors, architectural aluminum extrusions and special ornamental products. Our catalogs are filed in Sweet's.

Visit our Booth at the National A.I.A. Convention

Cupple Products Corporation
2660 South Hanley Road • St. Louis 17, Missouri
KYCEIL. Area-Lume Lighting Systems have been conceived and designed in line with the increasing importance of complete area illumination. The trend in modern architectural design with its simplified large interior areas points up the need for this type of lighting.

The problem has been approached with several basic requirements in mind. To begin with, the system must be one that is readily adapted to a multiplicity of architectural design requirements and ceiling materials. Installation must be simple, economical and adaptable to any ceiling construction. It must provide the quality of light and type of over-all distribution essential for area illumination. And, it must be designed to achieve architectural harmony—an integral part of the plan, and not an "added appendage of lighting."

SKYCEIL is the answer—as its many and highly successful installations prove. Architects, contractors, lighting engineers and all concerned with this modern lighting trend will find its detailed story of great interest and value. To get your copy of the "Skyceil Story" (soon off press) send in your request now to get on the preferred first-mailing list. Or if you have any immediate questions, send them to our New York Office for a quick reply.

*AREA-LUME LUMINOUS OVERALL CEILING LIGHTING BY
SKYCEIL FEATURES

- Permits combination of silvered bowl incandescent lamps and fluorescent lamps in any ratio or combination.
- Complete structural ceiling grid to support lighting elements and standard acoustical materials.
- Offers unlimited design possibilities from complete ceiling of light to tailor-made luminous panels surrounded by opaque acoustical areas.
- Conditions of building surfaces above the ceiling level does not affect the illumination.
- Accessories available for introduction of accent or special purpose lighting element.
- Will fit areas of any dimension.

LIGHTING ADVANTAGE:

EFFICIENCY:
Performance data under typical service conditions shows Skyceil combination system to be 30% to 40% more efficient than conventional luminous ceilings using fluorescent lamps alone. This increase in efficiency results from more efficient distribution and control of light by the Skylike silvered bowl fixture and from considerably lower depreciation losses.

MAINTENANCE:
Skylike units which comprise the basic lighting element are designed to be relamped from the floor using pole type lamp changers. The silvered bowl lamp carries its own sealed reflector and each relamping restores the unit to initial efficiencies. Occasional cleaning of the Skylike reflectors is easily accomplished.

COMFORT:
Skyceil offers a new comfort factor in lighting by eliminating the unpleasant contrast in brightness of lighted fixtures against adjacent unlighted ceiling backgrounds. Skyceil provides a complete structural framework for recessed fixtures in which the surrounding adjacent areas are softly luminous, eliminating all unpleasant brightness contrasts.

SKYCEIL LIGHTING SERVICE
This service offers actual plans whereby the Skyceil System can be installed economically to meet any structural or decorative requirement and also provide the desired illumination. Just send us details and ceiling plan-We'll do the rest. No obligations.
"Impossible? No: for however far modern science and technics have fallen short of their inherent possibilities, they have taught mankind at least one lesson: Nothing is impossible."

Lewis Mumford: Technics and Civilization

This is again my annual Commencement address to the graduates of the schools of architecture and of planning. I hope that a few parents, teachers, and practitioners will feel free to listen in. I have been giving these addresses for so many years, now, that I feel as though I could apply for the position of Valedictorian Emeritus of the architectural schools—with a reasonable chance of obtaining it.

I hope that as soon as you have your sheepskin in hand you will pack up and hitchhike out to Minneapolis to the AIA Annual Convention. Granted that you may not yet be a member, you will still be welcome, and this year's meeting ought to be a good one. Of course, I have always felt that graduation from an accredited undergraduate architectural school should automatically qualify a man for a training membership in the AIA—as one step above a student membership, which should be automatic in every student chapter in every school. Further, upon completion of a graduate architectural course, a student should automatically qualify as a professional affiliate AIA member, in which position he could remain until he is ready for full membership. In this way, we would be able to develop at an early date the appropriate and necessary interest in and loyalty to our important central organization. Student attendance at annual national meetings, regional meetings, and chapter meetings would be both natural and personally significant to the student. Furthermore, such attendance would constantly vitalize the meetings and provide to the AIA itself a better and more regular flow of young blood than it now obtains. The American Institute of Planners could well consider a similar system. All this is valuable in the context of a professional and scientific world which is strongly organization-conscious.

The subject of the Minneapolis meeting is challenging. It has to do with the replanning and rebuilding of our old cities and the planning and building of new ones. I have talked to you about this many times. I have mentioned the slowness with which our architects have moved, in taking an interest in city rebuilding at home and abroad. I have mentioned the one-building-at-a-time mentality that has been creating buildings (not architecture) in a nonexistent vacuum for

(Continued on page 182)
UNION CENTRAL Annex Building, Cincinnati, utilizes some 200 Kno-Draft High Pressure Air Diffusers for quiet, draftless, comfortable air distribution.

BEHIND THE SCENES photo shows typically compact Kno-Draft single-duct system. Note flexible connectors. Outlets at same level as ducts explain why...

High Pressure Saves Space

Space saving, of course, is only one advantage of high pressure air transmission. But it's important. High building costs make it worth while to reduce space allotted to air ducts; and in existing structures, small high pressure ducts have permitted central system air conditioning where space limitations prohibited conventional designs.

Additional advantages of Kno-Draft high pressure systems are: (1) flexibility to meet changes in air conditioning requirements without modifying the system, and (2) individual room temperature control from central station systems.

Kno-Draft High Pressure Air Diffusers are especially designed to handle air at branch duct velocities up to 3,000 feet per minute. Outlets are equipped with dampers and sound traps to eliminate noise. System provides even temperatures throughout the area without drafts.

Working to a school building budget?

Versatile

U.S.G. PLASTERING SYSTEMS

can help cut costs!

For full details about these and other U.S.G. wall and ceiling systems, contact your U.S.G. Architect's Service Representative; see Sweet's, sections 11/a, b, c, d; or write Dept. PA-3, 300 W. Adams St., Chicago 6.
**FOR HOLLOW PARTITIONS**

**TRUSSTEEL**® **STUD-ROCKLATH**® **SYSTEM**

The open-web design of non-load bearing TRUSSTEEL Studs permits quick, low-cost installation of mechanical services horizontally or vertically without weakening the partition structurally by chasing. And with no more than fingertip pressure, TRUS-LOK Clips anchor either plain or perforated ROCKLATH® Plaster Base to the studs in seconds, further saving valuable time and labor.

**FOR SUSPENDED CEILINGS**

**BRACE-TITE**® **LATHING SYSTEM**

Attaches ROCKLATH to standard metal grillage not more than 16" o.c. The spring action of the BRACE-TITE® Clips supports the ROCKLATH PLASTER BASE across its full width increasing its rigidity. The wire clip embedded in the plaster actually strengthens the lath and plaster assembly.

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**CLASSROOMS**—Specify TRUSSTEEL STUD-ROCKLATH Partitions... for required fire protection... for extraordinary quiet (up to 48.0 db sound transmission loss ratings)... for various wall thicknesses... for light weight which can mean savings in structural framing.

**CORRIDORS**—Specify TRUSSTEEL STUD-ROCKLATH Partitions... for strength from steel studs of efficient truss design... for simplified concealment of pipes, ducts, conduits... for low material costs and economical erection.

**CEILINGS**—Specify the BRACE-TITE ROCKLATH Lathing System... for easy, low-cost installation... for rigid, full support of the lath... for fire-rating up to 4 hours... for vapor resistance of 0.79 perms when insulating ROCKLATH is used as the plaster base.

**NOTE:** a special BRACE-TITE Clip is available if acoustical tile is to be cemented directly to the ROCKLATH.

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For cost-cutting answers to any door need, see these TWO NEW CATALOGS!

Kinnear Steel Rolling Doors
With the coiling upward action of the interlocking steel-slat curtain, originated by Kinnear

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A protective, attractive openwork of steel bars and links—admits light, air and vision

Kinnear Motor Operators
Special rugged motors for time-saving push-button door operation

Kinnear Rol-TOP Doors
Sectional upward-acting wood or all-steel doors with any number of panels for glass

FACTORIES IN COLUMBUS, OHIO and SAN FRANCISCO, CALIFORNIA

The Kinnear Manufacturing Co.
1900-20 Fields Avenue, Columbus 16, Ohio

Please send new Kinnear door catalogs to:

Name_________________________Title_________________________

Firm__________________________

Street__________________________

City___________________________Zone______State______________

out of school

(Continued from page 178)

so many years. And, step by step, I have tried to keep you abreast of the changing atmosphere of the last five years as we have moved through programs of urban planning and redevelopment into our first primitive steps towards complete urban renewal and a comprehensive urban architecture.

I am sorry to have to say to you at this time, just before they hand you your diploma, that your education is already out of date! It is as out of date as mine was when I graduated 24 years ago. Don’t misunderstand me. I am not saying it was wasted—at least, I hope your hard-working professors were not wasting their time on you. It is just that technology moves so fast that schooling cannot possibly keep up with it. And you are going to have to work fast on your own to keep up with it out of school. Don’t depend on me either. I’m not a reliable source of anything but trouble.

Let me give you a couple of examples of what I am talking about. Last April, just at Easter, I think it was, there were two almost simultaneous fabulous announcements in the papers. One was a story about the approval of the financing and construction of several nuclear energy power plants to be located in widely dispersed spots in the nation. The other had to do with a fantastic little gadget, a one-man-controlled flying saucer, developed by the Navy, and capable of vertical flight. About five years from now, my guess is that these two quite different things are going to become worth watching. Ten years from now they can well be revolutionary.

Let us consider the little flying saucer first. In the newspaper picture a man was standing alone with his hands on the rail of a small circular platform hovering a few feet in the air. He controlled the angle of flight by simply leaning on the rail. Now we all recognize that the modern airplane is still a pretty crude gadget when it comes to taking off and landing. It does fairly well in the air—particularly those little turbo-jet fighters. But like a
Look at the company behind your doors!

WHEN you specify or buy Mengel Doors, you get a Guarantee backed by the world's largest manufacturer of hardwood products.* Mengel has "been here" for seventy-eight years, and builds all its products to the high standards required by a company which expects to be here another seventy-eight years.

This means something to you — for yourself, your clients, your customers. Mengel Doors are available in three different types, for every kind of job, "Palace or Project". Each is competitively priced. Write for complete information.

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*Mengel products include nationally-advertised Mengel Permanized Furniture, Mengel Kitchen Cabinets and Mengel Wall Closets.
you see things better with this new

Glass

New twin-ground Parallel-O-Plate Glass is the most distortion-free plate glass ever made in America. Yet in most localities it costs no more than regular plate glass. When you consider all of the things, every day, that you see through glass, you can see how important it is to insist on Parallel-O-Plate Glass.

For your windows, you can get Parallel-O-Plate from any Libbey-Owens-Ford Distributor or Dealer, listed under “Glass” in the yellow pages of phone books. For mirrors made of Parallel-O-Plate, see your department store, furniture store or mirror dealer. For additional information on twin-ground Parallel-O-Plate Glass, write to Dept. 8365, Libbey-Owens-Ford Glass Company, Toledo 3, Ohio.

L·O·F Parallel-O-Plate Glass

Finest plate glass made in America... only by

LIBBEY·OWENS·FORD a Great Name in Glass

LOOKING AT windows of Parallel-O-Plate Glass, you see how much its truer reflections mean to exterior appearance.
LOOKING IN through the Parallel-O-Plate Glass in a storefront, you hardly know the glass is there.

LOOKING OUT of your window wall of Parallel-O-Plate *Thermopane* Insulating Glass, you see the scene as it is.

*®
perfect atmosphere for worship—Tectum® roof deck

Spacious, quiet beauty, the perfect atmosphere for worship, is created at Boulevard Presbyterian Church by wise use of Tectum Roof Deck.

Nine-value Tectum deck, the underside spray-painted to specification, blends attractively with soothing pastel sidewalls and rich natural wood arches in this modern interior. Tectum lets churchgoers enjoy clarity of sound and the comfort of all-season insulation.

Surely, Tectum stretched the building fund. It will keep maintenance costs down due to greater stability than most building materials plus its inherent resistance to termites, fungus, and rot. Noncombustible Tectum affords high structural load capacities, yet weighs only about two lbs. per board foot. Eleven stock sizes and four thicknesses are available in this easily worked, quickly erected roof decking material.

(Continued on page 190)
Advance originates compact, light-weight Lead-Lag slimline lamp ballast design.

1948

Improved Series — Sequence slimline lamp ballast design created by Advance engineers.

1950

Advance Series — Sequence design becomes standard for the lighting industry.

1950

Advance Lead-Lag design recognized as lighting industry standard.

1954

Origination by Advance of revolutionary 96-T-12 Rapid Start lamp ballast. More compact... lighter in weight... maximum efficiency.

1955

 Designed & Engineered by the World's Largest Manufacturer Devoted Exclusively to the Production of Fluorescent Lamp Ballasts

CBM C EBM CERTIFIED by ETL

Cable Address "ADTRANS"

2950 N. WESTERN AVENUE, CHICAGO 18, ILLINOIS, U.S.A.
MOST ARCHITECTS AND ENGINEERS PREFER NOT TO USE SUBSTITUTES... now they Specify Genuine ...  

DUR-O-WAL
Backbone of Steel for EVERY Masonry Wall

You can depend on top performance with genuine Dur-O-wal on the job. Electrically welded of high tensile steel, Dur-O-wal works fast, lays flat to combat cracks in brick, block, or tile masonry. Dur-O-wal's patented trussed design keeps side rods working together; put more steel in the wall economically. Increase sales and customer satisfaction the proven Dur-O-wal way. Demand Dur-O-wal ... available everywhere.

Butt-Weld • Trussed Design
DUR-O-WAL
the Backbone of Steel for EVERY masonry wall

SYRACUSE, N.Y. Dur-O-wal Products, Incorporated, Box 428
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Modern beauty
For modern buildings, specify P&S Roto-Glo ... the only truly modern light switch. Combines functional design ... feather-quiet operation ... glows in the dark. Precision-built mechanism ... 15 Amp, 277 Volts A.C. ... designed to handle fluorescent loads with ease.
Write Dept. PA for the complete Roto-Glo story.

Available in P&S Despard and conventional strap types
it's a ROTO switch
it's a LUMINOUS switch
it's a QUIET switch

NEW ROTO-GLO Quiet Switch
... because switches should be SEEN ... not heard

PASS & SEYMOUR, Inc., Syracuse 9, New York
71 Murray St., New York 7, N. Y.
1229 W. Washington Blvd., Chicago 7, Ill.
2,200 GUTH TROFFERS CREATE AN “ACRE OF LIGHT” AT LOVEMAN’S

Shoppers are greeted by a store full of lighting that says “come in and buy” as they enter Loveman’s Department Store, Montgomery, Alabama.

Nicknamed “an acre of light”, this beautiful new store has over 86,000 sq. ft. of sales area. Every inch is efficiently lighted by 2,200 Guth Recessed Troffers and 265 Guth Tile-Lites. Tile-Lites were used between fixtures and at row ends for added interest in the long lines of light.

This striking troffer installation looks as if it were custom-made for Loveman’s. The fixtures blend harmoniously with the modern decor. Gleaming snap-on trim hides flange screws and “teebar gap” for a distinctive, tailored appearance. The effect of “arrow-straight lines of light” was made possible by the precision alignment of the troffers.

In a job this size, installation work is a big factor. According to the electrical contractor, this “acre of light” was ... a breeze ... one man could have handled it! The fixtures arrived in complete units ... ready to mount. They fitted the “tile-wide” openings perfectly.

The troffers, with 35° x 30° metal eggcrate shielding provide 40 F. C. halfway between rows. Readings were taken at 34” above the floor.

Another factor in the choice of Guth Troffers was maintenance economy. They have hinged shield frames for easy relamping or cleaning. Slide-in reflectors are simple to remove. Electrical apparatus may be replaced without taking troffers down.

Loveman officials give a great deal of credit to Guth Lighting for making their store a pleasant place to work, to shop ... and to make profits!

Loveman’s is part of the new Normandale Shopping Center—33 shops and stores, all lighted with Guth Troffers. It was developed by Aronov Realty Co., Inc.; Architect, Sherlock, Smith & Adams; Electrical Engineer, J. L. Phillips; Electrical Contractor, Long & McGhee Elec. Co.; General Contractor, Jehle Brothers, Inc.; Distributor, Noland Company, Inc.

The most complete troffer line—

2 x 2’s, 2 x 4’s, 4 x 4’s for unlimited pattern planning.

All types of shields from GrateLite* Louver-Diffuser to the new Paraflector and “Ro-Lo-B” Louvers.

WRITE ON YOUR LETTERHEAD TODAY FOR BIG NEW GUTH TROFFER CATALOG 50-BB FREE!

THE EDWIN F. GUTH CO.
ST. LOUIS 3, MO.

TRUSTED name in lighting since 1902

The SAFETY ENGINEER knows

... that A.W. ALGRIP Abrasive Rolled Steel Floor Plate eliminates costly slipping accidents.

He knows, too, that neither oil nor grease nor water can reduce the gripping power of ALGRIP's deeply embedded abrasive. ALGRIP, the only abrasive rolled steel floor plate, slashes insurance costs ... requires no maintenance ... and—because it is steel—gives many years of economical safety under heavy loads and abuse.

ALGRIP—approved for safety by Underwriters' Laboratories.

A.W. ALGRIP ABRASIVE ROLLED STEEL FLOOR PLATE

ALAN WOOD STEEL COMPANY
Conshohocken, Pa.

Please send A.W. ALGRIP Booklet AL-33
Name
Title
Company
Address
City Zone State

Other products: A.W. SUPER-DIAMOND Rolled Steel Floor Plate—Plates—Sheets—Strip—Alloy and Special Grade

out of school

(Continued from page 186)

wide variety of industries. Already there is an estimate that by the time 100 have been built, they would cost under $1 million. It is not inconceivable, from this experiment and several others, that adequate and then cheap power will shortly be available throughout the country—say in 20 years, maybe less. At the same time we hear of new, diminutive, atomic war-heads used for controlled destruction purposes. We can easily imagine similar diminutive reactors, containing minute quantities of controllable radioactive energy used for domestic purposes.

Add automation to the domestic use of nuclear power—in fact the development of such power is pure Martian automation right now—and by the opening of the 21st Century (just 45 years from now), if we don't slip up and destroy ourselves with nuclear power before we learn to control our hatreds and frailties, this same power should make the world not only safe for democracy but also a fine place in which democracy may flourish.

But with new atom planes, new automobiles, the new atom city, all within reach in your lifetime if not mine, the architect and the planner had better ready himself for action on a wide front. It is clear that what will be created by all this is one very evident condition—the condition of flexibility. Let us, for the moment, separate the medical, research, testing, and mechanical devices; product creation, and all the advances already presaged by the use of radioactive isotopes. It is clear that limitless but controllable sources of energy in the infinite forms of heat, light, pressure, sound, or radioactivity available through nuclear fission, make our neotechnic society today appear no further advanced than the handicraft era up to 150 years ago.

Now perhaps you are beginning to get a glimmer of what I meant when I said that your education was already out of date. And maybe you are wondering why I recommend attending an AIA convention right after this graduation exercise, when we all know the program was behind the times before it was printed. Unfortunately, the human mind is slower
beautiful overhead...

with the fire department built in!

Not only do Fiberglas® Acoustical Tiles soak up sound, they reflect beauty and brightness too. Naturally inorganic, they're certified fire-safe, they won't shrink or swell, they keep their good looks through long, carefree years of service.

But here's the clincher ... Fiberglas Ceilings are the lowest cost fire-safe acoustical ceilings you can specify. What more could you ask for? If it's more information, just write: Owens-Corning Fiberglas Corporation, Dept. 68-D, Toledo 1, Ohio.
Throughout one of the World's newest and most luxurious hotels

The Fontainebleau

MIAMI BEACH, FLORIDA

For every deluxe and standard bathroom throughout Miami Beach's new Fontainebleau Hotel—one of the world's most fabulous—Solid Olsonite Seats were specified and installed.

Olsonite No. 56 open front seats with cover were specified in a variety of plain colors to match the pottery of the colorfully appointed bathrooms. Like all Olsonite seats, these plain color models are solid one-piece construction. There's no sheet covering or applied finish of any kind to crack, chip or peel.

Selection of Olsonite for the Fontainebleau is another indication of Olsonite's ever increasing popularity. Equally popular for hotels are Olsonite white seats both with and without cover. Unlike ordinary white seats, they will not fade or discolor even after years of use.

For a complete catalog of all Olsonite models, please write on your letterhead.

Olsonite models 5 and 10 (both with and without concealed check hinge) are also ideal for hotel installations.

Olsonite model No. 56 Solid color seats were installed throughout the Fontainebleau Hotel.

SWEDISH CRUCIBLE STEEL CO. (Plastics Division) 8561 Butler Avenue, Detroit 11, Michigan

ARCHITECT: Morris Lapidus, Miami Beach, Fla.
General Contractor: Taylor Construction Co., Miami, Fla.
Mechanical Engineers: Sammet and Bennett, Miami, Fla.
Mechanical Contractors: Morkonitz Bros., Inc., Miami, Fla.
Captivate commercial clients

Why not join the many architects who have taken the Craftwall way to satisfy commercial and institutional clients? You'll agree that here is a wide and stimulating design opportunity — ready for the spark of your imagination.

Choose from nine handsome woods — Walnut, Birch, Oak, Knotty Pine, Cherry, Mahogany, Blonde Limba, Maple and Elm. Create with your choice of four distinctive styles. Economize with large, lightweight panels that hold down installation costs. Factory craft-finish ends on-the-job mess . . . packs a bonus of many more years of beauty — remarkable durability and easy maintenance.

Ask your Roddiscraft representative for samples . . . or send in the coupon below.

RODDISCRFAT, RODDIS PLYWOOD CORP., Dept. PR-655, Marshfield, Wisconsin

Please send me illustrated literature and cost information. I want all the facts about Craftwall factory-finished paneling.

Name
Firm
Address
City Zone State
out of school

(Continued from page 190)

than a nuclear reactor although, fortunately, it is no push button machine. Many times in this column I have given my favorite quote from Launcelot Hogben, the eminent British mathematician and scientist, and here it goes again: "The training of the scientist and technician gives him no prevision of the social consequence of his activities." Perhaps this is less true today than it was before Hiroshima and Nagasaki. But it is still the case as we plunge ahead into this 21st Century world of limitless energy and of limitless physical flexibility.

The AIA Convention will be an excellent lesson for you. It will demonstrate quite clearly how limited we still are in our abilities to correct our physical and social difficulties. Our arts and sciences of planning and building are so primitive that I quail before the prospect of limitless energy and free flight.

Gentleman city builder, graduating today, you had better hurry. These pure scientists are itching to set off that last bomb which chain reaction will prove that it can be done in less than one hour. The operation will have been successful with even the doctors all dead.

notices

summer program

PLASTICS IN THE DESIGN OF BUILDING PRODUCTS will be the subject of a Special Summer Program, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, June 14-24. PROF. BURNHAM KELLY will head the Program, assisted by members of MIT staff and distinguished visiting experts in the plastics engineering and design fields.

exhibitions

FOURTH ANNUAL BOSTON ARTS FESTIVAL, featuring New England painting, sculpture, graphic arts, and architecture, will take place in the Boston Public Garden, June 5-19.

appointment

ROBERT ICLHART has been appointed professor of art and chairman of the Department of Art, UNIVERSITY OF MICHIGAN College of Architecture and Design.
You've Never Seen Siding Like This!

Masonite Offers Revolutionary New

SHADOWVENT SIDING

• Permanently attractive—nails don't show!
• No dips or waves—every course true!
• Vented to minimize moisture problems!

Now—the most nearly perfect siding ever made!

Masonite Shadowvent Siding incorporates the rugged strength, stability and weather resistance of Tempered Preswood®, along with the advantages of an exciting new application system.

Specially designed aluminum strips create character-building shadows. Nailing on strips only...no wall disfigurations. Strip holds course above it in perfect alignment.

Builders report up to 33% saving in application labor with Shadowvent Siding. Send now for all the facts at no obligation.

MASONITE SHADOWVENT SIDING

TEMPERED PRESWOOD PANELS FROM MASONITE® CORPORATION

(Not immediately available west of the Rockies)

Specify This Man He Makes The Difference

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Dept. PA-6, Box 777, Chicago 90, Ill.

Please tell me more about Shadowvent Siding.

Name

Firm

Address

Town

County

State

June 1955 195
Saves Nearly $60,000 and 30 days on New Wanamaker Store

Mr. A. O. Leighton, Partner of Irwin and Leighton, General Contractors, says: "In the new Wanamaker store in Wynnewood, Pa., a lath and plaster ceiling, serving as membrane fireproofing for the floor beams, eliminated the need for individual encasement of structural members with heavy concrete.

"This construction substantially reduced the dead load weight of the building, thereby cutting framing costs, and reducing the construction time by 30 days. An over-all saving of approximately $60,000.00 was effected!"

The technique of using lath and plaster ceilings to fire protect structural floor beams and "shell" or perimeter fireproofing to protect columns, has advanced sharply in recent years. Fire resistive ratings up to 4 hours for beams and columns are provided with lath and plaster that weighs as little as 12 pounds per square foot. These constructions permit a reduction in dead weight of as much as 50%, thereby reducing the cost of steel framing.
Certified Craftsmanship
IN ACTION...

• The Certified Craftsmanship Certificate is a written pledge of adherence to work schedules, job cooperation, work of craftsmanship caliber and nationally recognized standards of quality. A certificate is yours for the asking from lathing and plastering contractors adhering to the Code of Standard Practices for Lathing and Plastering.

We suggest a thorough reading of the Code of Standard Practices which appears on the back of every certificate. Ask your lathing and plastering contractor for a copy, or write National Bureau for Lathing and Plastering, 1401 K Street, N.W., Washington 5, D.C.

Associated Manufacturers of Lathing and Plastering Materials
520 N. Michigan Avenue, Chicago 11, Illinois
FINISHING LIME ASSOCIATION OF OHIO • GYPSUM ASSOCIATION
METAL LATH MANUFACTURERS ASSOCIATION
PERLITE INSTITUTE • VERMICULITE INSTITUTE

Put the FLOOR and the CEILING side by side

From a parqueted floor to wall-to-wall carpeting, the floor is today an important part of interior design. Chances are, the ceiling is totally uninteresting.

In times past, the ceiling was one of the major decorative elements. Then, with old-type materials and modern building costs, the decorative ceiling became too expensive for the average home.

Today, we have new standards and modern materials; the ceiling comes back into its own. And the costs are also back in line — for homes of every size.

With a strong, sound-deadening material such as Homasote, many new treatments are possible — at minimum cost. Take advantage of the Big Sizes in which Homasote is available — up to 8’ x 14’.

Panel effects in many shapes are easily constructed. Beams offer endless other possibilities. And Homasote Roof Decking is available in 2’ x 8’ panels with attractive beveled edges.

The Linen Finish on both types provides a fine finish surface for any ceiling.

Let us send you samples and specification literature on Homasote in all its forms — including Striated and Wood-textured Panels. Kindly address your inquiry to Department F-8.
Macomber has JOB ENGINEERED four distinct Steel Joist types.

Each type serves some specific structural purpose to your advantage from a cost standpoint.

When you see Macomber Nailable Steel Joists specified and going into job after job, it becomes obvious that definite time, labor and material advantages are dominating the thinking of specification writers today.

THIS IS WHY. Since Macomber originated the Steel Joist Industry, there are a great many more years of engineering and manufacturing analysis concentrated on Macomber Steel Joists than on those which came along years later.

The Macomber Steel Joist Catalog demonstrates this leadership with a convincing analysis of joist application to the job at hand. Send for your copy.
Build your bathrooms around BRIGGS BEAUTYWARE...

IN COLOR

Coordinated color interiors give homes personality and prestige, according to Howard Ketcham, America's best known color adviser to many home building firms. Today, there's no doubt about the importance of colorful bathrooms and kitchens. They're as much a showplace as any room in the house.

Your prospects are not only color conscious, but fast becoming color educated. That's why the soft pastel tones of Briggs Beautyware are so pleasing, so versatile and so popular.

When you tell your prospects that colorful Briggs Beautyware is fadeproof, easy to keep clean, and blends with any number of bathroom accessory and decorating changes, you can't help but generate a strong desire for ownership.

We invite you to shop for color fixtures—compare materials, design and workmanship—compare bathing features, utility features, finishes and beauty of appearance. And compare color match, color shade and color brilliance. You, too, will agree—Briggs Beautyware is the outstanding color value and a great contribution to home sales features.
Briggs colors complement any type of home—any decorating theme

No matter what the style of a home—from Colonial to Contemporary—you can enhance the beauty of the bathroom and kitchen with any of Beautyware’s sparkling sea-tone colors. Here are colors so natural and so pleasing that they complement any decorating theme—even suggest new decorating ideas—add greatly to a home’s livability and saleability.

Briggs color processing is exclusive and exacting

Pressure-formed enameling steel—proven superior for many rugged porcelain products—is specially processed at Briggs into glass-hard, glass-bright color fixtures.

At Briggs, too, the finest clays are chemically blended and glazed under most exacting controls to assure matching vitreous china. As a leader in color processing, Briggs has made color fixtures available at new economical costs.

Briggs Beautyware finishes are fadeproof and stainproof

Briggs color finishes are so durable that they defy stains, acids, medicines and cosmetics, just like glass itself. In addition, they resist chipping and marring, and are absolutely fadeproof.

These are selling features that your customers will really understand and appreciate.

A Second Bathroom is Beautyware’s new standard for American Living
Developer and Plumbing Contractor "team up" with AllianceWare Fixtures in Merchandising 300 Homes

When Ted Bentley and Fred Wallace, Jr. began planning Highland Acres and Rolling Park Manor homes sites in the City of Chester, a suburb of Philadelphia, Pennsylvania, their previous experience in home development made them realize the extreme importance of fine bathrooms as a home sales-feature.

So it was a natural for them to team up with their plumbing contractor—Madsen Plumbing and Heating Company—in selecting sanitary ware fixtures that will be sales features in each of the 111 multi-level units and 146 row-type houses which are planned.

Their selection is AllianceWare — chosen for several practical reasons. Both organizations believe in AllianceWare because of past performance on previous projects of similar character. Second, the wide choice of the beautiful colors of AllianceWare makes possible the keying of decoration arrangements in pleasing variety, and third, the popular acceptance of AllianceWare in the Philadelphia area will be a distinct aid in successful selling.

ALLIANCEWARE, INC.
Alliance, Ohio

BATHTUBS • LAVATORIES • CLOSETS • SINKS

Plants in Alliance, Ohio and Colton, California
Revolutionary New Line of ELECTRIC OPERATORS for...

Designed for easy installation, low maintenance cost. Electrical controls housed in one easily accessible box. 24-volt control circuits cut installation cost, eliminate hazards of high voltage. All models easily adaptable to time-saving electronic control.

Traditionally builders of the finest sectional, upward-acting doors, Overhead Door Corporation has a heritage of equal experience in the field of electric operators and control systems, dating back to the days when each operator was built by hand. Today, this cumulative experience has been combined with fresh ideas and intensive research to produce a new line of electric operators for every commercial and industrial need. Take full advantage of it—make every building more modern with electrically-operated doors.

Write For Specification Folder on All Models

OVERHEAD DOOR CORPORATION
Hartford City, Indiana

A COMPLETE LINE OF DOORS... A COMPLETE PRICE RANGE

June 1955 203
Standby electric power in operating rooms only is not enough!

ONAN Standby Electric Plants supply power for all essential services

Patients, hospital personnel and property may be endangered when any other vital equipment cannot be operated or important service performed ... especially when the power outage is of long duration.

From the wide range of Onan Electric Plants you can specify a model with the capacity to operate all essential equipment ... automatic heating system, respirators, aspirators, X-ray machines, ventilators, communications, pumps, elevators and lights for as long as these services are needed.

When power interruptions occur, the Onan Emergency Power System takes over automatically ... supplies electricity for the duration of the outage ... and transfers the load back to the regular source of power when service is restored.

Standby power for every need

Hospitals, homes, schools, churches, hotels, radio stations, stores, businesses ... all modern buildings need standby protection. Onan builds units for any requirement ... 1,000 to 50,000 watts.

Write for Architects kit SP1020

D. W. ONAN & SONS INC.
3361 UNIVERSITY AVE. S.E. • MINNEAPOLIS 14, MINNESOTA

reviews

(Continued from page 198)

Romanesque vision. But this rather parochial monotony is certainly not the fault of the author. Miss Rickert has done a fine—one might almost say journalistic—job of enlivening her material. Her tables of English History, preceding each chapter, her charts and annotations, add greatly to the understanding of the complicated cross-influences, and the brief commentary proves her to be not only an able scholar, but also a true writer. Speaking of the transition from the abstract-formalist Celtic style to the emerging Naturalism of the Continental School she writes:

"The next step was inevitable. The scrolls put out leaves and buds, and the animals, released from their uncomfortable confinement, began to run about, not only inside the decorations but out of bounds, in the margins of the page ... The monsters grew in size and monstrosity, the leaves and flowers became gigantic, and the whole style suddenly blew itself out, with only a few East Anglian daisies and marigolds surviving, and an occasional grotesque showing its sad little face."

Considered in connection with the other two new PELICAN volumes, Miss Rickert's book forms a bridge between the most ancient origins of our civilization, and its most recent and remote crystallization in the realm of the Princes of Muscovy. Henri Frankfort's, "The Art and Architecture of the Ancient Orient," has all the characteristics of his earlier works on the Near East: scholarliness, conciseness, fine writing, and superb choice of illustrations. It underlines the great tragedy of the author's early death in 1954, terminating the work of the greatest archeologist of this century. Sumerian portrait heads of contemporary characterization, an inlaid harp from Ur antedating Abraham by more than 1000 years, the almost decadent refinement of Achemenian eclecticism, all of this is pure visual joy.

Architecturally, there is the curious sensation of seeing two vistas from opposite directions merge gradually into a stereoscopic view. From the desert comes the Semitic influence; raised platforms
reduce 2 building steps to 1 with...

These large, burned-clay units build a sound, structural wall and a beautiful ceramic finish at the same time — no extra finishing is needed.

Stark Glazed Facing Tile meets the high standards of the Facing Tile Institute of which it is a charter member. And Stark's modular sizes, vertical coring, rigid grading, and careful selection produce a better job at a lower-in-the-wall cost.

Stark also gives you the benefit of over 40 years' experience in the clay products field — and a record of excellent relations with thousands of satisfied users.

For finest Facing Tile, call your Stark dealer first. An early order is your assurance of timely delivery.
Alcoa Building, (left), Pittsburgh, Pennsylvania
Architects: Harrison & Abramovitz
Associate Architects: Mitchell & Ritchey
General Contractor: George A. Fuller Company
Date of Adlake Window order: January 25, 1951

North Central Home Office
Prudential Insurance Company of America, Minneapolis, Minnesota
Architects and Engineers: Magney, Tusler & Setter
General Contractor: C. F. Haglin & Sons' Co.
Date of Adlake Window order: October 19, 1953

Prudential Insurance Company of America, Chicago, Illinois
Architects: Neuss & Murphy
General Contractor: George A. Fuller Company
Date of Adlake Window order: November 12, 1953

Shelby County Hospital, Shelbyville, Kentucky
Architects: Nevin & Morgan
General Contractor: Otto Tapp
Date of Adlake Window order: June 24, 1952

City County Building, Detroit, Michigan
Architects: Harley, Ellington & Day
General Contractor: Bryant & Detwiler
Date of Adlake Window order: January 12, 1953

Freeport Motor Casualty Company, Freeport, Ill.
Engineers and Contractors: The Austin Company
Date of Adlake Window order: June 2, 1952

East Unit, Baptist Memorial Hospital, Memphis, Tennessee
Architects: Office of Walk C. Jones, Jr.
Consulting Architects: Samuel Hanneford & Sons
General Contractor: Harmon Construction Company
Date of Adlake Window order: June 23, 1953

Rockford Memorial Hospital, (right), Rockford, Ill.
Architects: Hubbard & Hyland
General Contractor: Security Building Company
Date of Adlake Window order: December 28, 1951
originated aluminum reversible windows?

Anyone can claim to—but ADLAKE can show installations sold as early as these!

There's a lot of talk these days about companies "developing" aluminum reversible windows—and we're rather flattered. For we like to think the sudden rash of "new" windows proves that a lot of people looked at the Adlake Aluminum Reversible Windows (that we sold 'way back in January, 1951) and liked what they saw.

Take a look yourself—at the outstanding buildings listed here. They're all equipped with Adlake Aluminum Reversible Windows. (And just to keep the records all straight, we've put in the dates when the orders were placed with Adlake for the windows.)

As with all Adlake products, these windows had to undergo extensive testing before they were offered for sale, so the windows were designed and developed several years before the first order was placed. We believe Adlake was first with aluminum reversible windows, and until we see some installations that were sold earlier, we'll keep right on thinking so!

THE Adams & Westlake COMPANY

Established 1857 • ELKHART, INDIANA
New York • Chicago
and square plans oriented toward the calculated points of the compass, symbols of the Semitic mind that lives for and by suprapersonal law, formulated by Hammurabi 1800 years before Western Civilization made a first attempt to supersede tribal rule with the lex romana. From the mountains and the steppes came the other force: Indo-European tribes, Sum- erians, Hititites, Mitanni, Medes, who worshipped the dynamism of the sun wheel and the mysterious chaos of uncontrolled nature. Their settlements are embedded into the natural structure of the land, free-form enclosures developing centrifugally from the hall of the chiefrain. The merging of the two ethnic extremes is shown in Frankfort's book on the contrast between Semitic temples, which were adopted throughout the Near East, and the fortresses, ornaments, and weapons more often determined by the dynamic Indo-European forces. After Rome had wiped out the great Bronze Age cultures, the Canaanites of Israel preserved, if not the visual evidence, at least the ideology of the great second millenium, and from it grew Judaism and the Christian Reform.

To move from this, the oldest heartland of documented human history, to the third of the three new PELICAN volumes, is easier than the title would suggest. George Heard Hamilton's "Art and Architecture of Russia" starts with the establishment of the three great centers of early medieval Russia: the Khazar realm of Kiev in the south, close to and deeply influenced by the Near East and Byzanto-Greek form elements, the Swedish Varangian outpost at Staraya Ruso in the north with its heritage of Viking culture, and Novgorod in the center, cross-terminal and trading post between the Varangians and the Greeks, but also close enough to the Siberian Asiaties to show traces of their influence. The architecture of Russia after 1200 A.D. shows the same merging of opposites as did the Near Eastern culture, documented by Henri Frankfort. From the North comes the ancient tradition of timber building, the logged and paled enclosures following the lay of the land; "tent" towers,
NOW...get arcadia quality in **aluminum** too!

Today, after nearly six years of patient planning and exhaustive research, Arcadia proudly announces a magnificent new line of custom sliding doors of **aluminum**...designed and engineered to meet or surpass all commercial and residential needs!

Here, at last, is an aluminum door worthy of the name *Arcadia*...long the leader in **steel** sliding glass doors. Before you specify *any* door, see the all-new Arcadia aluminum door. Compare it with all others...you'll see the difference. Then decide for yourself.

*arcadia* sliding glass doors

*first choice in steel...now first in aluminum, too!*

**ARCADIA METAL PRODUCTS • ARCADIA, CALIFORNIA • NATIONAL MEMBER PRODUCERS’ COUNCIL, INC. and NATIONAL ASSOCIATION of HOME BUILDERS**
**New! Sterling® sliding door locks...**

The first sliding door lock for by-passing doors. Now closets can be locked and contents kept secure from pilferage. Designed on a revolutionary new principle. One half turn of key raises tongue to locked position or returns it to unlocked position. Cylinder is geared to tongue and action is positive. Simple to install—bore one hole. Fits 3/4" to 1 3/4" doors.

**for by-passing doors**

A new type of lock for bathroom or bedroom doors. Privacy is assured by turning locking button on inside. Emergency button on outside permits unlocking with screw driver or coin. Neat, simple installation. Fits 1 3/8" or 1 3/4" doors.

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Whenever you buy, recommend or specify Vogt Structuralized Shower Cabinets, you are assured of a fine, quality shower cabinet. It is recognizable in the galvanized and bonderized, heavier gauge steel or the extra-heavy natural aluminum construction. Vogt quality engineering is apparent in the gleaming chrome accessories and multicoated, lustrous enameled finish. Vogt precision fabrication guarantees fast, easy assembly.

From start to finish, there is no better, popular priced shower cabinet made. Write Department PA-4 for complete specifications and prices.

**STERLING HARDWARE MFG. CO.**
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**STERLING HARDWARE means Quality**

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You can make your integral moisture barriers by either using Medusa Waterproofed Gray Portland Cement or Medusa Waterproofed White Portland Cement, or by mixing Medusa Waterproofing Paste or Powder with any regular portland cement.

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Owens-Illinois Toplite installed in the North-Central Substation of the Ohio Agricultural Experiment Station near Castalia, Ohio. Acting as a daylighting team, the Toplite Panels and glass block provide sufficient daylight during normal days without need for artificial lighting.

Toplite Panels may be installed in continuous strip, pattern, or in individual panels. Use a Toplite Panel as you do a lighting fixture. They permit daylighting of all building areas regardless of location or distance from exterior walls.
**Why Owens-Illinois TOPLITE meets the demand for good daylighting**

Transmits north light

Maximum transmission of north light is a desirable quality in top-lighting because of its uniformity and freedom from glare and solar heat. Note how the prism structure of Toplite affords efficient transmission of north light.

Accepts winter sun

Since low winter sun is comparatively weak in relation to high summer sun as far as glare and solar heat are concerned, maximum transmission is again desirable. This illustration shows how Toplite accepts and transmits winter sunlight.

Rejects summer sun

Other materials which transmit north light and low winter sun also transmit high percentages of light during the hot, summer months. Toplite rejects direct light and heat from hot, summer sun, but transmits much of the cool, north light.

Write for free booklet on Toplite Roof Panels

The complete story of this great new advance in efficient utilization of free daylight is available in this new bulletin. For your free copy write today: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. PA-6, Toledo 1, Ohio.
perhaps Asiatic in origin but following
the construction of Early Medieval mast
churches in Scandinavia. From the South
comes the Byzantine cupola, itself a Per­sian import; the Near Eastern tradition
of the walled city; and the splendor of
over-all decorations that seem to have
come directly from Nimroud and Khorsa­
bad. It all climaxes in the Moscow Kre­
mlin: “The present Kremlin bears all the
marks of the changing tastes of each suc­
cessive age.” There were also Italian
Palaces, built by imported architects from
Milan and Florence, the exuberant
Baroque of Balthasar Neumann, Neo-Clas­
cicism adopted by Catherine the
Great and her successor, and finally the
dead eclecticism of 19th Century revival
styles.

Hamilton’s descriptions are without the
ramblings of the usual expert. They read
entertainingly and succeed, as is particu­
larly important in Russian architectural
history, in filling the walls with the his­
torical figures that created them. It is
therefore particularly disappointing and
puzzling that his work ends with 25 pages,
devoted to the most mediocre paintings
of Russian 19th Century and Early 20th
Century artists, based on Western art
schools which in themselves were of dubi­
ous originality. Not a word or a picture
given of all that happened in Russian
architecture after the Revolution of 1917.
A strange and inexplicable omission—
or self-imposed political censorship!

SIBYL MOHOLY-NAGY

architects’ statements

Une Petite Maison. Le Corbusier
George Wittenborn, Inc., 38 E. 57 St.,
New York 22, N. Y. 96 pp., illus., $2.50.
In French with English translation.

Scope of Total Architecture. Walter
Gropius. Harper & Brothers, 49 E. 33
St., New York 16, N. Y., 1955. 185 pp.,
illus., $3.50

These two little books are by-products of
the activity of great architects. They add,
but not greatly, to our image of them.
Le Corbusier’s book is intensely personal,
all intimacy and charm—visual and sen­timental notes on a little house he built

(Continued on page 216)
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Fully Described in Bulletin 316. Write for a copy.

THE POWERS REGULATOR COMPANY
reviews

in 1923 for his aging parents, on the soothing shores of Lake Geneva. Here is the antidote to the stereotype of Le Corbusier, Great Geometer. He glories now in the casual, the accidental, and he makes the most of growing things, of weathering, of settling, and even the dog, as they affect this modest shelter. The photographs, like the atmosphere, are soft and hazy, and one thinks of another Swiss-Frenchman, Jean Jacques Rousseau, who 200 years ago frequented this same lake and formulated the idea of the “little house on the hill,” the rustic ideal to which even our Levittowns pay unconscious obeisance.

Dr. Gropius’ book looks outward, rather than inward. It is directed to the public at large, rather than the profession, and is an architect's contribution to a series entitled World Perspectives, which seeks to “interpret creative forces at work today” in the world community. Gropius, one of the most universal and effective minds of our century, would seem a logical choice. His book touches on design education, the role of the architect and his team mates, basic assumptions of housing and planning, and the need for imaginative artistic-sociological-technical research for the creation of a new and better way of life yet unknown.

If he succeeds in opening the layman’s eyes and keeping totality before the student’s, then more power to him. Unfortunately, the task is too great for the space available; the illustrations are inadequate; the prose is as lyrical as the average textbook; and, due perhaps to stringent editing, the work never hits its stride. The many short sections derive from previously published articles going as far back as the 1920s. Their historical value and prophetic sureness are undeniable; but this is one time when pre-fabrication failed to hit the spot.

MARTIN JAMES

books received


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reviews

(Continued from page 214)

books received


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THE OSCAR C. RIXSON COMPANY
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June 1955 217
Huge School System

Leaks were serious in this older school, so brick was repointed then coated with silicone repellent. Results: Weatherwise, the school is better than new!

Approves Silicone Masonry Water Repellent

A remarkable “invisible raincoat” is already protecting a half million square feet of wall, on over 30 of the 300 schools in a great eastern city. Known as “above-grade masonry water repellent,” it is made with LINDE Silicones.

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Above-grade masonry water repellents made with LINDE Silicones dry in three hours to a colorless, shineless finish. They reach the correct depth for maximum effectiveness. They let walls “breathe” so moisture entrapped before treatment can escape.

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Under Toughest floor traffic and service conditions...

Despite constant exposure to heavy traffic, spilled food, grease and liquids, the Terraflex floor in the cafeteria of the Sperry Gyroscope Company at Lake Success, L. I. shows no sign of wear—looks as fresh and colorful as the day it was installed.

provides beauty, color and wear with minimum care

The Johns-Manville Terraflex tile floor in this busy cafeteria offers daily proof of its ability to meet stringent requirements of heavy-traffic service with lowest possible maintenance cost. In spite of repeated scuffing ... spilled liquids and foods ... abusive treatment ... Terraflex retains its sparkling, new appearance with a minimum of care.

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Available in a range of 15 marbleized colors, J-M Terraflex vinyl-asbestos tile is ideal for restaurants, public areas, schools, hospitals ... wherever reliable floor service, long-wearing beauty and long-time economy must be combined.

For complete information about Terraflex vinyl-asbestos floor tile, write Johns-Manville Box 158, New York 16, N.Y.

See "MEET THE PRESS" on NBC-TV, sponsored on alternate Sundays by Johns-Manville
Solving noise problems and moisture problems, too...

ReynoCoustic

Wherever noise problems exist, ReynoCoustic aluminum acoustical system offers an efficient solution in attractive form...combined with minimum maintenance and ready access to utilities above the ceiling. Incombustible, high in light reflection and easily cleaned, the ReynoCoustic system also has high thermal insulation value.

In addition, this YWCA natatorium at Charleston, West Virginia, demonstrates another advantage. These rustproof aluminum panels combined with glass fiber blankets, are unaffected by moisture, a common problem in acoustical treatments. The result is ideal for swimming pools and many other applications where high humidity conditions exist.

A complete installation service is available. For name of nearest franchised acoustical applicator, call the Reynolds office listed under "Building Materials" in classified phone books of principal cities. For complete literature write to Reynolds Metals Company, Building Products Division, 2014 South Ninth Street, Louisville 1, Kentucky.

REYNOLDS ALUMINUM
BUILDING PRODUCTS
When a door must do more than merely open and close, the effective and trouble-saving solution is a Jamison Engineered Door. It's the answer to many different problems: sound reduction, temperature, pressure, humidity, materials handling, gas isolation, corrosion, impact, visibility, safety or security. Or maybe you need a door that's unusual in size, shape, or the way it opens. Whatever the problem, Jamison brings to it more than 50 years of experience in developing cold storage and special-purpose doors. Send the coupon now for specific information.

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The importance of carpet to your clients, in terms of employee morale and efficiency, can be estimated by the fact that carpet eliminates virtually all floor noise. It swallows the clicking heels, the noise of scraping chairs and other contact noises that produce fatigue and decrease efficiency.

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June 1955 225
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ACOUSTICAL EFFICIENCY

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<th>Test No. A51-99</th>
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<td>mechanically mounted on special metal supports (mounting No. 7)</td>
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<td>1.6</td>
<td>1.7</td>
<td>1.8</td>
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I was greatly saddened, returning from a trip recently, to learn of the death of George Howe. One of the truly penetrating, calm, and dispassionate minds of our time in our profession, he had led an extremely active life through many phases of practice, teaching, and again practice in later years. One had become so accustomed to tumultuous comments from George on almost any subject of current controversy that it will seem strange indeed—and very grievous—not to be able to quote him anymore.

I got to know George Howe rather late in his long and varied career, and never with any great degree of intimacy; yet I felt that he was a real friend, with whom I could talk on any subject with the frankness one allows oneself only with such friends. I think many people felt that way with him, and I believe that characteristic is one of the greatest any human being can have.

I don’t think George was ever fully pleased with any work of architecture he completed. I suppose he will be remembered best for the Philadelphia Savings Fund building in Philadelphia, done with Bill Lescaze. What really tickled him more, I believe, were the accolades resulting from the design of the Clara Fargo Thomas house, “Fortune Rock,” daringly cantilevered over Somes Sound, Maine. At the time it was done it was tremendously influential in the move toward what Talbot Hamlin calls “character through materials and construction.” And I know that he was not displeased with the Philadelphia Bulletin building, done with Robert Montgomery Brown, now nearing completion. He recognized his earliest work for what it was: tasteful, somewhat romantic, well planned, and well detailed. It also had a strong influence. I remember walking down a street in St. Louis with him one evening and, as we passed a stone-and-timber house, his nodding toward it, smiling, and saying, “... early Mellor, Meigs & Howe school.”

By the time of the ’30s, Howe was an avowed “functionalist.” Writing for Pen­cil Points in 1932, he said, “There is more real beauty in one straight line of a well-designed functional country house, standing in bold relief against the irregularities of nature, than in all the soft contours recrested by the romantic in painful imitation of the peasant’s handiwork.” The need in architecture for “a common language, which every activity will serve to enrich, a language such as writers possess, whose imaginative medium is speech, with every contemporary human experience,” seemed always important to him. Until we find that common language, he said, “we shall remain a generation of polyglot headwaiters without the ability to express a great thought in any tongue, ancient or modern.”

But that common language never meant to him an adherence to any rigid school of thought. In the little collector’s item I was privileged to publish on this page in January 1954, entitled “It Was a Great Symposium,” Howe poked kind fun at the avant-garde Director of Architectural Exhibitions, the avant-garde Critic-Historian, the Dean, the Observer of the Skyline, the American Mercury, the Acolyte, and the self-styled Saviour.

As personal characteristics, one remembers both the quick wit and the quiet pleasure in life that remained with George Howe through his career as architect, public administrator, and educator. As example of the first, I have told many times the story of Howe bringing to Frank Lloyd Wright at the Princeton Bicentennial Conference in 1947. At an informal evening discussion, Wright had been explaining graphically the difference between the Oriental and the Occidental mind. “The Easterner,” he said, “approaches a problem like this ...” and he marked two points on a blackboard, drawing from one a long, circling line which went around and around the second point until it finally approached and touched it. “And the Westerner,” he explained, “approaches a problem like this ...” from one point to the other he drew a direct straight line. Then, having finished his discourse, Wright totally changed the subject and casually asked before he sat down, “What is this AIA—this union—I hear all of you architects talking about? Can any of you explain it to me?”

Howe rose and went to the board. “I’ll explain that, Frank,” he said. “The AIA believes in a code of professional ethics, which goes like this ...” and he repeated Wright’s long curved line from one of the points on the blackboard to the other. “But on the other hand,” he continued, “most architects believe in self-preservation, and that goes like this ...” whereupon he repeated Wright’s quick straight line from one point to the other.

To understand his pleasure in living and in doing whatever was the task of the moment, one would have had to know George Howe. In St. Louis, as professional advisor to the Jefferson Memorial Competition, he enjoyed St. Louis—and the people in that city loved him. In Rome, as architect-in-residence at the American Academy, he enjoyed Rome. The one person I know who loves Rome more than any other—Bruno Zevi—told me that he had never seen any other person, not a Roman, learn the city and its pleasures so well. He enjoyed his work with the Public Buildings Administration, he enjoyed his five years as head of the Department of Architecture at Yale; he enjoyed being Chairman of the Penn Center Advisory Board for Design.

Howe, in short, enjoyed architecture, and he enjoyed knowing and working with his fellow architects. If his comments were at times biting, it was the sharpness of a member of the family concerned about the foibles of his kinsmen. What more could anyone ask as measure of a full life than pleasure in the accomplishments of that life, and many friends who have shared the pleasures and admired the accomplishments?

The trip from which I have just returned took me to Memphis, Dallas, and San Antonio—in each case to attend and take part in unusual local AIA Chapter meetings. If these visits are any indication (and I think they are), the vitality of local professional activity is tremendously increasing. In each case, the Chapter had an “issue” it was fighting for. In each case, someone in the Chapter was sufficiently alive to public relations to take advantage of a visiting fireman who might be quoted on the issue. The result was a series of interviews with newspaper people, to an extent I’ve never encountered before, and remarkable press coverage of the meetings.

In Memphis, where the architects have been urging the Mayor to hold a competition for a Fine Arts Center, they were able to draw to their meeting the Mayor, the ex-Mayor, and several possible candidates for the Mayoralty in the next election. In Dallas, the Chapter has been arguing with the Board of Education against stock plans for schools; there I got quoted on the disadvantages of stock plans. In San Antonio, the local Honor Awards Program received good coverage, and the continuing issue of a parking garage under Travis Park (which would mean, among other disadvantages, the loss of the park’s fine old trees) was kicked around in the papers and on the radio.

As I finish this column, word comes in that Marshall Shaffer has died. I feel a great sense of personal loss, because Marshall had been a close personal friend for many years. Many people will write of his magnificent handling of the tricky problem of a government “advisory” agency. I think further back, to the days when he was teaching at Pratt Institute, to the enthusiasm of his pupils learning to the first time that architecture involves people. I remember an out-of-this-world night in New Orleans with Marshall and Al Aydelott. I think of his unrestrained voice booming across a restaurant or up a hotel corridor. And I recall his great generosity in promoting the work of others. He was, in the true sense, a character—“a person characterized by notable traits.”