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Coming in the Record

MODERN ART AND MODERN ARCHITECTURE

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

SCHOOLS FOR TODAY AND TOMORROW

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

DESIGNED FOR COMMERCE

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

in Old New Orleans

Prefab Concrete Combines Beauty, Safety and Economy

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

Only 58 reinforced concrete sections (cast in five varieties) were used to assemble the barrel-vaulted, 65'8" x 33'8" building on its concrete slab. Including landscaping, the attractive, firesafe school cost only $28,920 prior to the installation of church furniture.

Vaulted roof sections, 44' long, are carried by concrete beams resting on concrete columns. Perforated concrete panels with cathedral glass inserts form the side walls.

'Incor'® 24-hour cement was used exclusively by the precaster, enabling him to produce high quality concrete sections with maximum speed and economy—making the most efficient use of his facilities. Lone Star Portland Cement was used in the foundation and slab.

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End of an Era

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

Leonardo’s Three-Level City

Somebody looking through an old issue of the RECORD the other day came upon an article describing Leonardo’s “fascinating scheme for replanning the city of Milan” which is not only a fresh reminder of how tough it is to come up with an idea Leonardo had not somehow foreshadowed but also a rather grim indication of how long some ideas must wait for their time to come. “After the plague of 1485 and 1486,” the article (May 1918) recounts, “he addressed to the Duke, his patron, a letter describing a new type of thoroughly hygienic metropolis, so that his fellow citizens might no longer be required to live ‘packed together like goats and pollute the air for one another.’” The plan involved the construction of ten smaller cities, each average accommodation for 30,000 inhabitants. A system of artificial rivers or canals, with lock connections and regulations, was to provide circulation facilities and a maximum of light, air and cleanliness was accounted for in the plan; streets within the ten cities were as wide as the buildings bordering them were tall; great squares and market places were also included. Streets were, furthermore, arranged in two levels, the upper for pedestrians, the lower for traffic; the latter were also accessible from the canals, thus providing ready means for cleaning them and also for transportation of goods. A still lower level was occupied by a complex system of smaller canals to be used by gondolas. This level and the traffic level both had access to all houses for purposes of easy delivery of goods. To be sure, this huge project was at that time far beyond human means and exchequer to finance, though we do not doubt that da Vinci could readily have brought it physically into being. Today such enormous undertakings are everywhere in progress; many even of much larger scale are a matter of common practice. There is much in this Utopian plan of Leonardo’s that will merit investigation, and for modern methods and materials it would not be of exaggerated magnitude.” Five centuries after Leonardo, and 42 years after the article quoted, this month’s news includes (page 20) still another bold proposal for a new city which would segregate pedestrians and vehicular traffic, still another reminder of all the proposals and some brave experiments in between. Any real signs the time of this idea has come?

Anybody for Un-design?

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

Vandalism and Architecture

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

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

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

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

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

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

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

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

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

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

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

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

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

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

From Aspen to Grindstone
In planning a program, there are two possible approaches:

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

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

We have fluctuated between these two approaches.

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

At Nantucket the overall approach was used—the whole range of architecture was separated into five divisions, each given equal weight in continued on page 392
SUPEROIR ALL-COPPER PLUMBING IN THIS SCHOOL AT LOWER COST TO TAXPAYERS

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

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LEAGUE OPENS EXHIBITION

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

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

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

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

Members of the juries selecting awards winners in continued on page 14
Gold Medal of Honor in Sculpture: mobile for UNESCO, Paris; Alexander Calder, sculptor; Marcel Breuer, Pier Luigi Nervi and Bernard Zehrfuss, architects and engineers.

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

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

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

Each of the categories, in addition to Mr. Ketchum, who served as ex-officio member of all committees, included:

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

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

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

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

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


Honorable Mention in Architecture: Industrial Reactor Laboratory, Plainfield, N.J.; Skidmore, Owings & Merrill, architects
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IN STOCKHOLM: Dominating the city’s new downtown commercial center will be five 18-story office buildings, one of which has already been completed, the others of which will be finished by 1962. The first two floors of these buildings will be occupied by shops, on top of which roof gardens will be built, to be connected to each other by footbridges. The central area will be closed to vehicular traffic. Underground services include a much-needed 700-car garage and subways. Project was developed by municipal planning commission, with David Hildén as chief architect.

TWO PROJECTS, IDEAL AND REAL, SEPARATE PEOPLE AND CARS

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

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

**local building codes should be minimum standards**

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ARCHITECTURAL RECORD April 1960 23
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SHEPARD ELEVATORS
San Francisco!

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

- O'Neil Ford, San Antonio—Design.
- Wayne S. Hertzka, San Francisco—Service to The Institute.
- Paul E. Hunter, Los Angeles—Service to The Institute.
- Perry B. Johanson, Seattle—Service to The Institute and Public Service.
- A. Quinlan Jones, Los Angeles—Design.
- Bradley F. Kidder, Santa Fe—Service to The Institute and Public Service.
- Vincent G. Kling, Philadelphia—Design.
- Louis B. LaFarge, New York—Design.
- Robert M. Little, Miami—Design.
- Harold B. McEldowney, Chicago—Education.
- John W. McLeod, Washington, D. C.—Design and Service to The Institute.
- H. A. O'Dell, Birmingham, Mich.—Service to The Institute and Public Service.
- John H. Prichard, Tunica, Miss.—Design and Service to The Institute.
- Joseph P. Richardson, Boston—Design.
- Lutah M. Riggs, Santa Barbara, Calif.—Design.
- Burton Romberger, Newport Beach, Calif.—Service to The Institute.
- Chester O. Root, San Jose, Calif.—Public Service.
- Walter Scholer, Lafayette, Ind.—Public Service.
- Daniel Schwartzman, New York—Service to The Institute and Public Service.
- Solis Seiferth, New Orleans—Service to The Institute and Public Service.
- Chloethiel W. Smith, Washington, D. C.—Design and Service to The Institute.
- Harvey P. Smith, San Antonio—Public Service.
- Charles H. Stubbins, Jr., Cambridge, Mass.—Design.
- Robert L. Weed, Madison—Design.
- David R. Williams, Lafayette, La.—Design.
- Minoru Yamasaki, Birmingham, Mich.—Design.

Swiss Wins Reynolds Award

The fourth annual Reynolds Memorial Award of $25,000 for creative use of aluminum in architecture will go to a Swiss professor of architecture, Jean Tschumi, for his design of the seven-story Nestle Administration Building in Vevey, Switzerland, on the shore of Lake Geneva. In the four years of the award, no American has ever won it; and this year’s jury report had this to say: "The jury assumes that the lack of imaginative use and sensitive detail in some U. S. entries may reflect the ready availability of standard and pre-engineered building components in the United States and the restraints imposed by U. S. building codes and insurance requirements." The jury for the award, which is administered by the American Institute of Architects, was headed by Walter Gropius as chairman and included Philip Will Jr., James M. Hunter, Arthur Fehr and C. E. Pratt.

Major Competition Honors FDR

A memorial of unspecified nature is the subject of a major national architectural competition to honor the late President Franklin Delano Roosevelt, with a total of $110,000 in prizes to be awarded by the Franklin Delano Roosevelt Memorial Commission (Tariff Commission Building, Washington 25, D. C.). The first stage of the two-stage competition is open to registered architects; or to associations of landscape architects, continued on page 32
Split-level to skyscraper opens resilient

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ARCHITECTURAL RECORD April 1940
ARCHITECTURAL HISTORIANS LOOK AT URBAN RENEWAL

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

In January the S.A.H. members, now fourteen hundred strong, gathered in New York for their thirteenth annual meeting. The general session and the one devoted to the history of Renaissance and Baroque architecture followed customary interests, but a possible new trend could be noted in one section on the history of city planning and another on historic architecture as it relates to urban renewal. The first was organized by Christopher Tunnard, head of Yale's graduate program in city planning, and the second by Dean Holmes Perkins of the University of Pennsylvania. The papers on modern architecture were given in the auditorium of the new Guggenheim Museum and covered the architecture of such men as Wright, Gaudí, Parker and Unwin and Howe and Lescaze. Wright proved to have done a little erasing to bring one of his early project drawings up to twentieth century standards, Gaudí was shown to relate to a larger Art Nouveau movement in Spain and Parker and Unwin were linked up with William Morris and the Arts and Crafts. Welcoming remarks to the Society were given by James Johnson Sweeney, Director of the Museum. No formal evaluation of the Guggenheim itself was forthcoming from the historians. However, a great deal of "space" and "structure" were privately analyzed and there appeared to be agreement that the building had been intended to make an impression and had done so by breaking everybody's rules except Wright's. Art and the great city had him at bay but he had put up a magnificent struggle.

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

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

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

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

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

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

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

The plan, which was initiated in 1956, grants each school $2250, to be divided equally in three annual payments. Annually, $500 is to be used for scholarships or student loans in the college's architecture or architectural engineering departments. The only stipulations made by the Tile Council are that the recipients of the scholarships be citizens of the United States, and that they intend to enter architectural practice upon graduation; academic, financial and character requirements are those usually demanded by the college administering the scholarships.

It is also to be left to the college's discretion whether to use the money for scholarships or for student loans. If loans are made, no time limit is to be defined for repayment, nor is interest to be charged.

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

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

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

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

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Many combinations of Oak, Maple, Walnut and Cherry are available.

ADDS HAND-CRAFTED RICHNESS AT NO EXTRA COST

and sometimes at less cost than ordinary parquet.

All the centuries — old tradition of expert parquet craftsmanship is exemplified by Harris BondWood in gleaming expanses of pleasing geometric patterns. Sturdy Oak . . . durable Maple . . . fashionable Walnut . . . and distinctive Cherry. Easily and permanently installed in adhesive on concrete or wood sub-floor. And the beauty is deep — a lifetime of service — slats are 5/16" of solid hardwood, not tongued and grooved.

Write for color booklet illustrating the sales possibilities.

HARRIS MANUFACTURING COMPANY Dept.AR-40, Johnson City, Tenn. The Finest in Flooring since 1898. See our catalog in Sweet’s.
Retirement Village Features
Living, Not Custodial Care

When officials of the Upholsterers' International Union decided to build a retirement village, they determined not to let it become a "misery harbor" old-age home. Instead, they evolved plans for a self-contained community of active elderly people and younger people on vacations and visits. Also included are facilities for limited-time nursing and convalescent care for all ages. The village, called Salhaven for Sal B. Hoffmann, president of the union, was opened in the end of 1957. It is on a 600-acre site in Florida, north of Palm Beach.

Rufus Nims was the architect of the original community buildings and first 12 cottages; Russell Vannest Black was site planner. There are now an administration building, a recreation building, a 500-seat auditorium (used by people from the surrounding areas as well), a convalescent center and cafeteria, and a security building. There are also 18 cottages, each with one to three bedrooms, and two lodges with eight apartments each. The latter originally were intended for single retired people, but experience has shown little demand for that type of living by elderly people; thus the lodges are now used for visitors and vacationers. Another change based on continued on page 52

The benefits: Better supervision, better protection... and at greatly reduced costs. Your Autocall Sales Engineer can help you plan a new system or upgrade your present protection. There is no obligation for this service. Write, wire or phone, now.
You can install STREAMLINE DWV COPPER TUBE AND FITTINGS at savings up to 15% and get the most modern drainage system possible... a compact, space-saving system that's lightweight, sanitary, non-rustable and clog proof.

**COMPARISON WITH RUSTABLE MATERIAL PROVES INSTALLED COST OF STREAMLINE DWV COPPER TUBE AND FITTINGS IS LOWER!***

<table>
<thead>
<tr>
<th>3&quot; ALL COPPER DWV DRAINAGE INSTALLATION</th>
<th>3&quot; GALVANIZED AND DURHAM DRAINAGE INSTALLATION</th>
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<tr>
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*This comparison is based on actual material and labor costs in effect on January 7, 1960, in a mid-west metropolitan area of 75,000 population.

Complete technical information on Streamline DWV Copper Tube and Solder-Type Fittings is included in big, new 32-page Bulletin D-459. Send for your free copy today.
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to adjust gliding doors!

NEW KENNAFRAME®
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complement to decor  deep cushion comfort  space-saver, stacks eight high many uses  many colors

The Harter Six-Seventy combines design aesthetics in the contemporary motif — with a degree of real seating comfort unapproached even by more expensive side chairs ... And it's still as kind or kinder to the budget than any alternate choice. All the facts and features — in color — are yours in free descriptive folder. Use the automatic request tag below.

French Lick Sheraton Hotel, French Lick Springs, Indiana, employs 500 Harter Six-Seventy-Chair in newly redecorated Convention Hall which converts quickly to a dining or conference area.
New Design Directions for Nursing Homes Suggested in Report on Aging

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

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

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

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

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

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

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

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

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

Another factor in this confusing picture, it holds, is the growing pressure to incorporate into the direct services provided in public nursing homes such additional programs as medical clinics, laboratory and X-ray facilities, psychiatric services, social casework, physical and occupational therapy programs, and other services more normally associated with hospitals.

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

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

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

The best data currently available on the supply of and need for skilled nursing home beds are those submitted by the states to the U. S. Public Health Service under Hill-Burton continued on page 492
WOODGRAIN IN VINYL ASBESTOS TILE

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Colors: Beech, Elm

Woodgrain Tiles also available in Solid Vinyl, Rubber and Asphalt.
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Broad Activity Reported on Post Office Projects

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

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

The engineering work involved in constructing leased facilities at smaller offices was proceeding at a rate of approximately four projects per day. PO officials have said they hope to advance this rate to six projects per day within a year.

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

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

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

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

The net result is that in number of general aviation airports, the industry is practically standing still. Most state, county and local executives favor having these smaller airports in their areas. Administrator Quesada said, but friction often develops when the fields are proposed, sites selected, zoning drafts presented, and master plans prepared.

Stressing that absence of an airport usually means revenue loss, Mr. Quesada observed, "Given the rapid spread of our suburbs, the consequent tremendously increased demand for new taxes for schools, roads and similar improvements—given these violent stresses, the airport cause is often lost in the shuffle."
For details of home installations, see Sweet's Light Construction File, 11c/Be.

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is a recognized need in today's homes. By telephone planning the homes you design, you provide outlets for full service flexibility, keep wiring concealed, preserve interior beauty.

*Bell Telephone System*
Best for ductwork or spiral conduit

Bethcon Galvanized Sheet Steel

Here, running side by side, are ductwork and spiral pipe for the heating and air conditioning systems of a large new office building. Bethcon galvanized steel sheets were extensively used in the fabrication of both of these component parts.

Bethcon sheet steel is just right for sheet metal work such as this. First, being steel, Bethcon is strong and rigid, permitting long spans with minimum support. Second, Bethcon is neither too soft nor too hard; it's ideal for easy shopwork and a sturdy end-product. Third, Bethcon's zinc coating is second to none for its refusal to flake or peel off.

Bethlehem's continuous galvanizing process includes a special annealing cycle which gives the steel its desirable strength-with-ductility combination. Seconds later the zinc is applied, and applied so tightly that it permits forming never before considered practical for galvanized steel.

Bethcon is available in a wide variety of gages, with either plain open hearth or copper-bearing (Beth-Cu-Loy) steel for the base metal. Just get in touch with the nearest Bethlehem representative for whatever details you need. Or write direct to our home office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL
From the John Gellatly Collection in the National Collection of Fine Arts, Smithsonian Institution, Washington, D.C.

Beauty and Structure Become One

Through Facing Tile. The enduring beauty of the Han Dynasty vase is mirrored in the lustre of facing tile. Two thousand years apart in time, the two have an affinity in art. Each is drawn from the earth and employed by the artist to produce lasting art and enrich man's purpose.

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1520 18th Street, N.W., Washington 6, D.C.
Construction Cost Indexes

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

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

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

- index for city A = 110
- index for city B = 95

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

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

\[
\frac{110 - 95}{95} = 0.158
\]

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

\[
\frac{110 - 95}{110} = 0.136
\]

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

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.
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ARCHITECTURAL RECORD April 1960 67
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Technical data on Custom Corlon Tile: uses: above, on, or below grade; surface resistance: greaseproof, excellent for acids, alkalis, many solvents; dimensional stability: superior; ease of maintenance: superior; static load limits: 200 lbs. psi; underfoot comfort and quiet: excellent; gauges: 3/16", 1/4"; sizes: 9" x 9", 12" x 12", 18" x 36"; colors and designs: burl graining and Imperial Series (a terrazzo effect) in over 30 colors, including plain black and plain white.

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Armstrong Floors price list
Approximate installed prices per sq. ft.
Over concrete, minimum area 1000 sq. ft.

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<td>$1.00 and over</td>
<td>&quot;Imperial&quot; Custom Corlon Tile 3/8&quot; Custom Corlon Tile 1/4&quot; Cork Tile 3/8&quot; Opaquesq Vinyl Tile 1/4&quot;</td>
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Armstrong 1860-1960 Beginning our second century of progress
New Monograph Series


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

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

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

Though each of the authors is naturally in sympathy with his subject, each also succeeds in preserving his detachment.

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

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

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

A Cool Book on Squares

TOWN AND SQUARE: FROM THE AGORA TO THE VILLAGE GREEN. By Paul Zuckerman. Columbus University Press, 2950 Broadway, New York 27. 287 pp., illus. $15.

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

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

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

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

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

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

—ARTHUR FISHER

Vitruvius Britannicus

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

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

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

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

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Vitruvius . . .

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

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

—JONATHAN BARNETT

Two European Architects

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


The Italian book on Giulio Minoletti is the first of a projected series of monographs on Milanese architects, continued on page 408
Louisville Elementary School makes use of Romany-Spartan glazed wall tile in corridors, kitchen, gymnasium and toilet rooms.

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SEE THE MONTGOMERY ELEVATOR COMPANY REPRESENTATIVE OR THE STEPHENS-ADAMSON REPRESENTATIVE IN YOUR AREA.
How Alcoa Aluminum saved taxpayers money on Minnesota school

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

And this aluminum wall weighs only about 5 lb per square foot—where masonry would weigh as much as 90 lb—which means another big saving to taxpayers from reduced loads on foundations and other structural elements. Aluminum saves in many ways! That's why Bloomington's new school used aluminum in so many places: 617 aluminum windows, 621 aluminum panel frames in the curtain walls, plus many pounds of aluminum in screens, louver frames, trim and elsewhere.

The savings go on and on, too.

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

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

Your Guide to the Best in Aluminum Value

For exciting drama watch "Alcoa Presents" every Tuesday, ABC-TV, and the Emmy Award winning "Alcoa Theatre" alternate Mondays, NBC-TV
Unique use of *Marlo* fan-coil units in handsome new doctors' building

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

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

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

Write for 16-page illustrated brochure on Marlo “Seazonaire” remote room air conditioning units. Contains photographs and drawings of all models available, construction and performance details, examples of typical installations.
New office building designed with the future in mind
Exterior view of new home offices of Bankers Life Insurance Company of Nebraska, in Lincoln. Two different lighting systems are provided for the building, one for day and periphery lighting for night.

Bankers Life Building

designed for comfort, convenience, economy and expandability

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

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

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

You can be sure...if it's Westinghouse

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

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

C. E. Pickering, J. O. Unthank and J. P. Anderson are shown in front of Westinghouse 1500-kva dry-type ASL power center. This power center steps incoming voltage down from 5 kv to 277y/480 for distribution through three Type DB-50 air circuit breakers.
W. F. Sterbens looks through the only opening of central ventilator-power duct shaft located in immediate office area of each floor. A compact 75-kva Westinghouse Type DT-3 dry-type transformer steps down voltage at point of utilization feeding underfloor duct. K. W. Bell, Building Superintendent, and Jacob Dietrich, Building Engineer, check noise level of transformer which must be inaudible to operate in office area. Size was also a prime consideration in fitting transformer through available opening. Only a Westinghouse DT-3 dry-type transformer combined small size, 75-kva rating and guaranteed silence.

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

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

Harold Stebbins, C. E. Pickering, A. J. Whitmer, G. R. and J. O. Unthank are shown on one of the Westinghouse Selectomatic®-Automatic elevators which are traffic controlled to match, automatically, elevator service to traffic demand.
Jacob Dietrich views Westinghouse PRECIPITRON®, the Electronic Air Cleaner which removes up to 95% of all dirt particles, smoke and pollen in the air circulating throughout the building. This improves working conditions and also protects employee's health. The PRECIPITRON traps microscopic particles that cause streaks, smudges, damage to interior furnishings and office equipment, thereby reducing cleaning and maintenance costs.

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

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

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

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

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

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

WATCH "WESTINGHOUSE LUCILLE BALL-DEBI ARNAZ SHOWS"
CBS TV ALTERNATE FRIDAYS
There can be no compromise here*

On galvanized metal surfaces —
be sure of lasting performance with
Rust-Oleum GALVINOLEUM® Coatings

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

RUST-OLEUM STOPSRUST!

There is only one Rust-Oleum. It is distinctive as your own fingerprint. A matter of excellence.

Your nearby Rust-Oleum Industrial Distributor maintains complete stocks for your convenience.

RUST-OLEUM CORPORATION
2556 Oakton Street
Evanston, Illinois

New 30-page Rust-Oleum Architectural Specifications Catalog. Features actual color charts. Clip coupon to your letterhead for your free copy of Form No. 259-A.
WHAT 7 THINGS HAPPENED RECENTLY AT FRICK COMPANY* IN WAYNESBORO, PENNA.

7 important things for

...and you:

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

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

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

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

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

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

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

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

FRICK COMPANY
Waynesboro, Penna.

*Pioneers in dependability since 1853: air conditioning, refrigerating, ice making and quick freezing equipment, power farming machinery and portable sawmills.
These facts are the reasons why Sinko THIN-CELL Louvers are being specified by leading architects, lighting manufacturers, interior decorators and builders for all types of lighting installations where a practical and artistic approach to their lighting problem is required.

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

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

We invite you to write for Bulletin 32A which gives you pertinent facts on Sinko THIN-CELL Louvers.
This roof insulation meets every specification for a rigid insulation board. Composed of durable, inorganic glass fibers, it is faced with a tough, impact-resistant asphalt and paper mopping surface. This surface later becomes an integral part of the built-up waterproofing. The resulting insulation is rigid and tough!

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

Recommended for above the deck: Perma Ply®
Unretouched “delayed flash” photograph shows how impact tester demonstrates toughness and impact resistance of Fiberglas Roof Insulation. Test simulates impact of mobile roofing equipment.

RIGID CONSTRUCTION THAT STAYS FLAT AND WILL NOT WARP OR BUCKLE

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

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

Owens-Corning Fiberglas Corporation
FENN COLLEGE
West Campus Building
Cleveland, Ohio

Architects, Joseph Ceruti
and Associates

Contractor, The Albert
M. Higley Co.

SUCCESSFUL RECONSTRUCTION

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

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

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

HOPE'S WINDOWS, INC., Jamestown, N.Y.
THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS
Genuine Walnut . . . the warmth and rich natural beauty of the real wood. Also available in genuine oak and cherry . . . or, if your client prefers, fine birch in Tawny or Fruitwood finish.

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

Classic . . . elegant in its simplicity . . . one of several St. Charles custom styles . . . available plain, or with decorative panels. There is the right style to fit your design.

These are just a few of the almost limitless possibilities at your command when you specify St. Charles Custom Kitchens. Full freedom in layout, style, color, materials, features . . . because a St. Charles Kitchen is custom built after you plan it . . . not before!

Write for the award-winning St. Charles kitchen planning booklet featuring new custom kitchen ideas, and detailed information and specs on St. Charles' units.

St. Charles
CUSTOM KITCHENS

St. Charles Manufacturing Company
Dept. ARK-13
St. Charles, Illinois
Inspected
PREFABRICATED BUILDING COLUMNS

Concrete filled tubular steel columns insulated with specially developed aggregate and steel jacketed for mechanical protection—have been tested and approved by the UL for up to 4 hour fire ratings. Available in sizes and shapes to meet virtually any need.

If you were designing your own Drafting Chair...

you'd specify these Cramer-HI-MODEL POSTURE CHAIR features:

V Cast aluminum seat. Foam latex cushion, 2½" thick.
V Replaceable seat and back covers. Choice of smart fabrics and colors.
V Spring steel back support with exclusive "Dualok" control.
V Non-revolving steel spindle for easy swivel without seat wobble.
V Adjustable foot ring.

WRITE FOR COMPLETE DETAILS

Cramer POSTURE CHAIR CO., INC.
625 Adams Street Dept. AR-4 Kansas City 5, Kans.

For full information write:

TUBULAR
Products, Inc.
Souderton, Pennsylvania

142 ARCHITECTURAL RECORD April 1960
PLAN NOW—ONE SYSTEM FOR TEN SERVICES!

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

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

THERE IS NO OTHER SYSTEM LIKE IT!

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

SUNBEAM LIGHTING COMPANY
777 East 14th Pl., Los Angeles, Calif. - 3640 Georgia St., Gary, Ind.
Introducing: the neatest thing on the floor!

The New SPANG® Telephone Service Fitting

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

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

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

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

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

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

THE NATIONAL SUPPLY COMPANY
Two Gateway Center, Pittsburgh 22, Pennsylvania
Subsidiary of Armco Steel Corporation
Hospital Casework by St. Charles

Installed in Muskogee General Hospital, Muskogee, Oklahoma

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

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

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

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

St. Charles
CASEWORK SYSTEMS FOR HOSPITALS
St. Charles Manufacturing Co.,
Dept. ARH-13, St. Charles, Illinois
How to Avoid Crazing in Concrete Surfaces

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

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

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

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

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

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

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

1. Concrete must be kept moist so that cement hardens while continuing to combine chemically with the water.
2. Start curing process after finish troweling as soon as the surface is hard enough to resist damage.
3. Don’t allow concrete to air-cure.

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

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

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

More Information
Send for the Alpha Craftsmanship in Concrete Folder #1 which presents much more data on “Steel Trowel Finishing”. Reprints of this advertisement are also available on request.
An advanced concept which assures superior illumination for all of the lighting requirements in the patient's room... with significant economies for the hospital.

Write for illustrated brochure LC-110R.
Steel pipe serves hot-water heating system of 1,685-unit Armed Services Housing Project

One of the largest housing developments in the country is the $27,500,000 project recently completed at Plattsburgh A.F.B., New York. Spread over 235 acres, the 396 buildings will accommodate Air Force officers, enlisted men, and their families. A centralized hot-water heating system will keep the buildings comfortable even in the coldest of winters. And for the greatest of economies, the system was built with steel pipe—some 450 tons of Bethlehem Electric Resistance-Weld and Beth-Co-Weld steel pipe were used on the job.

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

STEEL PIPE IS FIRST CHOICE
for lasting strength

economy
workability

insist on
STEEL PIPE MADE IN USA

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor:
Bethlehem Steel Export Corporation

158  ARCHITECTURAL RECORD  April 1960
TIFF

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

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

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

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

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

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

THE CAMBRIDGE TILE MFG. CO.
P.O. Box 71, Cincinnati 15, Ohio
HUSH CLIP Partition System makes a fine building that much finer

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

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

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

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

PENN METAL COMPANY, INC.

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

MIES VAN DER ROHE

Since Mies van der Rohe has given twentieth century architecture several of its masterpieces, it is more than fitting that he should at last receive the A.I.A. Gold Medal. He should be so honored even if it were not for the masterpieces, for he has influenced present day American architecture more than any other architect. His is an architectural order which can be learned, and Philip Johnson, Eero Saarinen, Paul Rudolph and Gordon Bunshaft have been among his apt pupils. Some less able architects have been released from the imperatives of originality and architecture is the better for it. They have found in the reasonable, detached clarity of Mies a system of architecture within which they are able to do a decent job. There are forces which run counter to Mies; a preoccupation with shell construction, an emphasis on plasticity, and now “the new freedom.” There are signs that Mies himself in several recent projects has handled details in a more plastic manner. He will not go too far. His strongly contrasted forms, precisely articulated structures and decisive details fulfill a yearning for a direct and simple experience of architecture more acute than ever in our complex age.
1920-1925: In the projects of this period Mies enunciated his major ideas. 1. Of the glass skyscraper he said, "... the important thing is the play of reflections and not the effect of light and shadow as in ordinary buildings." 2. Philip Johnson calls the concrete office building project the apotheosis of the ribbon window. 3. Plan of country house, 1923, is related to a painting by Theo van Doesburg. In describing this house Johnson has written: "The unit of design is no longer the cubic room but the free-standing wall, which breaks the traditional box by sliding out from beneath the roof and extending into the landscape. ... Indoors and outdoors are no longer easily defined; they flow into each other. This concept of an architecture of flowing space, channeled by free-standing planes, plays an important role in Mies' later development and reaches its supreme expression in the Barcelona Pavilion of 1929." 4. The concrete country house project of 1924 was the first house planned to be "zoned" into separate elements for living, sleeping, etc.

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

1938-1952: In 1938 Mies became Director of Architecture for Armour Institute, now known as Illinois Institute of Technology. 8. Entire campus planned by Mies for I.I.T. is based on a modular bay 24 by 24 ft and 12 ft high. Spaces between buildings are controlled by the same module. 9. Johnson describes the mullion and corner details of Alumni Memorial Hall as follows: "The columns ... are faced with mullions, but these are not permitted to masquerade as supports; instead they are stopped short just above the ground to reveal their true nature. This is a remarkable subtlety, as is the fact that the mullions, in framing the brick and glass panels, never merge with them but are clearly separated by shadow casting indentations, giving to the walls somewhat the quality of a relief." 10. In the Farnsworth house, floor and roof fascias are welded to eight steel columns. 11. The Lake Shore Drive apartments are parents to Mies' subsequent skyscrapers. 12. The I.I.T. Chapel suggests that Mies' esthetic can accommodate worship.
1953-1958: 13. A Convention Hall for Chicago's South Side. The roof is a great steel truss based on a modular cube 30 by 30 ft and 30 ft high. It will span 720 ft without interior columns, and will be 112 ft above the convention floor. The four walls act as flat trusses. As yet unbuilt, it is called by Arthur Drexler "the most monumental image twentieth century architecture has yet produced." 14. The main floor of the Architecture and Design Building for I.I.T. consists of a great undifferentiated space 120 by 210 ft enclosed by a roof hung from deep steel girders supported by exterior steel columns. The floor itself is supported by a regular bay system in the basement. This building does not function well for its present purpose either on the main floor occupied by architectural students or in the basement occupied by design students, but this was not Mies' chief concern. More interested in the construction of clear spans at a large scale than in relatively temporary functional arrangements, Mies designs a universal space within which specific use may change with time. 15. Cullinan Hall exhibits Mies' infrequent use of a curved element. Two earlier projects have curving façades; a design of 1933 for the Reichsbank, and another of 1937 for an administration building for the silk industry. 16. While America offered Mies the opportunity to realize his conceptions and to build on a far larger scale than he had in his European career, until the Seagram building there were no American works which allowed his masterful handling of fine materials and skilled craftsmanship to come into play. Until Seagram there was no chance for the elegance of the Barcelona Pavilion or the Tugendhat house. The Seagram building embodies this and every other strength of Mies; in it each effort in a long career is fulfilled.

Redevelopment Program for Detroit

NAME: Lafayette Park
LOCATION: Detroit, Michigan
OWNER: Estate of Herbert Greenwald and Samuel Katzin
ARCHITECT: Mies van der Rohe
STRUCTURAL ENGINEER: Frank Kornacker
MECHANICAL ENGINEER: William Goodman

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

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

Twenty story apartment is the first of six to be completed. There will be twenty-five low-rise structures.
"Today the factor of economy makes rationalization and standardization imperative for rental housing."

MIES VAN DER ROHE from Bau und Wohnung, 1927
The low-rise structures are carefully related in space

Two story low-rise plans

High-rise plans

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

Redevelopment Program for Newark

Apartments structurally identical to high-rise unit in Detroit redevelopment

**NAME:** Colonnade Park  
**LOCATION:** Newark, New Jersey  
**OWNER:** Estate of Herbert Greenwald and Financial General Corporation  
**ARCHITECT:** Mies van der Rohe  
**STRUCTURAL ENGINEERS:** Frank Kornacker and Robert Rosenuasser  
**MECHANICAL ENGINEER:** William Goodman
Mies van der Rohe: Newark

Anodized aluminum curtain wall of Pavilion Apartments
Plans for Pavilion Apartments. Compare with Detroit high-rise plans on page 173

One of twenty floors in Colonnade Apartments

Colonnade Apartments will include three bedroom units renting for $248 to $267 per month
Mexican Headquarters for Bacardi Rum

Ground floor

Office floor
OWNER: Bacardi Y Compañía, S.A.
LOCATION: Mexico D.F., Mexico
ARCHITECT: Mies van der Rohe
STRUCTURAL, MECHANICAL AND ELECTRICAL ENGINEERS: Saenz-Cancio-Martin-Gutierrez

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

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

Illustrations by Walker Cain

"THE WELLSPRINGS OF DESIGN"

by John A. Kouwenhoven*

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

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

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

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

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

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*Dr. Kouwenhoven is professor of English at Barnard College, Columbia University, and was formerly associate editor of Harper’s magazine. He is the author of Made in America and numerous articles published in this country and abroad. This paper was the concluding address at the First Pacific Rim Conference, sponsored by the California Council, A.I.A., and held in Honolulu, October 8-14, 1959.
accommodate; or he may become eloquent about the way they are designed to express democratic ideals or serve democratic ends. But those of us who make a habit of reading what architects and designers say about their own work have learned not to expect much correspondence between the things they assert in stone or steel or wood, and the things they assert in words. Architects as artists are essentially non-verbal; as business men or salesmen, they are frequently as verbal as Madison Avenue hucksters or college professors, but what they say as business men need not (and seldom does) have much to do with what they do as artists.

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

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

Some of you will already have asked (as I did when I first heard Van Doren's remark) how, if artists are inspired by art rather than by life, art ever got started. Obviously someone must at some point have produced a painting in direct response to a human figure or a natural landscape, because at some point there can have been no other paintings to prompt him. There must have been a first house, a first temple, a first pyramid, designed (or improvised, if you prefer—though the terms are more nearly synonymous than we usually admit) as a direct response to physical factors, and to such basic
social needs as those for shelter, for worship, or for the assurance of immortality. The forms which have been developed and refined, echoed and re-echoed in our various architectural traditions, obviously had their origins in primordial responses to physical, social and cultural realities, unhindered and unhindered by earlier formal solutions.

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

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

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

There are people who argue that it is one thing for a Japanese poet, who belongs after all to a different culture, to use a net unlike the one we are used to, but quite another thing for Whitman (and his successors) to do so. Whitman seems to them, as it were, a traitor to his class, willfully seeking a flatulent originality. The literary argument roughly parallels the architectural one which has been employed in a recent American book denouncing modern architecture in all its manifestations, on the ground that it has merely seceded from tradition in a fruitless effort to be original. The literary argument that artistic conservatism will resist them effectively. Society has plenty of built-in devices to induce even the most recalcitrant architect to adapt his work in some measure to contemporary reality—one of the most effective, the client’s bank roll.

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

Just here, I would like to suggest that we make a distinction between an “urban-industrial” society and a society based upon technology and science. They are not quite the same thing. As an analytical, descriptive term in sociology, “urban-industrial” no doubt describes our kind of society very well. But it does not specify the basic forces, the driving energies which are shaping the society. Rather, it is a
"... implicit assumption that whatever is wrong about our new world can be cured by reviving values inherited from a reputedly happier time ..."

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

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

We would do well, I think, to hold in our minds, as we return to our various countries after this conference, the question of how much or how little the life of contemporary Japan or New Zealand or America, or wherever, is really shaped by science and technology.

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

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

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

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

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

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

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

The destruction has come, and will continue, not, Morison said, because the things which are destroyed are in themselves bad, but "because however good and useful they may have been in the past, they are not adapted to fulfill the requirements of the new epoch." The danger is that the destructive changes will come so fast that the new developments, appropriate to the new world, do not come fast enough to fill the gap between them. And of course such developments (in architecture, education, or whatever) will not come fast enough if, each time that we are frightened by some destructive change, we decide that change itself is bad and that we must therefore renounce all attempts at new solutions and go back, as the phrase is, to "the high classical manner," or the theology of Aquinas, or the politics of Aristotle, or whatever the "unchanging verity" in our neck of the woods may be.
For people in general these days, in the western world at least, there is an implicit assumption that whatever is wrong or distressing about our new world of technology and science can be cured—or at least ameliorated—by reviving or adapting the values we inherit from a reputedly happier time (before the discovery of ways to manufacture power) when society was based upon agriculture and handicraft commerce. We speak of science and technology as either essentially inhuman and evil (witness Charlie Chaplin’s version of the assembly line), or at best merely neutral (as when we say that atomic energy is neither good nor bad in itself; it’s what the politicians, the generals, or the doctors do with it that matters). Either way, science and technology look pretty scary, and we therefore conclude that a society based upon them is a Bad Thing and we had better return to the time-tested values which architects like the amateur who resides in Berkeley across the bay, and professors of liberal arts like me, make it our business to preserve and cultivate.

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

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

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

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

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

It is my conviction that the society we live in marks—as Morison said it did—a really new epoch,
"A ballerina wearing the standard frilled tutu . . . is a good deal freer to express her unique vision than one wearing a polo coat."

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

It was my contention that the early, unschooled attempts to create satisfying patterns out of these novel elements in our environment constituted a new kind of folk art. The folk arts we are familiar with are the product of groups cut off from the mainstream of contemporary life, and they are the surviving remnants of traditional forms and patterns. These new "folk arts" are, on the contrary, the product of people directly involved with the dynamic forces of contemporary life, and they are the environmental elements to which they give shape are quite literally something new.

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

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

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

We could illustrate the role of the vernacular in evolving new forms, appropriate to the new environment, by reference to other examples, including the steel frame and the concrete shell. But the point would be the same: that in a time of rapid and future-founding change, the architect who ignores the vernacular, with its unselconscious and uninhibited response to the elements of a new environment, and who submits himself too devoutly to
the inspiration of past architecture (his own, or
to others), runs a grave risk of losing fruitful
contact with the life about him.

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

Architecture is what you should pay attention to,
as Mark Van Doren's comment implied. I would
only urge that, in these rapidly changing times,
you include under that head not only the master­
pieces of the past but, more especially, the humble
vernacular which is springing up around you, wher­
ever you live, in direct response to the new elements
which democracy and technology are still intro­
ducing, and at an ever-increasing pace, into the
lives of people everywhere. Remember that critics
always want you to imitate the great artists of the
present and the past, but that great artists never
imitate their equals; they imitate (and plagiarize
from) their inferiors. If you submit to the influence
of the critics, they will hound you into the shadow
of some imperious, if dead, perfection. But the per­
fection embodied in the great architecture of the
past, as in the great poetry and great music, is the
culmination of a growth which began far back in
the inexpert gropings of ordinary mortals. The
forms which reached their loveliest and most mov­
ing expression in the Gothic cathedrals of the mid­
dle ages were evolved not from those of classical
temples but from those of common barns and mar­
kets, just as Beethoven's symphonies were an elab­
oration of formal elements which originated in folk-
music, and just as Shakespeare's plays were the
culmination of a long development in the popular
theater. We tend to forget that Shakespeare did not
write Hamlet because he was steeped in Aeschylus
and Sophocles, but because he found in the crude
forms which had been evolved by generations of in­
ferior predecessors a vehicle, relevant to his time,
which he could adapt and refine so that it fitly con­
veyed a vision of life which his genius made rele­
tant to all times.

Vernacular forms, whose elements are the ma­
terials and processes of technology and the atti­
tudes and interests of democracy, will continue to be
improvised wherever technology and democracy
make themselves felt among the peoples of the
earth. They will, of course, be modified in each re­

gion by physical and social actualities and by the
local cultural heritage which goes deeply into the
quality of what we build. But they will share the
quality of immediate responsiveness to the driving
energies of the new epoch. They will be crude, un­
refined, and—if you will—ugly, more often than
not. But the architect as artist will neglect them at
his peril. For they are perhaps the most life-giving
of all the wellsprings of design.

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

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

The elegant simplicity of this house is an eloquent statement of its purpose: to achieve the stateliness of a large and formal house in what is essentially a small house, containing only the number and kind of rooms suited to its owners' tastes and way of living. Set among the pines of an old estate on the San Francisco Peninsula, the house knowingly balances the formal plan and amply proportioned principal rooms (where 14-ft ceilings are appropriate to the other dimensions) against an easy informality of indoor-outdoor relationships and the casual flow between the main rooms and the great gallery around the central glass-enclosed court with its quatre foil pool.
Exposed on one side to a golf course, the house needs an interior focus to provide a place for privacy and intimacy. The court and its surrounding gallery are this focus, the clear glass walls extending the sense of space into and through the court. The high ceiling—14 ft, as in entry, living and dining rooms—contributes to the stateliness that is so strong a part of the quality of the house.

Fine materials also contribute to this quality, but the simplicity with which they are used is an influence toward informality. Terrazzo floors, used in the gallery, make maintenance easy; unfinished teak boards in entry, dining and living rooms add the warmth of natural wood; ceilings are plaster except in the gallery where acoustical tile is used.

William B. Gilbert, Structural Engineer; Daniel Yanow, Mechanical Engineer; Thomas Church, Landscape Architect; Vail Kasper, Decorator; Aro and Okerman, Contractors
A Formal House
In An Informal Setting

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

A RANCH HOUSE IN CALIFORNIA’S CENTRAL VALLEY

This is a true Valley house, designed for the Valley’s hot climate and its flat land—a ranch house on the grand scale, providing for a luxurious sort of casual living. Its 2-ft-thick adobe walls and wide porches insulate against the intense heat; the second floor living areas are high enough above the ground to catch the view that extends almost without limit across the rich fields of the Valley; and the two handsome stairways—the double one on the south, the other rising from a mound—successfully tie the house to the land. Although it continues and frankly recognizes the tradition of the great house on the working farm, this house derives from the Wurster conviction, not from any style, period or region.
The house is set felicitously in the middle of its site, central to the ranch's operation which involves both agriculture and the raising of thoroughbred horses. The screened porch off the entry and the living room overlook the paddocks as well as the Valley. Openings in the adobe walls are few and small in area to afford minimum protection from the heat and to minimize the load on the air conditioning system, and double doors are used wherever there is a direct connection with the outdoors. Skylights set into the roof over the hearth in the living room and over the stairwell increase the daylight in otherwise dark areas. The roof is galvanized iron painted dark red, an effective use of a simple material. Since it is a working ranch, landscaping has been kept simple
The dark and beautifully curved form of this great walnut stairway against the soft white adobe wall is the one feature of the large recreation room on the ground level. Walnut is also used for casework; elsewhere woodwork is resawn sugar pine, painted.
Two New Office Buildings in San Francisco

The Crown Zellerbach Building

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

STRUCTURAL ENGINEER: H. J. Brunnier

GENERAL CONTRACTOR: Haas & Haynie

OWNER: New York Life Insurance Company
Crown Zellerbach Building

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

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

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

LOBBY LEVEL: The open lobby level, made possible by the massive steel columns which frame the building and the separate core which contains elevators and other services, is undoubtedly the building's most dramatic feature. The particular kind of sophistication which it brings to San Francisco is tempered, unexpectedly, by the warmth of certain details: the natural teak rail around the open deck and the modeling of the travertine balusters on which it rests; the travertine floor; the plastic form of the bridge from Bush Street to the deck; the rich but very simple luminescent ceiling of the lobby with its hundreds of plexiglass dowels protruding from a polished brass panel and acting as conductors of light from the fluorescent fixtures in the plenum above. Marcello Mascherini's "Woman in Bronze" is one of four works commissioned for the building; David Tolerton's fountain in the plaza and Mark Adams' mural in the cafeteria and Emil Nouman's horse are others.
SECOND FLOOR: Cafeteria and kitchen facilities take up most of the second floor; a large meeting room at the building's west end can be subdivided by folding doors for use by smaller groups. This is one of two floors on which modular services are not included; atypical, too, is its concrete floor required for utility lines.
TYPICAL FLOOR: Crown Zellerbach's generous 5 ft 6 in. module, the most basic design factor in the building's concept, was chosen to satisfy the two primary space requirements, for partitioned executive office space and for completely open secretarial pool space. This is an elegant as well as a generous module, furnished with all services—light, telephone and air conditioning—so that partitioning can take place anywhere on the module lines or not at all. With all columns ranged along two sides of the building, interior space on all floors is clear. Heat absorbing green glass runs from ceiling to floor; the air conditioning unit, continuous on the perimeter, acts as a barrier to contact with the glass wall. On sunny days the south side offices need curtains because of sun glare. When curtains on all floors are drawn, the building has a completely different aspect—the dark green spandrels are set off by wide bands of white. Orientation of the core toward Market Street and the south cuts heat and glare from a part of the building. Although Crown Zellerbach now occupies about half the building's space, it will take over the rest eventually.
Crown Zellerbach Building

EXECUTIVE OFFICES: The eighteenth floor is another atypical floor; the flexibility of the lower floors is not needed here because its uses are fixed and so are its office partitions. The executive offices for the company are located on this floor from which there are superb views of the Bay and the hills of the city. Offices all open onto a central reception area, a wide and handsome space which runs the length of the building and is the circulation for this floor. Secretaries' stations are located outside the various offices. The walls are of sand-finished plaster or of walnut veneer paneling. Ceilings are acoustical plaster with recessed down lights. Office files and other equipment are either in cupboards behind the wood paneling or set flush in the wall. Emil Norman's hollow wood horse stands on a travertine pedestal at the entrance to this reception area, backed by the travertine partition of the front reception room. Paintings on reception area walls and in offices are rented and change from time to time.
Although the arches at its base are the building's most striking street-level feature, the great gray solid rectangle, alike on all sides, that rises above the second floor is its most imposing aspect. The lightweight concrete bearing walls—half solid, half glass—are faced with dark gray polished granite, laid like cleats to make a subtle pattern on the surface and break the reflections of other buildings. The gray glass panels of the fixed windows, set in bronze frames, cover only half the wall area and rhythmically indicate the module—5 ft 1 in.—of this building's design. On the ground floor is commercial space for rent; on the second floor are the company's regional executive offices; the remaining floors (except for the fifteenth which has mechanical equipment) are for office rental.
John Hancock Western Home Office

ARCHITECTS:
Skidmore, Owings & Merrill, San Francisco

LANDSCAPE ARCHITECT:
Lawrence Halprin

CONTRACTORS:
Cahill Brothers, Inc.

OWNERS:
John Hancock Mutual Life Insurance Company

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

* Technical details of the design of the Hancock building appeared in Architectural Record, April 1959.
Two New Buildings in San Francisco

John Hancock Building

The haunched arches transfer the loads from the exterior bearing walls to the setback columns at first-floor level. Their sculptural form, derived with strict honesty of purpose and means from the structural requirement, is responsible for the building's unique design expression. Along the building line, the recessed columns widen the sidewalk and set the building off even at that level; basically, however, this is a tightly conceived building on a restricted site. Setting the building back on the east and south sides at the second floor not only meets fire code requirements but surrounds it with light and air and makes possible the landscaped outdoor areas at the second floor level. Seen from either direction on California Street, the building's strong individuality is pleasantly assertive.
For some months now, Architectural Record has been examining the role of the architect in our time. So far, the major concern has been with the Image of the Architect. In March, a new phase began with the publication of a number of letters from architects; in these, each told about his own approach to the realities of current practice. This month, the new phase continues by means of a study of the methods of organization now being used by one large firm to meet the demands of today. In succeeding months, methods of other firms will be presented.
Immediately after commissioning, a form similar to that above is prepared for each project and circulated within the firm. As may be noted, only the most important information is included. Posting on the bulletin boards assures that every employee, regardless of his position, is kept informed. The form below is typical of the continuing index maintained on all projects.

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**Form No. 1**

Sunset Sr. High School  
Poughkeepsie, N. Y.  
November 30, 1959  
R. N. Clark, ams

**PROJECT NO. 59-1061**

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

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

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

In a small office, the principal often assumes all of the responsibility for all jobs. He may retain all of the authority. In a larger office, for example one with two partners, each partner may assume a part of the overall responsibility and authority, yet each may be able to keep himself informed about most of the details of all projects. Decisions are relatively easy since only the two principals are directly concerned in them. This is the position the firm of Eggers and Higgins was in at the end of World War II.

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

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

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

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

By the use of the production system, the Circular Chart and other forms, the firm has been able to virtually eliminate overlapping of responsibility and authority between individual jobs. There are fewer misunderstandings. The firm’s capacity for new work, the availability of personnel and their capabilities, and projected future requirements may now be accurately determined. Continuing project responsibility is centered within small work groups, yet specialists are available when needed.
This chart is the heart of the system. In actual use, it is in the form of a large wall chart, equipped with metal card holders. Into these, the names and numbers of projects and of the people working on each, are inserted. The chart is kept current. In general, it works this way: the principals (center) determine policy. Design policy is translated through individual principals (inner ring) in charge of particular projects. These are indicated in the next ring. A designer, project manager, and construction supervisor (their names are on cards in the appropriate rings) are assigned to each job. The outer ring is symbolical only; draftsmen are listed in other records. Production policy, initiated by the principals, is translated through production administrator...
The roles of the production administrator are many and diverse. He is directly responsible for the coordination of all of the technical or production operations of the firm. In practice, this means that he is the person who schedules production and is responsible for maintaining the schedules. He assigns project managers and other personnel to individual projects.

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

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

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

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

The production administrator is charged with the development of new ideas and revision of older procedures to meet changing demands. These include a cost control system, methods for sub-contractors approvals, a system for obtaining approval of public agencies for hospital projects, an office manual, and the like. There is even a file on languages; at last count, present employees speak some 30 foreign languages.
The Production Report (left) indicates the status of all current projects. Each principal receives a copy of the entire report listing all of the firm's jobs. At monthly intervals, the principals note on their copies the changes in status of their own jobs and return the forms to the production administrator. Changes are then transferred to the master and revised copies are returned to the principals. Current lists of the jobs assigned to project managers (above), designers and supervisors are maintained. A report (right) on schedules, estimates of personnel required, and the like is prepared for each job, soon after it is received, by the principal in charge, and sent to the production administrator.

**THE PRODUCTION SYSTEM**

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

After analysis of the project and necessary conferences with the client and others, the principal in charge of the project completes an estimate of the production schedule and manpower requirements for the work (above, right). This form contains considerable data on the timing of the project, estimated dates for the completion of various phases and of construction, and personnel information. The form is submitted to the production administrator. The information is then transferred to the Production Report and to the Wall Chart. If circumstances require, this form may be revised later to reflect extreme changes.

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

A number of auxiliary forms and charts are used for various specialized purposes. One of these is the project manager work load list (above, left). By means of this list, the production administrator readily keeps track of the assignments of the project managers. Thus, he has a quick and efficient means of determining the appointment of these people to new projects. Similarly, lists are maintained of designers, construction supervisors, and other key personnel.
All current jobs are listed on the Project Chart shown above. Information is included on the present stage of the work and a projection of the future stages. From this data, scheduling of jobs and controls over their production can be efficiently handled. In addition, the chart indicates present and estimated future personnel requirements and other pertinent information. In practice, the chart operates in this manner: personnel assigned to jobs are listed and job progress is indicated by coded bars. The figures over the bars show draftsmen presently assigned. Figures under the bars indicate the estimated numbers of people who will become surplus (plus signs) or the additional people needed (minus signs) in the various future stages of production. Totals are tabulated at the bottom of the form and carried forward to show the personnel requirements for the entire firm. The form below indicates the organization for a particular project.

The Production Report is supplemented by the Project Schedule chart shown above. Together with the Circular Wall Chart, these two forms provide an overall picture of the status of individual projects and of the firm as a whole. Their use in connection with the other systems and forms, permits decisions to be made concerning such important matters as the taking of new commissions, their scheduling, the use of present personnel, and the hiring or dismissal of employees.

The Project Schedule chart includes information on the job number, name, and location, the project manager (he has overall responsibility for the job under the principal in charge), the principals' initials, and the names of assigned draftsmen. More importantly, it shows by means of bar graphs, the estimated time of production for various phases of the work. As may be seen, these schedules are projected for at least six months ahead of the date of preparation of the chart.

The bars are coded to indicate phases of the work. Above the bars are penciled figures representing the estimates of total number of draftsmen needed. Below the bars are penciled figures representing the surplus or additional draftsmen required. In actual use, these figures are in red pencil for surplus personnel, green if more draftsmen are needed. These figures are totaled at the bottom of the sheet. Totals from all sheets are added on the last page of the set of forms. In this way, a picture is obtained of the manpower requirements and availability for at least six months ahead.

One of the miscellaneous forms used for special purposes by Eggers and Higgins is the Project Organization Chart (left).
Problem: an airport meeting the needs of growing numbers of passengers, flying increased air-miles, in jets.

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

ARCHITECTS: Mann and Harrover
AIRPORT CONSULTANTS: Landrum and Brown
STRUCTURAL ENGINEERS: S. S. Jenworthy & Assoc.
MECHANICAL & ELECTRICAL ENGINEERS: Allen and Hoshall
SIGNS AND GRAPHICS: Architectural Graphics Associates
AIRPORT SITE PLAN (left): the design of the Memphis airport complex is based on projected requirements for 1970. It will serve Memphis and the approximately 2.75 million people in its market area. Projections indicate that this means an enplaning passenger volume of about 786,000 people per year. Types of aircraft using the facility will include small and medium-sized jets and conventional airplanes. Traffic will include major airlines, feeder airlines, and non-scheduled flights. In the initial stage, 22 to 24 gate positions will be provided.

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

FINGER PLANS (opposite page): the upper level is directly connected with the main passenger level of the terminal building. On either side of the concourse, 24- by 60-ft. gate lounges are shown. These will be shared by the major jet airlines serving Memphis. Directly below these, on the first level, are located the operations areas for these airlines. Stairs lead from the second level to the apron for use of airlines or for passenger loading if required. The one-level concourse at the end of the finger will be used for loading of smaller aircraft.
This airport was planned for the future. Rapid change and growth are the outstanding characteristics of aviation. In order to have validity and to function efficiently, airports and airport buildings must reflect these attitudes. The new problems brought by jets—fumes, blast, noise—must be solved. Passenger walking distances are increasingly important as the volume of traffic increases. Passenger comfort and convenience have been markedly improved in the air, while seemingly becoming ever worse on the ground.

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

Each city and each airport has its own specialized problems. Aviation is rapidly changing. These facts were immediately evident to the architects when they began their studies for Memphis. Working closely with the airlines that will use the terminal, the city Airport Commission, and the airport consultants, the architects went through an extended, and unusually complete, period of data-gathering and research. They assembled a library of information and visited most of the recent airport buildings in this country. Discussions were held with airport managers, pilots, airport architects and engineers, aircraft manufacturers, and any other individuals they could find who might have information of value. Careful analysis of the collected information led to schematics of five general types; a single-level terminal and fingers, a bus or mobile lounge scheme, satellite buildings with tunnels, a two-level scheme with single-level auto traffic, and a two-level type with auto traffic on both levels.

After comparative study, the last scheme—a two-level terminal, with auto and pedestrian traffic on two levels—was chosen. It was felt by the architects, their consultants, and the other organizations concerned that this scheme best suited the particular problems at Memphis, the traffic volume expected, and the budget available. In addition, the scheme has quite a bit of flexibility. In the future, additional fingers might be added; buses or mobile lounges may be used; satellites may be constructed; or some combination of these may be employed.
MAIN FLOOR: Enplaning passengers enter lobby on this level. Ticket counters, entrance to plane concourse, and concessions of importance to enplaning passengers are included on this floor.

GROUND (APRON LEVEL) FLOOR: Facilities important to deplaning passengers and operational spaces are located on this floor. Escalators and stairs are provided for access to main floor above.
MEZZANINE FLOOR: Areas of lesser importance to passengers are located on this floor. These include airport offices, restaurant and kitchen, private dining, conference rooms and observation area.

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

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

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

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

Note: Allen and Hoshall are project engineers for the entire airport, as well as mechanical and electrical engineers for the terminal building. Important contributions to the building design were made by the following members of the staff of the architectural firm: Robert Ernest, Mel O'Brien, Jack St. Martin, Donald Winklemann
After the selection, by the Memphis Airport Commission, of the two-level scheme from among those studied, the terminal building was designed. Study indicated that the main floor (second level) should contain the airline ticket counters and offices, a coffee and snack bar, major waiting rooms, and other public facilities needed primarily for the convenience of enplaning passengers. The ground floor would contain the facilities for deplaning passengers, including airline baggage rooms, baggage claim areas, the airplane meal catering kitchen, utility rooms, and the like. The next step was the decision to include a mezzanine floor. In this way, functions not directly related to the requirements of passengers could be provided for in a convenient place, without disrupting the smooth flow of passenger and airline operation traffic patterns. The architects placed on the mezzanine the main dining room (most customers were found to be other than passengers), spectator gallery, management offices, and various secondary concessions.

The architects first studied islands placed within the building, each containing one or more of the functions of the terminal. In this concept, circulation patterns moved around and between the various islands. Further inquiry indicated that a preferable treatment would be a large open space in the center of the building, with the various functions placed around it against outside walls. Thus, the decision was made to base the overall planning of the terminal on the concept of a great hall. In this scheme, the mezzanine becomes a gallery or balcony surrounding and overlooking the interior space.

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

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

Above: view of the terminal and finger, from the aircraft parking apron, showing activities which will take place on various levels of the building and apron. The airport signs shown on this page and on page 213 give some indication of the attention paid by the architects to the analysis and planning of the airport and to all of its details. At an early stage, consultants were engaged to make a thorough study of the signs and other graphics. The results are signs that express their messages directly and simply. Most of them could be used in any airport, or for that matter, in other commercial buildings or building groups. The signs are unified through the use of a 3-ft square, divided as required into thirds or combinations of thirds. Colors will be standard in all signs. The letter faces (German Standard bold caps and Clarendon bold numerals) will be the same for all signs. The graphics system should go a long way toward reducing circulation problems in the airport. In addition, it should help in the overall unification of the entire airport scheme. Signs and Graphics: Jane Davis Doggett, Architectural Graphics Assoc., Dorothy Jackson and Michael Rolston
The hospitals in this study are, in principle, based on the planning criteria developed by the U.S. Public Health Service or (in the case of the Canadian example) its counterpart in Canada, the Ministry of Health. Yet none of the architects for the hospitals have slavishly followed the criteria. Each of the examples exceeds the criteria minimums in most respects. Each hospital is an individual solution to the particular problems faced by its architects. Thus, one of the hospitals is a high-rise building and contains unusually complete research facilities. Another, of approximately the same size, is essentially a one-story hospital. A third example was planned around a highly organized supply system. Another is particularly noted for its large and complete emergency suite. The last is an out-of-the-ordinary combination of a general hospital and a rehabilitation center. All of the hospitals make assets out of site characteristics which might otherwise have been liabilities. Though all of the hospitals are based on common criteria, the design of each is highly specialized and derived from its own location, site, functions, and the purpose of its architects.
Hospital Planned For
Unusual Emergency
Requirements in
Industrial Area

NORTH KANSAS CITY
MEMORIAL HOSPITAL,
NORTH KANSAS CITY,
MISSOURI

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

CONTRACTOR:
Bennett Construction Company

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

A steel frame structure, with concrete floor and steel roof deck, is used in the building. Exterior walls are brick with a curtain wall of porcelain enamel panels and glass in aluminum frames. Ceilings throughout are finished with acoustical plaster. Interior partitions throughout the entire building are metal studs with plaster.
As may be seen in the plans, the scheme for this hospital involves a one-story building with a basement, part of which is unexcavated. All patient facilities are located on the main floor. Nursing wings are arranged for segregation of different types of patients. The two nurses' stations are placed so that each has control over two of the four nursing areas. In this way, approximately one-half (50) of the patients are handled from each station. Four-bed wards and semi-private rooms only are provided. The only private accommodations are the isolation and psychiatric rooms required under the Hill-Burton program. Because of the slope of the site, the basement is partially above grade. In it are located various service areas.
North Kansas City Hospital

Left, top: view of waiting room toward the entrance vestibule. Left, center: each nurses' station is located at the intersection of two nursing wings. Stations are larger than normal, because of greater than usual number of nurses needed for handling of 56 patients from each station. Left, bottom: typical rooms have two patient beds. The large glass area permits unrestricted view of the river and provides patients with maximum amount of light and sun. Heavy glass fiber curtains are used for sun control. Space economy was achieved in the patient rooms by the decision not to build any private rooms. However, all rooms are air conditioned and have individual controls. Each room is equipped with radio and television with individual pillow speakers, nurse call, telephone, and piped oxygen.
Right, top: view of one of two major surgeries. The surgeries are connected to each other by a scrub-up room (right, center). Right bottom: view of a nursery toward the workroom which connects it with the second nursery. Double-loaded corridors are provided for these areas and throughout other hospital areas in order to minimize patient and staff travel between various facilities.

COST TABULATION:

- Total Area (sq ft) 50,480
- Total Usable Beds 100
- Basic Construction Cost $1,116,731
- Group I, II, III Equip., Fees, other equipment 253,269

**TOTAL PROJECT COST** $1,370,000

**TOTAL COST PER BED** $13,700

Hospital constructed with assistance of Hill-Burton funds, administered by Division of Health, State of Missouri.
High Efficiency, Lowered Costs Achieved in Low-Rise Hospital

THE GREATER NIAGARA GENERAL HOSPITAL
NIAGARA FALLS, ONTARIO

ARCHITECTS & ENGINEERS:
John B. Parkin Associates

HOSPITAL CONSULTANTS:
Agnew, Peckham & Associates

CONTRACTORS:
Smith Brothers Construction, Ltd.

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

The structure of the main (core) building consists of fire-proofed steel columns supporting reinforced concrete flat slab floors. For the wings, structural clay tile bearing walls are used with poured-on-grade floor slab and a precast concrete roof. Exterior walls are brick with double glazed aluminum sash. Interior partitions are structural clay tile glazed in halls, operating and delivery rooms, pantries, and utility rooms, plastered elsewhere.
Above: in the rendering may be seen the three-story central core, with the boiler and laundry room at the extreme left, the sub-acute nursing wings to the right, and the nurses' residence in the background. Right and below: views of the core building. The projecting wall separates the emergency entrance from the main entrance. The grade slopes from this side down to the rear, permitting a grade level entrance to the basement on the rear.
Greater Niagara Hospital

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

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

CARROLL COUNTY
GENERAL HOSPITAL,
WESTMINSTER,
MARYLAND

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

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

HOSPITAL CONSULTANTS:
Gordon A. Friesen Assoc.

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

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

Utilizing the 10 per cent grade of the site, the architects placed all service elements in the basement, all patient facilities on the main floor. The core of the main floor plan is the central supply area. New supplies are received at special entrance on ground level. These and soiled supplies are processed on this level and distributed on special carts. Clean patient supplies are delivered to patient supply cabinets located near the entrance to each room where they are available to nurses within the rooms. Soiled supplies are placed by nurses in the soiled compartments of the cabinets. From here, they are picked up in the corridor and returned to central supply on carts. Total Area: 52,550 sq ft, total beds: 64, estimated cost including site work and Group I equipment: $1,156,000, estimated cost Group II and III equipment $150,000, cost per bed: $20,400
Limited Site Size, Extreme Grade Helped Determine Hospital Plan

MISERICORDIA HOSPITAL, BRONX, NEW YORK

ARCHITECTS:
Kiff, Colean, Voss & Souder,
The Office of York & Sawyer

STRUCTURAL ENGINEERS:
Di Stasio & Van Buren

MECHANICAL & ELECTRICAL ENGINEERS:
Meyer, Strong & Jones

FOOD SERVICE CONSULTANT:
Howard L. Post

CONTRACTOR:
Vermilya-Brown Company, Inc.

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

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

Building structure is concrete frame with flat plate floor arches. Exterior walls are aluminum framed porcelain enamel curtain walls and brick with limestone trim. Interior walls are plastered concrete block; ceilings are plastered.
Ground Floor: service elements are on this level of the hospital. Because of the slope of the site, the staff dining room is located above grade and high windows provided in several of the areas. The service entrance is located on this level, as are the enclosed passages to the nursing school and unwed mothers home. First Floor: the main entrance and lobby are located on this floor. One wing is used mainly for admission of patients, medical records, and administration. The other large wing contains quarters for interns, doctors' lounge, and nurses' locker room. Entrances from the staff parking area are provided. Other facilities included on this floor are the morgue, examining rooms, a shop for patients and visitors, and medical library.
Misericordia Hospital

Left, top: view of medical records room which is located on the first floor. Adjoining this area are a small room for dictation and the medical library. Left, center: view of a laboratory. All labs are located on the second floor, as are the pharmacy, radiographic and fluoroscopy suite and similar facilities. Thus all facilities required for examination and treatment of outpatients are on the floor where the outpatient clinic is located. Efficiency is improved and the load on elevators is decreased. Left, bottom: view of a typical operating room. There are five of these rooms, located on the third floor. All are quite similar in design. They are arranged in surgical suites, each having two operating rooms connected by a shared scrub-up room. One operating room is separated from the others and is used for special operations.
Second Floor: the public parking area is on this level, adjoining the entrance to the clinic. A separate entrance is provided for emergencies. In the emergency suite, a waiting room is provided. The emergency rooms and plaster room are adjacent to this space. The emergency waiting room is closely related to the elements of the clinic; this relationship allows the clinic areas to be used for emergencies involving mass casualties. Third Floor: the surgical suites are located on this floor, with the two surgical nursing unit wings adjoining. The architects originally planned to include centrally located nursing stations in each nursing wing where the utility rooms are shown, but were forced to combine these for reasons of economy in operation.
Misericordia Hospital

Left, top: view of a typical private patient room. Nearly all of these rooms are exactly the same size as semi-private rooms. They were planned for use as either private or semi-private rooms as required. All patient rooms have at least two large windows; most have three, but a few corner rooms have more as shown. Left, center: view of a typical semi-private room showing the interior arrangements, curtains hung from the ceiling, and furnishings. In addition to rooms of this size, several four-bed wards are provided in the hospital nursing wings. Left, bottom: view of the emergency suite, located on the second floor. As shown, the emergency room is directly connected with the plaster room. Ceiling-hung curtains are provided for division of the rooms into several areas when required.
Fourth floor: the central wing of this floor is devoted to delivery elements and the nursery. Closely related to this is the maternity nursing unit in the wing to the right. The other wing contains a medical nursing unit. Fifth floor: the pediatric nursing unit and a medical nursing unit are located on this floor. The remainder of the floor is devoted to research facilities, central sterile supply, and miscellaneous spaces. The location of supply area on an upper floor is somewhat unusual, but it is directly connected with other floors via elevator and dumbwaiters. Sixth and Seventh floors: these floors (not shown) are devoted to the convent for the Sisters of Misericorde and to the chapel which is used by the Sisters, staff, patients, and visitors.
General Hospital Combined with Rehabilitation Center

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

ARCHITECTS: Fisher and Davis
STRUCTURAL ENGINEERS: Ken R. White Engineers
MECHANICAL ENGINEERS: Marshall and Johnson
ELECTRICAL ENGINEERS: Swanson and Rink
CONTRACTOR: J. C. Boespflug

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

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

The foundations of the buildings are concrete on wood piling. The frame is steel with a concrete slab floor and gypsum roof deck. Exterior walls are brick and native sandstone with aluminum sliding windows. Interior partitions are plaster on steel studs; plaster or acoustical suspended ceilings are used.
Above: the facility is located in a valley near the Big Horn River of Wyoming. The site is essentially flat and surrounded by low foothills. To the left of the entrance canopy is the rehabilitation center; to the right, the general acute patient wing. Right, top: the main entrance with the rehabilitation center in the background. The emergency entrance is located on the right side of the building. Right, center: view of the central court of the rehabilitation center. This area is used for recreational activities for the patients. On the right is the barbecue pit, in the background, the cafeteria. Right, bottom: the main lobby, between the hospital and the rehab center, serves both areas. The rehabilitation center also has a public entrance.
Rehabilitation Center and Hospital

General-acute beds are located in the hospital wing projecting toward the front; the rear wing contains beds for adult rehabilitation patients; maternity and obstetrics are located in the front portion of the main hospital and are segregated from other facilities. The kitchen, laundry, and other service areas are located in the basement. The rehabilitation center facilities are grouped around a central court. In each of the two detached children's cottages six two-patient bedrooms, a living room, bath, and supervisor's room are provided. The unfinished basement area will eventually be used for a swimming pool and expanded therapy areas. Left, top: view of the occupational therapy area. Left, center: the rehab section of the main hospital was planned for specialized needs of these patients. Left, bottom: each of the patient rooms in the hospital is planned for two beds.
If the need should arise, a portion of the basement of the rehab center may be used for a kitchen for the center, separate from that of the hospital. Also, the storage area of the hospital, adjacent to the present kitchen, was designed for possible use as a future hospital cafeteria. At present, a single dietary service is used for both facilities. However, separate dish storage and washing areas for the two facilities are now provided. Left, above: view of the adult gymnasium. A separate gym is provided for children. Left, center: view of one of the children's cottages of the rehabilitation center. Left, bottom: view of a living room in one of the children's cottages.
Progress for Engineered Wood

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

Air Conditioning: Up-grading Design

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

Prefabbing with BX

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

This Month's AE Section

THIN SHELLS:
Engineering Fitness and Architectural Form

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

Part 2

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

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

\[ \frac{1}{R_1} \cdot \frac{1}{R_2} > 0 \]

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

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

The boundary disturbance generated in the thin calotte shell is of very limited extent when the edge members are stiff enough to prevent any appreciable vertical deflection in their own plane, but are quite flexible horizontally. It is most prominent at the corners formed by the intersecting sides. The more acute the corners, the more pronounced is the local peak of boundary disturbance in their vicinity. Thus the local boundary disturbance of calotte shells is less for shells over a square base than for shells over a triangular base, since the sides of the quadrangular shell subtend a more obtuse angle.

Sometimes a calotte shell is supported vertically only at the corners of its polygonal base, as is the case with the octagonal calotte shell roof of Eduardo Torroja's market hall in Algeciras, Spain (Figure 3). Because the edges of the roof are not fully restrained from vertical deflections, there is considerable boundary disturbance around the columns. The resultant horizontal boundary thrust around the octagonal base is absorbed by a tension member which was prestressed so that the tensile stress system was kept to a minimum. There is still considerable boundary disturbance present, but the prestressing has alleviated the more critical peaks of...
tensile stress within the thin shell. The secondary shell segments arching between the columns are primarily designed to maintain the geometry of the shell’s edge, which is highly stressed and would otherwise have a tendency to buckle out of shape. This phenomenon must be guarded against in all shell problems where concentrated forces occur along the perimeter of the shell.

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

Since the rate of increase in the boundary disturbance of a calotte shell is largest going from a square base to a triangular base, the triangular shell is not the best solution from the structural point of view. The writer’s contention is that hardly ever can shell structures be devised that are mechanically and architecturally perfect and fully fit for immediate human occupancy.

In order to realize its full value as a showpiece, a shell structure should “read” from at least one of its sides, and preferably from the outside since it is always harder to appreciate thin shell structures from the inside. This thin shell obviously has its character fully expressed from the exterior, and therefore its adoption would seem to be entirely justified.

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

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

**Compound and Translational Shells**

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

In comparison, the segmental shell structure shown in Figure 6
does not seem to accomplish its structural purpose. The leading mo-
tive behind the dissection of this spherical dome into a large number
of narrow pie-shaped segments was also an expected economy resulting
from the re-use of forms. But unfortunately the proportions and boun-
dary conditions of the segmental shells were chosen to be such that a
significant shell action of the structure was entirely lost. The spherical
segments are so narrow that a state of transverse bending exists prac-
tically everywhere.

Another important type of shell structure is the translational shell
whose surface is generated by sliding one curve along another. Such
shaels are quite efficient in transferring their loads primarily by mem-
brane forces. If their boundaries are supported at reasonable inter-
vals so that the edge members can be of moderate size, the boundary
disturbance induced in the shell’s skin is quite small and an effective
shell structure is possible. Transla-
tional shells can develop resultant
diagonal tensile membrane forces
of considerable magnitude in the
vicinity of the corners, but these
can ordinarily be absorbed by re-
forcement or prestressing.

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

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

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Negatively Curved Shells

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

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

Such shells have excellent properties against buckling, but their greatest disadvantage lies in the fact that they usually develop considerable tensile membrane stresses which can be a nuisance in reinforced concrete thin shell structures.

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

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

There have been several rather misleading articles written on such
shells in various journals which convey the impression to the reader that the membrane solution of hyperbolic paraboloidal shells is a structurally safe solution. Nothing could be farther from the truth. These shells have not as yet been fully investigated for all aspects of their structural characteristics, but there is already sufficient evidence available to indicate that critical discontinuities in membrane stresses and strains are possible. The boundaries of such shells are very often in a precarious state of equilibrium with an omnipresent threat of some lateral kickout.

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

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

**Folded Plates**

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

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

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

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

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

A New Approach to Air Distribution
In Operating Rooms

by Edward A. DeVan
Krey & Hunt, Consulting Engineers

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

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

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

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

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

In the case of the cardiac operating room, the placement of supply outlets was dictated by the perimeter of the dome required in the ceiling for observation, for television and camera ports, and for the mounting of a circle of 24 recessed incandescent fixtures. These lights are directed at the operating field, and can be individually controlled at a console by the surgeon.

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

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

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

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

Studies have shown that air also can become contaminated in the air handling system due to build-up and accumulation of bacteria on cooling and/or heating coils, and air leakage from fan room into the casing (which cannot be made air-tight) due to negative pressure. These studies indicate the need of filters immediately before the air outlets to operating room suites, regardless of the type of air conditioning system used.

2. **Method of Air Distribution and Air Change Rate.** Air distribution has been discussed earlier. Air change rates for operating suites published in the literature vary from 10 to 20 changes per hour, even though in many cases a rate of 6 to 7 a.c. will handle the heat gain. While the higher air change rate will produce the greatest dilution of bacteria, at the same time it can create excess air motion and pick up bacterial clusters on linen, equipment, etc. For the present, until further studies are made, 10 to 12 a.c. are recommended as a compromise.
3. Operating Room Cleaning. It is common practice in operating suites to wash the floors, part of the walls and furniture after every operation, or at least once a day. In some hospitals, however, scant attention is paid to the higher parts of the walls and ceilings, and in particular to the air conditioning outlets. Air conditioning outlets, both supply and exhaust, can be focuses of dust collection.

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

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

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

"Warm colors advance; cool colors recede." How often have you heard or read this statement? Or perhaps even used it yourself? It provides one very convenient rule of thumb for color selection—if it is valid. It is the case that shades "advance" and tints "recede." It appears, then, that a shade of blue would be both cool and advancing. It would satisfy both the exposure requirement and the distance requirement. This is exactly what we are seeking, so we pause only momentarily to ponder the apparent contradiction to our rule.

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

We find a disconcerting report by Pillsbury and Schaeffer to the effect that, with red and blue lights, eleven out of fifteen observers reported that the blue light appeared nearer! Now we are confused. We forget quantitative matters for the moment and seek reassurance that red does really appear nearer than blue. Freund gives us some help, for he reported that red, yellow, and green were advancing colors as compared to blue. We have now got red and blue back into the "right" relationship. Perhaps we should stop while we are ahead but, inveterate seekers after truth that we are, we push on. We find that Taylor and Sumner reported brightness to be more important than hue in distance judgments and that Johns and Sumner found that brighter colors, as compared with darker ones, appeared closer when both were objectively equidistant from the observer. Now we are really confused. Our authority on applications stated that shades (or darker colors) advance relative to tints (or lighter colors), but we find an experimental study reporting that lighter colors appear relatively closer.

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

First of all, the subject of perceptual and affective reactions to color is a very complex one. It is scarcely surprising, therefore, that we find contradictory evidence even in laboratory studies. It is not at all surprising to find contradictions and confusions between experimental evidence and anecdotal evidence, for the latter is rarely objective and may even, in some cases, be exaggerated or contrived for commercial purposes. Also, such evidence is so confusing.

See bibliography page 348
duplicate with sufficient accuracy the practical situation. Both kinds of evidence are therefore inadequate; much additional information is needed before the effects of color can be assessed.

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

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

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

Eight colors were used in the experiment. The side walls and one end-wall panel were painted a medium gray. This medium gray panel served as the standard at one end of the room in all comparisons. The other seven colors were used on the remaining seven panels. The approximate Munsell notations for the colors were as shown in Table 1. The average room illumination at eye level (sitting position) was about forty foot candles. The amount of illumination on the end walls did not change noticeably as the walls were moved from the end toward the center of the room. Observers were seated in a fixed position ten feet from the standard gray wall. This location allowed for a maximum adjustment of two feet for the variable end-wall beyond the physical equality point when the standard end-wall was set at the end of the room. Observers were tested for color deficiency, instructed in the use of the control lever for the power-driven carriage, and given practice until they were able to manipulate the carriage satisfactorily. After such instruction and practice, the experimental trials were started, with each observer making two settings for each of the seven colors. The various colors were presented in random order, and other necessary experimental precautions were observed. At the end of his test, each observer was asked to do three things:

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

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

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

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

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

<table>
<thead>
<tr>
<th>TABLE 1</th>
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<tbody>
<tr>
<td>Color Name</td>
</tr>
<tr>
<td>Red</td>
</tr>
<tr>
<td>Yellow</td>
</tr>
<tr>
<td>Green</td>
</tr>
<tr>
<td>Blue</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>Light Gray</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>Medium Gray</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 2: MEAN SETTING (IN INCHES) FOR EACH COLOR</th>
</tr>
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<tbody>
<tr>
<td>Red</td>
</tr>
<tr>
<td>+2.8</td>
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</table>

<table>
<thead>
<tr>
<th>TABLE 3</th>
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</thead>
<tbody>
<tr>
<td>Most to least advancing from experimental settings</td>
</tr>
<tr>
<td>Yellow</td>
</tr>
<tr>
<td>Green</td>
</tr>
<tr>
<td>Red</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>Light Gray</td>
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<tr>
<td>Blue</td>
</tr>
<tr>
<td>Light Gray</td>
</tr>
<tr>
<td>Black</td>
</tr>
</tbody>
</table>

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

The results produced by this rather elaborate experiment were both pleasing and disappointing. While statistically significant effects due to color were found, the average magnitude of such was small. The mean settings of the movable end wall for all observers for each color are listed in Table 2. A positive value indicates that the variable panel was set farther away from the subject than the gray standard. Since all the colors except black, on the average, appeared to advance compared to the gray standard. Even though they are statistically significant effects, even though they are statistically significant, to be of much practical importance.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The alloys which produce this colored oxide film are said to be comparable to common alloys in their other physical properties, and, indeed, in some instances superior. The proof of the pudding lies in tests conducted over the past five years, during which every color-alloy was tested in at least 50 batches and some in 100. The Kalcolor process results in a coating 20 to 40 percent denser than standard anodic coatings, and hence more resistant to abrasion and corrosion. There was no perceptible fading or corrosion during accelerated tests under salt spray, water fog and high intensity ultraviolet rays, and outdoor exposure tests gave similar results.

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

Vinyl Finish Spray — Applied to Fabrication Metal

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

Because of their resiliency, toughness, unlimited color range, and resistance to corrosion and chemicals, vinyl-metal combinations have already found wide acceptance in spite of their premium cost. By largely eliminating the problems inherent in their fabrication and production, the new spray technique is expected to bring finishing costs down enough to encourage the use of vinyl-coated metals for architectural applications as well as for consumer and industrial products. Metal & Thermit Corp., 100 Park Ave., New York, N.Y.

Dry Wall System Cuts Installation Time, Costs

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

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

In field tests, use of the Steelfast system has eliminated the backing lumber normally used to provide nailing surfaces at the ceiling line and most corners, and precluded the use of metal strapping plates across frame openings for plumbing and ductwork. It also eliminated taping and spackling at the joints. Research Institute, National Assn. of Home Builders, National Housing Center, 1625 L St., N.W., Washington 6, D. C.

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Office Literature

Fir Plywood

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

Basic Design Measurements

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

Toilet Compartments

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

Refrigerant Coils

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

Wasco Skydomes

(A.I.A. 12-J) Features Skydome Se­lector Tables which chart the information needed for quickly estimating the number and type of daylighting units required for various levels of daylighting in each of three geographical “brightness zones.” Wasco Products, Inc., 5 Bay State Rd., Cambridge 35, Mass.

Foamed Plastic Insulation

Eight-page brochure outlines physical properties of Genosfoam expanded polystyrene, and discusses its use as perimeter insulation, plaster base, backer board, roof insulation and cold room insulation. General Foam Plastics Corp., Portsmouth, Va.*

Doric Office Furniture

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

Strength of Concrete

... Under Combined Stresses, by B. Bresler and K. S. Pister, presents a criterion for failure of plain concrete subjected to combined stresses, and a procedure for determining the shearing strength of a special class of rectangular reinforced concrete beams without web reinforcement. Bulletin No. 12, 604. Published by the Reinforced Concrete Research Council of the Engineering Foundation. Copies available from The Portland Cement Assn., 33 West Grand Ave., Chicago 10, Ill.*

Post-Tensioning

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

Engineering and Testing Services

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

Dual Duct Air Mixing Units


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

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The famous LOCHMOOR CLUB of Detroit now uses the same TOTAL WATTAGE as before to get TWICE as much light.

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

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

Design of Air-Distribution Systems

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

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

Perimeter-Loop System

(For Concrete Floor Slab)

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

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

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

<table>
<thead>
<tr>
<th>Btuh Per Feeder</th>
<th>Length of Feeder in Feet</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>0-15 Feet</td>
</tr>
<tr>
<td>up to 7,999</td>
<td>6&quot;</td>
</tr>
<tr>
<td>8,000 to 8,999</td>
<td>7&quot;</td>
</tr>
<tr>
<td>9,000 to 10,999</td>
<td>7&quot;</td>
</tr>
<tr>
<td>11,000 to 11,999</td>
<td>8&quot;</td>
</tr>
<tr>
<td>12,000 to 12,999</td>
<td>8&quot;</td>
</tr>
<tr>
<td>13,000 to 17,000</td>
<td>8&quot;</td>
</tr>
</tbody>
</table>

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

Extended Plenum Systems

(Use with Perimeter Register Systems)

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

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

Return-Air Duct Systems

The return-air duct system is a house installation is a relatively simple arrangement,
Where the elements are corrosive... specify

REINFORCED CONCRETE

Along our seaboards where salt air often corrodes construction materials, reinforced concrete is used extensively for buildings of all types and sizes. At the Allapattah Baptist Church Educational Building in Miami, Florida, reinforced concrete was specified for its outstanding corrosion resistance, as well as its lower construction costs, lower maintenance costs, and greater fireproofing qualities.

Before you build, investigate the superior design and cost-saving qualities of this extremely flexible construction medium.
### RESIDENTIAL WARM AIR HEATING AND AIR CONDITIONING: 5-DUCT SYSTEMS

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

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

##### 2a: Length of Feeder—2 to 10 ft

<table>
<thead>
<tr>
<th>Heat Loss of Room Btuh per Hr.</th>
<th>Lgt. of feeder duct under rm. plus 1/2 lgt. of perimeter duct under rm., ft.</th>
<th>0-0 Ft.</th>
<th>10-19 Ft.</th>
<th>20-29 Ft.</th>
<th>30-39 Ft.</th>
<th>40-49 Ft.</th>
<th>50-59 Ft.</th>
<th>60-69 Ft.</th>
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##### Total Diffuser Free Area Required for Room, Square Inches

<table>
<thead>
<tr>
<th>Heat Loss of Room Btuh per Hr.</th>
<th>Lgt. of feeder duct under rm. plus 1/2 lgt. of perimeter duct under rm., ft.</th>
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<td>182</td>
<td>178</td>
<td>173</td>
<td>167</td>
<td>164</td>
</tr>
</tbody>
</table>
Restaurant chooses NEO-RAY LOUVED CEILING ...within a ceiling*


...adds superior appearance...highly functional

* Gentlemen:

.........we chose the Neo-Ray ceiling to conceal all piping, duct work, wiring, etc.

.........we used a standard acoustical tile on the dropped portions, and the Neo-Ray on the larger higher central areas. We are very pleased with the effect.

Very truly yours,

WHITE FOB
SAMFI-t KIT
KIEIAII SC MINI-CELL
ALUMINUM LOUVRE

...exclusive CEL-LOK PROCESS.
...baked white enamel.
...or Ripple-Tex® low brightness.

MANUFACTURERS OF LIGHTING FIXTURES INCLUDING:
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SPECIAL LOUVER DESIGNS?
Neo-Ray is recognized as the pioneer in the development and manufacture of louvred ceilings... with years of louvred ceiling experience. Let the "know-how" of our engineering department assist you. No obligation, of course.

Send for the following literature:
...New Product Bulletin N-58 (Mini-Cell)
...Sweet's Architectural File for 1960
...Louvred Ceiling Catalog No. 544

MANUFACTURERS OF LIGHTING FIXTURES INCLUDING:
LOUVRED CEILINGS • ROTO-STRIP • MODULARS • TROFFERS

NEO-RAY PRODUCTS, Inc.
315 East 22nd St. • New York 10, N. Y.
by S. Konza, Professor of Mechanical Engineering, University of Illinois; E. J. Brown, Research Associate in Mechanical Engineering

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

1) Locate the return-air grille in the floor plan. The grille can be placed low in the sidewalk, high in the sidewall, or in the ceiling.
2) Make a line drawing of the duct system.
3) Determine the Btu design heat loss to be served by the return-air grille. For example, a grille in a central hallway may serve a large number of rooms adjacent to the hall.
4) Measure the length of the return-air duct, and determine the number of elbows in the duct. This information, together with Table 4, enables one to determine the free area of the duct. The free area of the grille is shown also in Table 4 (Column 1), and a manufacturer's catalogue will give the required commercial size.

Heat Losses, Insulation, Vapor Barriers
Heat losses may be substantially reduced by:
1) the addition of insulation to the walls and ceilings, (2) the use of storm sash and storm doors, (3) the application of weatherstripping to doors and windows, and (4) the caulking of the joint between the sill and the foundation.
In new construction, full-thickness insulation in the sidewalls and as much as 6 in. in the ceiling are recommended. The insulation must have a vapor barrier which should be applied on the room side of the insulation.

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

---

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

<table>
<thead>
<tr>
<th>No. of Elbows</th>
<th>Btu/hr</th>
<th>CFM</th>
<th>Actual Length of Pipe in Feet From Bonnet to Diffuser</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>8700</td>
<td>800</td>
<td>8700 0600 7460 9290 6430 5960 5550</td>
</tr>
<tr>
<td>1</td>
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<td>800</td>
<td>8620 7480 6560 5640 5030 5560 5100</td>
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<td>2</td>
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<td>7900</td>
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<td>3</td>
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<td>7800</td>
<td>8400 7820 6650 5610 4990 5420 4950</td>
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<tr>
<td>5</td>
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<td>7750</td>
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<tr>
<td>6</td>
<td>8300</td>
<td>7700</td>
<td>8300 7730 6360 5300 4690 5130 4660</td>
</tr>
</tbody>
</table>

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Table 4: Return Air Duct and Grille Sizes

<table>
<thead>
<tr>
<th>ACTUAL FT.</th>
<th>UP TO 10 FT.</th>
<th>11 TO 20 FT.</th>
<th>21 TO 30 FT.</th>
<th>31 TO 40 FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of 90° Turns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grille Area</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Btu/hr</td>
<td>8000</td>
<td>14</td>
<td>17</td>
<td>20</td>
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<td>10,000</td>
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<tr>
<td>40,000</td>
<td>54</td>
<td>66</td>
<td>76</td>
<td>87</td>
</tr>
</tbody>
</table>

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Table continues with details for Duct Free Area.
Your
structural steel
fabricator
serves you in
all these ways

CONSULTANT
What's new in steel technology? (Lots!) How does it contribute to better structures built more cheaply, more quickly? (In many ways!) Just ask your fabricator.

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Your fabricator knows the cost-saving "ins-and-outs" of every steel construction method. He knows when to use which—and he knows how to use it.

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Your fabricator studies every cost factor. He'll incorporate every money-saving suggestion he can think of. Since he works with steel, he can think of plenty.
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Your fabricator will prepare a final shop detail drawing for each part of an assembly to assure precision fabrication, precision fit—whether it's a 50-ton girder or a 500-pound floor beam.

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Your fabricator will "tailor" the shapes you need—exactly the way you need them. He can help you capitalize on the full versatility of today's most flexible structural material—structural steel.

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

ERECTOR
Your fabricator will erect the framework he fabricates for you—fast! His equipment and tools are modern; his crews are experienced. And what other structural material goes up as fast as steel?

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

ARCHITECTURAL RECORD  April 1960  267
Space-Saving Unit Ventilators
Even when installed free-standing, a new line of classroom unit ventilators project 2 3/4 in. less than previous recessed units, thus saving as much as 14 sq ft of floor space in the average classroom when placed in a continuous unit with equally slim (1 1/8-in.-deep) matching shelving. Since the units are available for steam, hot water and electric heating, and chilled water cooling, and in five possible arrangements of fans, coils and other internal components, they can be used to meet most classroom heating requirements. Both heating and cooling units come in 28- and 32-in. heights for installation under high or low sills. The Trane Co., La Crosse, Wis.

Custom-Patterned Curtain Wall
Available in 22 architectural colors, the new Syntek contour sandwich panel for exterior curtain walls can be custom-formed with designs to meet the architect’s specifications. Because the panel face is formed of Rohm & Haas’s Plexiglas, tooling costs are low enough to make custom panels practical even for small projects. The Plexiglas face also has excellent weathering characteristics and is extremely light—43 per cent as heavy as glass. Syntek panels will be sold in conjunction with Alumiline 969 curtain wall, shop glazed where required, so that the modules arrive at the job site with the panels pre-installed. Alumiline Corp., Pawtucket, R. I.

Thinner Insulating Glass
The development of a new GlassSeal Thermopane unit made of single strength glass, which is 25 per cent lighter than double strength Thermopane, is making it possible for window manufacturers to use insulating glass in double-hung sash on a mass-production basis. The advantages cited for double-glazed, double-hung sash include elimination of storm windows, heating and cooling economy, and free air circulation at top and bottom. Six millwork companies are already producing the new double-hung windows, and others are expected to go into production in the near future. Libbey-Owens-Ford Glass Co., 608 Madison Ave., Toledo 3, Ohio

CONSTRUCTION DETAILS
for LCN Overhead Concealed Door Closer Shown on Opposite Page

The LCN Series 200 Closer’s Main Points:
1. Efficient, full rack-and-pinion, two-speed control of the door
2. Mechanism entirely concealed; arm disappears into door stop on closing
3. Hydraulic back-check prevents door’s being thrown open violently to damage walls, furniture, door, hinges, etc. Door may open 180°, jamb permitting
4. Hold-open (optional) set at any one of following points: 85°, 90°, 100° or 110°
5. Easy to regulate without removing any part
6. Used with either wood or metal doors and frames

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

LCN CLOSERS, INC., PRINCETON, ILLINOIS
Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario

268 ARCHITECTURAL RECORD April 1960
New J-M Colorlith Chalkboard is available in 3 eye-pleasing colors: Cyprus Green, Charcoal Gray and Cameo Brown.
Architects say—Handsome color and texture run all the way through this homogeneous sheet . . . can't wear off.

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

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

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

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

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

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

Colorlith gets great strength from integral mixing of Portland cement, carefully selected asbestos fibers, and selected pigments. It can be used in 1/8" thicknesses without expensive backing to make it rigid. Accurately butted joints need no divider strips which could hinder writing. Comes fully finished and ready to use as a self-supporting wall member. Its natural finish is durable—colors and pattern cannot be scratched off. Withstands heat, flame, moisture (fully washable) . . . acids and solvents in working concentrations.

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

Ramset, the proven powder-actuated fastening system, has the wide acceptance of architects on hundreds of fastening applications, ranging from installation of heating duct to hanging curtain wall. For fastening into steel and concrete, Ramset offers tremendous speed and holding power without costly and time-consuming drilling, chipping, plugging of concrete or the drilling and bolting of steel. Ramset's versatility permits architects to streamline fastening specification with the added assurance of guaranteed holding power. Your Ramset dealer is listed under "Tools" in the Yellow Pages. Call him, or write us direct, for complete information.

Ramset Fastening System

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Product Reports

Thermostatic Fire Detector

The new N-Co-Stat thermostatic fire detector is recommended for use in areas 20 by 20 ft or less and in all locations subject to rapid temperature fluctuations (boiler rooms, drying rooms, kitchens, bathrooms, etc.) where rate-of-rise detection devices can cause false alarms. The resetting detectors operate on the fixed temperature principle, and were designed for easy installation in standard outlet boxes. The operating element is protected by an inconspicuous, water- and air-tight housing.

Notifier Corp., 3700 N. 56th St., Lincoln 4, Neb.

Flexible Form for Curved Concrete

Radi-Lok, a new flexible steel form for pouring uniform inside or outside curves in concrete walls, sidewalks, curbs and gutters, can be preset to hold any desired contour, shortens set-up time, and cuts labor costs by practically eliminating surface finishing. Curves are formed by setting the supporting stakes, adjusting the band to the desired contour, and tightening the lock nuts. After pouring, the form can be repositioned to repeat the same curve without additional adjustments. Radi-Lok comes in 10-ft lengths in heights ranging from 4 to 24 in. As shown above, units may be joined in series to make up a variety of contours. Binghamton Metal Forms, Box 848, Church St. Station, New York 8, N.Y.

more products on page 276
Aetnapak offers these custom features in steel door & frame packages, in stock for speedy delivery (no custom engineering delay):

- Order Aetnapak with or without hardware — doors and frames, doors separately, frames separately.
- Complete U-L service including "A" labeled Aetnapak Fyr-Chek doors with single-point locks. Smoke screens, borrowed lights and transoms. Send for Aetnapak order-from-stock catalog today.
Modern narrow design drawn seamless trim.

Four popular finishes: White, aluminum, brass, chromium.

Adjustable inner knob for snug ceiling fit.

Fast, easy installation with snap-on extension bars.

Push-latch releases glass easily.

Adjustable mounting ears.

Jumbo size outlet box.

Eight pryout knockouts.

Heavy gauge steel corrosion-resistant housing.

Full-size one-piece interlocking aluminum reflector.

Removable outlet box cover plate inside housing.

Pull-in outlet box.

Trim interlocks with reflector, eliminates light leaks.

Frame within a frame—outer trim need never be removed.

Removable outlet box cover.

Hinged inner trim for easy relamping.

Matching color two-part trim.

Now from

MOE LIGHT

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The new Dor-O-Matic Hydra-Cushion concealed-in-floor door control gives maximum protection to doors and frames. Stops and overhead holders which cause damaging shock when doors are banged open are unnecessary! Now doors are gently cushioned to a stop by an adjustable hydraulic action as they approach open position. No need for expensive, heavy-duty anchor or pivot reinforced hinges because the Dor-O-Matic Hydra-Cushion eliminates the damaging stresses transferred to hinges and door frames when doors are brought to a smashing halt. Positive built-in back stop . . . and built-in hold open . . . eliminate door or floor applied stop devices.

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

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

more products on page 285
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The latest news on the office front is a "slide rule" that can add and subtract, and, what's more, can handle dimensions expressed in feet, inches and fractions as low as eighths. It also automatically converts inches into feet, and fractions of feet into inches. The compact Add-foot Junior is manufactured in West Germany by Addiator Rechenmaschinenfabrik, and is distributed in this country by Alexander Drafting Equipment Co., 640-642 N. Chester Ave., Pasadena, Calif.

Remote Cash Drawer
For Checkstand
The new Super-Flow K-22A checkstand features accommodation for a slant cash register and provision of space for a remote cash drawer at the location most convenient for the cashier. This is said to reduce fatigue in checkout work and assure pilfer-proof cash control, while two motor-driven conveyor belts minimize merchandise handling and checking errors. The checkstand itself comes in a wide range of baked enamel and vinyl-clad textured steel finishes, with removable outside panels that can be taken off and replaced if desired. Super Market Equipment Div., Hapman Corp., 630 Gibson St., Kalamazoo, Mich.

BILT-WELL Products
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Product Reports

more products on page 288
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Decorative Aluminum Grille System
Ornamental screens can now be assembled inexpensively from the new Alshade system of standard aluminum components—cast aluminum sections and matching back-up plates, and optional extruded framing members—prefinished in eleven baked enamel colors. The cast sections can be placed back-to-back to form a 4-in. deep decorative and solar shading screen over walls and windows, or combined with a single back-up plate for use as a purely decorative exterior screen (2½-in. deep). For overlays for ceilings and interior walls, or for space dividers, the back-up plates can be used double to form a 1½-in. deep screen. Although Alshade is currently available only in the “Shad-O-Wheel” version shown above, production of additional patterns individually designed by architects is contemplated.

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Decorative Aluminum Grille System
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WALLS

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ASBESTOS WALLS ... Soffits of the overhanging roof, window spandrels and returns at the entrance of this plant are Flat Transite. Large panels of fire-safe economical Corrugated Transite are used for the main wall areas. These structurally strong asbestos-cement sheets can be used equally well with steel frame construction or with wood framing.
DIRECTIONAL WALLS... Sheets of J-M Corrugated Transite erected horizontally provide a strong directional accent at the entrance of this building. These asbestos-cement panels can be used painted or in natural stone-like gray.

MASSIVE WALLS... The massive main element of this power plant is faced with Corrugated Transite... structural panels that combine fine appearance and permanence.

Interesting and functional approaches to the handling of exterior walls—and exciting design potentials adaptable to a wide range of building types—become available with the use of Johns-Manville building products. Shown here are recent applications on buildings in different sections of the United States.

For more than a century, Johns-Manville has been famous for its leadership in research and in the development of quality building products. This knowledge and experience is available through Johns-Manville building specialists who can be reached by contacting Johns-Manville, Dept. AR-3, Box 158, 22 E. 40th St., New York 16, N. Y. In Canada, address Port Credit, Ontario.

THIN WALLS... Here, porcelain on metal skin was laminated to both sides of Johns-Manville Micro-Flexboard for a total thickness of only 5/16". These curtain walls have no waviness; stay uniformly flat. Virtually any finish can be laminated or applied.

TWIN-PURPOSE WALLS... By using J-M Transi-top for the walls of this laboratory, both interior and exterior finish are provided by one material. The large, quickly installed panels consist of an insulating core faced on both sides with strong, tough asbestos-cement sheets.

TRANSLUCENT WALLS... Johns-Manville Corrulux reinforced fiber glass panels combine design with function... to provide soft, natural interior lighting. Use these shatterproof translucent panels anywhere, corrugated or flat. Available in a wide range of colors.
Steam Cools Desert Heat at Albuquerque Auditorium

Cleaver-Brooks CB packaged boiler supplies air conditioning system with 4,560 lbs. of steam per hour — helps keep new civic auditorium cool and comfortable in 100° outside heat.

The nation's largest thin-shell, post-tensioned dome belongs to this magnificent new structure. To help keep things cool under this concrete "parasol," the city of Albuquerque specified a CB packaged boiler — a dependable source of steam for an air-conditioning system that filters, cools and circulates 93,000 cubic feet of fresh air every minute.

Reports Dr. Marcello Giomi, consulting and mechanical engineer for the project, "We specified a Cleaver-Brooks boiler because it is a complete factory-tested unit including burner, boiler and modulation control system — all designed and built by a single manufacturer. Each component is integrated with all others for maximum operational efficiency. And Cleaver-Brooks saw to it that a factory-trained serviceman was here to supervise start-up even including necessary compensation for job altitude."

Consultant Giomi goes on to say, "Our experience with Cleaver-Brooks products goes back at least 10 years and we have yet to find a job where they haven't proved more than adequate to handle all loads imposed."

Architects for the building were Ferguson, Stevens, Mallory and Pearl of Albuquerque. If you'd like to know more about this installation or how Cleaver-Brooks packaged boilers (15 to 600 hp) fit into architects' best-laid plans, write Dept. D, 362 E. Keefe Ave., Milwaukee 1, Wis.

Product Reports

Sentry for Refrigeration Systems

The Televance Sentry, an electronic device that is expected to help lower operating and maintenance costs of refrigeration and air conditioning systems, keeps constant watch over the system and signals at the very first sign of a refrigerant leak or any malfunction causing gas bubbles to appear in the liquid line. It also detects and signals the occurrence of any condition that might result in non-operating of the compressor while the thermostat or compressor motor control device is calling for refrigeration. In some cases, such as a slow refrigerant leak or very inefficient compressor, it is claimed that the Sentry will signal that service is required months in advance of actual equipment failure.

The basic unit consists of a sensing probe which is located in the liquid line of the refrigeration system, and a main electronic control unit. A multiple selector switch which permits up to five condensing units to be connected to a single Sentry, and a low voltage remote alarm light, are also available. One standard unit can be used on any size equipment and with all refrigerants. Televance Corp., P. O. Box 3043, St. Louis 23, Mo.

Noise-Controlling "Paint"

Hush-Tex, a new cork- and asbestos-reinforced plastic emulsion developed for application on ceilings of corridors, meeting rooms, auditoriums, stairways, and similar public areas, is said to provide insulation against heat, cold and fire, as well as a low-cost, noise-absorbing finish. The rough-textured resilient coating can be applied to any paintable surface at about the same cost as paint. Preco Chemical Corp., 415 Lexington Ave., New York, N. Y.

more products on page 296
The INSIDE STORY is told in COLOR... by putting into actual practice the well-known psychological effects of color, it is possible to speed recovery and boost staff morale.

P&L colors were used throughout for this purpose because of their beauty, high quality and low maintenance costs.

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Architect: Richard W. Groh
General Contractor: Ditman, Pickens & Bond
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MODERN HUMANITARIAN FACILITY IN SOUTHWEST

This new hospital is modern and beautiful from entrance to exit. A large overhanging roof gives the entrance an appearance of a patio. The facade of this four story structure is almost completely covered with glass except for the cement partitions and overhang which give it an "egg-crate" effect. The inside rooms are spacious and color styled with Pratt & Lambert products.

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This is just one example of how today's architects are using concrete to create outstanding decorative effects. In buildings of every size and type, concrete fits both free-ranging imagination and functional requirements.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Spectacular club-house created for the Elks at Duncan, Oklahoma, was made possible by an inches-thin shell roof of modern concrete.

Unique house of worship, Zion Church, Milwaukee, Wis., gets strength and character from walls of concrete hyperbolic paraboloids.

Plug-In Baseboard Heating Units
Although they are more compact, a new line of plug-in baseboard electric heating units provides the same output as previous models (250 watts per linear foot) without increasing surface temperature. The units also cut installation time considerably since electrical connections are required only in a 9½-in.-long control section that contains a double pole switch and thermostat. They are installed by simply plugging-in to the control section through a concealed three-pronged connection that provides a continuous flow of power to each additional 2-ft section. The units are easily fastened to the wall to complete the installation. Westinghouse Electric Corp., P.O. Box 2099, Pittsburgh 30, Pa.

Long-Lasting Vinyl Diffuser
Lifeguard 150, a self-extinguishing vinyl diffuser panel, is said to have light stability of 150 per cent compared to conventional light stable vinyls. Accelerated aging tests have shown it to have, in addition, a usable life of 30,000 to 45,000 hours, or 50,000 hours (15 years) when used in double “dirt shield” panels. United Lighting & Ceiling Co., 2828 Ford St., Oakland, Calif.

Random-Grid Translucent Panel
The overall random effect of Kalwall’s new Random-Grid translucent wall panels is achieved by varying the distance between the mechanically interlocked aluminum I-beam sections which form the core of this plastic-faced sandwich panel. The panels are manufactured in sizes up to 4 ft wide by 20 ft high, for use in wood, masonry or curtain wall construction, and skylights as well as in the new Kalwall Panel Unit Wall system which combines translucent and opaque panels with fixed and operating sash and louvers. Because of their high strength, they require only perimeter fastening to the building, eliminating subframing and supporting members. Color may be incorporated in the panels by specifying colored translucent faces or colored inserts in the grid openings. Kalwall Corp., 43 Union st., Manchester, N. H.

Good Samaritan happy with Van equipment in new floor kitchens

- The new Villa Madonna maternity wing of the Good Samaritan Hospital at Dayton has three floor serving kitchens and one diet kitchen...all with most modern all stainless equipment...designed, fabricated and installed by Van. Sister Helene, Chief Dietitian, says that they are a joy to clean. It is so easy to keep everything shining and clinically clean.

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DOORS INSTALLED BY—Barker Lubin Co., Springfield, Illinois

Maintenance free beauty . . . quality controlled construction . . . adaptation to low headroom, are but a few of the outstanding Raynor features that met and surpassed the overhead type door specifications for the Springfield Fire Department shown above. Every Raynor Door is designed and engineered to meet and surpass the exacting specification requirements of today’s modern architectural design, your assurance that “when you specify Raynor, you specify the finest.”

Contact your nearest Raynor Distributor and request the NEW RAYNOR ENGINEERING MANUAL, it will provide you with every necessary detail for the complete line of Raynor Overhead Type Doors & electronic operators.

RAYNOR MFG. CO.
Dixon, Illinois
Hammonton, New Jersey

Product Reports

Compatible Sound Components
A complete line of custom sound components has been developed to provide everything from low level sound reinforcement (music distribution with hi-fi characteristics) to high-powered paging equipment, or both, with all necessary equipment mounted in a single compact rack as shown above. The basic components in the line—AC power panel, relay panel, input panel, AM-FM tuner, monitor panel, output panel (10 switches, 20 outlets), 4-speed changer and/or tape player, pre-amp panel, amplifiers, speakers and microphones—can be installed in any combination with assured compatibility. Webster Electric Co., Racine, Wis.

Streamlined Pendant Fixtures
Two new incandescent lighting fixtures for residential and commercial applications feature imported, hand-blown opal glass diffusers with brushed aluminum pipe and trim. The “Ellipse” is available in either pendant or surface styles with 14-, 18- or 22-in. globes. The “Pendant Sphere” comes in 12-, 14-, 16- or 18-in. globe sizes. Halo Lighting Products, Inc., 4201 West Grand Ave., Chicago 51, Ill.

more products on page 314
WHAT DO YOU WANT besides price when you specify or buy GYM SEATS?

GREATER SAFETY? Medart seats have it—compare them with others! Self-supporting steel understructures, plus added strength of wood members, support over 400 pounds per foot of seating space.

Four dual vertical uprights for each 16'0" seatboard. Two rollers on each upright retract and place load on floor, not walls or casters.

MORE SEATING? Medart 16-foot seat sections up to 12 rows high use only 32½" of floor depth when closed. Better seeing is assured with a choice of 17" or 18" seat heights. Ample toe and heel space add to comfort of spacious seat room.

EASIER OPERATION? Floating telescopic seat supports and interlocked twin rollers under each upright assure easier opening and closing; prevent binding and damage.

LESS UPKEEP? Harder, tougher clear wood finish lasts up to 15 times longer. Vertical fronts collect less dust. Swing-up front riser makes sweeping of debris quick, easy. Also, rubber rollers won't mar finely finished floors.

Sharply competitive in price, Medart Telescopic Gym Seats offer a host of exclusive features that promise savings in money, better performance, extra years of service.
You can now specify windows of sturdy, lasting stainless steel—at a cost much lower than you may think. Reason? Manufacturers now roll-form windows from Allegheny Stainless and pass the fabrication economies on to you.

In actual bidding recently, the price of roll-formed Allegheny Stainless windows averaged only about 10% higher than another non-stainless metal.

Vital to architecture, durability and compatibility are inherent in Allegheny Stainless. It never requires chemical films for surface protection, and virtually cleans itself with normal rainfall. Because of an amazing resistance to corrosive atmospheres, the brightness and freedom-from-pitting of Allegheny Stainless are recorded history; yet different patterns, textures and colors make news each day.

Stainless steel windows—of all-welded design and tubular construction—are available in Allegheny Stainless Types 202 and 302.

Include Allegheny Stainless in your design-thinking now. Learn how you can get the quality of stainless steel windows for much less than you think. For additional facts, and manufacturers' names, write to Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. Dept. R-4.

**Strong, durable, lower in cost**
Why is ceramic tile becoming so popular?

For one thing, the new importance of the wall area in today's architecture has focused attention on ceramic tile as the ideal material for architectural design. It is richly decorative, permanently beautiful, superbly functional. For another—the many new tile products developed by American Olean give the designer wide latitude for individual expression... as illustrated by the two wall treatments shown here. Write for Catalog 210 for details on the complete line of American Olean tile products.

Our Design Department will be glad to assist you in developing details for special design treatments.

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Vibroflotation®

was used to compact the sandy subsoil at two National Airlines Buildings.

At Miami International Airport, the nose hangar and administration building of National Airlines are built on sand compacted by Vibroflotation.

On two separate contracts, over 829 compactions were made to specified depth of 10 feet. Vibroflotation provided a rapid, effective, economical solution to the problem of eliminating foundation settlement.

Around this immediate area are several other buildings built on sand compacted by Vibroflotation including: American Airmotive Corporation's cantilevered hangar and Skyways Motel.

Write for Booklet A-19

Contractor: Bradford Builders, Inc.; Miami, Florida.

Clay Masonry Screen Units
Among the materials available for the now-ubiquitous sun screen are three versatile clay masonry units by designer Jack Hastings (typical installation above). Notable for the delicacy of their patterns—which can be varied by setting them in offset or stack bond—the units are all 8 1/2 in. square, and come in 3 1/2-, 5- or 8-in. depths. The natural color of the hard-burned plastic fireclay ranges from pink to buff, but glazed finishes are also available. Brookhaven Pressed Brick & Mfg. Co., Brookhaven, Miss.

Improved Packaged Heat Pump
One of York's expanded line of packaged heat pumps, the Model HP36 heat pump shown above provides automatic year-round heating, cooling and dehumidifying at temperature ranges from zero to 115 degrees. Designed for a wide variety of residential and commercial applications, it features twin cooling systems for step capacity comfort and economy, and built-in step capacity electric heaters to supplement the compressors at lower temperatures. York Div., Borg-Warner Corp., York, Pa.
Great new things are shaping up in concrete block

"Shadowal" concrete block has often been described as "the block with a thousand faces." Used here in combination with square blocks by Architect Mario J. Ciampi, San Francisco, this unit has created a striking and distinctive example of the role concrete block plays in today's building plans. And to lay up the new concrete masonry units, Atlas Masonry Cement continues to be the preferred cementing material for mortar. It helps produce a smooth, workable mortar... assures a stronger bond... gives weatherproof joints that are uniform in color. And Atlas Masonry Cement complies with ASTM and Federal Specifications. For information write: Universal Atlas Cement, Dept. M, 100 Park Avenue, New York 17, N. Y.

Universal Atlas Cement Division of United States Steel
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Takes 50% Less Space
—Fits into confined, often-wasted areas

COMPACT, HERMETIC CENTRIFUGAL—A 130-ton Turbopak is only 14' long, 5' deep and 6' 4" high, nearly 50% smaller than previous designs. Exclusive Borg-Warner power transmission reduces compressor rotor size to gain space-saving compactness.

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Another YORK Trail Blazer Concept Proved in Action at Insurance Company of North America, Richmond, Indiana—A 125-hp York Hermetic Turbopak supplies chilled water to air condition this modernized office building. Cool, clean, dehumidified air greatly increases the comfort and efficiency of the employees.
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High Frequency Bus Duct
Outlines features, and gives dimensions, ratings and specifications for new high frequency bus duct. Booklet B-7326-380, 12 pp. Westinghouse Electric Corp., P.O. Box 2099, Pittsburgh 30, Pa.*

Shallow Recessed Troffer
(A.I.A. 31-F-2) Describes the construction and installation features of the Shallotroffer lighting fixture series and its plug-in unitized electrical assembly. Specifications, mounting and trim details, and technical information (brightness values, coefficients of utilization, lighting curves, etc.) for each of eleven available bottom diffusers are also included. Brochure B-2, 32 pp. Globe Illumination Co., 2121 S. Main St., Los Angeles 7, Calif.

Electric Motor Controls
Provides condensed listing of motor control products and accessories, with descriptive copy, design data, and ordering information on each. Catalog 5900, 72 pp. Furnas Electric Co., 1176 McKee St., Batavia, Ill.

Molded Case Circuit Breakers

ACI Book of Standards
1959 Edition compiles current ACI standards, recommended practices and specifications. 382 pp., $5. American Concrete Institute, P. O. Box 4754, Redford Station, Detroit 19, Mich.

Painting Insulation Board
Provides information on the various types of insulation board to which paint is ordinarily applied, and suggests proper painting methods for each. Glossaries of insulation board terms and paint terms are also included. 10 pp. Insulation Board Institute, 111 W. Washington St., Chicago 2, Ill.

Drapery Hardware Catalog

Sound Absorption Coefficients
... of Architectural Acoustical Materials (A.I.A. 39-B) provides a list of trade names and marks; summary tables which classify materials according to appearance and composition; and producers' tables which give detailed data on all listed acoustical materials of associated producers. Installation recommendations and coefficients of general building materials are also included. Bulletin XX, 44 pp., 50¢. Acoustical Materials Assn., 335 East 45th St., New York 17, N. Y.

Washroom Cabinets

*Rookis Machine Company
133 Fourth Street, Clare, Michigan

For descriptive literature and installation details, write Dept. A-66.

Additional product information in Sweet's Architectural File
more literature on page 326
STANDARD BEARER TO THE HINGE INDUSTRY!

Since 1954, when Hager first introduced Permanized LUMA-SHEEN Finish—the original and first true aluminum colored finish—it’s become the most widely acclaimed finish of the door hardware industry!

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HAGER HINGE CANADA LIMITED, KITCHENER, ONTARIO

ARCHITECTURAL RECORD  April 1960  323
Burgess-Manning Radiant Acoustical Ceiling
Especially Advantageous for Psychiatric Hospitals

The Burgess-Manning Radiant Ceiling has many features that make it especially desirable for all hospital buildings designed for psychiatric use.

With the Burgess-Manning Radiant Acoustical Ceiling there are no hot radiators or registers within reach that can harm, or be harmed by an irresponsible person. The panels that transmit radiant energy for heating or cooling the space are located in the ceiling. Thermostatic controls can also be located out of reach.

With the Burgess-Manning Radiant Ceiling as the heat source, floors are always comfortably warm, and there is no appreciable variation in temperature from floor to ceiling, or in any part of the room.

Acoustically this ceiling absorbs noise and provides maximum quiet for patients and staff.

The absence of drafts caused by convection currents, largely unavoidable with other heating systems, is another feature that is especially desirable in hospital installations.

These considerations prompted the selection of the Burgess-Manning Radiant Acoustical Ceiling for the Marquardt Building almost as much as its other features—superior comfort conditioning, economy of operation, low cost maintenance, and the virtually instantaneous response to thermostatic control.

Marquardt Building, Augusta State Hospital, Augusta, Maine.

Radiant Acoustical Ceiling Structurally Simple

Considering the triple function—heating, cooling and noise control—performed by the Burgess-Manning Radiant Acoustical Ceiling, its construction is amazingly simple and compact. It consists of only 4 major parts.

1. Suspension
   The standard suspension system of 1 1/2" channels on 4 ft. centers is ordinarily used.

2. Water Circulating Coil
   The grid type coil is made from pre-fabricated headers to which 1/2" laterals are welded. A sinuous type coil can be used where conditions make it desirable. Either type coil is attached directly to the suspension grid.

3. Acoustic Blanket
   The non-combustible sound-absorbing blanket, with the required noise reduction coefficient, is laid on top of the suspension grid.

4. Snap-on Panels
   Heavy gauge perforated aluminum panels of the proper thermal conductivity are attached directly to the water circulating coil.

These and other economies permit installation of Burgess-Manning Radiant Acoustical Ceiling at a cost equal or lower than would be paid for various combinations of convection heating and air cooling, plus a suspended acoustical ceiling.
one thing in common...

...their tableware was washed by a Hobart Flight-Type dishwasher...standard for volume operations

Whether in a restaurant, hotel...cafeteria in an office building, school or industry, they do have one thing in common! They eat every day, and agree with you on clean tableware. Hobart dishwashers are the unparalleled answer. "Unequaled speed, thoroughness and efficiency" skims over the Hobart flight-type dishwasher story much too fast. For here is every dishwashing service you need built into one amazingly fast machine (many models)—custom-designed to cut costs in volume food operations. Fully automatic, it delivers the lowest possible operating cost, with traditional Hobart dependability.

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Completely automatic power-water-scrapping, power washing and rinsing, with human supervision reduced to a minimum. Dishes are continuously racked in conveyor between Delrin tipped, resilient, stainless steel “flight links”—stainless steel specially treated to protect chinaware against markings...side links, rollers and tie rods of stainless steel. Famed Hobart combination jet-powered and revolving wash system insures thorough sanitation. Sizes range from 12 to 26 ft. long, with conveyor speeds from 5 to 12 ft. per minute. Dozens of other exclusive features make it the most advanced dishwasher made.

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Revised Timber Standards
(A.I.A. 19-B) Two revised standards have been added to the AITC's Timber Construction Standards. AITC-Sa 11.06, "Selection of Adhesives," covers waterproof and water-resistant adhesives; Section 900, "Guide Specifications for Structural Timber," covers structural glued laminated lumber and sawn structural timber. American Institute of Timber Construction, 1757 K St., N.W., Washington 6, D. C.

Fundamentals of Building Insulation
(A.I.A. 37) Discusses how building insulation works, why it is used, and where it should be used. 44 pp. Robert A. LaCosse, Technical Director, Insulation Board Institute, 115 W. Washington St., Chicago 2, Ill.

Aetnawall Partitioning Systems
Offers specifications, details and photos of typical installations of five basic types of Aetnawall partitioning systems. Aetna Steel Products Corp., 7S0 Fifth Ave., New York 19, N. Y.*

Design of Wood Formwork
... for Concrete Structures
(A.I.A. 4-D-1) presents current information on using structural lumber and boards in formwork construction. WCD No. 3, 18 pp. National Lumber Manufacturers Assn., Technical Services Div., 1319 18th St., N.W., Washington 6, D. C.

Tips, Techniques and Drafting Aids
Contains sections on drawing techniques, simplifying drafting practices, protecting prints and drawings, drawing lines and curves, modifying equipment for extended use, and getting the most from drawing instruments. 32 pp., 50¢ Alvin & Co., Inc., 611 Palisado Ave., Windsor, Conn.

Sika Epoxy Compounds

Vermiculite Fire-Resistance Ratings
(A.I.A. 21-C-l) Gives details, descriptions and fire ratings for basic applications of vermiculite plaster, concrete, acoustical plaster and direct-to-steel fireproofing. Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill.

Acrylic Exterior Paints
Progress Report No. 6 gives detailed information on the results of a six-year study of applications and exposure tests of exterior paints made with Rhoplex AC-33, an acrylic resin emulsion. 54 pp. Rohm & Haas Co., Washington Sq., Philadelphia 5, Pa.*

*Additional product information in Sweet's Architectural File

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Tips, Techniques and Drafting Aids
Contains sections on drawing techniques, simplifying drafting practices, protecting prints and drawings, drawing lines and curves, modifying equipment for extended use, and getting the most from drawing instruments. 32 pp., 50¢ Alvin & Co., Inc., 611 Palisado Ave., Windsor, Conn.

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more literature on page 330
Walter Dorwin Teague designs

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Office Literature

Specification Manual . . . of Plumbing Fixtures and Specialties for Institutional Kitchens provides dimensional drawings and detailed specifications for plumbing fixtures "from one end of the kitchen to the other," as well as for water fixtures used in patron service areas. Manual KS1, 84 pp. T & S Brass and Bronze Works, Inc., 128 Magnolia Ave., Westbury, L.I., N.Y. *

What the Architect Should Expect . . . from His Curtain Wall Fabricator deals with all aspects of the fabricator's role in the engineering, fabrication and installation of metal curtain wall systems. 8 pp. Albro Metal Products Corp., 944 Longfellow Ave., New York, N.Y. *

Permalite Insulating Concrete (A.I.A. 4-E-13, 87-B-2) Covers use of Permalite expanded perlite insulating concrete in roof decks and floor fills, with specifications, load tables and other technical data. Catalog C12-1960, 8 pp. Perlit Dept., Great Lakes Carbon Corp., 612 Flower St., Los Angeles 17, Calif. *

Engineered Lighting . . . and Control Equipment includes specifications, photometric data, circuiting and dimensional information on stage lighting equipment, stop and night lights, flush and surface luminous elements, exit and directional signs, hospital bedlights, test cell units, downlights and control switchboards. Catalog 101, 44 pp. Hub Electric Co., 2249 Grand Ave., Chicago 12, Ill.

Sliding Glass Doors (A.I.A. 16-E) Presents details and specification data on complete line of all-aluminum sliding glass doors. 12 pp. Ador Corp., 2345 West Commonwealth, Fullerton, Calif. *


*Additional product information in Sweet's Architectural File

more literature on page 334
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ALUMINUM WINDOWS

You get lowest maintenance costs when you design and build with "Quality-Approved" aluminum windows—either awning, casement, double-hung, jalousie, projected or sliding types. They are rustproof and rotproof... never need painting or expensive maintenance. They retain their trim modern appearance for the life of the building and save money year after year for the owner. Specify "Quality-Approved" and look for the seal on the window. For latest Window Specifications book, write to Dept. AR 604.

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A "packaged" building manufacturer asks architects not to judge it by association

Are "packaged" buildings a threat to the architect, and to what he stands for? It seems that architects think so—and Butler received this news with considerable dismay. We can't testify for others, but we wish to make our position and intentions clear.

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But the fact remains that our Builders have constructed thousands of buildings designed by architects. Where the structure calls for it—that's the way we want it, and we help and encourage our Builders to work through architects. Conversely, architects have called on our Builders for assistance. Under these circumstances, the "package" we offer consists of coordinated structural and roof systems, and metal wall systems—both factory and field insulated. The architect takes what is useful and adds what collateral material creates the pleasing finished product.

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Insulrock's positive new advantages in roof deck construction further simplify your selection of the best deck on the market. For ultimate beauty and high light reflectance in exposed, acoustical ceilings . . . for portland-cement-bonded strength . . . for all-in-one efficiency and economy . . . the answer is simple: INSULROCK—FOR BEAUTY THAT STANDS UP THROUGH THE YEARS.

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FOLDING WALLS HELP INCREASE CONVENTION BUSINESS AT ATLANTA'S BILTMORE

Atlanta's explosive growth as a convention city is responsible for the all-new 10th floor of the Biltmore. 7 of 11 meeting rooms, designed for conferences or private dining, are connected with Unitfold Folding Walls. These areas can be varied to serve groups from 25 to 160 persons.

In the example above, Unitfold is faced with the same paper as the permanent walls (photo 1). Photo 2 shows Unitfold withdrawn and entirely hidden in the pockets at right; contrasting pocket doors add interest to room decor. Photo 3 demonstrates that there are actually two walls, separated by air space. All the Biltmore walls are of this type — one of the Fairhurst features that means the highest sound retardance known in movable walls. Note close clearance at column. This is Unitfold — solid, rigid, with all the characteristics of a permanent wall.

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John T. Fairhurst Co., Inc.
45 West 45th Street New York 36, N. Y.
FAIRHURST . . . First Name in Folding Walls

Office Literature

Non-Shrink Grouting
... of Machinery and Equipment describes successful grouting techniques with Embecco non-shrink grout by outlining and illustrating common methods of grouting different types of equipment, the mixing and placing of grout, and cold and hot weather grouting. Information on recommended mixes and estimating tables are also included. Bulletin E-1d, 16 pp. Master Builders Co., Cleveland, Ohio *

Ceramic Mosaics Patterns

Interior Fire Fighting Equipment
Contains information and specifications on automatic sprinkler systems, carbon dioxide systems, dry chemical systems, smoke detection systems, foam systems, and hose and extinguisher cabinets. Form S-62, 28 pp. Customer Services Dept., Fyrfyter Co., 221 Crane St., Dayton 1, Ohio.*

Engineering Testing Equipment
Catalogs engineering testing equipment ranging from a pocket soil penetrometer to completely equipped mobile laboratories and nuclear testing equipment, and gives recommended equipment lists for specific types of testing projects. 316 pp. Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.

Panels by Erie
(A.I.A. 17-A) gives pertinent data on complete line of insulated and veneer curtain wall panels, with full information on the materials, colors, textures and finishes now available in either mechanically-assembled or laminated panels. 8 pp. Erie Enameling Co., Erie, Pa.*

Roofing Guide
Describes and illustrates 14 common roofing problems and recommends repairs and maintenance to overcome each. Roofing Div., Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio

*Additional product information in Sweet's Architectural File more literature on page 338
The beauty of this million-dollar building, inside and out, has been lifetime insured by the finest flashing available. And yet, the cost of continuous spandrel flashing at all floor levels, including window heads and sills, was only 1.2% of the total construction cost... a modest investment for complete and lasting protection against the elements.

**ONLY 1.2% OF TOTAL COST...**

**FLASHING BY WASCO**

The flashing in Madonna Hall is Wasco five-layer Copper-Fabric, the most versatile flashing ever perfected. Copper-Fabric is ideal for every architectural application... it is rugged and flexible; unaffected by heat and cold; positively will not stain or bleed. To be sure that your buildings have maximum beauty insurance, specify Wasco Copper-Fabric Flashing. Why risk a substitute? For complete details and specifications, see Sweet's Architectural File 8g/Wa.

**PROTECTING THE BEAUTY OF ARCHITECTURE**
Exclusive!  
1¾" THIN, 4½" LOW!  
Invisa-Line Baseboard Heat

Perfect for use under window wall.

Here is the slimmest and trimmest of all baseboard heat units. Because of its dramatically reduced dimensions, the new Arvin Invisa-Line "disappears" from conscious view, once installed. Now, at last, the concept of electric baseboard heat becomes a reality, literally replacing the modern, low-room-baseboard with a heating unit that's equally unnoticed. Yet, with all its slimness, Arvin's low-wattage baseboard provides a world of warmth. And it's safe ... every section contains safety thermal cutouts ... 140 watt capacity per lineal foot assures ample heating performance without "hot spots" in the room. No other baseboard unit gives more real meaning to the modern advantages of electric heat than new Arvin Invisa-Line: all you notice is the warmth.

Also available is Arvin's high wattage Invisa-Line baseboard, with 300 watts per foot. It too contains safety thermal cutouts. Only 2" thin and 6" low, it obliterates in appearance all other units of comparable wattage.

Instant-Heating Wall Heaters
A complete line, six fan-forced and radiant models. 3413 to 13,652 BTUs. Instant-heating elements Automatic thermostats, double-pole. Push-button controls.

Fastest, Easiest Installation
New Arvin rough-in box with quick-fastening clamps cuts time, labor costs.

Radiant Heating Cable
New! No braid or loom needed—cold leads have heavy, UF-type insulation, can be installed with new-design staples. Nickel-chrome elements.

Wall Thermostats
Gives you new freedom
lend" styling

'S YOU PROVIDE OUTSTANDING
STALLATION AND MAINTENANCE
VANTAGES IN RESIDENTIAL,
ICE, APARTMENT AND
TEL APPLICATIONS

Write for the complete folio of individual Arvin Electric Heat specifications sheets.

FOR YOUR JOB FILE
Information on These and Other Advanced Arvin Electric Heat Units.
Write for the complete folio of individual Arvin Electric Heat specifications sheets.
SWEET'S Listing 10C/ARV

ARCHITECTURAL RECORD April 1960 337
A Product Report for Architects...

Inside Window Washing

with the new Fleetlite double hung

Monumen-tilt!

For the architect engaged in conventional and curtain wall design of offices, schools, hospitals and other high rise buildings, Fleetlite offers the only monumental double hung aluminum window that can be fully screened and still cleaned at floor level from inside the building.

**SHORT SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>All frame and sash are extruded aluminum alloy 6063-T5 with a minimum tensile strength of 22,000 psi.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESIGN FEATURES</td>
<td>Upper and lower sash have extruded glass-frames hinged at the lower rail of each sash. For inside cleaning, glass-frames pivot &quot;hopper style&quot; when in the lower position. Jambs of adjoining windows fastened with male and female screws and splined for weather tightness. Continuous head and sill for mullioned units up to 20' wide.</td>
</tr>
<tr>
<td>HARDWARE</td>
<td>Sash balanced with removable spiral type balances. Glass-frames lock into sash by concealed stainless steel cam locks. Installation anchors of heavy gauge steel cadmium plated.</td>
</tr>
<tr>
<td>WEATHERSTRIPPING</td>
<td>Perimeter of sash double weatherstripped with wool pile. Glass-frames continuously weatherstripped to sash.</td>
</tr>
<tr>
<td>AIR INFILTRATION</td>
<td>Shall not exceed .30 cubic feet per minute per foot of crack length under static air pressure equal to winds of 25 mph velocity.</td>
</tr>
<tr>
<td>GLAZING</td>
<td>Glass and glazing up to and including 1/2&quot; insulating glass under separate contract.</td>
</tr>
<tr>
<td>MAXIMUM SIZE</td>
<td>4'6&quot; x 8'0&quot; frame overall dimensions.</td>
</tr>
<tr>
<td>SCREENS</td>
<td>Fiberglas half or full length screens available.</td>
</tr>
<tr>
<td>FINISH</td>
<td>Lustrous satin-like finish. Anodizing provided if specified.</td>
</tr>
</tbody>
</table>

Complete specifications and full size details available upon request.

FLEET OF AMERICA, INC., Dept. AR-40
2015 Walden Avenue, Buffalo 25, N. Y.

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**Office Literature**

**Roofs With a New Dimension**
Thin shell primer presents a brief discussion of shell action, describes the four most commonly used types (barrels, domes, hyperbolic paraboloids and folded plates), and illustrates foreign and American examples of each type. 20 pp. Portland Cement Assn., 33 West Grand Ave., Chicago, Ill.*

**Masonite Contemporary Studies**

**Plumbing for Flexicore Decks**
(A.I.A. 4-K) Explains how openings can be designed into precast concrete decks and framed during construction, or hand-cut or drilled after the deck is in place. Details of typical plumbing conditions are included. 12 pp. Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio.*

**Uni-Silencers**

**The Lunning Collection**
... of Scandinavian Design describes and illustrates a complete line of seating, tables, office furniture, cabinets, occasional pieces, lamps, rugs and textiles. 72 pp. Frederik Lunning Inc., 667 Fifth Ave., New York 22, N. Y.*

**Schlage Hardware for Hospitals**
Describes complete line of locks designed to meet the special and sometimes unique needs of modern hospitals. A comprehensive Selector Chart provides a convenient guide to the proper lock choice for specific door functions. 12 pp. Marketing Services Dept., Schlage Lock Co., P. O. Box 3324, San Francisco 19, Calif.*

*Additional product information in Sweet's Architectural File

more literature on page 344
Profile Acoustone—12" x 12" tiles are now produced with two kerf planes. Design possibilities are unlimited.

Two new Acoustone designs—Profile and Accent—add new shape to sound control... the dramatic dimension of depth. To the long recognized mineral tile advantages of Acoustone, they introduce striking new advantages in beauty.

Contact your nearby U.S.G. acoustical contractor for more information on these three-dimensional ideas for ceilings, or write United States Gypsum, Dept. AR-01, 300 W. Adams St., Chicago 6, Ill.

UNITED STATES GYPSUM
the greatest name in building

...beautiful new shapes for Acoustone®
The Hartford Building
new concept in space and dignity...
served by electronically controlled
Haughton Auto-Signamatic operatorless Elevator System

Destined to become the Chicago landmark, the Hartford Building at 100 South Wacker Drive will provide regal surroundings and facilities for tenants and visitors.

A case in point: thirteen Haughton Operatorless Elevators with the latest automatic electronic controls will speed passengers from floor to floor with silken smoothness. They will be motivated by an amazing electronic brain that anticipates service needs at every moment, day and night, and dispatches cars at the proper times and in proper sequence to meet traffic needs exactly.

Of course, operation of Haughton Operatorless Elevators is simplicity itself. One merely enters the car and presses the numbered floor button. Doors open and close automatically at floor level, with unfailing consideration for passengers. They are controlled by proven devices of ingenious design that help make Haughton Operatorless Elevators the safest mode of floor to floor travel.

The Hartford Building... to be occupied in part by the Western Department of the Hartford Fire Insurance Company Group. From its unique exterior, creating a functional design accented by simple charm, to its superb location and superior facilities, this beautifully planned building carries its tasteful design throughout... The twenty floors are arranged for purposeful planning and unexcelled utilization of floor space. Windows are shielded from direct sun rays by the canopy effect created in the exterior design, a first in this country... The landscaped esplanade and spacious lobby provide an exciting vista, while building features combining the ultimate in fluorescent lights, automatic elevators, year 'round temperature control, under floor ducts for electrical and telephone equipment and other innovations make The Hartford Building an unparalleled office home for any organization.

* Haughton's advanced program in elevator systems research and engineering, with specific emphasis on the creative application of electronic devices and instrumentation for betterment of systems design and performance.
featuring Haughton Elevonics*
KoolShade® aids patient care by reducing heat and glare

KoolShade Sunscreen installed on the outside of hospital windows provides many benefits to both the hospital and its patients.

Increased comfort. KoolShade, the quality solar shading material, intercepts up to 89% of the sun’s direct rays. For a patient this means a cooler room—up to 15° cooler... without air conditioning. KoolShade also relieves eyes of tiring glare... yet provides 84% “see-out” visibility. Efficient shading is achieved without the gloominess of drawn blinds or drapes.

Reduced “housekeeping.” With KoolShade, room furnishings are protected, too... from sun bleaching. Dirt-catchng interior shading devices can be eliminated. Window washing frequency can be reduced.

Reduced air conditioning load. By cutting down on the entry of solar heat, KoolShade reduces air conditioning loads. A rule-of-thumb guide is that 100 sq. ft. of KoolShade reduces a cooling load by one ton. On new construction this can mean a sizable reduction in cooling tonnage. On expansion jobs it may mean that the present central air conditioning unit can handle the addition.

Minimum maintenance. The rot-, rust- and corrosion-proof materials used for KoolShade Sunscreen and KoolFrame® Extrusions take weather in stride. Your investment is protected for years to come.

Franchised installation. For maximum satisfaction and performance, KoolShade is sold and installed only by Franchised, factory-trained distributors.

SEND TODAY for this free illustrated bulletin. Find out how you, too, can solve your solar problems with modern KoolShade. No cost or obligation.

Office Literature

Dorm Line by Simmons
Describes, illustrates and gives complete selection information on built-in and free-standing wardrobes, chests, dressers and desks, as well as chairs, tables and beds in the Dorm Line group of dormitory furnishings. 16 pp. Contract Div., Simmons Co., 1870 Merchandise Mart, Chicago 54, Ill.*

Case Plumbing Fixtures
Catalogs full line of water closets, lavatories, urinals and drinking fountains, with product photos, detailed dimensional drawings, and complete product descriptions. 28 pp. Case Mfg. Corp., 247 Delaware Ave., Buffalo 2, N. Y.*

Air Powered Hydraulic Dockboards
(A.I.A. 35-I-141) Data file folder describes, illustrates, and gives specifications, installation diagrams, and parts and price list for Aero-Board hydraulic dockboards. An air compressor chart and data, and suggested construction details are also included. Sales Engineering Dept., Allied Products Div., Freightliner Corp., P. O. Box 3591, Portland 8, Ore.

Unitron Chair Carriers and Closet Fittings

Metropolitan Counters
Catalogs complete line of soda fountain and snack bar counters and accessories. 8 pp. Bastian-Blessing Co., 4208 W. Peterson Ave., Chicago 46, Ill.*

Huck Fasteners
Includes driving cycles, strength data, typical applications, grip ranges, significant dimensional data, hole size recommendations and installation notes for each fastener in the Huck product line. 24 pp. Huck Mfg. Co., 2480 Bellevue Ave., Detroit 7, Mich.*

*Additional product information in Sweet’s Architectural File
another product of L. E. Carpenter's designing skill and integrated manufacturing ingenuity

On a note of modern elegance . . . the eloquence of Old World artistry, Vienna has a speaking role in your plans for creating the aura of minuet-time enchantment. The tonal richness of its delicately sculptured bas-relief captures the charm of another era in a modern, practical wallcovering . . .

last-forever Vicrtex vinyl that never cracks, chips, peels or frays. Vienna in 14 enticing hues an exclusive Vicrtex creation.

This magnificent new motif is also available in matching patterns and color range, with smaller repeats: Contessa.

Write today for sample swatches, prices . . . and your copy of the colorful "Walls of Fame" brochure.

L. E. CARPENTER & COMPANY
Empire State Bldg., New York 1 • L.Ongaco 4-0080 • Mills: Wharton, N. J.
Available In Canada: Canadian Resins and Chemicals, Montreal & Toronto
New jet-spray acoustical material sound-insulates planetarium, above, and kitchen, print shop, and composing room of U. S. Air Force Academy, Colorado Springs, Colorado.

Faithfully follows surface contours; hides no details.

SPRAYED "LIMPET" ASBESTOS

SOUND-CONDITIONS U. S. AIR FORCE ACADEMY

At this aerie for fledgling eagles, SPRAYED "LIMPET" ASBESTOS offers double sound-absorption.

First, millions of pores trap the sound. Secondly, the soft, fluffy texture gives with the sound waves, sharply reducing their rebound.

Sprayed on with a gun, SPRAYED "LIMPET" ASBESTOS goes on in any kind of weather, as long as the temperature at point of application is above 40° F. Sets fast and dries fast. No nailing, cutting, fitting, or clipping. No forms or shoring. Minimum clean-up time and labor.

Thermal insulation, condensation control, and fire-retardation are other uses of SPRAYED "LIMPET" ASBESTOS. A 1½" thickness provides four hours of fire-retardancy.

For more information, write to us today, Dept. I-3440

KEASBEY & MATTISON
Company • Ambler • Pennsylvania

ARCHITECTURAL RECORD • April 1960
The only line of exit devices U.L. approved for both fire and panic!

The Sargent line of Standard Exit Devices is the only one offered by any manufacturer, at any price, that is approved by the Underwriters' Laboratories for "Panic" and has successfully passed the U.L. 3 hour fire test. Now you can protect both life and property with U.L. approved Exit Bolts on either single or pairs of doors. See your Sargent Supplier or write Sargent & Company, New Haven 9, Connecticut.

* Tested with doors by Overly Manufacturing Company

SARGENT
THE NEWEST FASHION IN A COMPLETE LINE OF ARCHITECTURAL HARDWARE
VERSATILITY and ADAPTABILITY with BESTWALL LITE-AcouSTIC PLASTER

Bestwall Lite-Acoustic can be applied over monolithic surfaces, wallboard, oil paint—any clean, firm, water-resistant surface. It is designed for machine application, and various textures are easily obtained by simply adjusting the nozzle.

Also, Lite-Acoustic is highly sound-absorbent—noise reduction coefficient is .55-.60—and provides a highly decorative texture. The white finish reflects up to 69% of light, the ultra-white 74%.

Get complete information on Bestwall’s full line of lath and plaster from your Bestwall representative.

BESTWALL GYPSUM COMPANY
Ardmore, Pennsylvania
Plants and offices throughout the United States

BIBLIOGRAPHY

2. FREUND, H. (The phenomena of color relief from the epidological point of view.) Z. Psychol., 1942, 152, 257-292.
8. TAYLOR, I. L., and SUMNER, F. C. Actual brightness and distance of individual colors when their apparent distance is held constant. J. Psychol., 1945, 19, 79-85.
INDIRECT GAS FIRED STORAGE WATER HEATER FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL USE

No scaling • No drop-off in rated efficiency • No fuel waste • No on-the-job assembly • No complicated maintenance • No limitations on placement • Fully automatic • Copper heating surface

P-K SCALEFREE 230* is a unique rugged unit backed by P-K's 80 years of experience in building and designing quality water heating equipment. It heats water through hot intermediate distilled water. Transfer occurs below the temperature at which minerals that cause scaling precipitate. Efficiency remains unimpaired throughout service life. Linings of pre-Krete or copper are available to keep the unit free of rust and corrosion regardless of water conditions.

SCALEFREE 230 features a new P-K gas burner. It operates at maximum practical efficiency. Yet it gives almost noiseless service—does not rumble or boom on startup. This permits location almost anywhere in office buildings, institutions, schools, motels, etc.

SCALEFREE 230 is a complete fully automatic package that can be quickly set in place, hooked up and checked out. It is available in more than 100 storage and recovery combinations. Storage capacities range from 250 to 4000 gallons. Recovery sections range from 390,000 to 2,215,000 Btu. Write for catalog with full information.

*Patent pending
Just completed after 30 years of building, the Shrine of the Immaculate Conception in Washington, D.C. features 465 ALTEC-engineered products in its sound system. Often referred to as the Catholic National Shrine, it is the largest cathedral in North America. In common with thousands of public and industrial buildings, stadiums, auditoriums, hospitals, schools, churches and shopping centers all over the world, the Shrine features the pure sound of an ALTEC system. Like all ALTEC products, ALTEC commercial sound systems offer dependable service under all conditions, longer life, ease of installation and service—factors which enhance your own reputation. Hundreds of ALTEC engineer-consultant contractors can serve you with 100 different sound components or complete systems designed to your specifications. For the best in service, the best in sound—talk over your project with the nearest ALTEC contractor. Look for him in the phone directory yellow pages, or write ALTEC at the address below.

For full details, write:

WANT TO KEEP THAT BUILDING CLEAN AFTER IT'S BUILT?
Specify NIXALITE bird barrier and control. You'll not only keep your design clean, but, you'll help lower maintenance costs for your client.

Nixolite, the porcupine-like barrier can be installed on ledges, pediments, columns, etc... in fact, anywhere birds are likely to roost. It is inconspicuous but does a conspicuous job of keeping birds of all sizes away. It's flexible base bar carries 120 sharp prongs to the foot, curved and staggered in varying angles to cover a complete 180° arc. And, being of nickel stainless steel, it doesn't substitute one form of maintenance for another... won't streak or dis-color other building materials.

Do yourself and your client a favor by specifying NIXALITE, the permanent bird barrier and control.

COMPANY OF AMERICA
DEPARTMENT 34
1722 • 1st Avenue
Rock Island, Illinois

Client blowing his stack...?

then specify A. O. Smith glass-lined smokestacks—
Build client satisfaction with a smokestack that:
• Lasts 3 to 5 times longer than unlined steel stacks
• Installs easily with no need for special equipment or highly skilled workmen
• Is lightweight — lower foundation costs
• Requires little maintenance — glass can't rust
• Is now available in colors

For full facts, write Dept. AR-30.
TODAY it is hard for termites to find a "hearty meal" in newly constructed homes. That's because up-to-date architects and builders are using aldrin insecticide to knock out termites before they cause damage.

Aldrin is an alkali-stable, F.H.A. approved insecticide for use on all types of home construction—slab—basement—and crawl space.

New projects can be treated without interrupting normal construction work and builders can safely give home owners a guarantee . . . confident that aldrin protection will last for years.

For full information on aldrin termite protection for new construction see your local Pest Control Operator or write to:

**aldrin**

**FOR PRECONSTRUCTION TERMITE CONTROL**

**SHELL CHEMICAL COMPANY**

AGRICULTURAL CHEMICALS DIVISION

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ATLANTA • NEW ORLEANS • ST. LOUIS • SAN FRANCISCO
On the Calendar

April

1960 Nuclear Congress and Exhibit — The Coliseum, New York

5-7 Spring Conferences, Building Research Institute — Statler-Hilton Hotel, New York

18-19 Joint Conference on Automatic Techniques, sponsored by American Society of Mechanical Engineers and Society for the Advancement of Management — Sheraton Hotel, Cleveland

18-23 92nd Annual Convention, American Institute of Architects — Mark Hopkins Hotel, San Francisco

19-21 Second Annual Church Design and Building Conference and Exposition — Morrison Hotel, Chicago

25-27 Annual Convention, Construction Specifications Institute —

Concentrate Responsibility... Specify SEDGWICK Dumb Waiters and SEDGWICK Dumb Waiter Doors

When you select a Sedgwick Dumb Waiter, you get a completely integrated installation — including dumb waiter doors — designed, engineered, manufactured and installed by Sedgwick.

This places the responsibility for the entire installation in the hands of one supplier — cutting in half the red tape, contracts and approvals, and eliminating your coordination of door and dumb waiter design and erection. Furthermore, all equipment is shipped at the same time, saving shipping and handling costs. The same mechanics install both doors and dumb waiters.

Sedgwick Dumb Waiters and Doors are available in a complete range of modern, improved types and standard sizes that can be adapted to fit requirements exactly.

(See standard specifications and layouts in SWEETS 24/Sc)

Doors are manufactured in bi-parting, slide-up, slide-down or hinged arrangement. Also access and clean-out doors. (Underwriters' Labelled where required.) Send today for complete literature and specifications.

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ADDRESS________________________
CITY_________________STATE_____

Rickey's Studio Inn, Palo Alto, Calif.

May

1-3 Chicago Electrical Industry Trade Show and Exposition — Lake Front Exposition Hall, Chicago


1-7 Congress on Better Living, sponsored by McCall's magazine — Washington

9-12 Second Instrument-Automation Conference and Exhibit of 1960, sponsored by Instrument Society of America—Civic Auditorium and Brooks Hall, San Francisco

11-16 World Design Conference in Japan (followed by tours, 18-20); theme, "Our Century: The Total Image" — Tokyo

12-14 South Atlantic Regional Conference, American Institute of Architects — Winston-Salem, N. C.


16-20 Annual Meeting, National Fire Protection Association — Montreal

19-21 Annual Meeting, Refrigeration Research Foundation — Denver

22-27 41st International Conference and Exposition, National Office Management Association — Queen Elizabeth Hotel and Show Mart, Montreal

23-26 Design Engineering Show and Conference — The Coliseum, New York

25-27 25th World Planning & Housing Conference — San Juan, Puerto Rico

June

1-4 Annual Assembly, Royal Architectural Institute of Canada — Fort Garry Hotel, Winnipeg

8-11 Annual Meeting, National Society of Professional Engineers — Statler Hotel, Boston
NEW Custom Designed Panels
For Exterior Curtain Wall
At A Cost Practical
For Small Buildings

A NEW CONCEPT . . . formed, colored and textured Plexiglas facings on insulating panels in Alumiline's Series 969 Aluminum Curtain Wall for outstanding exterior curtain wall design.

CUSTOMIZED DESIGNS in a choice of 22 architectural colors in glossy or mat finish. Low die cost for panels formed to your special design makes Syntek Panels practical for even smaller builders. Customized designs, textures plus wide range of color selection open the doorway to outstanding creativity . . . distinctiveness never before achieved at such moderate cost.

Syntek Panels are strong, attractive and have excellent weathering characteristics. They were developed by The Alumiline Corporation in conjunction with the Rohm & Haas Company and are sold with a 5 year guarantee.

For bulletin "Syntek Panels in 969 Alumiline Curtain Wall" write . . .

The ALUMILINE CORPORATION • Pawtucket, R. I.

ALUMILINE SYNTek PANELS
(in 969 Curtain Wall)
are formed of Plexiglas in 22 Architectural Colors

by Dr. Norman Bienefeld

Alumiline Syntek Panels are available in 22 architectural colors that have been extensively tested. The approved colors have shown virtually no appearance change after over 15 years of field installation and utilization in signs and facings.

In addition to excellent weathering characteristics, Syntek Panels are light in weight. Plexiglas is only 43% as heavy as aluminum and 50% as heavy as glass.

Forming tools and forming operations are exceptionally low in cost . . . as little as 1/50 the cost of forming tools for metal materials. The types of shapes and textures that can be achieved are virtually unlimited and include all sorts of geometric forms, trademarks, etc.

Syntek insulating panels are factory glazed and shipped as an integral part of Alumiline Curtain Wall modules. This procedure further reduces building costs and helps assure a trouble-free installation.

Costs of FORMED Syntek Panels run approximately 10-20% more than FLAT porcelainized panels, but 30 to 70% LESS than FORMED aluminum, stainless steel or porcelainized metal units.
Benjamin Sky-Glo is easier (and faster) to install than any other illuminated ceiling on the market. New type ceiling grid of lightweight aluminum alloy is easily suspended from strip lighting units, rigidly fastened with simplified grid clamps. Exclusive leveling device insures quick, accurate adjustment.
**Completely NEW from**
**BENJAMIN**
the first name in illuminated ceilings

**Sky-Glo** brings you an outstanding combination of advanced features, based on the design and engineering experience possessed only by Benjamin—ORIGINATOR of the illuminated ceiling! Easily-installed 2' x 4' or 2' x 2' panels fit any room, are adaptable for acoustical treatment and air-conditioning requirements. Supplied complete with lighting equipment, with a choice of seven panels and standard or high output lamps. Investigate Sky-Glo—see for yourself how much more Benjamin offers.

**ILLUMINATED CEILINGS**

- Higher lighting levels
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- Latest design plastic panels
- Shadow-free wall-to-wall lighting

**GET ALL THE FACTS on Sky-Glo Illuminated Ceilings—write for Bulletin D; Benjamin Division, Thomas Industries Inc., 907 E. Broadway, Louisville 2, Ky., Dept. E**

**NEW COMPLETE LINE OF LIGHTING UNITS**

Another Benjamin exclusive!... Sky-Glo illuminated ceiling offers you Rapid-Start, Slimline, 800 ma, or 1500 ma. Power Groove lamps in a complete new line of fluorescent strips, featuring grooved channel, simple butt mounting and new ceiling spacer.

**NEW SELECTION OF PANELS**

- Acoustical perforated vinyl panel
- Sculptured vinyl panel*
- Prismatic L-120 lens
- Polystyrene louver—½" cube
- Aluminum louver—½" cube
- Holophane prismalume #6024

*illustrated in ceiling on opposite page
12-24 Fourth Annual Seminar for teachers of architecture, jointly sponsored by the American Institute of Architects and the Association of Collegiate Schools of Architecture; theme, "Technology in Architecture" — Sagamore Lake, N. Y.

13-15 National Meeting, American Association of Cost Engineers — Rice Hotel, Houston
19-22 Annual Convention, National Parking Association — San Francisco
19-25 National Convention (second of three in 1960), American Society of Civil Engineers — Reno

26ff Annual Meeting and Exhibit American Society for Testing Materials — Chalfonte-Haddon Hall, Atlantic City
27-29 61st Annual Meeting, American Society of Landscape Architects — Waldorf-Astoria Hotel, New York

Office Notes
Offices Opened

William S. Kaplan has opened an office as consulting structural engineer at 268 Market St., San Francisco
D. Stewart Kerr, A.I.A., and Thomas C. Beggs, P.E., announce their partnership in a new office at 633 East Main St., Santa Maria, Calif.
Gassner & Nathan, Architects, have opened a new office at 128 North Court, Memphis, Tenn.

Firm Changes

Weiler and Strang and Associates announce the formation of a new partnership consisting of four partners, Joseph J. Weiler, Allen J. Strang, Roger E. McMullin and Nathaniel W. Sample; and four associates, Robert C. Kraft, Jerome J. Mullins, Gunard E. Hans and Walker L. Patton, for the practice of architecture and engineering. Address: 810 University Bay Drive, Madison, Wis.

Moore & Salsbury, Architects, announce that Oliver J. Foster, Jr., and Frank J. Ridout have been admitted to the firm as associates.

Shepley Bulfinch Richardson & Abbott announce that James Ford Clapp, Jr., has been admitted to the firm and that Otis B. Robinson and Richard C. Tousley have become associates.

A. W. Thompson has become Senior Field Architect for American Airlines. His title was previously Senior Facilities Architect.

Ken H. Pfeiffer has joined Charles Luckman Associates as director of store interiors.

Ellington & Day, Inc., Detroit architects and engineers, announce that Henry William Ruifrok, A.I.A., has joined their staff as Chief of the Architectural Department.

New Addresses

Johnson, McWhinnie, Architects, are now located at 1060 University Ave., West Windsor, Ontario.

Schainen Stern Design Associates have moved to 236 E. 53rd St., New York 22.
Aluminum by Mills... Walls for the man who must represent all that is distinctive about his company. The newest of seven movable wall systems by Mills... all created to shape space to the purpose, progress and growth of people at work, comfortably, attractively, economically.

Aluminum by Mills provides a limitless choice of panelling—glass, laminates, woods—and a variety of contrasting frame inserts for universal vertical posts (patent pending) and horizontal members of aluminum, anodized in color or natural satin.

For details write to The Mills Company, manufacturers of movable walls since 1921. The address is 963 Wayside Road, Cleveland 10, Ohio. If you must design efficient, comfortable work areas, you will find the Mills Planning Kit excellent help in visualizing arrangements; a request on your letterhead will bring you one.
HEADED or BENT

Which Concrete Anchor For Your Next Job?

If your requirements include...

- Known values for your specifications.
- Greatest degree of holding-power.
- Reduced handling costs.
- Faster production, with split-second end-welding.
- Reduced fabrication costs.
- Stronger, more positive welds without causing distortion to the structural member.
- Anchors made of certified steel.
- A superior quality job...at no increase in cost.

Specify...NELSON HEADED CONCRETE ANCHORS

Your local NELSON field man is standing by to back up these claims with verified test results...and answer your questions. Call him today...or write for Application Folder 415. Nelson Stud Welding Division, GREGORY INDUSTRIES, INC., Dept. CA-1, Lorain, Ohio.

Crisp new design in wood office furniture

The Template Group by LEOPOLD

Now quantity production makes high styled furniture affordable and practical for the general office. Architects, designers and decorators are invited to write direct for pricing and purchasing information.

The LEOPOLD COMPANY, Burlington, Iowa

FRESH LOOK IN CURTAIN WALLS

...YOUR OWN PATTERNS IN

for more information, write:
Stylon Corporation, Milford, Mass.
Western Subsidiary: Redondo Tile Co.
Redondo Beach, California.
Modern plants burn coal the modern way

PENTAGONAL POWER PLANT SOLVES SPACE PROBLEM AT RICHMOND STATE HOSPITAL

When Richmond State Hospital, Richmond, Ind., decided to build a new power plant, the project was complicated by the lack of space at the desired location.

The solution was a five-sided building, designed by the firm of Fleck, Quebe and Reid, working with F. B. Morse, of Purdue University. This unique structure houses three boilers (and space for two more) facing a one-man control center, with auxiliary equipment located between units. All corners are used efficiently; actual operation is simplified by completely automatic coal handling and ash removal. To facilitate plant housekeeping, the design allows only an eye-level vision strip and provides for a vacuum cleaning system with 23 outlets throughout the building.

Radically different from conventional power plant design, the Richmond pentagon has proved itself in lower construction costs while providing best possible adaptation of space to present and future needs.

District engineers of the Bituminous Coal Institute have detailed information on how coal-burning plants lend themselves to modern architectural design. If you have a problem in power plant design, write for the name of the BCI man in your area.

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SEND COUPON FOR GUIDE SPECIFICATIONS, with complete equipment criteria and boiler room plans:

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Company
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NEWEST, NEATEST IDEA

NO UNSIGHTLY PLUMBING—IT'S CONCEALED INSIDE! Nothing juts out behind to collect dirt or mar clean appearance. As a result; instead of usual 18" to 22", this Westinghouse cooler extends only 12 3/2" from the wall—leaves passageways clear for traffic, handtrucks. New "slip" connections inside make installation far faster and simpler, too.

SO MODERN, SO NEAT—SO EASY TO CLEAN UNDER! Slim and smart looking, this Westinghouse model fits compactly on the wall, out of the way. Completely eliminates dirt-catching areas . . . simplifies floor cleaning. Doubles as a kiddie-cooler when mounted on the floor . . . measures just 31" high, just right for schools, etc.
IN WATER COOLERS!

IN THE WALL!

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WALL LINE

Exclusive Westinghouse Water Coolers end unsightly plumbing and wasted space...help keep your buildings smart and functional!

Architects have hailed the Westinghouse “Wall Line” as today’s biggest news in water coolers—and with good reason! Its exciting “clean look” matches perfectly the clean, functional style of today’s architectural designs. Gone is old-fashioned dirt-catching exposed plumbing—it’s concealed inside. Gone is wasted space in offices and corridors—these new coolers fit compactly against... or in the wall! What’s more, you’ve a choice of 3 completely different types that allow you maximum flexibility of style and location. Get the full story. Mail the coupon today—or call your Westinghouse Water Cooler Distributor. He is listed under “Water Coolers” in your Yellow Pages.

YOU CAN BE SURE...IF IT'S
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Write for more information on new WESTINGHOUSE WALL LINE

Westinghouse Electric Corp.
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GENTLEMEN:
Please send more information on your new Westinghouse “Wall Line” Water Coolers.

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A Record Special Report
continued from page 10

time allotted: (1) History and Theory and Philosophy; (2) Design and the Visual Arts; (3) Urban and Regional Planning and Control; (4) Engineering (structural design and building techniques); (5) Architecture in Practice.

At Grindstone we reverted to limited topics for study, in that we examined the immediate past in architectural teaching, both in this country and in Europe, and that we then considered the realities of practice today in order to try to frame our educational programs to the needs of the profession.

This Year: Technology
In the coming seminar to be held at Sagamore, we shall concentrate on technology. The Program Subcommittee has stated it in these terms:

"The A.C.S.A.-A.I.A. Seminar on the Teaching of Architecture, to be held at Sagamore Lake, near Raquette Lake, N. Y., June 12-24, will be concerned with the many aspects of building technology as they are related to teaching architecture and, parallel to this, a general consideration of the art and science of teaching."

"With full recognition of our responsibilities of training for practice, we will focus attention on the performance of the architectural profession, the demands on the designer, the role of our schools and the techniques of teaching in relation to our world of advancing technology."

We are trying to achieve something for different kinds of teachers with varying backgrounds, and varying interests, as this is believed to be essential in meeting the problems of providing proper preparation for a profession which arrogates to itself leadership in the creation of our man-made environment.

At the trial run in Cambridge, all but one of the twenty participants were teachers of design. In the seminars since then the committee has sought to persuade the heads of schools making the recommendations to choose from among their staff some of those teaching courses other than design. Last June this objective of diversity was largely realized. In naming a theme and charting out a course of study relating to a profession as comprehensive as architecture, there is always the danger of becoming involved in the minutiae of a profession which has to operate on such a broad front including, as it does, the practical, the factual, the artistic and the scientific.

This we have tried to avoid.

If Design Is Not All—
If there is one unifying idea in architecture, it is the idea of the central position occupied by design. Here, if at all, is the focal center. Furthermore, it is in his capacity as designer that the architect is the one who offers a unique and exclusive service which no one else is qualified to furnish.

We have attempted in these seminars always to hold in front of us, regardless of theme, or direction, or subject under discussion, no matter what it may be, this basic concept of the overall importance of design.

But having said this, something else quite different also needs to be... continued on page 366
AIR CONDITIONING

AN ANSWER TO SPACE/COST PROBLEM IN APARTMENTS

In providing individual apartment heating and cooling, the architect and owner faced the inevitable problem of minimizing space cost and noise level. Uniform comfort throughout the apartments, which range from efficiency to three-bedroom suites, was a "must".

You see the answer here. The Bryant air conditioner was placed above the Bryant furnace in a small closet on an outside wall. The furnace blower circulates air through a very simple duct system.

The return air for heating and cooling is brought from the apartment through a grille and short duct to the furnace. It is then circulated by the furnace blower through a simple duct system.

Air to cool the unit is pulled in through the closet door, through the unit and is discharged to the outside through the grille in the outside walls. No protrusions to spoil the clean lines of the building.

The system, as designed with the aid of Bryant's distributor, United-Bryant Corp., Washington, D.C., is simple, quiet, easy to control — and economical to install and operate.

Bryant engineering and planning service are available to assist you with your apartment air conditioning problems. This system is ideal for small homes, too. Call your local Bryant distributor or factory branch—see the Yellow Pages. Ask for our Apartment House Brochure. Bryant Manufacturing Company, Indianapolis, Indiana.
FOR THE WORLD'S LARGEST OFFICE BUILDING...

51 acres

Grand Central City will rise 59 stories in the heart of New York. It will house a permanent working population of 25,000—with daily visitors expected to exceed a quarter million!

OWNER: Grand Central Building, Inc.  
Erwin S. Wolfson, president

ARCHITECT: Emery Roth & Sons

DESIGN CONSULTANTS: 
Walter Gropius and Pietro Belluschi

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STRUCTURAL ENGINEER: 
James Ruderman
of electrified floor system

...FURNISHED BY Fenestra

FIFTY-NINE STORIES HIGH...

with room for a work force of 25,000—
Grand Central City will be the largest
commercial office building ever built. A
monumental job for architect, engineer,
contractor and owner.

Fenestra will supply 2,200,000 square
feet of Holorib Elect-Re-Form to reinforce
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this building. As a reinforcing form, it
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flexibility ... lets you provide electrification
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New Fenestra Holorib roof and floor
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write: Fenestra Incorporated, Dept. AR-4,
2252 E. Grand Blvd., Detroit 11, Michigan.
said; namely, that because it is central is not to say that design is everything.

As the Profession Goes—

There is this other danger—the danger inherent in the concept of the individual architect as artist, wrapped in the cloak of genius, one who transcends the mundane; the idea that the designer, per se, as an individual occupies a position which places everyone else with whom he has to deal on an inferior plane; the idea of the prima donna—the solo operator; as opposed to the idea of team action. It is an image, inherited from the past, that we should beware of. The image still holds in the case of a few men of genius like Le Corbusier and the late Frank Lloyd Wright, and especially in the schools, if not in the profession, we are inclined to think of architecture in these terms. But, in actuality, architecture, because of increasing complexity and demands for a wide range of specialized knowledge and diversity of skills, is more and more the result of many minds brought to bear in collaboration in the working out of a complex problem and carrying it through.

What this means in terms of education was brought to our attention at Cambridge and again at Nantucket by Hugh Stubbins,* was critically presented by James Hunter at Aspen, and was reiterated in its broadest implications by John E. Burchard in his keynote speech at Grindstone Lake.**

—So Goes Education?
The need for change in the thinking of the educator has been expounded still further by Buford Pickens in the A.I.A. Journal of December 1959 in his article entitled “Practical Experience and the Education of Architects.”

At Grindstone Lake two areas of discussion, one dealing with objectives of the educational program, and the other related to design concepts, developed a certain ambivalence in the conference; but the basic issues remained:

1. Is the school only or predominately interested in the talented design student or, on the other hand,

2. If its aim is full recognition of the needs of the profession, what is it doing, or what should it do for the men who will serve the profession in areas outside of the initial creative design process but contributory to it?

Burchard’s analogy with education for the professions of medicine continued on page 370


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custom-fitted to your plans

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Please have your representative provide me with further information about Pittsburgh's free Color Dynamics service for architects.

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Here's a new high in "eye appeal" for your home with Flintkote's new Spring flooring fashions.

Flintkote's Spring collection of new flooring styles sparks ideas by famous Interior Designers that fashion-minded home buyers will want to see.
Everyone gets ideas in the Springtime. But Tom Lee, Geraldine Nicosia, Burton Singer and Emily Malino—famous Interior Designers—have the brightest of all: their home floor designs for Spring created with Flintkote's new flooring styles.

Flintkote's Spring collection is as new as the first robin—full of bright, smartly different patterns and colors that will send a shimmer of excitement throughout your homes. And when high-fashion flooring ideas like these catch homebuyers' eyes, you'll be catching new sales.

But beauty only starts the Flintkote story. Flintkote Floor Tile is unmatched for quality and for easy care. There's a Flintkote Flooring for every building need. And, behind the Flintkote Flooring line is a powerful, four-color consumer advertising campaign to pre-sell buyers before they visit your homes—pre-selling that can go a long way to help you sell more homes, faster.

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and law pointed up architectural education’s deficiencies.

What has been said might lead one to believe that this seminar was primarily a debate over the issue of the scope and aims of an architectural educational program of study. This would be an erroneous impression.

It was at Nantucket that a system of small group discussions was instituted and at Grindstone Lake the groups were made up of those with similar interests. Each group was asked to report back to the plenary session on a number of problems being tackled by everyone simultaneously but separately by different groups on such matters as: Creativity and the Role of the Artist in the School; Basic Design in the Curriculum; The Teaching of Planning and Civic Design for Architects; The Teaching of Structures; Architectural Research; Theory and the Place of History in the Curriculum.

Needed Now: Support

It has taken a great deal of encouragement, support, and hard work on the part of many people to inaugurate and to keep the project going. During the first two years, in order to give us a start, money came from two foundations, Ford and Graham, plus a grant for scholarships from the A.I.A. Last year help was given by A.I.A. groups, and many architects and architectural firms throughout the country responded to an emergency call for help in meeting operational costs.

Our efforts this year are concentrated on gaining the support of A.I.A. chapters, state associations and other architectural groups. The hope is that sufficient funds will be granted to provide for one-half expense scholarships to enable at least one man from each of the participating schools to attend the Sagamore Seminar in June. The A.I.A. has already given us $4000. The Texas Architectural Foundation has appropriated five $400 full scholarships for each of the five Texas schools. The National Institute of Architectural Education in New York gives $330 for a scholarship for a prospective teacher. Several A.I.A. chapters have granted from $100 to $350 also for scholarships. It is this kind of support which gives those of us who are giving our services to this project encouragement to carry on. We are hoping for the same kind of generosity from other chapters and architectural organizations.

This will be the fifth year that teachers of architecture will come together to give serious thought to their profession.

The backward glance, the inward look, the forward view, peering into the future—how difficult, how futile, some will say. But, how necessary, if we are to hold our own in competition for survival. Who else should be better qualified to see ahead clearly than those who believe in their potential as leaders, not followers: the teacher—who should be and sometimes is artist, architect, philosopher—whose life work constantly calls forth the employment of analysis, imagination and judgment; qualities most needed for advancement of the profession through education.
You Can Profit from these Beautiful Low-Ceiling Speaker Baffles.....

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Lowell AL Series Baffles are especially designed for low-ceiling areas such as restaurants, night clubs, offices, railroad cars, wired music installations or any area where concealment of speakers is necessary. Construction is such that metallic resonance is prevented. The speaker housing has a depth of 3 1/4" and has a 3 1/4" flange for mounting to the ceiling with just 4 toggle bolts. Your customers deserve the best; sell them Lowell!

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New Fab-Form by Pittsburgh Steel Cuts Floor and Roof Slab Costs, Gives Greater Length and Width

Fab-Form, a brand new addition to Pittsburgh Steel Products' line of quality construction products, builds in savings of materials and erection time for concrete floor and roof slabs.

New Fab-Form—longest and widest corrugated, permanent steel form for slabs poured over joists—reduces the number of end and side laps through its 32-inch cover width and extra length.

In addition, Fab-Form has an exclusive new welding method that is literally a snap.

Fab-Form is fabricated:
- In standard lengths, plus other lengths up to 28 feet, 3 inches—twice as long as most others.
- In a cover width of 32 inches.
- With deepest corrugation—a full ⅜-inch—of any standard steel centering.
- Plain or Bonderized with an exclusive baked-on dupont red oxid primer that provides weather protection and serves as an excellent primer base for further painting or exposed underside. Fab-Form's special protective finish prevents water stain or "white rust."

Fab-Form's uniform strength comes from high-tensile (90,000 to 100,000 psi), 27 gage, cold rolled steel sheet.

- Ideal for School—One of the first construction jobs in which Fab Form was used was the new St. Regis Church and School in Trafford, Pa. Architect for the job was Ermes Brunettini, AIA, Verona, Pa. More than 33,000 square feet of Fab-Form supports three-inch concrete floor and roof slabs set on steel joists.

Thomas A. Laboon, job superintendent for H. Justin Brown & Son, general contractors from Mt. Lebanon, Pa., said that the deeper corrugations in Fab Form helped make a stronger slab. Pittsburgh Steel's six-inch square mesh made of No. 6 gage wire was used for reinforcing Fab-Form's speed of installation also impressed Mr. Laboon. He said that it took four men just one day to lay 10,800 square feet of Fab-Form on roof joists. After sections were laid, welders using the exclusive Fab-Form Welding Washer Stick made plug welds to every other joist.

- Easy as A, B, C—Welders found using the exclusive Fab-Form Welding Washer Stick unusually simple. Pittsburgh Steel developed the unique stick so that each welder bent up the end washer on the stick made his plug weld and snapped off the washer—in just seconds. This eliminates fumbling in heavy gloves for individual washers. Next, mesh was installed and the slab was poured.

"Everything came out exactly right with no scrapped material," said Mr. Laboon in commenting on the economy of Fab-Form. "The side and end-lapping worked out exactly right.

"On top of that," he added, "you know that when Fab-Form is down you have a material that will take a beating from men tramping on it, buggies and even rough weather. "Later, after the slab is poured,..."
Deepest corrugation, ⅜-inch, of all standard steel centering is available with Fab-Form. Job Superintendent Thomas A. Laboon, left, shown with Pittsburgh Steel Products Salesman C. W. Bainbridge Jr., said deep corrugation helped make a stronger slab.

Rugged Fab-Form, longest and widest corrugated steel centering for concrete floor and roof slabs on the market, easily supports a three-inch roof slab. Fab-Form saves material and erection time.

you are confident that the same material will go a long way in helping provide sound construction."

Join the growing list of satisfied Fab-Form users. Your first application will convince you of Fab-Form’s advantages... from Pittsburgh Steel Products Division, a leader in the construction products field for more than 30 years.

Write today for literature or, better yet, contact the nearest Pittsburgh Steel Products sales office listed here.

Pouring is no problem with Fab-Form. Here a buggy has rolled over Fab-Form without damaging the material. Six-inch square mesh made of No. 6 gage wire is from Pittsburgh Steel, too.

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The fastest growing branch of the aviation industry is the business and commercial fleet, he continued. Business has found that air transportation means savings and as a result, any industry seeking a new site is keenly sensitive to the availability or absence of aviation facilities. He is convinced that county planning must take into account the need for a local airport if it is to provide realistically for the future.

The administrator proffered this advice: zone airport sites carefully, protect the airport's environs, and provide room for expansion.

Engineer Fees on U.S. Projects Found Lower than Reputed

Average fees charged by private engineering consultants on government projects are considerably lower than figures that have been widely publicized in the past, according to results of a survey conducted by a special task force on government contract relations of the National Society of Professional Engineers.

Surveying projects costing more than $4.3 million in overall construction expenditures, the task force found that the average fee for design was 2.95 per cent. Individual fees ranged from .5 to 14.7 per cent. Engineering inspection services on projects totaling more than $495 million averaged 2.19 per cent, the N.S.P.E. unit said, and individual fees varied from .5 to 7.5 per cent of the cost.

The conclusions were drawn from information furnished by 118 firms on 1464 engineering service contracts with 17 different Federal agencies and bureaus.

N.S.P.E., through its functional section for consulting engineers in private practice, noted that a Hoover Commission task force that reported in 1955 found engineering service costs supplied by Federal agencies ranging from 5.2 to 17.8 per cent. The lower percentages applied to agencies making greatest use of private consulting engineers, the highest to agencies making very little, if any, use of them, it was said.

The N.S.P.E. task force drew five conclusions:

1. The average fees of private consultants are considerably lower than the figures widely publicized.
2. A common erroneous assumption is that the consulting engineer always receives a maximum fee based on a percentage of construction costs.
3. It is impractical to generalize on engineering fees as a function of construction cost for a specific project. Lump sum fees are generally more equitable to the government and to the engineer.
4. By using private consulting engineers, the public pays for the services only when needed.
5. Privately consulting engineers, motivated by a profit desire, constantly strive to minimize overhead and can adjust more quickly to changes in conditions.

The report stated that variations in the ratio of engineering fees to construction costs are attributable to many factors. It named these: repetitiveness in design, complexity of the work, individual elements in the design, changes in scope or method after analysis, remoteness.

continued on page 378
Von Duprin pull bars are all extruded aluminum or bronze. Here is a fully versatile line: reversible . . . no resizing necessary . . . modern or matching designs, each with studs to anchor A² or 88 Von Duprin rim devices . . . plain or engraved grips are curved to fit the hand—safely. Matching push plates and pulls available for vestibule doors. Complete details are yours for the asking; write for Bulletin 576.

Illustrated above: all extruded aluminum modern design with extended and engraved grips. Catalog number E282-ENG. on active door; E282DT-ENG. on inactive door.
In hospitals from coast to coast.

Carrier Absorption Refrigeration lowers the cost of air conditioning

One of the most important considerations in modern hospital air conditioning is the selection of dependable, economical refrigeration equipment. Since 1945, when Carrier Automatic Absorption Refrigeration was first introduced, it has found wide acceptance in hospital applications. The list at the right represents a cross section of institutions enjoying the cost-cutting advantages of this reliable equipment. Because it is a heat-operated refrigerating machine, using steam to chill water, the installed boiler capacity normally used for winter heating can also be used for summer cooling—in addition to supplying the steam required for sterilizers, laundry and other hospital needs all year around.

If your hospital client is considering air conditioning for new construction or modernization, a Carrier representative will be glad to work with you or your staff. You may find his experience in this field helpful. No obligation, of course. Call the Carrier office near you. Or write Carrier Corporation, Syracuse 1, New York.

Better air conditioning for everybody everywhere

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These hospitals use Carrier Absorption Refrigeration

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Remco hospital casework is designed and built specially for hospitals... by specialists with years of experience who understand hospital needs. These "Miracles in Metals" are designed to facilitate maximum work flow. They save precious time... reduce maintenance costs to an absolute minimum. Every Remco component is constructed with utmost precision, finished with baked-on enamel that defies the abusive use of abrasives and chemicals. And units are available with square or cove corners.

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Washington Topics

of project, and unusual and difficult site conditions.
Four recommendations were made:
1. Economy and public interest should determine whether engineering service should be furnished by private consultants or engineering personnel in government agencies.
2. Governmental agencies should be responsible for preliminary study, pre-planning, and budgeting, and essential supervisory management and control, with private consulting engineers handling design and other engineering services to the extent consistent with the best interests of the public.
3. Congress should avoid general limitations on engineering service fees.
4. Congress should extend and update the 1955 task force study to indicate the current costs of engineering services performed by governmental agencies.

Ford-Backed Project Seeks Cost Data on Geodesic Dome

The Ford Foundation has expressed a willingness to spend money to prove or disprove the feasibility of geodesic dome construction applied to school gymnasiums.

It has approved an $8500 grant under which the Washington, D.C., architectural firm of McLeod and Ferrara is preparing preliminary plans for a high school in nearby Montgomery County. If the studies prove the feasibility of application of the Fuller construction principle to the gymnasium in this instance, a subsequent grant would cover the cost of final plan preparation, it was understood.

John McLeod, formerly chairman of and presently a member of the American Institute of Architects' Committee on School Buildings and Educational Facilities, said the study would bring out new data on relative costs of the geodesic structure as compared to more conventional construction. The Montgomery County, Md., school board has been seeking an alternative to more usual gymnasium construction with continued on page 382

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Washington Topics

its rising costs and inadequate eating space, it said.
Comparative bids on alternate plans will be taken to prove the costs as precisely as possible, Mr. McLeod said.

Boom in Chemical Facilities
Suggested by Survey

The country will see the completion of $1657 million worth of new chemical production and research facilities, now either under construction or planned, by 1962, the Manufacturing Chemists' Association announced.

The figure includes $1172 million for construction already started, and $485.5 million for projects scheduled for early ground-breaking and completion by the end of 1961. The data were collected in M.C.A.'s annual construction survey.

Projects completed in 1959 were estimated to cost $1344 million, bringing construction cost of such facilities in the three-year period 1959-1961 to an estimated $3002 million. This involves 820 projects by 318 companies in 458 communities of 42 states. M.C.A. found of special interest the fact that record highs were established this year in the survey categories of planned construction, total projects, companies participating and communities involved. This would seem to indicate, the association said, a resurgence of construction activity from the downswing of the 1958 recession and a continuing tendency away from plant-site concentration. The survey covered the chemical industry itself and the construction of chemical-producing facilities by firms identified with other industries such as oil, paper, and rubber.

A total of 290 projects being carried out by 140 concerns in 1959, 100 million in construction underway, it was said. At this time last year the M.C.A. reported 216 projects costing $1050 million as underway in 142 communities of 33 states by 98 companies. The planned construction, to be completed before 1962, includes 151 projects in 126 communities of 34 states at a cost continued on page 336
things look different at Lockheed...

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Honeylite luminous ceilings played an important part in the striking modernization of Lockheed's Administration Offices at the Marietta, Georgia, plant. Made of durable Hexcel aluminum honeycomb, Honeylite delivers shadow-free, glare-free light into every corner of the working area below...at the same time enhances modern decor by concealing overhead pipes and ductwork.

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NEW LOW COST WAY TO

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This modern way to build permits both esthetic effects and construction economies that can't be achieved with conventional methods. Hines field engineers will be glad to give you free assistance in estimating and engineering for use of Hines Plywood Components.

Hines manufactures these components under conditions rigidly supervised by inspectors of the Plywood Fabricator Service, Inc., sponsored by the Douglas Fir Plywood Association. (In addition, Hines maintains its own fully equipped quality control laboratory.) And Hines provides reliable delivery.

BOX BEAMS—Structural members made by combining laminated lumber flanges and plywood provide high strength-to-weight ratio. Span up 120'. Can be manufactured in a variety of decorative shapes to precise specifications. Dimensionally stable. Basic efficiency of concept gives low in-place costs.

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In building at Rochelle, Illinois, Hines Box Beams span 35'. Stressed Skin Panels form roof deck. Architect: Gene C. Jackson.

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of $485 million to 87 firms. Last year 58 companies were planning to allocate $464 million for 88 projects in 73 communities of 25 states.

The continued upswing in announced expenditures for the construction of new laboratories is especially significant, M.C.A. said, for to a large degree they equate the prospects for continued growth with the results of successful research. The industry long has been the leader in privately-financed research and its total research budget last year topped $600 million.

The three-year figure of $220.5 million for laboratory construction in this year's survey shows a substantial rise over the $157.2 million last year, and the $107.2 million the year before. The industry has been marketing more than 400 new products annually during the past several years.

Two New Soil Study Projects Announced by BRAB

The Building Research Advisory Board announced a new national study of soil fills for single and multi-story residential properties. This is another in a continuing series of research studies carried on by BRAB for the Federal Housing Administration. It comes under a contract between FHA and the National Academy of Sciences—National Research Council.

Two specific considerations in soil fills will be the objective of the Board's study. The first deals with the design and construction of proposed non-hydraulic soil fills and the evaluation of underlying strata to support fills. The second phase will evaluate existing non-hydraulic and hydraulic soil fills, including the underlying soils supporting fills.

Project director for BRAB is John Wilkes.

Another development in earth study announced by the Building Research Institute was a project under sponsorship of the International Cooperation Administration carried out at the Texas Transportation Institute. This is evaluating existing methods of earth construction, such as adobe bricks, rammed

continued on page 390

“It's wise to specify the Miracle ‘Thin-Set’ method of setting Clay Tile”

TO BE SURE of over-all performance, specify Miracle—the quality adhesive. Let’s take a look at the record. Miracle is tried and true over the years. Proof? Miracle tile installations can be found in subways, tunnels, hospitals, office buildings, schools and government projects all over the world. Swimming pools in the Dominican Republic, hospitals in Switzerland, hotels in Canada, projects in the Arctic — all easily installed by the Miracle ‘Thin-Set’ Method.

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earth, and others. New methods of using earth for construction of durable and attractive homes will be developed. The information is expected to be of particular interest to countries of the Far and Middle East where the purchase of conventional materials for housing is not economical, but where natural earth for the purpose is readily available.

FHA Accepting Applications On Nursing Homes

All FHA field offices now have been given authority to accept applications from approved mortgagees for mortgage insurance on proprietary nursing homes.

Nursing home mortgage insurance is, actually, a new venture for the FHA. Commissioner Julian H. Zimmerman noted that the program had been put together after many hours of thorough analysis and planning. He had the advice of industrial authorities serving on advisory committees.

"It is aimed at effecting the rehabilitation of sound existing nursing homes as well as the construction of new ones," Mr. Zimmerman said.

The new insurance plan was authorized in the housing act passed by Congress last year. FHA said it would help provide nursing home capacity and related medical services for people of all ages—convalescents and others—who are not acutely ill or in need of hospitalization but who do require such care and services.

Under the law, any such nursing home, to be eligible for the government mortgage insurance, must be for the accommodation of such persons. It must also be licensed or regulated by the state—or authorized state subdivision—in which it is located. The skilled nursing care and related medical services must be prescribed by, or performed under the general direction of, persons licensed to provide them in accordance with the laws of the state.

Within the statutory limits of $12.5 million, the maximum insurable mortgage amount is 75 per cent continued on page 398

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Van Keuren, Davis & Co. considers Dodge Reports the most effective and economical way of "getting the word around" to contractors and suppliers, and are impressed by the attention they command throughout the industry.

Competent bidders are informed at just the right time by this daily construction news service...helping to eliminate costs of additional publicity and extra administrative work on the architect's part. Dodge-informed salesmen are better prepared to discuss specific projects of current interest...are often able to offer timely suggestions on new products and services.

Together with plans and specifications filed in Dodge Plan Rooms nearest construction sites, the Reports help establish a broader bidding and quoting base... expedite contract awards, buying decisions and building.

Van Keuren, Davis & Co. sums up a profitable relationship by saying: "The Dodge Reporter is always welcome here"... further confirmation that DODGE REPORTS ARE A VALUABLE COMMUNICATIONS LINK BETWEEN THE ARCHITECT AND THOSE WHO SERVE HIM.
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of the FHA-estimated value of the property or project when proposed improvements are completed. The maximum interest rate is 5 1/4 per cent; the FHA mortgage insurance premium, half of one per cent. The mortgage is amortized over a period not exceeding 20 years.

FHA explained that it cannot insure a nursing home mortgage without first receiving from the state agency involved certification that the home is needed and that reasonable minimum standards for licensing and operating nursing homes are in force in the state. It also must have assurance that such standards will be applied and enforced with respect to every nursing home on which FHA provides mortgage insurance.

Mortgagors may be corporations, trusts, partnerships, or individuals approved by the agency and regulated by charter or agreement. Projects can be either new or rehabilitated homes consisting of not less than 20 beds each. The mortgages may include advances made during construction.

Said Commissioner Zimmerman: "Our minimum property standards for nursing homes apply to all new construction projects and, with specified minor requirement, to all rehabilitation projects. They include standards for site and building planning, for construction and materials, and for mechanical equipment. They specify fire protection standards that all structures in the project must meet with respect to fire-resistant construction and to fire protection and detection systems."

FHA advised sponsors interested in developing nursing home projects under the Section 232 program to present their proposals to officials of the FHA office serving the area in which they plan to locate, and to take this step before making formal application for an insured mortgage. The proposal should contain enough detail for the office to determine whether or not the project is feasible and the sponsors are acceptable. It should include full information about the property, about a definite care and service plan for occupants, and about the sponsor's qualifications to develop and carry the project.
Mr. C. C. Keller  
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342 Madison Avenue  
New York 17, New York  

Dear Mr. Keller:  

We have completed the installation of the Holophane Fluorescent Lighting System, designated as 6404-66, in our Central Engineering Department. The maintained illumination level is 170 foot candles.

The installation has proved very satisfactory from the visual comfort and the illumination level. The graceful styling lends itself beautifully to our surroundings with particular reference to the shallowness of the unit.

Holophane is to be congratulated in designing such a unit from the mechanical and electrical angle. With the ballasts mounted at far sides and opposite corners, it provides cooler and safer operation together with a better weight distribution with respect to installation.

The unit is constructed in such a manner that all parts are readily accessible from an installation and maintenance standpoint. It is our opinion that we cannot offer any constructive criticism or suggestion in order to make this a better unit.

Very truly yours,  
ATLAS POWDER COMPANY  
CENTRAL ENGINEERING DEPARTMENT  
TECHNICAL SERV. SECTION  

R. G. RUDLOW, MANAGER  
ELECTRICAL GROUP  


The entire Holophane organization—particularly the engineers and craftsmen responsible for the development of Holoflux units—is gratified to acknowledge the plaudits from Atlas Powder Company. Recognition of sincere endeavor spurs greater effort and further accomplishment.

HOLOPHANE COMPANY, INC.  
Lighting Authorities Since 1898  
342 Madison Ave., New York 17, N. Y.  
THE HOLOPHANE CO., LTD., 418 KIPLING AVE. 50., TORONTO 18, ONT.
The corridor of a Fred Harvey Oasis Restaurant on Tri-State tollway near Chicago, illustrating the dramatic, decorative treatment possible with Steeldome construction. The exposed concrete waffle ribs of the ceiling are painted charcoal gray, sounding a new note in decor motif.

Architect & Engineer: Pace Associates.
General Contractor: Ragnar Benson, Inc.

Straight-up view of two-way concrete joist construction formed with Steeldomes. The exposed concrete has been painted and the voids treated with acoustical tile. Voids also provide a new convenience for the placement of lighting fixtures, ventilators and intercom equipment.

Wide open space, free of columns, is economically attained in the general restaurant area with Steeldome construction. Here again the fresh, new decorative scheme is made possible by attractively painting the exposed concrete waffle design ceiling, adding charm to the room.
A NEW WORLD
OF DECOR OPPORTUNITY
IN CONCRETE JOIST CONSTRUCTION

Ceco Steeldomes Make Possible Unusual Decorative Ceiling Treatments
. . . While Providing Wide Open Spaces

In many an architect’s office, you’ll hear talk about the exciting new effects in ceiling ornamentation now possible with Ceco Steeldomes.

Not only are architects talking . . . they are using Steeldomes to take advantage of this new world of decor in concrete joist construction. The reason is that Steeldomes create smooth surfaces in the concrete ceiling, giving an unblemished, high quality finish. This is because each Steeldome is made in one piece and is removed from the hardened concrete by compressed air. The decorative treatment can be applied directly to the exposed waffle ceiling.

Steeldome construction offers the architect many basic advantages, such as wide column spacings, the rigidity of monolithic concrete, and economy. Now this added feature of high-style decor makes Steeldomes even more desirable.


IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE
Steelforms / Concrete Reinforcing / Steel Joists / Curtainwalls, Windows, Screens, Doors
Cecoframe Buildings / Roofing Products / Metal Lath
TOTAL MANUFACTURING FOR THE BUILDING INDUSTRY FROM RAW TO FINISHED PRODUCTS

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5601 West 26th Street, Chicago 50, Illinois
Please send catalog No. 4001-N including Ceco Steeldome construction.

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firm________________________

address________________________

city________________________zone________________________state________________________

☐ If student, check here for special data.
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Yes...the finest panic devices are those made by Detroit Hardware Mfg. Co. Modern styling combined with time-tested action, quality materials and few moving parts assure you long and dependable service. Detroit panic devices are gravity-operated and the cross bar lengths can be varied at will. Top and bottom latches can be independently locked to insure security at all times. Detroit panic devices are easily mounted keeping installation costs to a minimum. Find out more about these high quality, dependable panic devices from your Detroit Hardware representative.

A Washington Report continued from page 54

A Washington Report continued from page 54

Act provisions. This shows that on January 1, 1960, there were throughout the country 290,979 beds of this type. But under Hill-Burton standards for fire, safety, sanitation, functional layout, and desirability of location, only 58 per cent of these could be rated acceptable. A total of 120,838 beds was "nonacceptable."

It should be noted that the figures do not include all facilities providing nursing home care, as most states exclude from their inventories all unlicensed homes of three or less beds. The total bed count, however, has risen from an estimated 200,000 in 1954.

Despite the rate of growth in recent years, the states estimated total need on January 1 to be 427,171 beds based on the planning ratios of one to four beds per thousand population. (Federal Hill-Burton regulations allow the states to program from one to four beds per thousand population, according to their individual views of need.)

The Public Health Service figures show that of the 257,030 additional new beds now needed, 120,838 would be to replace existing unsuitable beds and the other 136,192 to fill unmet demands for care. It was pointed out that the 427,171 beds would provide 1.47 bed per thousand population, a conservative figure based on a 1957 study. This study produced replies from physicians indicating a need of four beds per thousand population if ability to pay or shortages of facilities no longer limited the patient's ability to receive care.

Said the McNamara subcommittee: "Assuming that present concepts of institutional care for the chronically ill and disabled in nursing homes do not change significantly in the next decade, it is obvious that larger capital outlays for new facilities are required to provide as a minimum safe, clean, efficient facilities in which the sick and elderly may receive care and live with a modicum of dignity and comfort. "Where these monies are to come from is a major question in itself. It is likely that both private and public investment will be required to solve this problem. Particularly is this true in view of the demand for higher standards of construction, increasing cost of building, and higher costs of borrowing money."

A POOR MICROPHONE CAN DISTORT A BRILLIANT ACOUSTIC PLAN!

Often, an architect's acoustic concept is unjustly blamed for poor public address system sound quality...the real troublemaker is frequently an improperly selected microphone.

SHURE HAS MICROPHONES TO SOLVE THESE PROBLEMS:

- FEEDBACK "HOWL"
- OVER-SIBILATION
- "BOOMING"
- RANDOM NOISE PICK-UP
- RAPID VOLUME FLUCTUATION
- VOICE TIMBRE DISTORTION

Among the dozens of superb professional quality Shure Microphones, one is certain to meet your exact needs: in sensitivity, pick-up pattern, type, and style.

SHURE BROTHERS, INC.
222 Hartrey Avenue, Evanston, Ill., Dept. 18-D

A POOR MICROPHONE CAN DISTORT A BRILLIANT ACOUSTIC PLAN!

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A POOR MICROPHONE CAN DISTORT A BRILLIANT ACOUSTIC PLAN!

SHURE BROTHERS, INC.
222 Hartrey Avenue, Evanston, Ill., Dept. 18-D
See why Pittsburgh Corning Products make the things you build look better, last longer, cost less

example: PC 4 x 12 Glass Blocks give dignity a new flair at Media Savings & Loan

The retreat from cold austerity in bank design has called for a growing exercise of the architect's creative authority over his materials. That, in turn, has called for materials which offer the architect increased latitude in their design use. That is what the PC 4 x 12 is all about. Design authority.

Here—in a striking dimensional variation of the PC Glass Block—the architect has been given almost limitless capacity to inject new visual vitality into the daylight wall. Take for example the design by architects Clifford E. Garner—Arthur B. White, Associates, Philadelphia, Pa., for the Media Federal Savings and Loan Assn. Building, Media, Pa. Creative interpretation of the light transmitting wall presents an attractive contemporary flair without sacrificing the characteristic dignity of the building.

Like the new Sculptured Glass Modules described on page four of this advertisement, the PC 4 x 12 represents Pittsburgh Corning's constant attention to the architect's need for materials which free design from purely mechanical constriction.
example:

FOAMGLAS® insulation to insure permanent flatness, constant U-value for curtain wall panels

There is an excellent reason why FOAMGLAS insulates all the curtain wall panels shown here. Only FOAMGLAS insulation brings so unusual a combination of benefits to the designer of curtain wall panels. For instance, FOAMGLAS is completely impervious to water and vapor, so its insulating value can never change. This insures that a panel will retain a constant U-value for the life of the building it faces.

And consider this: when an architect specifies a flat surface, curtain wall panels must remain completely flat—without oil canning or dimpling. FOAMGLAS offers a matchless combination of strength, rigidity and dimensional stability to insure permanent flatness . . . and add substantial stiffening to the laminated panel. Further, this all glass insulation is incombustible.

Remember: only cellular glass insulation can provide this valuable combination of panel benefits. And FOAMGLAS is the only cellular glass insulation.
A. JEFFERSON MEMORIAL HOSPITAL, Pine Bluff, Arkansas
Architects: Reed & Willis & Whittenberg, DeLong and Davidson, Pine Bluff and Little Rock, Ark.

B. FORD CENTRAL OFFICE BUILDING, Dearborn, Michigan
Architect: Skidmore, Owings & Merrill, New York, N. Y.
General Contractor: Bryant & Detwiler Co., Detroit, Mich.

C. EXECUTIVE HOUSE, Chicago, Illinois

D. RCA CHERRY HILL OFFICE, Camden, New Jersey
General Contractor: Turner Construction Company

E. GULF OIL CORPORATION, Bala-Cynwyd, Pennsylvania
Curtain Wall Contractor: Williams & Williams Products Corp., New York, N. Y.
Panel Fabricator: Seaporcel Metals, Inc., Long Island City, N. Y.
example: new Sculptured Glass Modules for design vitality through an artful use of architectural light and shade

This bulletin discusses and illustrates Sculptured Glass Modules—Pittsburgh Corning’s latest contribution to the vitality of building design. Inside or out, a wall or partition can now gain full textural impact from the artful interplay of light and shade. Patterns pressed deep into the surface of each module create nearly endless capacity to achieve a variety of effects hitherto impossible. And a single material carries the effect on both sides of a wall, partition or panel. Four patterns in 12 colors and clear are currently available—on architects’ specifications only. Check coupon for your copy.
PRECISION Electric HOT WATER HEATING BOILER

- Complete unit ready for installation with circulating hot water system and water chiller for year-round air-conditioning.
- Conversion easily accomplished where other type fuels now used. Suited for homes, churches, apartments, offices, hospitals, commercial buildings, swimming pools, snow melting and domestic hot water. Temperature Range 60 to 250 degrees.
- Every unit tested and inspected.

Write for color brochure and prices.

SMITH & LOVELESS pump stations available in standard sizes for capacities in 100 GPM to 4500 GPM per pump with two or three pumps per station. Even larger capacity stations are built to order. Proven in over 1200 installations from coast to coast, Alaska and Canada.

SMITH & LOVELESS pneumatic ejector like the "Mon-O-Ject" offer you a universal selection of lift stations to meet your requirements. Our complete line of ejector lift stations ranges from small, single-dwelling sewage ejectors for the home to large, duplex units like the "Du-O-Ject" for stand-by dependability.

SMITH & LOVELESS factory-built "Oxigen" sewage treatment plants provide a low-cost, dependable treatment facility with minimum annual maintenance. Available in single units to serve from 10 to 100 homes — or can be installed in parallel, as needed, to serve a growing subdivision.

Write today for our Free Engineering Data Manual on Sewage Lift Stations and Sewage Treatment Plants.

Address: Department 150 for Details

ARCHITECTURAL RECORD April 1960 407
Required Reading
continued from page 72

Two . . .

undertaken by the publishers of Milan Today to show the work of the individual architects "who have contributed to the development of this Milan." Mr. Minolletti would seem to be a good choice for the start of such a series. Though his work is perhaps not as well-known in this country as that of some of the other Milanese architects, he displays the versatility and range of interests we have come to expect from the Italians—buildings, display design, ship and plane interiors, a prefabricated bathroom, and some interesting, if abortive, plans for dealing with Milanese traffic. All text and captions are written in English, as well as in Italian, French, German and Spanish.

Mr. Pedersen's book on the Danish architect Arne Jacobsen is a revised edition of an earlier work, replacing projects with stories on the completed buildings, and adding material on new projects. The author hints in his introduction that Mr. Jacobsen finds architecture easy; whether this is true or not, certainly his buildings all have the grace which makes a difficult accomplishment look easy—from his early houses, through housing projects so human in scale and detailing (particularly the row housing) that Americans are likely to feel a twinge of conscience, to the clean-lined SAS hotel and Christenson factory. Although written in Danish, the book carries a full English translation, and captions are all in both Danish and English; plans, unfortunately, are keyed in Danish, but are still fairly readable.

How to See Architecture

EXPERIENCING ARCHITECTURE. By Steen Eiler Rasmussen; translated by Eve Wendt. Published jointly by Technology Press, Massachusetts Institute of Technology, Cambridge 39, and John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. 251 pp., illus. $4.50.

Though it was written with a hypothetical 14-year-old in mind, this book continued on page 414.
A ventilating system that **GROWS** with the school

Lennox Comfort Curtain system lowers initial costs for school heating and ventilating by providing only the heating capacity needed at time of construction. As expansion occurs, new units of the Comfort Curtain system can be added easily and economically. This modern Comfort Curtain system of ventilating, heating and air conditioning schools adapts to in-the-room, two-room remote, central, hot water, heat pump, or electric heat source.

Only Lennox gives your school ALL 6 of these benefits

1. **Ventilating-Heating-Cooling**—Even in winter, heat gain from students, lights and the sun often provides more warmth than needed. Comfort Curtain's provision for abundant outside air, as needed, creates perfect comfort.

2. **Temperature Constantly Controlled**—Lennox-designed controls of superior quality hold temperatures to a fraction of a degree, have night setting for fuel savings. No extra cost for controls.

3. **Balanced Air Distribution**—Carefully maintained air velocity through the discharge openings intercepts and diverts cascading columns of cold air off the windows, stops drafts completely.

4. **Flexibility of Design and Planning**—You originally specify only such heating-ventilating units as are currently needed, add more as the school is expanded.

5. **Ease and Economy of Installation**—The minimum of structural provision needed for Comfort Curtain reduces initial costs, while ease of installation reduces over-all expenditure.

6. **Minimum Maintenance**—The minimum maintenance required by Comfort Curtain can be obtained through local service organizations at a correspondingly economical cost.

Write Lennox, 484 S. 12th Ave., Marshalltown, Iowa, or invite a Lennox engineer to call.

**LENNOX**

*World leader in indoor comfort for homes, business, schools, and industry*

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In Canada: Toronto, Montreal, Calgary, Vancouver, Winnipeg.

ARCHITECTURAL RECORD  April 1960  409
AVAILABLE NOW — the only comprehensive manual to cover all the media and techniques of architectural rendering

ARCHITECTURAL RENDERING

the techniques of contemporary presentation

by Albert O. Halse, A.I.A.

277 pages • 8¾ × 11 5/8" size
over 300 illustrations and line drawings
17 PAGES IN FULL COLOR
$15.75

Here is a masterful, major treatise which explains in text and choice illustrations every technique and medium used in architectural rendering today. For anyone whose work requires knowledge of the methods of delineation, it offers something new and complete in its field.

Never before has so much information on rendering been amassed in a single volume. Every aspect of the subject receives attention here: interiors, exteriors, nature; perspective, lighting, reflections, textures; all of the media in detail; how to buy materials, and how and when to use them; professional tricks of the trade. Introductory chapters contain a history of rendering, a study of color and light, and basic information applicable to all rendering. Many detailed exercises guide you in techniques. Many examples of renderings in each medium give you direct access to expert solutions of a variety of problems. A special section of professional renderings done in various media has been included.

ARCHITECTURAL RENDERING is a delight to the eye as well as an invaluable reference. Its magnificent illustrations, 17 of them in full color, cover all of the steps of rendering, from pencil strokes to finished products. It is remarkable for its thoroughness, reliability, and convenience.

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Send me .... copies of ARCHITECTURAL RENDERING @ $15.75. After ten days' free use, I will either remit payment, including postage, or return the book(s) without obligation.

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ZONE, ....... STATE, .......................................

SAVE MONEY! Enclose payment and Dodge pays postage, same return privilege.

Dodge Books, F. W. Dodge Corporation
119 W. 40th Street, New York 18, N.Y.

Albert O. Halse, A.I.A., one of the foremost teachers of delineation in the United States, has had 30 years of experience as a designer, architect, and professional renderer, and has been a successful color consultant and interior designer as well. For 13 years he has taught delineation at the School of Architecture, Columbia University, during which time he has been able further to develop, test, and prove the theories and principles of delineation set forth in this book. He is well known also as a practicing New Jersey architect, and he was recently honored by the Architects' League of Northern New Jersey for his distinguished service to the profession of architecture.
QUALITY SLIDING GLASS DOORS THAT LOOK YOU SQUARE IN THE EYE

If frames could be turned inside out, you'd be amazed at the way some makers cut quality. Thin wall sections, inadequate weathersealing, weak corner construction, etc. — price-cut features often not apparent — in time cause client dissatisfaction and needless service expense. For doors with the constitution to look you square in the eye year after year (and the same goes for Miller dealers!) specify Miller quality aluminum doors: #1000 series for interchangeable 1" or 5/8" dual, or 1/4" or 3/16" single glass; #625 series for 5/8" dual glass; #187 series for 1/4" or 3/16" single glass.

QUALITY SLIDING GLASS DOORS THAT LOOK YOU SQUARE IN THE EYE

“BUILT TO LAST A HOUSE TIME” FEATURES

1. Heavy-walled box type aluminum extrusion frames. 2. Heavy-tread threshold. 3. All-season weatherseal. 4. Full grip “Magic Touch” hardware. 5. Track hugging, easily adjustable rollers. 6. Insect resistant, external screen. 7. Lustrous weather-protected Alumilited finish.

Write for catalog. See Sweet’s Arch. File 16d/Mi, or Sweet’s Light Construction File 5a/Mi. Dealers in principal cities.
Republic Steel Lockers meet practically every architectural requirement for good planning.

Big and roomy interiors are designed for convenience and comfort. Built-in shelves for storing books and personals. Built-in louvers assure free-flow ventilation—keep locker interiors fresh. All steel construction—fire proof.

Bonclerized, too! This exclusive Republic feature provides a superior base for the baked-on enamel finish. Offers protection against rust and corrosion. Restricts bumps, scratches, abrasions of everyday service to the site of the injury. Reduces maintenance costs.

Available in a wide selection of colors, sizes, and styles for built-in installations, or free-standing floor models for back-to-back planning. Selection of popular locking devices.

Consult your Republic representative. He will help you with your locker planning and assume full responsibility for complete installation. Call, or write today.
REPUBLIC BOOKSHELF UNITS solve library planning problems. Sturdy, steel shelving is adjustable to any book height. Available in sizes 36" wide, 9/16" or 12/16" deep, and either 84" or 90" high. Also special counter size 42" high. Choose from six popular colors. Immediate delivery from convenient warehouse locations. Call your Republic representative, or write for complete information.

MODERN TRUSCON BUILDING PRODUCTS FOR CLASSICAL BEAUTY. Truscon Donovan Steel Windows were used in the construction of the beautiful Wheat Street Baptist Church Education Building, Atlanta, Georgia. Donovan Awning Type Windows offer the architect unique advantages of lighting and ventilation without drafts, and maintain the depth and dignity of church and institutional construction. Architect Edward C. Miller; Contractor: Barge Thompson, Inc. Write for information.

REPUBLIC ELECTRUNITE® TUBING, rounds, squares, rectangles, offers architects and engineers a building material with unlimited freedom in design. Both beautiful and functional. Greater strength, less weight, easy to handle. Smooth, unbroken surfaces resist moisture and corrosion. No sharp corners or bare edges. Easy to join with other members. Weldable. ELECTRUNITE Carbon Steel Tubing available in rounds up to 6" O.D., squares up to 5", rectangular sizes in peripheries to 20" with wall thickness to .259". Stainless round tubing available in sizes to 5" O.D., square and rectangular sizes to 16" peripheries. Wide range of wall thicknesses. Write for data.

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World's Widest Range
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Please send additional information on the following products:
☑ Republic Steel Lockers ☑ Republic Bookshelf Units
☑ Truscon Donovan Steel Windows ☑ Republic ELECTRUNITE Tubing for structural applications

Name________________________Title________________________
Firm________________________
Address________________________
City________________________Zone________________________State________________________
Required Reading
continued from page 408

How . . .

is not in the slightest condescending
and should be most helpful to the
adult layman who is more interested
in learning how to look at architec­
ture than in learning a few handy
names to drop. It is likely to enter­
tain even architects themselves, since
Mr. Rasmussen is not only an enthui­
siastic user of his own eyes, but is
able to convey some of the charms
and rewards of this activity. His
imagination in selecting illustrations
of his points is flexible and free­
wheeling (an actor in Renaissance
costume riding a bicycle to illustrate
unsuitability; Venetian façades
linked with the Tugendhat house to
illustrate color planes). Recommented,
without prejudice, to either older
children or eager clients.

The Flowering of Rococo
FROM BAROQUE TO ROCOCO: AN INTRODUC­
TION TO AUSTRIAN AND GERMAN ARCHI­
TEC TURE FROM 1580 TO 1790. By Nicholas
Powell. Frederick A. Praeger, Inc., 61
University Pl., New York 3. 248 pp.,
illus. $10.

A good, general, English-language
survey of the baroque and rococo
architecture of Austria and south­
ern Germany would certainly be wel­
come, but this book does not fill the
bill. The coverage is exceedingly de­
tailed—each page bristles with
names and places—so that most of
the chapters are mere catalogs of
buildings, divided according to re­
gion, date, and use. Background for
the period is slighted or submerged
in the welter of factual data, and it
is hard for the reader to gain any
real historical perspective. More­
over, the clumsy handling of the
black-and-white photographs (rele­
gated to a separate 64-page section
in a sequence that does not follow
their mention in the text) makes the
book hard to use even as a reference
work, much less in the way the au­
thor suggests, as a guide for the
"art traveler."

Recommended (mostly for its in­
dexes of architects, stuccatori, pa­
trons, iconography, and the like) to
specialists only. —ARTHUR FISHER
CROWN ZELLERBACH

building

With dignity, elegance of detail, refinement of proportion, complete with rich materials yet restrained in their use . . . planned and executed by men of vision and public conscience . . . an environment of delight where men and buildings are not in conflict.

and

CURTIS-ALLBRITE

lighting fixtures

Crown Zellerbach selected Curtis-AllBrite 97245RS Unitized Luminaires for its new headquarters building. These remarkable new area luminaires combine ease of access to service plenums with good lighting and air diffusion—all in a single fixture. The C-A unitized fixture concept enables architects and consulting electrical engineers to provide good lighting and quick access without removing the fixture or disturbing ceiling construction. Over the years, C-A has proven its ability to meet the most rigorous architectural requirements. Our engineering facilities are always available to help solve your lighting problems. In San Francisco, Plaza 5-7077; in Chicago, Portsmouth 7-6100.
Architects and engineers have taken these actions recently as the result of advertising in Architectural Record:

"New G. E. '27' range-oven to be used in 800 house projects due to advertisement; helped to sell builder on use thereof."  
ARCHITECT—NORFOLK, VA.

"Specified Tectum Roof Decking as an incombustible roof deck material; also as sidewall insulation for warehouse structure."  
ENGINEER—CHINA LAKE, CALIF.

"I am installing a Modernfold sound reduction type folding partition in an office building for Martin Co. at the test center here. I saw the ad in the June 1959 Architectural Record, when deciding how best to divide a conference room."  
ENGINEER—COCOA BEACH, FLA.

"We first tried Kentile as a result of advertising."  
ARCHITECT—OKLAHOMA CITY, OKLA.

"Advertisement of Halsey Taylor wall mount water cooler led me to specify installation of same because of simple mounting and attractiveness. Also dimensions and mounting height were included in advertisement."  
ARCHITECT—BIRMINGHAM, ALA.

"Specified American Standard toilet fixtures after seeing advertisement on ‘Norwall’ toilets, ‘Sherrilyn’ lavatory and ‘Contour’ tub."  
ENGINEER—GARDEN GROVE, CALIF.

"Wrote to Republic Steel regarding steel tubes for structural members."  
ENGINEER—COLUMBUS, OHIO

"In a bowling lane building I specified an Armstrong acoustical ceiling which I noted in an advertisement in your magazine."  
ARCHITECT—SPOKANE, WASH.

"I have discussed Crane Company’s wall hung flush tank water closet with a plumbing engineer and a contractor. Later specified for a residence."  
ARCHITECT—CHICAGO, ILL.

"On a job we are presently doing, I am specifying Mahon insulated ribbed wall (aluminum), using information obtained from them as the result of an ad in Architectural Record."  
ENGINEER—HOUSTON, TEX.

"Saw Wooster ad for thresholds, wrote to them for information; also contacted local agent."  
ENGINEER—ST. LOUIS, MO.

"Noted advertisement on ‘Perma Cushion’ gym floor system. Wrote manufacturer and included in current University of Nevada gym building."  
ARCHITECT—LAS VEGAS, NEV.

"An ad for Gibson ‘Ortho 66’ lighting fixtures in the January ’59 issue interested me. I checked on it, contacted Gibson and recommended use of fixture in New Jersey school."  
ENGINEER—N. J.

"Specified Peelle Rolling Doors on last school job."  
ARCHITECT—LEWISTON, IDAHO

"Specified ‘Romany-Spartan’ tile as a result of an ad in the Record."  
ARCHITECT—PASADENA, TEX.

"The striking color ad on page 181 of “Record Houses of 1959” caused us to consider Micarta for a mural in an office building we are designing.”  
ARCHITECT—HIGH POINT, N. C.
HOW ARCHITECT AND 
ENGINEER SUBSCRIBERS 
ACT ON ADVERTISEMENTS

Percentage of respondents taking various types of action in response to advertisements in Architectural Record.*

1. Communicated with manufacturer 50.0%
2. Discussed product with associate 47.7%
3. Turned to Sweet's Catalog Files for more information 45.1%
4. Specified—or recommended use of—the product 36.0%
5. Tore out or filed advertisement—or otherwise took note of product for future use 35.4%
6. Communicated with dealer or distributor 31.0%
7. Gave time to a manufacturer's salesman who called 30.0%

Took no action 9.9%
Took one or more actions 90.1%

3 TYPES OF ACTION ON THE AVERAGE

<table>
<thead>
<tr>
<th>Percentage of Respondents</th>
<th>Number of Types of Action</th>
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<tbody>
<tr>
<td>9.9%</td>
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</tr>
<tr>
<td>16.5</td>
<td>1</td>
</tr>
<tr>
<td>18.8</td>
<td>2</td>
</tr>
<tr>
<td>24.8</td>
<td>3 (average)</td>
</tr>
<tr>
<td>12.1</td>
<td>4</td>
</tr>
<tr>
<td>9.5</td>
<td>5</td>
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<tr>
<td>4.8</td>
<td>6</td>
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<tr>
<td>3.6</td>
<td>7</td>
</tr>
<tr>
<td>100.0%</td>
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</table>

*Based on Continuing Readership Research during 1959. For details, consult your Architectural Record representative.

For advertising action in 1960

Architectural Record is

5 Ways Your Best Buy

1. Largest architect and engineer paid circulation—documented by June 1959 ABC Publishers' Statements. (By far the highest renewal percentage—and the lowest cost per page per 1,000 architects and engineers, too!)

2. Top verifiable building market coverage—documented by Dodge Reports.

3. Preferred readership by architects—and engineers in building—documented by over 140 studies SPONSORED BY BUILDING PRODUCT MANUFACTURERS AND ADVERTISING AGENCIES.

4. Editorial leadership in quantity and in quality—over 40 editorial awards, including 5 out of 6 awards to architectural magazines by The American Institute of Architects.

5. Year after year more building product manufacturers and their advertising agencies serve more architects and engineers with more pages of advertised product information in Architectural Record than in any other magazine. It’s building’s busiest magazine marketplace!

Architectural Record

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PROFITABLE WAYS FOR ARCHITECTS TO USE THE DOW BUILDING COST CALCULATOR

It's the easy, time-saving, authoritative way to...

• Figure building costs in minutes... save hours and even days over other methods
• Make reliable advance budget estimates
• Get costs within contractors' normal bidding ranges
• Check the reasonableness of contractor bids
• Take local price variations into account wherever you plan to build
• Advise your clients of cost variants in different localities
• Find historical cost data covering 150 metropolitan areas... bring old estimates up-to-date
• Keep abreast of changing cost patterns throughout the country
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ARCHITECTURAL RECORD April 1960 419
EVERY TIME the stock market acts up, it is very tempting to say that its gyrations can be ignored, because it isn’t, after all, a part of the real world we live in. There’s a little truth in this, too, because the market is influenced by many peculiar factors of its own making which don’t have much relationship to the economy in general. Nonetheless, the market may be influenced by real, tangible business conditions—and it may also influence the actions of businessmen and consumers. Thus the shakeout which characterized the market in the first quarter of 1959 probably had some real economic causes, in addition to the purely technical quirks which send the Dow-Jones average up and down; and it also contributed to some psychological tremors in other areas of the economy.

WHY did the market get the jitters? Technicians will explain it in terms of “stilt formations,” yield ratios, overbought-itis and similar mumbo-jumbo. An economist might point to some other factors. One is tight money, which made bonds considerably more attractive as investments than they had been, thereby causing some stockholders to switch from stocks to bonds. A similar result might have been produced by a feeling that inflation has been slowed, at least temporarily, thus reducing emphasis on stocks as a hedge against the declining value of the dollar.

ON TOP OF THIS, the course business seemed to be taking was a source of concern. Housing had been expected to decline, but very high hopes were held for a boom in the rest of the economy. Steel and auto production, and consumer spending, by failing to live up to these rosy expectations, were a disappointment. As noted in this column last November, there were two schools of thought about what would happen at the end of the steel strike. One group (the great majority) expected a big upsurge in everything as the economy made up for lost time. The other group expected the gap in steel production to result in a hiatus in the nation’s normal growth trend. As we said then, “the truth probably lies somewhere in between.” And that’s about the way it has been—a good quick recovery from the effects of the strike, but no big upsurge. This really should be grounds for rejoicing, but to those who expected more, it has been a disappointment. They will get over it, as they begin to realize that things aren’t so bad after all.

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