Cabot, Cabot & Forbes planned this "City"

Shown above are just a few of the buildings constructed recently around Boston, Mass. by Cabot, Cabot & Forbes, nationwide industrial park developers. All the buildings in this "CCF city" have several important things in common. They are all located on high-speed, arterial highways; they are all convenient to downtown Boston; and they all have Grinnell Sprinklers to make them completely fire safe. These rental buildings are equipped with Grinnell Automatic Sprinklers to protect both lives and property. Grinnell Sprinklers operate fast to stop fire at its source, day or night. They never sleep — never relax their vigil. And Grinnell Sprinklers can be a smart investment... frequently paying for themselves in a very few years with substantial insurance premium reductions often between 20 and 90%.

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This folder contains all you’ll need to know regarding the specifications and applications of the 4 types of Revere Aluminum Gravel Stops. Revere has also just issued a 28-page booklet, “Revere Aluminum Components for Modern Structures,” which you will find a valuable adjunct. This may also be found in Sweet’s Architectural and Industrial Construction File.

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Combining beauty with function, Edward B. Page, architect, and R. Rolleston West, mechanical engineer, specified Wrought Iron Pipe for the new glass-encased Firemen’s Fund Building in San Francisco. The functional aspects of Wrought Iron Pipe — corrosion resistance, ductility, mechanical strength — are at work here in air conditioning, steam condensate, underground gas and steam lines and downspouts.

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Coming in the Record

MATURE WORK OF A MODERN MASTER

A new development of some familiar preoccupations and a new concern with old materials used in a new way characterize the current work of Marcel Breuer which will be shown in a major portfolio next month. Masonry and modern architecture is one theme; the binuclear plan developed in a new way another; some new approaches to enclosed exterior space still another. The portfolio will include three houses and the new U.S. Embassy in The Hague.

BUILDING TYPES STUDY: INDUSTRIAL BUILDINGS

No building type has had so spectacular an increase in activity in recent months as industrial buildings; and the F. W. Dodge Corporation forecast for 1960 is for a whopping 20 per cent increase over 1959. The Building Types Study for January will focus on this important field of opportunity for architects, with emphasis on the variety of opportunity that exists.

AUTOMATIC CONTROLS FOR HEATING AND AIR CONDITIONING

The first of a special series of articles on mechanical services for buildings will offer a broad survey of design trends, practices and equipment and installation methods in a field which has seen some significant changes in the basic concept of control over the last several years. The article, by Arthur Spaet of Slocum and Fuller, consulting engineers, will include a sample specification related graphically to the components involved.


Members of Audit Bureau of Circulations and Associated Business Publications. Architecutural Record is indexed in Art Index, Industrial Arts Index and Engineering Index.

Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

Subscription prices: Published monthly except May 1960 when semi-monthly. U.S., U.S. Possessions and Canada: $5.00 per year; other Western Hemisphere countries, $9.00 per year. Single copy price except Mid-May 1959 issue $2.00; Mid-May 1959 issue $2.96. Beyond Western Hemisphere, to those who by title are architects and engineers, $5.00 per year for 12 monthly issues not including Mid-May 1959 issue. Subscriptions from all others outside U.S., U.S. Possessions and Canada for 12 monthly issues, not including Mid-May issue, $24.00 per year. Change of address: subscribers are requested to furnish both the old and new address, sending if possible stencil impression from magazine wrapper and to include city delivery zone number, where such is used, for the new address. Allow four weeks for change.

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Byzantine architecture has been given an impressive new treatment in Pittsburgh's Holy Trinity Greek Orthodox Church, constructed of precast concrete units.

Although the original design called for monolithic reinforced concrete, the architect and contractor decided to save time with precast units which could be stockpiled during the Winter for rapid erection in warm weather. Precast concrete would provide all the inherent values of reinforced concrete—fire-safety, corrosion-resistance, rot-resistance, low initial cost and maintenance-free service—and in addition, the architect felt, it would also increase the aesthetic acceptability of the structure.

Barrel arches for the nave are comprised of Y-shaped precast units placed alongside each other and supported by precast columns. Light-weight concrete fills the rooftop valleys.

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THE DURIRON COMPANY, INC., DAYTON, OHIO
Saarinen's New Vocabulary

The design for Yale's projected new residential colleges (see page 13) has provided contemporary architecture with a new phrase—and possibly with a new phase as well. "Polygonal masonry architecture" is Saarinen's phrase for it; and although he notes it was a special response to a special challenge, he also calls it "an architecture with certain truths and one which answers certain needs of our time that are more widespread than this one-time use." At Yale, the site is "angular and odd," the neighboring buildings pseudo Gothic; one "formidable" in scale, the other smaller; the emphasis was to be on the individual, the atmosphere focused on work and study, the buildings not "dormitories" but "colleges." Studying the "dual challenges of site and meaning," Mr. Saarinen reports, "we realized that these very special problems could not be solved within the general current vocabulary of modern architecture. . . . Repetition, regularity, uniformity, standardization—all prime parts of the vernacular—were at direct odds with the diversity, variety and individuality we wanted. . . . We became convinced that . . . we would have to create a new vocabulary or add to the vocabulary of modern architecture. . . . We made the buildings polygonal—their shapes derived in order to provide the special and diverse student rooms, to answer the needs of the site and to give a variety and sequence of spatial experiences in the courts. We have used a large-scale bending of walls back and forth to give these buildings a scale that would make them stand up next to the surrounding buildings. Most significantly, we conceived of these colleges as citadels of earthly, monolithic masonry—buildings where masonry walls would be dominant and whose interiors of stone, oak and plaster would carry out the spirit of strength and simplicity." As for those walls: "an entirely new technological method will be used . . . so that for the first time a stone wall will be as 'modern' as a curtain wall of panels. . . . Formwork is built as if the wall were to be poured in concrete; but crushed pieces of stone ranging between 3 in. and 8 in. are first dumped into the mold; then high strength grout cement mortar is pumped through hoses inserted in the form wall between the stones; after the wall has set and the outer form is removed, the wall is washed with water under 100 lb of air pressure, thus removing some of the surface mortar and exposing the stones."

Gingko in Gotham

In response to a telephone call, we went last month to a tree transplanting at the Seagram Building. When we arrived at the plaza, it was deserted, except for a truck, a large tree on the truck, and half a dozen or so burly, busy workmen. A raw wind had evidently discouraged the spectators one would have expected to show up for an operation of this size on a sunny morning in October. The landscape architect, Karl Linn (small, animated, earnest) was finally located in the lobby of the building, out of reach of the wind, and told us that the tree on the truck was one of six gingkoes, to replace the weeping beeches which had earlier graced the plaza. The beeches, it was explained, had survived but not thrived on New York air. Gingkoes, variously spelled gingkoes, and variously pronounced with a hard or soft g, are described by the dictionary as "handsome gymnospermous trees." Mr. Linn further explained that the gingko is the oldest known tree—"first the ferns, then the gingko"—and that its remains have been found fossilized in its native China. Unlike most trees, it is bisexual, and the Seagram Building is provided with three males and three females. It is very hardy, and just about pest-proof. And esthetically, its advantage in this case is that its light green, open foliage should contrast well with the dark mass of the building. These trees, Mr. Linn said, were 50 or 60 years old; a widespread search had been conducted for gingkoes of this size, and they had finally been run to earth in a nursery near Baltimore. Mrs. Catherine Brun (sensible shoes, charming voice, and it is believed, the only woman tree moving contractor in the country) further added to our information by reporting that these gingkoes weighed between eight and nine tons each, that the transplanting would take about a week for all six trees, that moving trees of this size was simply a matter of knowing how, and that the life span of the gingko was not, as far as she knew, a matter of knowledge, though she had seen gingkoes growing in New York City with trunks six ft in diameter.

Why Architecture?

The Bacardi company has commissioned Mies van der Rohe for its new office buildings, in Santiago de Cuba and Mexico City, marking its first entry into the ranks of businesses using internationally known architects to design their buildings. The president of Bacardi, Jose M. Bosch, asked to explain the decision, had this to say: "Ever since I became president of this company, about 15 years ago, I have tried to build factories and offices that are a little better looking than the usual constructions in the tropics. We have used Cuban, Puerto Rican and Mexican architects, sometimes American decorators; the results have been fair, perhaps because we were always short of time. The Bacardi building in Santiago has been studied carefully and because of the ample time it gave me the opportunity of looking into the work of many architects and I came to the conclusion that Mies' work in one-story buildings was foremost in the world. Perhaps it should also be considered that it is possible that I may want to mark my tenure of office with indelible marks that to my successors would create a definite necessity to work for the greater success of our enterprise."
A Record Special Report

U.I.A. Assembly and Executive Committee Meet in Lisbon

A Report by Delegate Henry S. Churchill, F.A.I.A.:

Working Committees Report—Cooperation with UN on Low-Cost Housing Problems Contemplated

—International Competitions Discussed—1961 Congress Planned in London

The Union Internationale des Architectes (U.I.A.) held a business meeting of accredited delegates (Assembly) and a meeting of its Executive Committee in Lisbon, 20-27 September. It was very well attended, with about 100 delegates representing 42 countries present, and all 20 members of the Executive Committee from 20 countries. The agenda was a very full one, and many of the items were of the usual "internal affairs" type, so that what is reported here concerns only those which seem of general interest.

The United States delegates were Henry S. Churchill (member of the U.I.A. Executive Committee), Ralph Walker (past vice president of the U.I.A.), Samuel L. Cooper of Atlanta, John Fugard, Sr. (chairman A.I.A. Committee on International Relations), Ernest Grunsfeld (U.I.A. Financial Assistant). Eugene Fuhrer of Chicago and John R. Badgley of San Luis Obispo were present as observers.

U.I.A. through its representatives has made closer ties with other international organizations, to the end that the role of the architect has been strengthened and the part he can play in helping formulate programs has become better understood. These organizations include the appropriate sections of the United Nations, both in New York and Geneva; World Health Organization; International Federation for Housing and Planning; International Labor Office; C.I.B.A.; UNESCO; and other alphabets. It was also pointed out that the now effective European Market has opened new possibilities for international cooperation and technical exchange among architects.

There were reports of the Working Committees, some of them of much interest. To reproduce them here would require too much space, but they can be obtained from the Secretary General's office. Professor Mountsen of Belgium had an excellent paper on the Practice of the Profession. Alexander Cochran of Baltimore is a member of this committee. Professor Gardner-Medwin of London reported on the Education of the Architect; M. Andre Gutton of Paris on Town Planning (Henry Churchill of Philadelphia is a member); Herr Wilhelm on School Buildings; Professor Goldfinch gave an excellent account of relations with WHO (Zachary Rosenfeld of New York has just joined this committee); and M. Vouga of Switzerland reported on Housing and on Research (Walter Campbell of Boston is a member).

A small temporary committee was set up to establish definite working arrangements with the United Nations under its "Long Range Programme of Concerted Action in the Field of Low Cost Housing and Related Community Facilities." It is composed of Matthew of Great Britain, Rasmussen of Denmark, Abrosinov of USSR, Dubuisson of France, J. P. Vouga of Switzerland is reporter. It was given a mandate to suggest action programs by 1 December. Churchill of USA is the connecting link through Ernst Weissmann of UN in New York.

Michel Dard of UNESCO presented a final draft of a proposed international document defining the mutual rights and obligations between practitioners of the plastic arts and architects. This was adopted, subject to some minor revisions of text, and will probably become official within the year.

In the field of international competitions there were two reports. M. Pierre Vago, Secretary-General, recommended that in spite of some obvious defects in the regulations for International Competitions it seemed to him better not to propose changes at this time, since it was only last year that they had been accepted as an international document by UNESCO and become officially binding in most countries. He suggested that further use of the regulations might show the need for additional modifications, which could perhaps be discussed in London in 1961.

Professor Robert Matthew of Great Britain said he hoped to have ready soon a program for a competition for Schools of Architecture to be presented and judged at the London Congress. The subject will be the design of a small demountable theater. Presumably this can be fitted into the 1960-61 college year. As soon as details are available the information will be circulated by the American Institute of Architects.

M. Jiri Novotny of Czechoslovakia reported that the traveling exhibition on City Planning and Architecture which was gotten together for Moscow last year has been shown in Bulgaria, East Germany, Poland, Hungary, Czechoslovakia and Yugoslavia, and is scheduled for France, Turkey, China and North Korea. It will be available for the United States in late 1960 if it is wanted. The delegates were also shown an excellent documentary film (15 minutes) of the Congress in Moscow last year. Everyone agreed it was well and fairly edited. There are copies available in continued on page 232
Typical waste and soil line layout for two complete bathrooms in the Novitiate Building of Brothers of the Holy Cross. Note compact, space-saving connections to the 4" soil stack. Light weight of copper tube makes overhead work easier, faster. Combination of copper tube and solder-joint fittings makes working in close quarters easy. Right: Trim copper tube vent lines on top floor for back-to-back bathrooms on this floor and floor below—eliminate wide plumbing walls, reduce construction costs, give greater usable floor area.

In big jobs, too, Copper Tube drainage systems provide substantial installed-cost savings.

"We prefer to use copper tubes because we have compared costs — material and installation — and come up with copper tube as the most economical of the specified materials every time," says David L. Farrell of Farrell Bros., plumbing contractor of Albany, N. Y. "The light weight of copper tube makes it easier to work with and reduces the hazards of handling heavy, bulky materials. Copper tubes can be accurately cut to desired lengths and much more quickly installed. All of these advantages add up to substantial savings."

More and more local and regional building codes are being modernized to allow copper tube in sanitary drainage systems. Wherever permitted, in buildings large or small, copper can effect substantial savings as compared with conventional cumbersome materials. It is a worthwhile building cost-reduction factor.


Model of Chapel and Novitiate Building, Brothers of the Holy Cross, Kinderhook, N. Y. Anaconda Type DWV copper drainage tube and Anaconda cast-brass drainage fittings were used on interior soil, waste, and vent lines. Architect: Toole and Angerame, Albany, N. Y. Plumbing and heating contractor: Farrell Bros., Albany, N. Y.
Wright's Guggenheim Completed

Frank Lloyd Wright's Solomon R. Guggenheim Museum in New York opened in the end of October to a hullabaloo in the local press equal to any its architect created in his lifetime. Its ramp gallery (shown in two views below), 1416 ft long, has a grade of 3 per cent; paintings are mounted in bays along the continuous side wall according to a system devised by the museum's director, James Johnson Sweeney. The building has a diam of 100 ft at ground level and 128 ft at the roof; height to the glass dome is 92 ft. Facilities include a 277-seat theater. Charles Middleeer, landscape architect; Euclid Contracting Corp., general contractor
MUSEUM OF MODERN ART EXPANDS
Philip Johnson Associates are the architects of a proposed new wing for New York's Museum of Modern Art, to be east of the garden. The eight-story structure, at left in model photo, is to be connected with the existing building, right, by glass-walled corridors. The reinforced concrete and steel wing, sheathed in travertine, will raise total exhibition space to 43,000 sq ft and storage space to 11,000 sq ft (present totals: 12,000 and 4500). Philip Goodwin and Edward D. Stone were the architects of the present main building, left, built in 1939; a 1951 annex was designed by Philip C. Johnson.

YALE GETS NEW COLLEGES
Eero Saarinen is the architect of two new residential colleges for Yale University. The model shows, in foreground, Ezra Stiles College and, in background with tower, Samuel F. B. Morse College. (The Yale Graduate School is shown in lighter shade at right rear.) The colleges' "warm grayish monolithic walls" will be of crushed stone molded in high-strength grout cement mortar, according to Mr. Saarinen. Construction and maintenance cost of the new colleges, to accommodate 500 undergraduates, is $7.5 million.
Buildings in the News

The Stanford Medical Center in California consists of three hospital and four medical-school buildings of three stories, all connected by arcades and walkways. Structure is reinforced concrete with precast grills. Exteriors are painted buff with red and brown trim. Total area: 715,321 sq ft. Total cost, including construction, furnishings, equipment: $21,006,000. Edward D. Stone, architect; E. Todd Wheeler, consulting hospital architect; Stanford University, general contractor; Wagner & Martinez, managers of construction.

The two-story headquarters building of the Michigan State Medical Society at East Lansing is due for completion next June. There is a vaulted precast roof and a two-story-high lobby with a bridge connection for the upper floor of offices; meeting rooms are also provided. Minoru Yamasaki, architect; Granger Brothers, Inc., general contractor.

Two new buildings on the Bronx Campus of Hunter College in New York were dedicated recently. Shown below, they are, left, a limestone-clad Classroom-Administration Building, and a glass-walled Library. The detail at right shows the screen walls on southern elevations, made of horizontal clay flue tile. The Library is roofed by hyperbolic paraboloid concrete shells, making possible only six columns on the main reading floor. Total cost: $3.5 million. Marcel Breuer, architect; Robert F. Gatje, associate; Eduardo Catalano, consultant; Leon D. de Matteis & Sons, Inc., general contractor


Below: Westinghouse Electric Corporation's research and development center near Pittsburgh will be occupied in 1961. The two buildings, 712,000 sq ft, have some 450 individual laboratories. (Existing labs are in left foreground). Skidmore, Owings & Merrill, architects
A sudden electrical storm shuts down a transformer. An underground sewer explosion rips open a main feeder cable. Power can fail in many ways. And each time it does, man-hours are lost, business is lost, dollars are lost. In a hospital, even lives may be lost.

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CITY__________________________STATE__________________________
Churchill College, named in honor of Sir Winston Churchill, will be the first collegiate foundation at Cambridge University in almost a hundred years. The trustees, anxious that such an important architectural opportunity should not go by default, have just held a competition to determine the design.

Twenty architects or firms were invited to compete, and the list of their names reads like a roll call of the brightest and most promising figures in British architecture today. The designs were submitted to a distinguished board of three assessors who chose four schemes to be developed further and then made their final decision. The assessors were: Basil Spence, president, Royal Institute of British Architects; Sir William Holford, professor of town planning, University of London; Sir Leslie Martin, professor of architecture, Cambridge University.

The result has not come up to expectations. The winning design, although unquestionably highly competent and with a totally admirable system of living accommodation, displays a disappointing lack of architectural distinction.

Those people who are inclined to second-guess the choice of the assessors have had ample opportunity to do so, for all the competition drawings have been on exhibit at the R.I.B.A. for an entire month. Seen together in this way, the entries present a rather startling picture. The designs differ widely in overall conception and in plan; but when it comes to the elevations, the work of every architect, "humanist" and "brutalist" alike, seems to be cut from the same bolt of not very interesting cloth. It certainly looks as if the architects were so busy trying to consolidate the complex requirements of the college into a workable plan that they had little time left over to develop the elevations.

Even in the designs of the four finalists, which were taken much further than the others, the same schematic tendency can be found. It is particularly evident in the Chamberlin, Powell & Bon design (4), but also exists in the gigantic enclosing court suggested by Stirling & Gowan (3), and, to a certain extent, in the winning design itself. The only proposal which was not vulnerable to criticism on this point was that of Howell, Killick & Partridge (2), who had developed a complex series of modeling effects through the use of pre-cast concrete panels. This entry was highly praised by the assessors, whose principal objection seemed to be that the authors' own estimate was considerably over the budget and might still be set too low. It should also be noted, however, that the panel scheme, while it does give the design character, is not completely fortunate in all of its effects.

The author of the winning design, Richard Sheppard, has indicated in a recent issue of the Cambridge Review that he considers the elevational drawings submitted in the competition to be of necessity provisional, and the buildings will doubtless acquire a more individual character as each unit is erected.

The competition itself, however, although it was administered under almost ideal circumstances, cannot be said to have produced any truly distinguished designs. It would be interesting to know the reasons for this failure. Perhaps the cause lies in limitations inherent in the competition system. It may, however, be a question of an excessively pragmatic attitude on the part of the architects.

—Jonathan Barnett
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Honeylite—now with greatly increased durability and complete suspension
system. Available in a variety of cell sizes, cutoff angles and colors.

Honeylite—the big plus in luminous ceilings.
in wall paneling

Cross-section shows the construction detailing of the Cherry Wood paneling in the photo at the left. Stock molding materials can be combined with veneer panels to produce decorative effects of outstanding interest and beauty.

Centuries have put their stamp of approval on the mellow beauty of wood. Its fascination never grows old. Keeping it new are the constant advances in architectural concepts as well as the bold use of traditional motifs.
The imaginative installation in the photo at left certainly exemplifies a style of simple elegance in wall panel design. The deft hand of the wood artisan has been at work here, blending veneer panels and molding into a timeless expression of human craftsmanship. The result is a straightforward beauty of lines and planes in dimensional depth. Whether an architectural design is traditional or contemporary, the use of veneer paneling has a way of putting the busy man at ease in his work-day setting by virtue of its warmth and dignity.
The photo and cross-section detailing shown here depict only one style of divided paneling. Single panels of any desired size can be designed. The infinite possibilities for architectural ingenuity, taking full advantage of the charm of some of Nature's most beautiful woods in veneers by Stem, are easy to see. The most extensive portfolio of architectural veneers in the United States is on hand, ready for shipment. And this Stem selection offers endless inspiration for design ideas with the creative touch of wood. Stem veneers are the most masterful accomplishment of the veneering art. You are invited to let Stem help you achieve a masterpiece of interior artistry.

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*Patent applied for.

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First Pacific Rim Conference

Despite the fact that the distance from home prevented many California architects from attending, the First Pacific Rim Conference, sponsored by the California Council, A.I.A., and held October 8-14 in Honolulu, was a great success (see cuts, page 28). With a combination of tropical island atmosphere and a roster of speakers from a variety of fields outside architecture as well as internationally known architects, the Conference drew an attendance of over 150 architects from the mainland (some from the East who stopped en route to Japan on the Architect's Tour of that country) and their wives. Local architects joined them to make a total architect attendance of nearly 200.

The program format was new: non-architect speakers spoke in their own fields to the conference theme, "Wellsprings of Design"; architect-speakers linked architecture and the other fields. A final session gave each speaker a chance to recap on his own words, to comment on what others had said and—for the non-architects—to add impressions after a week's sojourn among architects.

The three aspects of the theme chosen for exploration were the physical, sociological and cultural wellsprings for design. Throughout the sessions, architecture was challenged: by Dr. Paul Siple, internationally known geographer and antarctic explorer, and Honolulu architect Harry Seckel on the physical sources of design; by Dr. Wendell Bell, associate professor of sociology, U.C.L.A., and architect and city planner Carlos Contreras of Mexico City; by Dr. Karl With, integrated arts department head, U.C.I.A.; by Australian architect and author Robin Boyd; and by John A. Kouwenhoven, professor of English, Barnard College, editor and author of Made in America, who in his summation address cautioned that the "architect as artist will neglect at his peril the vernacular forms which are, perhaps, the most life-giving of all wellsprings of design."

With ample free time allowed by the program organization, architects could take tours of Honolulu houses and other building; arranged by the local A.I.A. and W.A.L. chapters; drive around Diamond Head and the lush and still rural windward side of Oahu; and savor some of the islands' history in a special program of costume song and dance put on by the Kaahumanu Society. Post-conference tours to the outer islands were popular enough to make it seem that the convention was still in session.

Citations for outstanding service to the profession were presented by Council president Lee Kline of Pasadena to L. F. Richards of Santa Clara, immediate past president of the Council; and to publishers L. W. Lane of Sunset magazine and John Entenza of Arts and Architecture. A.I.A. president John Noble Richards and Institute secretary Roy Carroll attended the conference and participated in its program.

John W. Kruse, San Francisco, was chairman of the convention advisory committee. Ulysses Floyd Rible is regional director for California.

Western Mountain Meeting

More than 240 architects and their wives and guests from the six states—Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming—met in Albuquerque October 8-10 for the annual regional conference of the Western Mountain region, A.I.A. Within the theme, "Science in Architecture," the conference offered a stimulating program which suggested that more knowledge and more research are needed if architecture is to cope with the problems of today and tomorrow.

Among the speakers on the program were Herbert Swinburne, Philadelphia architect and member of the national A.I.A. research committee; Dr. E. J. Workman, president, New Mexico Institute of Mining and Technology; Dr. C. H. Topping, senior architectural consultant, design division, E. I. DuPont de Nemours Company; and Dr. Clayton S. White.
At San Jose

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San Jose, California

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operating perfectly
after 28 years' hard service

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San Jose State College
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Schlage cylindrical locks were installed in San Jose State's old science building when it was constructed in 1931. And, when a new science building was built in 1956, the long-term excellent performance of Schlage locks again made them the choice.

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Meetings and Miscellany

radio biologist and director of research, Loveland Foundation, Albuquerque. A "Science in Architecture" seminar, led by William E. Burk, Jr., who was chairman of the conference program committee, considered the proposal to set up a research foundation within the A.I.A.

A tour of nearby Sandia Base was a feature of the conference events. James S. Liberty was general conference chairman; Miles Brittelle is president of the New Mexico chapter, host to the conference; and Frederic Porter of Cheyenne is regional director.

Awards for excellence in architectural design, given annually at the regional meeting, went to Robert Wehrli, Casper, Wyo., for his Architectural Guild building in Casper; Ralph Haver, Phoenix, for a school in Scottsdale, Ariz.; and Donald Panuska for a residence in Salt Lake City. Dr. David Gebhard, director of the Roswell, N. M., Museum, was made an honorary member of the New Mexico Chapter.

—Elisabeth Kendall Thompson

Northwest Region, A.I.A., Meets

Innovation in its conference is almost a by-word in the Northwest region. This was the first area to hold annual interstate conferences, on which regional meetings of A.I.A. groups were later patterned, and now this region has effectively demonstrated that a joint conference with allied professionals can not only be held but can be a big success.

This year's Northwest regional meeting, with Harry Weller as its new director and Keith Boyington as its chairman, was a joint meeting with the Washington Arts and Crafts Association, October 8-11 in Spokane, Wash. Some sessions were concurrent, some joint. The artists' group offered Charles Eames as a speaker to the entire assembly; the architects' presented Albert Bush-Brown of M.I.T. Both groups showed slides of their work, a panel discussion probed the problem of "how to purchase art in architecture," and the artists and craftsmen staged a practically continuous "art in action" show in a wide variety of work.

Breakfast sessions are regular parts of Northwest conferences, but this year's lively program, "Cities are Funny," topped the usually good offerings at such events. Five architects—Charles Endicott of Eugene, Ore., Alan Liddle of Tacoma, DeWitt Robinson of Portland, John Detlie of Seattle, and Paul Blanton of Moscow, Ida.—were equipped (the previous day) with 20-shot cameras with which to photograph whatever they saw in Spokane that would illustrate the session's topic. The ends justified the means: Spokane's foibles and its virtues, sought out with uncanny perception, were not only amusing footnotes to a visit to that city, but pungent commentary on Anytown, U.S.A.

Next year's conference will be held in Sun Valley, Ida. In 1961 Hawaii, newest member of the region, will host to the conference.

—Elisabeth Kendall Thompson

New Schools For New Education

A highly concentrated and unusually stimulating architectural workshop on schools was held in Ann Arbor, Mich., October 19-21. Under the general direction of C. Theodore Larson, the sessions were conducted by the department of architecture in collaboration with the School of Education, University of Michigan, on behalf of Educational Facilities Laboratories, Inc. (Ford Foundation).

Planned to explore possible and practicable applications to school planning of J. Lloyd Trump's much-talked-about report "Images of the Future," the conference invited ten architects active in the school field to present workable schemes—actual or hypothetical. The attendance totaled some 50 people in the architectural and educational fields.

The response was a rather amazing enthusiasm shown for Professor Trump's teacher-team, varied-space theories, but with a wide variety in approach and focus of interest. Added together, the ideas advanced seem to give a school picture of big, medium, and little rooms banked with many individual carrels (variously referred to as "Q Spaces," "Cells," "Zest Spaces" at the conference)—all put together with an extraordinary degree of flexibility to give multi-use, reduced costs, and to permit transition from present curriculum set-ups to the Trump one, then to ones undefined as yet. Mechanical aids, even mechanical brains to do the complex scheduling required, received considerable attention. The next few years should prove quite interesting for the school field, both educationally and architecturally.


—Herbert L. Smith, Jr.
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ARCHITECTURAL RECORD December 1959 31
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Fiberglass panels are used for walls and roof, with glass doors below the near-opaque panels of the pavilion walls and a 5-ft-diameter steel ring supporting the roof beams. The electric exhaust fan which draws fresh air filtered through louvered transoms through the center of the roof is hidden from view below and above by circles of fiberglass panels which conceal fluorescent tubes. In the pavilion the front of the bar is built of flat white fiberglass panels illuminated from behind, a mural above the bar is made of the panels and a lighting fixture incorporates a light-diffusing panel.

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42 ARCHITECTURAL RECORD December 1959
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Balfour Automatic Rolling Fire Doors bear Underwriters' Laboratories Class "A" (3-hour) Labels. A release mechanism, activated by fusible links, forces automatic closure and a governor assures a safe closing speed. After being opened for emergency exit they automatically close again.

**save space**

Rolling Fire Doors coil into compact, overhead units easily hidden above ceiling lines. The areas adjacent to door openings are completely usable.

**are so versatile**

Without sacrificing automatic fire protection, Balfour Automatic Rolling Fire Doors can be used as service doors. Designed for firewall, vertical shaft and corridor openings up to 24' x 24', they are suitable for all types of buildings.

The building is rising on a site 200 by 400 ft on the Avenue of the Americas and bounded by 51st and 52nd Streets. To cost an estimated $58 million, it will have a gross area of 1.7 million sq ft.

The tower and its rear base will be set in a plaza of 40,000 sq ft. The tower face will be set back 16 ft from the Avenue of the Americas building line and 24 ft from that on the side streets. The rear base will be 10 ft from the building line. The feeling of space and light at ground level will be further enhanced by a facade composed of glass panels recessed 15 ft behind the tower's metal columns and continuous paving extended through the lobby to the curbs.

The building will have 37 office floors of 24,500 sq ft each in the tower and 14 office floors of 37,000 sq ft each in the rear base. Four floors will contain mechanical equipment. There will be 34 passenger elevators capable of moving 2000 persons, or one fifth of the building’s working force capacity, in five minutes.

more news on page 50
SECTION AA. Precast cellular concrete Flexicore decks provide fireproof structural floors and roofs at Fairmay Apartments, Chicago. The five buildings are masonry wall-bearing except for reinforced concrete stairway and elevator core. Design called for 75 psf live load.

SECTION BB. Clear span of 18'-6" between masonry bearing walls permits simplified design and fast construction. Underside of Flexicore deck is exposed for finished ceiling.

TYPICAL FLOOR FRAMING. Each 3800-sq. ft. Flexicore deck was placed, leveled and grouted in two days. Available on third day as work deck for erection of walls and frame for next story.

The use of Flexicore precast decks permitted Fairmay Apartments to meet Chicago's strict fire code, and resulted in substantial savings to the owners. High-speed erection permitted earlier occupancy and exposed Flexicore slabs eliminated ceiling plaster.

For more information on this project, ask for Flexicore Facts No. 78. Write The Flexicore Co., Inc., Dayton, Ohio, the Flexicore Manufacturers Association, 297 S. High St., Columbus 15, Ohio or look under "Flexicore" in the white pages of your telephone book.
Complete Comfort — Lower Cost with Burgess-Manning Radiant Acoustical Ceiling

The American Casualty Company of Reading, Pa., owns and operates many headquarters and branch offices across the country, consequently its management was well aware of the difficulty of satisfying any group of employees in conventionally heated, or cooled offices.

When the 5 story addition to the Reading, Pa., headquarters was planned, the usual problems of maximum employee comfort versus cost presented themselves.

The planners were aware of the many advantages of radiant heat, and, since acoustical ceiling treatment was planned for the entire building, it was decided to combine this function with comfort conditioning by installing Burgess-Manning Radiant Acoustical Ceilings.

The result, after operation through a summer and winter season, is virtually 100% satisfaction for both management and employees.

Here is a building with approximately 70% glass exterior walls and yet there is no noticeable "cold wall" effect.

With the Burgess-Manning Radiant Acoustical Ceiling the air movement that is a part of conventional heating or cooling systems and that is so frequently a cause of discomfort to employees, is limited to only that amount required for ventilation.

Space saving, made possible by the elimination of floor level heating units, particularly along the outside glass walls, proved to be another inherent advantage.

All of these factors contributed to the universal satisfaction experienced with the Burgess-Manning Radiant Acoustical Ceiling in this outstanding new office building.

Write for descriptive Burgess-Manning Catalog No. 138-2L

Burgess-Manning Company
Architectural Products Division
749 East Park Avenue, Libertyville, Illinois

Thermal and acoustic environmental comfort is assured for American Casualty employees by the Burgess-Manning Ceiling.

Basically Simple, But Amazingly Efficient

The deceptively simple construction of the Burgess-Manning Radiant Acoustical Ceiling is scarcely indicative of its operating efficiency. A standard 1¼" channel grid (1) supports a grid or sinuvasus type galvanized coil (2). Perforated aluminum panels (3) are fastened directly to the coil (2) and a sound absorbent blanket (4) is laid on top of the suspension grid (1). Thermostatically controlled hot water circulates through the coil (2) and warms the aluminum panels (3) which transmit radiant energy to the floors, walls, furniture and occupants of the room and provides a high degree of comfort conditioning. On the cooling cycle, the process is reversed so that chilled water, with temperature above the dew point to eliminate condensation, cools the panels and permits them to absorb radiant energy from the objects, floor and walls of the room.
AETNA WALL

...is the word for movable partitions in the Corning Glass Building. Write for catalog.

AETNA STEEL PRODUCTS CORPORATION, 730 FIFTH AVENUE, NEW YORK 19, N.Y.
A Washington Report by Ernest Michel

Gigantic Post Office Building Program Begins to Move

The Post Office Department's quiescent program of modernization has just begun to move and with this start of a new age for mail handling comes a $1.5 billion building program.

There have been no direct appropriations for new post offices except for the experimental giant at Providence, R. I., and the Gateway project soon to be built at Oakland, Calif.—since 1938. This lapse of more than two decades after the building program of the thirties has left the department with facilities ill-suited to the demands now placed upon it by the steadily increasing volume of daily mailings.

The situation was described by Postmaster General Arthur E. Summerfield two years ago when he presented Congress with the plan for modernization. He said at that time: "The physical plant of the department has not kept pace with the nation's growth. More than half of the post office space is concentrated in 3,500 Federal buildings, all located in key gateway cities. These buildings, built in the late thirties or earlier, some over 50 years old, are mostly monumental in character and completely unsuited for today's mail-handling problems."

Mechanization Means Obsolescence

In the meantime, General Summerfield and his assistants have pushed ahead doggedly with the technical development of new equipment of all sorts—electronic devices to sort mail in a fraction of the time required by the "case" method now in prevalent use, canceling and handling machines that virtually take over the job from human effort, and self-serving substation machines devised to vend stamps, money orders, weigh and insure packages and make change, needing human attention only once every 24 hours.

The significance for architects in these current and future events is obvious enough. The Department confidently expects to work 14,000 new post offices into its program within the next few years. The rate now has reached three new post offices to reach six per day, and General Summerfield says the rate will continue to increase.

The Department requires that an advisory private architect be retained on each job in excess of 12,000 sq ft; it urges that the services of architects be obtained on the smaller projects as well.

How the Program Operates

Under the present system, the government does not build these structures with appropriated funds. Sponsors are selected by the post office department to finance and construct the buildings, leasing them back for periods of from 10 to 30 years.

In carrying out this program, the government advertises for bids to lease in advance of construction. This is done through competitive bidding. Appropriated funds cover all equipment costs, but construction and cost of working drawings are financed privately.

The regional offices of the Post Office are responsible for advertising the projects approved, giving initial approval to drawings and construction requirements, and for the follow-through with working drawings and final specifications. Washington, however, retains the privilege of a final look at the lessor's building plans.

To aid sponsors and the architects they engage, Post Office has published a brochure of designs applicable to buildings ranging in size from 1000 to 12,000 sq ft. This presents 37 schematic plans and elevations in color for each, There are plan descriptions, suggested materials and general notes on each plan. The book also contains sections on space criteria, lot layouts, and minor suggested construction detail.

New Brochure As Guide

In a foreword, E. O. Sessions, until recently deputy postmaster general, states that "for the first time in the department's history a means is now available for obtaining uniformly efficient and architecturally attractive small post office buildings throughout the United States."

The brochure is intended as a guide in the development of working drawings and specifications for proposed postal facilities. "Acceptable" designs are shown. Said General Sessions, who now has been appointed Ambassador to Finland, "We wish to point out that it is not the intention of the Post Office department to preclude original designs by architects; however, any such original designs must be submitted to the Post Office department for approval.

On the larger projects, architects and engineers are retained by the sponsors and announced by them, the Department's Facilities Bureau explained. As the modernization program goes into high gear, concentration will be on the larger jobs, General Summerfield said, since half the mail volume is handled in only 60 of the nation's 3,600 post offices. The smaller locations will not be neglected, however, and eventually thousands upon thousands of the automatic substations will be erected throughout the country, according to present plans.

The construction industry division of the Business and Defense Services Administration (Department of Commerce) recently covered the post office program in some detail in its Construction Review. This presentation pointed out that the working drawings and specifications for the larger projects are prepared by private industry working with government engineers and architects. Buildings and machinery are planned and constructed as a unit.

Trend to One-Story Buildings

The trend is toward one-story structures. Each of the 37 schematics presented in the brochure is one-story in design and many of the larger installations are being projected in this concept. Basements in the new buildings are rare. Absence of columns allows for flexible working space and the areas are being designed so they can be converted easily at any later time to non-postal uses. A store-type interior was one of the conversions mentioned by the BDSA. Said the Construction Review article, "These structures have been planned with the view of achieving low construction costs and economy of maintenance. This results in low rental costs to the government. As the Post Office department recently pointed out, the rental cost of the new space is considerably lower than the rentals paid by the government as a whole.
Membrane fireproofing: a re-examination

For years, membrane fireproofing has been the standard method of attaining low-cost fire protection in floor-ceiling assemblies. For example, where one-hour or two-hour construction was required—and an acoustical ceiling was wanted—most specifications called for mineral fiber acoustical tile cemented to either a lath and plaster or gypsum board membrane. The acoustical ceiling tile alone could not offer rated fire protection to the structural members in the assembly.

Now a new method of membrane fireproofing, Armstrong Acoustical Fire Guard, eliminates the need for intermediate fire protection between the suspended tile ceiling and the structural floor above. Acoustical Fire Guard is the first acoustical ceiling tile to offer rated fire protection to structural steel. Floor-ceiling assemblies using Acoustical Fire Guard as the only protective element beneath the structural floor have received one-, two-, and four-hour ratings from Underwriters' Laboratories, Inc.

Because Acoustical Fire Guard eliminates the need for additional fire protection above the suspended ceiling, it offers significant savings in construction time and cost. It is installed in a completely "dry" operation; there are no delays of the kind caused by "wet" work. This has already enabled many general contractors to save three to six weeks' construction time.

Through elimination of materials and labor, Acoustical Fire Guard can mean savings of up to 30¢ per square foot, depending upon locale, building design, type of fire protection being considered, and type of alternative acoustical ceiling being considered.

There are many instances when Acoustical Fire Guard ceilings will provide greater fire protection than would be the case with alternative methods. In such cases, this additional protection will usually be recognized in the form of lower fire insurance rates—year after year—on the building and its contents.

Acoustical Fire Guard offers unlimited accessibility to pipes, ducts, and electrical fixtures above the acoustical ceiling. Its acoustical efficiency is built in at the factory and does not depend upon the skill of the man who installs it. And it is an interior finish that requires no job painting after it is installed.

Acoustical Fire Guard has been chosen for millions of square feet of fire-retardant ceilings in commercial, institutional, educational, and industrial buildings across the country.

If you would like to learn more about this remarkable new ceiling, contact your Armstrong acoustical contractor or your nearest Armstrong district office. Or write to Armstrong Cork Company, 4212 Rock Street, Lancaster, Pa.
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U.S. Proposes New Pattern For Noise Control at Airports

Noise at large airports, long a problem for land planners and realtors as well as for aviation officials, is being attacked by the Federal Aviation Agency.

FAA's administrator, E. R. Que-sada, has proposed adoption of a special civil air regulation. This is the first government effort to develop air traffic rules which provide requirements for abatement of aircraft noise.

First application would come in the Los Angeles area. The proposal is Special Civil Air Regulation No. 436, dealing with airport traffic pattern rules for Los Angeles.

This would establish and designate a specific area of space surrounding the airport as an airport traffic pattern area within which special operating rules would apply for both civilian and military aircraft. The airspace would extend upward to 2000 ft within a radius of five miles of the geographical center of the airport. (The Los Angeles airport is ranked second only to Chicago's Midway Field in order of air carrier operations.)

CAA stressed the fallacy of applying the proposed regulation to other busy airports in the country; each center will require its own study and solution because of individual operating patterns. The study of other airports where the jets are flying is in progress, CAA said.

Of Los Angeles, the agency said: "Jet air carrier operations alone... during a typical week in October 1959 amounted to 41 scheduled departures and the same number of arrivals each day for a total of 285 outbound and 285 inbound jet flights. The airport is located close to highly populated communities; and, as a result, the operation of high performance jet transports during take-offs and landings can seriously interfere with school and other community life. With the increased number of jet operations scheduled for the future, the problem demanded action."

Here is how CAA proposes to minimize noise disturbance:

Minimum altitudes would be observed while entering, operating within, and departing from the airport traffic pattern area. The procedures would prescribe safe directions of flight over areas of least congestion within the area. It would be required that under calm wind conditions aircraft use preferential runways for take-offs in westerly directions over open water. The rules would not cancel the pilots' prerogative to use alternate runways, traffic permitting, if the pilot believed that use of a preferential runway would jeopardize the safe conduct of his flight.

All aircraft landing at the airport would be required to enter the traffic pattern at an altitude of at least 1500 ft, weather permitting, and maintain that altitude as long as flying is in progress, CAA said. (Underwriters' labelled where required.) Send today for complete literature and specifications.

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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.:

\[
\text{Cost comparison} = \frac{\text{Index for city B} - \text{Index for city A}}{\text{Index for city A}} \times 100
\]

Conversely:

\[
\frac{\text{Index for city A} - \text{Index for city B}}{\text{Index for city B}} \times 100
\]

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.
Encircled in the picture above is one of several aluminum grating air vents in use throughout the park as air exhausts for the multiple-level parking area below ground.

The arrows indicate two of the locations of a system of drain trenches in existence throughout the park.

The grating installed is Borden Pressure Locked Aluminum Grating. This was an exacting job, one where only standards of quality equal to Borden's would do. Functional beauty and low maintenance are but two of the many advantages of Borden's Pressure Locked Aluminum Grating.

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United States Air Force Academy, Colorado Springs ... dramatically positioned with the Rampart Range of the Rocky Mountains as a backdrop.

Architects & Engineers: Skidmore, Owings & Merrill.

Electrical Engineer: Syska & Hennessy, Inc.

Fairchild Hall where open floors give a semblance of flight. The outside corridors are illuminated by special corner fixture troffers using lenses to direct light outward.

Cafeteria in the headquarters building in the service and supply area. Here flush mounted troffers with curved lenses assured a pleasing lighting effect of low brightness luminescence.
A monument to tomorrow...

The
Air Force
Academy

Complemented by AllBrite Lighting in Keeping with the Space Age

A calvacade of contrast... that's the Air Force Academy near Colorado Springs.

Buildings of aluminum, glass and white marble in military order seem to march down a mesa of broad terraces. There are buildings within buildings, separated by courts. All in all, there is earthbound strength in their precise arrangement. Yet, a sense of air and flight permeates structures that stand on stilts. Here and there floors are left completely open. Colored walls of glass mosaic read as vertical planes to add illusion of height.

This feeling of the future challenged imagination in illumination so unusual effects were sought. In one instance open floor areas were illuminated by special AllBrite corner troffers using lenses which gave light an outward direction, adding to the semblance of flight. In another, an office area was bathed in low brightness luminescence to create an unusually restful atmosphere. This was achieved by AllBrite troffers with curved lenses.

Thus did architects Skidmore, Owings & Merrill wed lighting to the total design concept of a monument to tomorrow... and with special skills and products AllBrite engineering served the architects well. Curtis-AllBrite Lighting, Inc., AllBrite Lighting Division, 352 Shaw Road, South San Francisco, California; Curtis Lighting Division, 6135 West 65th Street, Chicago 38, Illinois.
Required Reading

Wright's Creative Process Shown in Drawings


BY FREDERICK GUTHEIM

More is to be learned about Frank Lloyd Wright in this magnificent book than in any other place. At least, by architects. Here, in the moment of conception, we can explore the creative process of our most original architect. The format is generous, the reproduction faithful, the selections definitive. Seldom have architectural drawings been so well reproduced in color. It is inconceivable that short of possession of the actual drawings themselves, one could be put in a better position to make his own judgment of Wright's total achievement.

The drawings are grouped according to themes, without attention to chronological order, building type, or style of drawing. This is a happy arrangement because, like all artists, Wright was loyal to such themes, often over many decades, and developed numerous variations on them. The most fruitful theme is structure. Other themes are theories of life. ("Organic buildings are always of the land and for the life lived in the buildings" Wright believed.) Some themes are related to such architectural subjects as the tall building or rural architecture. The anonymous editor (presumably Edgar Kaufmann, Jr., whose Taliesin Drawings, published in 1952, anticipates the present work) has not neglected the historical aspects of his work. These varied facets of some 200 drawings are united in this splendid and perceptive collection.

Ours is a day when drawing is still in disrepute among architects. Past excesses have made clients wary of elaborate presentations; they smack of hoodwinking. A whole generation of architects has reacted sharply against beaux-arts draftsmanship. But we live also in a day when the need for architectural drawing of a different sort is increasingly recognized. What we have today, as I attempted to show in a small group of drawings that formed part of the A.I.A. centennial exhibition, is the vigorous, energetic drawing of conception—well illustrated by the aggressive lines of Louis Kahn; the open, informal, low-pressure, back-of-the-envelope sketch, which Harry Weese does so well; the realistic advertising-art perspective rendering that will always be with us; and the thin, intellectualized architectural drawing that has its origin in engineering. Of these categories, Wright clearly belongs to the first. He employs drawing as the primary tool of architectural creation. This volume does well to include, in addition to actual working sketches, some of the many drawings executed in the white heat of three-dimensional conception, illustrating Wright's matchless power to conceive fully an entire structure and describe it in a single drawing. None of the present collection show this as well, I believe, as a framed drawing of the Millard House to be found in the studio at Taliesin, exhibited originally by Oskar Stonorov in the famous Gimbel's 1951 display—the first to show more than 200 original Wright drawings, and to include conceptual as well as presentation drawings. This quality

continued on page 70
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There's a big difference in safety switches—a difference between maximum safety and halfway safety—low maintenance and excessive maintenance. These differences are readily apparent when you look at the design and operation of the BullDog Vacu-Break Clampmatic Safety Switch.

THE VACU-BREAK: Contacts are housed inside compact arc chambers which have very little air space. When contacts are “broken” under load, arcs can't build up because of the lack of oxygen. Pitting and burning of the contacts are reduced to the absolute minimum. Maintenance is virtually eliminated.

POSITIVE SWITCHING: For positive safety, the Vacu-Break switching mechanism does not rely on tricky toggles or springs to trigger the disconnect operation. The operating handle is directly connected to the contact heads by means of a sturdy metal rod. Push the handle "OFF" and the switch is off!

VACU BREAK HEAD
CLAMPOMATIC SPRING
MOVABLE CONTACT SLUG
CENTER INSULATING BARRIER
STATIONARY LOAD SIDE JAW
STATIONARY LINE SIDE JAW

Close-up of Vacu-Break head shows movable contact slug inside the compact, oxygen-limiting arc chamber. Clampmatic spring assembly assures bolt-tight contact, speeds "break". This combination guarantees positive, safe operation, long switch life.

WITHSTAND 100,000 AMP FAULT CURRENT: Vacu-Break Clampmatic switches equipped with current-limiting type Amp-Traps** were subjected to 100,000 amp short circuit current. The switches were undamaged.

Play it safe! Compare, recommend, buy . . . BullDog Vacu-Break Clampmatic Safety Switches. They cost no more than other switches . . . yet give you the maximum in safety and performance.

*BullDog and Clampmatic are registered trademarks of the I-T-E Circuit Breaker Company.
**Amp-Trap is a registered trademark of the Chase-Shawmut Company.
AN EXHIBITION PAVILION
United States Cultural and Industrial Exhibition, 200' diameter Dome
Sokolniki Park, Moscow, Russia. Architects, Welton Becket, F.A.I.A. and Associates

A CONVENTION HALL
Civic Center Convention Hall, 145' diameter Dome
Virginia Beach, Virginia. Architects: Oliver and Smith, A.I.A.

A BANK
Citizens State Bank, 145' diameter Dome
Oklahoma City, Oklahoma. Architects, Bailey, Bozalis, Dickinson and Roloff

AN OPERA HOUSE
Casa Manana, Opera House, 145' diameter Dome
Fort Worth, Texas. Architect, A. George King, A.I.A.
Whether in terms of practical end-use or in terms of harmonious blending with other architectural forms, there is virtually no limit to the versatility of the aluminum stressed-skin dome.

All four of the buildings shown here feature Kaiser Aluminum Domes. And yet, each of the four leading architects represented has incorporated the Dome to satisfy a unique set of requirements (summarized below).

The Dome also has been designed and used as a theatre, a manufacturing facility, an element of a commercial and shopping center complex. For all of these and still more applications, it offers efficient clear-span coverage of floor areas up to 30,000 square feet.

From the wide range of Dome structures already planned and erected, Kaiser Aluminum has gained a wealth of practical experience which is yours to call upon. Contact any Kaiser Aluminum Sales Office for details and the name of the franchised dome contractor serving your area.

**SUMMARY OF REQUIREMENTS:**

**MOSCOW DOME:** To demonstrate and symbolize (as the dominating structure of the United States Cultural and Industrial Exhibition at Sokolniki Park in Moscow, Russia) the newest in American engineering progress and industrial ingenuity. To house, for visitors' clear-traffic access, five motion picture presentations plus dozens of floor-level exhibits.

**FORT WORTH DOME:** To create an opera house and theatre of classic but dramatic lines to integrate both esthetically and practically with existing monumental structures, memorial and museum. To house musical and dramatic productions efficiently, and to provide outstanding acoustical qualities.

**VIRGINIA BEACH DOME:** To provide, within critical considerations of design, appearance and cost, a dominating civic center structure complementary to surrounding landscape. To provide sufficient space for 1,500 persons at meetings or 1,000 persons at banquets.

**OKLAHOMA CITY DOME:** To build an impressive yet contemporary, economical and practical structure appropriate to a leading financial institution. To house complete banking services, including drive-in facilities.
The Kohler Memorial—a new school and community building.

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ELECTRIC PLANTS
provide
planned protection against power-failure emergencies

Two 35 KW Kohler electric plants provide automatic, flexible stand-by power to meet specific needs in the Kohler Memorial, Kohler, Wis., when normal electricity is cut off.

The No. 1 plant provides power for heating and ventilating, stage switchboard, swimming pool lighting. Special switch gear enables an operator to concentrate full lighting in specific areas, such as theatre or gymnasium during performances. The No. 2 plant provides emergency lighting throughout the building at 5 to 10 percent of capacity. Sizes to 100 KW, gas or gasoline, and diesel. Complete manual with suggested specifications sent on request. Write Dept. D-65.

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theatre, gym, youth center

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The Kohler Memorial

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Required Reading

is recognized by A. Hyatt Mayor, author of one of the introductory essays: "His drawings tell so much because he refrains from drawing until he has meditated the building in all essentials." "When Wright is ready to draw he merely records a vision that has matured to singleness..." But nowhere in this volume is there a discussion of Wright's drawing methods: the crayon work, the dotted line, the Japanese screen layouts; nor an account of the many draftsmen—Marian Mahony, Henry Klumb, John Howe—who contributed.

Do not think that this collection is all a glamorizing of well-known works. There are new buildings and drawings never before published, such as the Huntington Hartford "country club" residence. Only those who have studied at Taliesin have ever seen these great unexecuted powerfully imaginative compositions—the San Marcos hotel, the Doheny ranch, the San Francisco funeral chapels, and others like them of huge, urbanistic scale, reaching into the future.

The editor hews well to his avowed aim: "to bring to a larger number of people the pleasure of seeing Frank Lloyd Wright's architecture at the stages of conception and first formulation." This is an album. The explanatory captions are cut to the bone. The other introductory essay, by Giuseppe Samona of the University of Venice, is an appreciation, full of insight, but brief. Yet it is a book that will take its place beside the great Wasmuth 1910 portfolio and the Santpoort anthology of 1925, and like them will become a landmark in the growing literature on Wright.

Two for Christmas


LITTLE BLUE AND LITTLE YELLOW. By Leo Lionni. McDowell, obolensky, 219 E. 41st St., New York 21. 38 pp., illus. $2.95.

Having trouble finding the right gift for the young artist or architect on your Christmas list? Take heart. Two books written with just such creative children in mind have come to the rescue. Monsieur Down, hater of beauty and godliness, is the villain, and Architects are the heroes of The Magic continued on page 264

ARCHITECTURAL RECORD December 1950
another first from Bilt-Well
by Caradco

The SUPER THREE...one basic double-hung window in 3 price ranges

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double-hung unit
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There's more to offer with BILT-WELL WORK by Caradco

ARCHITECTURAL RECORD December 1959 71
Monroeville School District is so well satisfied with its first electrically-heated school building that it is now planning to build another which will be heated in the same manner. The first building, shown above, the Northern Pike Elementary School, was first occupied last December 1. Schoolboard officials and administrators say they consider it a success from every point of view. The second building will be a 20-room structure in University Park.

Electrically-heated school triumphs over high costs

Classroom in Northern Pike Elementary School . . . it's warm in winter, cool in summer.

The cost of heating the Pittsburgh district's first all-electrically-heated and equipped school during the past winter was less than had been expected, according to school officials and the designers and manufacturers of the equipment. It is Northern Pike Elementary School at Monroeville.

According to the figures revealed after the severe winter's heating bills were all in, the cost will not exceed $4,700 per year for electricity. The original estimate, before the heavily-insulated building was built, was $5,330 per year.

The estimated cost of heating with other fuel was $5,720, including payment of principal and interest on the extra initial cost of the building, maintenance cost of boilers, higher insurance, etc.

Designers of the electrically-heated school say initial cost savings in construction amount to $55,000 rather than $41,500 as had originally been estimated.

The Northern Pike school contains 13 classrooms, a multi-purpose room which serves as an auditorium, playroom and cafeteria, a kitchen and administrative offices. It accommodates 250 children.

The school is heated principally by modern baseboard electrical units thermostated so that the body heat of the children, the sun which shines through windows and the heat from cooking in the cafeteria kitchen is not wasted. A constant flow of fresh air is pumped into the rooms from the outside.

Dr. Carl Newman, superintendent of Monroeville schools, says the operation has been entirely satisfactory from a comfort and health standpoint as well as from a cost point of view.

The architect of the original building was Walter E. Schardt Associates; the manufacturer of the equipment, the Edwin L. Wiegand Co.; the electrical contractor, Morganstern Electric Co., and the general contractor, Spires Brothers.
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The official seal of St. Laurent was reproduced in polychrome Ceramic Veneer; tan Ceramic Veneer was specified for the facing. Unit sizes are 20" x 27" and 24" x 24".
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says LEE CRAFT, Manager
Howard Johnson Motor Lodge, Milford, Connecticut

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For details write to The MILLS Company, manufacturers of movable partitions since 1921. The address is 951 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.
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ARCHITECTURAL RECORD December 1959
"Pre-wired telephone outlets? They're a standard feature of every home we build!"

—SAYS PHIL JONES, CUSTOM BUILDER OF INDIANAPOLIS, INDIANA

"You're not offering the buyer a really modern home unless you provide for his telephone convenience," says builder Phil Jones. "That means giving him built-in, pre-wired telephone outlets in key areas of his home, just as you give him pre-wired electrical outlets."

Phil Jones builds custom homes priced from $21,000 up, and every one has from three to five outlets for telephone service. "I let the buyer tell me where he wants them located," he says. "After all, he's going to use them."

"Pre-wiring makes good sense. People like the idea—and I use it as a solid, competitive sales advantage."

* * *

Your local Telephone Business Office will gladly help you with telephone planning for your homes. For details on home telephone installations, see Sweet's Light Construction File 81/Be. For commercial installations, Sweet's Architectural File, 32a/Be.

BELL TELEPHONE SYSTEM

At left, Phil Jones and telephone company man Bob Hill discuss outlet locations. Below is one of the builder's handsome "Johnson Meadows" homes.
Now—elevator performance in any building can be precisely measured under all traffic conditions for any predetermined time period. Through our development work in Elevonics®, new instrumentation has been created that "sees" every move an elevator makes . . . and automatically charts a continuous visual record of starts, stops and waiting time.

This information is of incalculable value to evaluate the quality of elevator service. And it provides, for the first time, a truly uncontestable basis for sound corrective action.

This is but one of many ways that Haughton skills and experience are shaping the new technology in vertical transportation . . . and creating superior new standards for design, modernization, maintenance.

Swift, smooth, dependable elevator service is an unfailing source of satisfaction for building occupants, visitors and owners. Be certain your elevators are doing the best possible job. Ask your Haughton representative to let you see them in action—through the eyes of Haughton Elevonics.
Lights and shadows dramatize the enduring beauty of Vibrapac Monumental Block

Impressive way to set a mood

This exciting modular concrete block faithfully expresses the feeling you envision during planning: Simplicity without monotony. Dignity. Warmth. In addition to being esthetically pleasing, Vibrapac Monumental Block is structurally sound. It is:

... three times stronger than ASTM grade A block
... causes less cracking, due to higher tensile strength
... absorbs less than half as much water
... passes a 2-hour water-repellency test
... is steam-cured and dried according to rigid specifications
... is uniform in dimensions and color, clean, non-fading, and free from popping and/or stains.

Specify Vibrapac Monumental Block on the next project you design for the ages. Complete specifications and detailed information on monumental block construction available on request.


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FIRST IN CONCRETE BLOCK MACHINES
which do you prefer?

Or, perhaps, we should ask, "Which do you provide for guests in your home?"

Your client’s employees and customers are guests, too. And when they use the washroom facilities you design, they also look for cloth.

Why? The reason is very simple. There is no substitute for the luxury and quality of clean cotton toweling.

You, as an architect, can provide your clients with the best, by including cotton towel service in the washroom facilities you design.

How? By specifying modern recessed cloth units like the one pictured (center, right) ... or by providing proper wall space for any of a variety of modern, wall-mounted continuous cloth towel cabinets ... ALL available to your clients through local Linen Suppliers.

You do not obligate your client to any particular service. Why? Because this recessed unit will accept a wide variety of cabinets ... both cloth and paper.

You specify the recessed unit ... your client decides what type of service he wants. And, for continuous cotton towel service, there is no investment or installation charge to your client.

For complete information, write to Linen Supply Association on your letterhead. Send for this free Planning-for-Cloth Kit Illustrated, includes specifications for recessed unit and continuous cloth towel cabinets.

A. I. A. File No. 29-J

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ARCHITECTURAL RECORD  December 1959  87
fully-finished random-grooved paneling
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See Sweet's, section 2f/INL — or write for catalog 240.

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- Closed-rib A-deck
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...your clients would pay $364 just to get the standard "extras" alone

If your clients went out to buy all the valuable extra features that are standard only on Chrysler packaged air conditioners, they'd pay up to $364! Here's what they'd get:

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2. Electro-magnetic safety controls. Increase the service life of your air conditioning equipment.

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In new Lockport, N. Y., elementary school... THESE LIGHTS WERE GLAZED

Anna Merritt Elementary School, Lockport, New York, covers an area of 17,111 sq. ft., features a new aluminum framing system with a neoprene seal that eliminates caulking.

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Neoprene
3 TIMES FASTER THAN NORMAL

For the new Anna Merritt Elementary School (shown in photo) and the Roy Kelly Elementary School in Lockport, New York, architects Sargent, Webster, Crenshaw & Folley, Syracuse, N. Y., developed an ultra-thin aluminum mullion (only 1/4 in. wide) which, in combination with a prefabricated neoprene synthetic rubber sealing gasket (a special gasket designed with Patent Pending) gives the exterior wall a trim, modern appearance...speeds glazing...and cuts maintenance.

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ARCHITECTURAL RECORD December 1959 105
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NEW U. S. EMBASSY IN OSLO

Eero Saarinen & Associates, Architects; Engh, Quam & Kiaer, Associate Architects, John Engh and Henrik Kiaer, Superintendents; Nils S. Stiansen, Contractor
The handsome new United States Embassy in Oslo, Norway, is notable on several counts: its plan; its unusual precast façade; and its dramatic, four-story central court—the focus, or "eye" of the entire scheme—which connects all the corridors, stairs, and elevators. The main elevation faces on Drammensveien, a principal Oslo street which opens on the opposite side to a park-like garden containing the royal palace. The architect wanted to continue unbroken the character of Drammensveien—that of continuous façades—and thus the new building's façades respect the existing building lines.

The 190-ft-long principal façade—precast and composed largely of Norwegian Emerald Pearl Granite aggregate—is a rich, dark green color and built up of components ground and polished to a high sheen and then very precisely assembled with minimal joints. This wall is both functional and decorative: it combines the interior office module with structure (bearing wall) and is interpreted visually as a three-dimensional screen that interestingly changes in aspect according to one's angle of view. From a distance (top) it appears as a series of verticals; from nearby in sharp angle (bottom) it becomes a pattern of horizontal checkerboard traces, some mat, some glossy—some light, some dark.

The triangular plan was dictated by the triangular plot, bounded by three built-up streets. The diamond-shaped court resulted naturally as the plan developed; it is actually an inner triangle with two corners removed for stairs, elevators, utilities, etc. The spaces are used as follows: ground floor, administrative and consular sections; second floor, USIS and cultural affairs facilities; third floor, economic and military sections; fourth floor, ambassador and political section; basement, garage, cafeteria, auditorium, and service areas.
Of the court, Architect Saarinen says, "In a sense, the building is conceived as a triangular Renaissance palace, with rooms surrounding a court. However, the climate of Oslo demanded that such a court be enclosed and skylighted rather than open, since for many months of the year the gray, cold weather must be countered by a completely interior civilization. A feeling of enclosure and warmth seemed wise—hence the warm beige Roman Travertine floor, the honey-colored teak screen, and the light-toned brick grille. The diamond shape of the court is a natural outgrowth of the bas-(continued page 112)
U. S. Embassy in Oslo

Tightly triangular plan. In the center of the court is a pool, planned for a 15-ft-high sculpture, which would serve to accent the volume of the court. We are hoping this will come to pass. Warm lighting gives a feeling of sunshine in a city which is without sunshine for many months each year."

At left: detail of the central court teak-wood and polished brass screen and railing, with a photo (top left) of the fourth floor corridor and skylight, showing the screen and railing in application.

Above: A view of several interconnected offices, showing how continuous strip lighting is used to tie them together.

Right page, top: looking out from the main entrance lobby to the sheltering marquee and park across the street. Bottom: view from the second floor corridor on the central court into the entrance and control portion of the United States Information Service Library, which extends along the entire front of the building at second floor level.
NEW U. S. CONSULATE IN NAGOYA

Cochran, Stephenson & Wing, Architects; E. Bruce Baetjar, Landscape Architect; Ewell, Nelson & Bombhardt, Structural Engineers; Henry Adams, Mechanical and Electrical Engineers; Obayashi-Gumi, Contractors

The architectural problem in designing this consulate—the first of any nation in the city of Nagoya—was to create a building of such character that it would appear inviting (since the local Japanese citizenry would shy away from anything with an “Imperial” look) and at the same time provide needed security and privacy. Privacy was especially important for the staff apartments—the building at the left in the lower photograph.

Both buildings are seismic-resistant, reinforced concrete rigid box frames with tied footings. The concrete structure is left exposed, with infilling panels of masonry faced with blue, unglazed ceramic tile in 1-in. squares. The buildings are located in Imperial Park, the 90-acre site also of the 300-year-old Nagoya Castle, on a plot which affords a dignified setting and a fine view of the city for the new buildings.
U. S. Consulate in Nagoya

Materials and finishes: the exposed reinforced concrete structure is earthquake-resistant and rests on piles of precast spun concrete; infilling panels are of slag block faced outside with mat ceramic tile in 1-in. squares; non-bearing partitions are either slag block or surgi wood studs, finished with walnut or lauan plywood paneling; floors are predominately of asphalt tile on concrete slabs, tatami mats on wood platforms in servants’ quarters, and terrazzo in lobbies and corridors; ceilings are acoustic tile in the office building, natural concrete in staff quarters; sash are painted steel casements with hopper vents; all windows have split bamboo curtains; doors are flush wood (teak or maple) in hinoki wood frames; both buildings are heated from a central plant; the office building is air-cooled during summer months.
Soon after World War II, the principals of the John B. Parkin firm decided that the realities of the postwar world required a re-evaluation of the role of the architect. One result of the discussions that followed was the basic decision to expand the professional services of the firm to enable it to handle building types not ordinarily worked on in the past, and to handle all of its work in a much more efficient and complete manner. The decision was made to get into the industrial field in a big way. In order to accomplish this goal, the firm was re-organized, quite drastically, into a new type of professional organization. It would become one which could take industrial commissions and perform all of the required professional services, including those which were traditionally the architect's job, and a number of additional ones which have, of late, become necessary or desirable.

Today, the firm is equipped to handle, with its own staff, all of the programming, architectural, engineering, and other phases (except construction) of a widely varied number of industrial building types. One of the most important additions to the firm was the establishment of an industrial engineering department within the framework of the organization. This department handles the needs of industrial clients for analysis and layouts of production lines, flow patterns, equipment, operations, and the like. Working in close harmony with the design department, the industrial engineers participate in the selection of the correct modules for design, in the development of preliminary schemes, and the production of working drawings and details. The photographs above and the following analyses of three of the firm's buildings illustrate some of the results.
Industrial Buildings of John B. Parkin Associates, Architects and Engineers
Manufacturing Plant, Chestsbrough-Ponds (Canada), Ltd., Markham, Ontario: Chestnut McGregor, Ltd., Contractors

Complex Processes Simplified

In this building may be seen an example of one of the important principles of industrial building design developed in the past few years by the Parkin firm, the relating of the office to manufacturing spaces by the insertion of a neck containing service facilities. In this plant, the neck portion is utilized for a main entrance. Traffic divides here to enter the other portions of the building. Behind the lobby are located such spaces as toilet-locker rooms and first aid, making these facilities equally convenient to the offices and manufacturing area, yet removed from them for efficiency of operations.

The manufacturing processes required for the production of cosmetics, as carried on here, are quite complex and require extreme cleanliness and good housekeeping. In order to accomplish a smooth operation and meet the housekeeping requirements, the manufacturing portion of the building was designed for a gravity flow system which begins on the second floor with compounding and preparation operations, then continues on the first floor with packaging. In keeping with the cleanliness requirements, ceramic tile and other impervious, relatively permanent materials have been used on floors and walls. An unusual problem was the provision for receiving and storage of hot, liquid petroleum jelly. The cooled jelly is reheated by the use of steam coils to make it easily transferable to the compounding areas when needed.

An exposed, painted steel frame structure is used throughout the building. Gray face brick walls are used on the office section and the second floor. Red face brick are used elsewhere. The service section walls are constructed of aluminum storefront sections.
Several Functions Combined

In this building for the Canadian subsidiary of Johnson and Johnson, spaces have been provided for offices, laboratories, and manufacturing of pharmaceuticals in a two-story scheme. The most important primary guiding principle of the design was the separation of office and manufacturing functions by the use of the service neck employed in many of the architectural firm's other buildings. In addition, the very high standards of cleanliness and sterilization, and the need for precision in the manufacturing of products of this type had to be given a great deal of consideration.

Many months of study, in cooperation with the clients, were required before the industrial engineering section of the architectural firm could solve the production problems satisfactorily. During this time, the industrial engineers worked closely with the design, architectural, and engineering departments of the Parkin organization. The building, which has resulted from this close attention to the problems and details, provides the client with an efficiently functioning production setup. The exact requirements of the manufacturing processes have been provided for. Processes may be altered easily without major changes in the building. Offices or manufacturing spaces may be extended for increased production.

The building structure is steel frame, fireproofed with concrete. The entire frame is painted white. Window walls are composed of black steel sash with blue, fused glass bulkheads under the windows. The bulkheads are fireproofed with a masonry backup. Under the overhanging office wing, provisions are made for parking and a driveway through the building.
Ortho Pharmaceutical (Canada), Ltd.

The extremely clean lines and good details of this building are suggested by the photographs. Some of this feeling results from the desire of the architects to make the building reflect the character of the processes involved in drug manufacturing taking place here. Of considerably more importance in the achievement of the final result is the organization of the architectural firm for the handling of the complete commission in all of its phases other than actual construction. The view above shows the manufacturing wing and gives some indication of the site problems solved. Below may be seen two views of the entrance lobby and the main stair. Automobile parking areas and a two car garage are to the left of the lobby, covered exterior terrace to the right. The cafeteria is directly behind the lobby and the second floor contains the company offices.
Raised Floor Stops Permafrost

In order to overcome the disadvantages of a low lying site on a major highway and the requirement for below zero temperatures inside, this building was raised off the ground. By doing so, the formation of permafrost in the ground under the building, which might have resulted in heaving and other problems, was avoided. Instead of the usual appearance of most warehouses or other buildings designed primarily for storage, this one is more impressive. Instead of the low, squat look of many such buildings, this one seems to float above the landscape. Simple details and close attention to the placement of roof ventilators and other unsightly necessities of warehouse buildings have contributed to what might otherwise have been a cluttered design. The plan used is almost perfectly rectangular, yet the rectilinearity has been relieved by the difference in roof levels used for the office-loading dock area and the main production area.

For contrast with the black steel columns of the building frame, white glazed brick has been used with an 8 in. clay tile backup. Walls, ceilings, and floor are insulated with 8-in. of cork, in order to enable the required interior temperatures to be maintained. The spaces between ceilings and roof are mechanically ventilated for the purposes of reducing the cooling load and the prevention of condensation which would cause the insulation to deteriorate. Floors are composed of 4-in. emery-finished concrete poured over the cork insulation, supported on an 8-in. reinforced concrete structural floor. Interiors of walls are finished with cement plaster.
York Farm Plant

As indicated in the plan, the arrangement of the areas of this plant is quite simple. Flow of products smoothly progresses from the receiving area, through processing, into the large storage spaces. The orders are then assembled, packed, and transferred to the over-sized shipping dock for loading on trucks and transportation to markets. Expansion of the plant may be accomplished by extending the length of the building. In the office area, another floor may be added. In the photograph above, the large covered shipping dock is shown. Overhead doors are provided for closing the area off during periods when loading is not underway, or at the end of the working day. The view at the right shows the main pedestrian entrance to the plant. At the top of the stairs, the office entrance is located, and the service area, main plant, and loading dock may be entered here.
A New Twist To Two-Story Zoning

This trimly elegant house offers some interesting planning variations on the familiar two-story plan with an upstairs sitting room. The main program objective was to gain optimum circulation patterns and privacy for adults and children, and also for family living and entertaining. The uneven terrain, with little flat area, and the wish to preserve all existing trees, led to a more compact two-story scheme. The very adaptable plan has family living and activity areas on the lower level, and a more formal living area on the upper level adjoining the main entrance. Bedrooms are also at the upper level, but set apart by a two-story section of the lower living room, and connected to the entry by a cat walk. All areas interrelate, retain privacy.
The Buser House

The zoned plan functions in a variety of ways. Daily living activities take place on the lower level, where there is a playroom for the three children set apart visually and audibly from the rest of the house, but convenient to the kitchen for parties and meetings. The children use either the playroom door or the kitchen door, which are most convenient to their school and their play yard. A stairway off the kitchen leads to bedroom areas. The upstairs living area is kept uncluttered for “drop-in” guests and the parents’ evening relaxation. For entertaining on a large scale, both living areas are used: cocktails are served from a bar in the upper area, and dinner for 12 to 24 on the lower level. A stair links the levels.

The garage is at the upper level, connected to the entry by a porte-cochere; the retaining wall existed on site.
The Buser House

Although the house is comparatively large—about 4000 sq ft—it gains an even greater sense of spaciousness from the open, two-story living areas, and from the extensive fixed double-glass walls. Ventilation is through screened wood louvers at the window sides. Weather-stripped wood doors close louvers on the inside. Sliding doors open to terraces on three sides of the lower level.

The house is built of a near-black, hard-burned brick veneer over a wood frame. White trim and an aluminum cornice offer a sharp contrast. As the plan is fairly open, living areas are finished with acoustical plaster; other interiors are painted smooth plaster. Doors and cabinets are mahogany.

Heating is by a radiant hot water system, gas-fired. Three zones are used for control: two upstairs, with coils in the plaster ceiling; one zone downstairs in the concrete floor slab. Floor finishes are vinyl plastic in kitchen, concrete in playroom, carpet in master bedroom, tile in baths, and vinyl cork elsewhere.
In this small London bookshop, the architect has managed a relaxed contemporary atmosphere which is accepted and appreciated by the owners and customers alike. This is quite an accomplishment in Baker Street. It seems even more of an accomplishment when one considers that the architect’s clients were the oldest booksellers in London (the firm was founded in 1790), and they hold the Royal Warrant.

The shop occupies two ground floor bays and the basement of an eight-story building. Provisions are made for customers to browse, or sit and read in comfort. The view from the street is inviting and congenial. The interior is restrained, but possessed of great warmth, extremely comfortable, but spare.
LONDON BOOKSHOP

Of his design, the architect says, "A bookstore is somewhat of a cross between a library and a self-service store. Therefore, I tried to create a congenial background for leisurely shopping. Further, my purpose was to surround the occupants with a space which was unobtrusive, yet one which would also be recognizable as architecture." In order to achieve these purposes, the shop has been designed with restrained good taste, as is evident in the illustrations. The rich materials such as marble, African walnut, copper, and leather contrast with simple white plastered walls. Sculpture is placed in a number of locations, in an attempt to integrate this art with those of literature and architecture.
At this location, the sales and servicing of small private aircraft are separated from those related activities involved in sales and storage of parts, office functions, and the like. In order to accomplish this to the best possible advantage, the architects designed two closely related buildings, a hangar for the airplanes and an office building for the other functions.

Both buildings were designed for economical construction, ease of maintenance, and efficient operation. The buildings are comfortable and provide the atmosphere the clients desired for their customers and company personnel. The structure is quite simple, the materials clean and unobtrusive, in harmony with the location and purpose of the buildings.
AIRPORT SALES BUILDINGS

The extreme simplicity of the office building is indicated in the plan shown above. This feeling is reflected in the interior. The structure and materials used are not extraordinary—exposed concrete bearing walls and bar joists, with a wood-fiber cement board roof. Thus, the materials serve not only as structure, but also double as finishes. Additionally, the roof deck acts as insulation and acoustical treatment. The resulting economy has not obviated good appearance. The hangar building, shown below, is constructed with a clear-span rigid steel frame, for the utmost in flexibility of the space. Concrete block walls are used for enclosure only, and one wall is composed entirely of sliding doors for maximum utility.
The architects of this building wished to express something of the assembly line, machine product qualities of the automobiles it will house. However, it was felt that the building must serve as background for the products, not compete with them in any way. This, with the added desire for architectural excitement, was the goal set for the design.

In order to accomplish their aims, the architects have provided for complete sales and service functions within a plain, rectangular building and added to this an exciting showroom on the front. This wing with its vaulted roof and floor to ceiling glass contrasts mightily with the austerity of the remainder of the building. The result fulfills the functions programmed.
As may be seen in the plan, the relationships between the pedestrian entrance, showrooms, offices, parts sales and storage, and service areas have been worked out for a smooth flow of operations. The automobile entrance and exits make the movement of cars through the various phases of service as easy as possible, with very little congestion. The illustrations indicate some of the clean qualities of the structure and materials used. These include steel frame and concrete vaults, concrete block and face brick, with blue, white, and gray porcelain enamel panels at the entrance, and terrazzo floors. Wood paneling set in light steel office partition framing is used for division of interior spaces wherever feasible.
FOUR CHURCHES BY VICTOR LUNDY

Victor Lundy has asked: "Why should the architect be ashamed to do something just because he likes it that way . . . without having to justify it with logic, science, economy . . . necessarily?" And speaking for himself he might have added: "Let the architect do it the way he likes it, and then justify it any way he has to." Lundy may have to argue adroitly with clergymen and committees to get his highly individual churches built, but as soon as one is finished it justifies itself. Like a warm presence it inspires a response, from critics certainly but from the congregation as well. The four churches shown in project form on the following pages indicate, however, that Lundy's expressive, personal conceptions require more than verbal infighting to get built. His structures are daring and original, his use of wood inventive. Without great technical skill these evocative forms would remain on paper; Lundy gets them into space.
To explain the basic concept of this church Lundy has written: "There is so much sunshine, brightness and glare in Florida, that I decided on a design that would look inward on itself. There will be a simple exterior of high battered masonry walls faced with white coquina (a beautiful Florida stone of calcified marine life). These walls will be placed at slight angles to one another for acoustic reasons and to permit triangular slivers of stained glass between. The building has two structural systems that have little to do with each other. The exterior walls stand alone as a heavy, protective enclosure for what happens inside. The interior is a lacework of eight hyperbolic paraboloids that crisscross, touching at the tips (they stabilize each other that way, and are better delineated individually). To further delineate them, the center voids are roofed with five simple vaults, probably framed in wood, the spaces between filled with colored glass."
Above: Church will occupy a flat four-acre site covered with pine trees through which the building will be viewed from long approaches. The narthex will be enclosed by two great walls of stained glass which will probably be designed in an abstraction of the branches and needles of pine trees, and which will be reflected in the indoor, outdoor pool at their base. The tower will be of steel faced with the white coquina stone with an illuminated cross on top. Side areas shown in perspective and on plan (opposite page) are kept low for scale contrast and provide gathering areas for the congregation after the service. Masonry walls resolve into arches (not shown) where these areas open off the nave. The area beyond the chancel has also been kept low. Side and rear areas which would appear as roofs below the plane at which the narthex, nave and chancel are drawn are shown defined by walls in plan.

Right: Photograph of model showing earlier roofing scheme
St. Andrew's Presbyterian Church

LOCATION: Dunedin, Florida

The ultimate concept must be built in easy stages at five or ten year intervals, so a design had to be developed in which the first stage would be a beautiful thing by itself. The fellowship hall is to be constructed first (see the plot plan) and will be used as a sanctuary until the second and larger portion is finished. The hexagonal units which house Sunday school rooms, offices, etc. will be built as needed. This system is flexible enough to allow each group of units to take advantage of a site which offers thick clusters of beautiful trees and exotic plants. The erection of five units is planned for the first stage.

The entry (see perspective) is low ceilinged and intimate, and as one progresses into the space it rises as it narrows, ending finally in a straight line. The future narthex will be low and then the second half of the structure will also rise as it narrows culminating in a height of 80 ft at the extreme end of the sanctuary. The final plan is a diamond and by means of sliding doors both spaces can be thrown into one huge one, or either space can borrow the narthex for expandability when the need arises. Easy expansion is an important consideration in Florida where there is the problem of transient congregations. Larger spaces are needed during the tourist season.

Lundy's personal justification for the final form: "The trees and shrubbery on the site are like a jungle. I felt a very simple strong silhouette would be necessary to make an impression against nature's power. The simple shape of the prow will be quite effective. Then too, Dunedin is a fishing town and the site itself is quite close to water. There is an appropriate sense of the ship about this building."
Fellowship hall and hexagonal units as they will appear in initial stage before erection of complete narthex and sanctuary

Photograph of model showing sanctuary on the left, narthex in the middle and the fellowship hall on the right in final stage
The fellowship hall will be built like the hull of a ship, and in fabrication the arches will be lofted like a ship's curves are. The main structural members, of laminated wood, are 16 ft apart. They will be spanned by 2-by-4-in. wood decking on edge with finger scarfs for long lengths. This wood decking will form the finished ceiling and will also serve as the final decking for the roof surface which will be wood shingles or copper. The battered walls will be faced with white coquina stone. Glass will separate both exterior and interior walls from the ceiling which will thus carry through in an unbroken line
Many members of the congregation of this church work at Cape Canaveral as technicians and engineers. Their budget is limited, the church must be small, and here Lundy designs on a very modest scale. Since small structures have a greater presence if their appearance is fairly consistent from every viewing angle, the visual image of this church is uniform. Planned for a multi-purpose use of spaces, seating in the nave can expand into classroom areas. The altar, the unquestioned focal point, is dramatized further by the upward spring of the laminated plywood arches opening apart to admit light from the sky. A special effort has been made to plan each classroom symmetrically around each arch. That way the scalloped roof will create interesting peaked ceilings in some and little butterfly ceilings in others, and each room will have an arch thrusting overhead.

The church will be built in two stages, working from the center out. Laminated wood arches in two orders of heights will carry the double tongue and groove wood decking which forms the finished ceiling and the roof deck. Probably a white plastic roof covering will be used to further the scalloped seashell impression created by the basic form.
The site is a nicely wooded piece of land on an island not far from Cape Canaveral. The building is set back from the property line on Hibiscus Boulevard with parking completely to the rear, so it will be viewed from a distance through trees and no cars will interrupt the main approach.
Another multiple stage project, the social hall will be built first and serve as a temporary sanctuary, the Sunday school will be completed in the second stage and finally the sanctuary and central tower will be constructed. In describing the problem Lundy said: "There are several good reasons for the cross-shape besides the symbolic one. By placing the social hall and the sanctuary end to end, the building presents an imposing front to the street, its best face forward, and this is an important consideration for a young mission church just starting its growth. Most people will see the church first as they move by in cars from the main highway to the west, so this frontal impact with the central tower reflected in the pool is important. The whole complex must be easily buildable in stages, and the cross shape is ideally suited for this as each leg of the cross is free to develop and grow independently, finally taking its place in the total concept."

Both social hall and sanctuary open on the central narthex under the tower. The narthex can become overflow space, and on important occasions the two spaces can merge with each other to handle the crowds. There will be no paved areas on the entire site. Driveways and parking spaces are used so infrequently that it will be possible to cover the whole plot with a carpet of St. Augustine grass over marl, and cars will simply drive about over the grass. The buildings will sit on a great expanse of green. According to Lundy, this type of grass has held up very well in certain Florida drive-in churches.
Photograph of model shows that the roof sections and structural theme of the three major elements are the same and there is a progression of scale upward to the sanctuary. The ridge of the Sunday school (forward element) will be 20 ft from the ground, and the ridge of the social hall (element at left) will be 35 ft high and line up horizontally with the solid part of the roof of the sanctuary (element at right). Above the 35 ft level, the sanctuary roof will become a skylight which will reach a height of 50 ft. The future tower will reach a height of 150 ft and will be made of heat resistant, glare reducing glass. It will be illuminated from within to serve as a beacon at night.
Each of the three structures will be surrounded by great outdoor porches. The supports for the system of laminated arches which intersect over the sliding glass door lines at the quarter spans are along the outside edges of the porches. They will be of steel covered with a coquina stone facing. When overflow area is needed the sliding doors are pushed aside into their pockets and the porches become part of the general space. There are no obstructions to the edge of the porches. They will be used as outdoor seating spaces and outdoor classrooms in the Sunday school wing. The low roof shape will provide an intimate scale.
To permit the roof to swing in an uninterrupted curve from the peak to the outside piers, no solid walls will go to the ceiling. As in other Lundy structures they will stop short and glass will be used to fill the remaining void. The roof will be of red cedar shingles on double tongue and groove decking spanning the laminated wood arches.
Religious Education and the Design of Protestant Churches

A leading Protestant educator traces the theological developments which have led to the new importance of teaching in modern Protestantism, and challenges the architect to express this emphasis in a new church form.

Protestantism in America requires a new architectural form which will express the understanding which contemporary Protestants have about the church’s nature and mission, and will also express the fact that Christian education is integral to the whole life of the church.

The church recognizes that modern man is anxious about the pressures of life, about how old values can fit into a technological age, about the meaning of world events and the new challenges of space. The church also recognizes that it must question its own faith to see if it is relevant and helpful for contemporary man. This has led, in our time, to a vigorous and extensive reexamination by the church of its faith. According to one competent interpreter, “Not since the Protestant Reformation has there been so widespread a movement for the radical reexamination of theological traditions as there is at the present time.” Since the roots of a church’s life feed upon the theological point-of-view it holds about its faith and how that faith should be expressed, this theological renaissance is changing Protestantism from within and has produced new approaches to the church’s educational task. Whenever an educational program changes, so should the kind of building which houses it.

Since the present period is so open, since the strangle-hold of imitation has been broken, since contemporary design is no longer anathema for Protestants, church architects who understand deeply what is happening within Protestantism can make a significant creative contribution to church architecture. The architect is seldom able to become a theologian, and the theologian is seldom able to specify the architectural implications of his own theological views. Through practical experience, most architects recognize some of the theological implications for sanctuary arrangement and symbolism. A new challenge, however, confronts the church architect because there is no historical precedent for expressing architecturally the implications of a new theological posture in which teaching and preaching are integral. Because the theological revolution is now going on, the “results” cannot be defined. The architect who is concerned to understand what these theological changes will mean for church architecture must begin by trying to learn why and how this theological revolution developed.

THE THEOLOGICAL REVOLUTION

Theology is always a lively arena of contention. Since 1900, American Protestant churches have come under the influence of three major points of view toward the Christian gospel. At the turn of the century, Protestantism was, in the main, conservative theologically with evangelical revivalism as its most dynamic pattern of development. However, for men who were experiencing the promise and optimism of an expanding frontier nation, who were developing...
the means and the power to control their environment by the use of science, and who were attracted by the idea of evolution, the world seemed to be explained better by philosophies which emphasized man and his power than by theologies which emphasized the supernatural powers of God. The roots of the man-centered point-of-view were in the rationalistic and idealistic philosophies of both Europe and America. In these views the focus of man's concern should not be to placate an angry God, but should be to build a new, ethical society, the Kingdom of God on earth. Social movements of many kinds grew up, from "institutional churches" in the cities that would rehabilitate urban life, to peace movements for ending war.

There were Protestants, of course, who did not accept these "modernist" views, who continued to hold that Christian faith could be summed up in five "fundamentals"—the inerrancy of Scripture, the Virgin Birth, the bodily resurrection of Christ, "blood atonement," and the Second Coming. In the 1920's the conflict between the two positions was public, frequent, and bitter, as evidenced by the "monkey trials" and the Bryan-Darrow debate in Dayton, Tennessee, in 1925. Fundamentalism continued to spread, but liberalism gained ascendancy in most of the large Protestant denominations.

Liberal theology made a major contribution to Protestantism by breaking through a static orthodoxy and fixed supernaturalism, by its recognition of the contribution of science to human knowledge and human welfare, by its attempt to use the findings of historical study to make the Bible more relevant to the twentieth century, and by its concern to see the improvement of man's social situation as part of the Christian mission.

Liberalism, however, began to lose ground under the impact of World War I and the resultant turmoil which led to the trauma of the Great Depression in America. Liberal theology had not prepared Protestants to understand the depth and tenacity of sin nor to recognize the perennial human temptation to "absolutise the relative." In rejecting the rigidity of orthodox Calvinism, Protestantism had become consciously anti-theological and thus had become separated from the insights of its own longer theological rootage. The liberals became too optimistic about men and progress. Even Dr. Fosdick, in a famous sermon, "Beyond Liberalism," warned in the 1930's that there would be a reaction against faith in man.

The reaction had started, however, in the 1920's in Europe. Karl Barth, a pastor in Switzerland, was profoundly impressed by man's capacity for evil as exhibited in World War I. This did not look to him like "progress," nor did it seem to justify the prevailing optimism about man. Barth began to read the Bible with new questions, and with the expectation that it might be saying something new and different to men of faith than it had seemed to say to those who looked to the Bible for assurances about man's capacities. He was looking for a more adequate understanding both of the world and of God. In 1927, Barth published a study of the Epistle to the Romans and his book proved to be a theological bombshell. In this and subsequent writing, he reassessed the authority of the Bible as revelation of God, the "otherness" of a transcendent God, the finiteness of man, and the inability of man who must depend wholly upon God's grace, to gain a right relation to God by his own effort.

When the earliest writings by Barth reached America, they were violently rejected by most Protestants, and his name became a symbol to many liberals of reversion to discredited fundamentalism. Such words as sin, salvation, revelation, guilt and redemption, used by Barth and a part of historic theological terminology, could not even be understood by many thinking Protestants. The theological renaissance which followed Barth's work was not so much because of the attractiveness of his ideas as it was a reaction to the failure of liberalism to interpret to sensitive and insightful men and women what was happening to them and to their world. Men need to be able to explain their situation to themselves, and they sense that they have a right to ask Christianity to offer an adequate explanation of existence.

On the American scene it was Reinhold Niebuhr, a seminary professor in New York, who attacked liberalism's optimism about man and utopian idealism about society and presented the Christian "dimensions of depth," the transcendence of God, and both the "grandeur and misery of man." Niebuhr has been a critical commentator on the political and social scene as well as in the area of theology and ethics, and as such has had a profound effect even upon many American thinkers who do not accept his theological presuppositions.

The theological currents growing out of the work of Barth and Niebuhr have often been called "neo-orthodoxy" or "neo-Protestantism." Some who have changed their approach from liberalism to a position nearer to Barth and Niebuhr call themselves "neo-liberals."

Barth and Niebuhr were not alone. Many theologians of major stature have shared in the reexamination of the church's belief about itself during the last two decades. Emil Brunner in Switzerland; Gustaf Aulen in Sweden; William Temple in Great Britain; Paul Tillich, Richard Niebuhr in America; and a younger generation of theologians, Bible scholars, preachers and teachers, have produced a new theological literature both in scholarly works and in books for laymen which reflects and interprets that reexamination. There is a wide diversity of emphasis among these scholars, yet certain common concerns and themes recur again and again. An appreciation of these concerns and themes is a necessary step toward understanding contemporary Prot-
estantism. Six of them deserve special attention:

1. **Theology is important.** Theology is returning as the central concern of the churches. Whenever one attempts to speak about his faith, he is speaking theologically, and speaking about the faith is the main business of the church. Theology as a discipline of scholarship has many branches and serves the Christian church in a variety of ways. It is used to study the history of Christian thought, to examine the meaning of the teachings of the Bible, to understand the nature and mission of the church, to explore the relation of Christian faith to society, to meet the opposition of non-Christians, and as a basis for preaching and teaching.

The current theological revival has had a deep impact in all of these areas, and as a result the pattern of church life and thought are changing.

2. **The Bible is the Word of God.** This old phrase meant to the fundamentalist that God had either dictated each word, or had guided the hands of the writers, so that there could be no error in the Bible. The liberal was more inclined to describe the Bible as a record of man’s search for God. Biblical writers who share the new theological approach point out instead that the Bible is the record of God’s search for men. The phrase, “the Word of God,” is now being used with new meaning. The Bible is the record of the events through which God has shown Himself to men, and particularly to His People. In whatever ways God shows Himself, those are the “Word,” the communication of God. “Word” is thus used in the broad sense of communication. When by reading the Bible a man is “spoken to” by God, then it becomes a channel for him of God’s “Word.”

3. **God is known by revelation.** A simple analogy can be drawn from everyday experience. We cannot “know” another person unless he lets us know him. We can know the color of his hair, his weight, something of his tastes, and who his friends are, but we cannot know the inner personality unless he allows us—unless he “reveals” himself to us. Revelation in theology, a central concept in the current theological emphasis, is something like that. It refers to the conviction that we cannot find God by our own rational effort. Biblical theology is not a “natural” theology which assumes that we can know God by reason or by observing the visible processes of nature. God reveals Himself to man in many ways—through the events of history, through the Bible, through personalities, by the Holy Spirit. God takes the initiative in revealing Himself, and He took the initiative most decisively and uniquely in Jesus Christ. What is revealed to man are not rules of living nor patterns of church life nor spiritual teachings. What is revealed is God.

4. **The Church is a covenant community.** For many liberal Protestants, a church is a society set up by Christians as a means of working together in a common spirit toward common goals. The more recent theological viewpoint sees in the church a continuation of the covenant community of Israel which grew out of the Exodus from Egypt. Present day Christians are members of a spiritual family which has a more or less continuous relationship, a common heritage in the faith, with Abraham, Isaac and Jacob, the prophets, Jesus, the Apostles and the historic church. From this point of view, to become a Christian is to adopt spiritual ancestors. The church is the Body of Christ, and He alone is its Head. It is in the world for the same purpose that Christ was sent into the world, “to reconcile the world to God.” This is not first a reconciliation of man to man, but of man to God, and from this should follow reconciliation of man with man.

In the light of such a view of the church, division is seen as a sin. Church unity is understood as God’s will for the church, for all who accept Christ as their Lord are members of one Family of which He is the Head. One of the great facts of Protestantism in the twentieth century is its worldwide ecumenical movement which expresses a new realization of this responsibility of divided Protestantism to unite in common work and witness.

5. **Protestantism has a distinctive witness.** Protestants are studying church history more than ever before, and while they recognize the many points at which they witness to a common Lord with Roman Catholics, they also recognize the deep gulf which divides them from Roman Catholics in their doctrines of the church and of work. This historical study has led to a new appreciation of the distinctive Reformation idea that the place where men are to fulfill their Christian duty is in their everyday work. No sphere of life can be separated from Christian concern; religion is not reserved for the pious occupations. Every occupation can be a “calling,” a “vocation” from God, and men perform their obedient service to their Creator primarily through their day-by-day work. The church, then, is at work in the world through the work of those who accept Jesus as the Christ, and its mission is expressed through their labor in farm or factory, home or classroom, at desk or drawing board.

6. **The church must act in the world.** If God acts in history, His church must allow itself to be used by Him to attain His purposes. The church is in the world, but not “of” the world. It must not allow itself to be identified completely with any particular social or economic system, any particular race or nation, any particular class or culture. The church should stand as a symbol within history of that which transcends history. It is in the world as a human institution which points to God and to His claim upon the world and upon men. However, the church must respect the function of other institutions and other points of view. Part of its mission is to maintain a dialogue between the faith and such scientific or academic fields as education, depth psychology, the arts, because not all truths are given in the revelation of God’s Truth about Himself.
RENAISSANCE IN CHRISTIAN EDUCATION

A church's theological position is reflected in worship through the form of liturgy, as well as the content of preaching, and this guides the architectural expression in the handling of nave and chancel.

The church's theological position is reflected organizationally in its education program, in both content and pattern, and this should guide the architectural expression in the facilities for Christian education.

Because education in the church is institutionalized into elaborate processes and programs, educators are usually the slowest of church professionals to adopt and implement theological changes. While neo-orthodoxy came to America in the 1930's it was nearly 20 years before the educational leadership of Protestantism began to reflect the change. The change has begun, however, and educators are teaching, organizing and writing from the perspective of a fresh theological concern, a new emphasis upon the Bible, and a new view of the church. Changes are to be seen in many local churches, but particularly in the Episcopal and Presbyterian denominations which in recent years have sponsored nationwide attempts at new patterns of Christian education.

The most important impact of these new theological currents is the acceptance of Christian education as an integral part of the life of the church. This is seen in the Episcopal program when the rector of the parish conducts the family service for the Church School. This acceptance is obvious in many practical ways. For many years, Sunday Schools were supported by their own offerings. Now in most churches the educational program is in the church budget—salary of director, cost of materials, equipment, curriculum, even subsidy for sending children to summer church institutes. For many years, Sunday Schools had their own committees, but now in most churches a regular board or committee of the church has responsibility for organizing and conducting the Christian education program of the church. In many churches one of the ministers is the head of the educational work of the church.

There is a deeper and more significant way in which the education program has been accepted as part of the life of a Protestant church. The change of attitude has come about from both sides—the educators and the churches. Sunday Schools no longer feel they have done their full jobs by telling children about the Bible and by developing individual character. To be a Christian means to be a part of the acting Christian Family, the church. The education task is carried on because it is part of the church's mission, and conversely it is part of the educator's task to introduce children and young people into the total life of the Christian church. Christianity is the faith of a community, of the people of God, and the participation of children in the Sunday School is their way of participating in the life of the whole Christian Church.

A second result of the new theological current is that experimentalism is returning to the local church education program. The new Christian education does not enthronel one method—discussion, lecture, story-telling, or audio-visual. The most important factors in the classroom are the faith of the teacher and the openness of the student to all of the experiences he will have there. The good teacher uses a wide variety of methods and techniques and the church should seek to provide the necessary facilities for such variety. More important is the fact that Christian educators are better trained and are better qualified to experiment creatively with new patterns in the local church. In more and more churches Sunday morning sessions last two or three hours. Weekday classes are increasing for youth and adults. No longer does a church stand idle from Sunday evening until Sunday morning. Because Christian educators are better trained, because the education program in itself is becoming more varied and complex, and because method is subservient to an understanding of the faith, there is little likelihood that a new fad will erupt for a one-sided educational emphasis and demand a narrowly specialized building.

A third aspect of the new currents in Christian education is its fresh concern for adult education. Being a Protestant Christian is now understood as involving a responsibility to continue to deepen one's understanding of the faith throughout life.

Early twentieth century religious education placed emphasis upon "growth," and the importance of starting the growth of the individual in the right direction. This sometimes implied that education in later life could contribute very little to the personality already formed. But biological maturing is not an adequate analogy for theological maturing nor for Christian development. "Growth" does not apply to faith in the same way. Understanding may come either suddenly by revelation or gradually by growth. The objective of the Christian gospel is to bring men into a right relation with God. This is not a "natural growth process," but rather is the result of a human response to a divine activity. This being true, the basic idea of Christian education is less to aid a person's spiritual growth than it is to make sure that the individual is confronted by the reality of God's activity in history so that he may be helped to recognize God's initiative in his own history and to respond with faith.

While in early childhood there is need for an introduction to the roots of the faith—Biblical and historical—as the person matures there is need for more explicitly theological training. In recognition of this a number of local churches now offer a midweek School of Religion, or a major lectureship, or a Lay School of Theology, for extended periods dur-
ing the year. Some churches are employing full-time directors of adult education. Libraries of religious books are increasingly a central feature in adult education programs. Perhaps the most significant adult education conducted by Protestant churches is the training provided for Sunday School teachers. Through teacher training the church helps to form the patterns of faith of the coming generation.

A fourth new emphasis is the serious attempt being made by many churches to implement the conviction that the family is the primary religious educator of children. The fact that parents are their children's principal and most important religious teachers—for good or bad, and whether they intend to be or not—has been asserted for many years by religious educators. No church has yet taken so radical a step as to require that all parents teach their own children, with the church providing education for parents only. In the new education programs of the Presbyterian and Episcopal churches, however, the parents play a much larger role than before, and are provided with monthly materials to use with children in the home which include text books that are permanently bound so they may become part of a family library. Activities are planned which enable the parents to assist the teachers. The new plan of the Episcopal Church provides for a family service each Sunday morning, conducted by the rector or priest of the parish, with children and parents going from this service to their individual classes.

Other churches are experimenting with a variety of family-centered plans. One form is family classes—where parents attend the Sunday School class with their child for part of the year. In another pattern, parents and children of a department attend together a common presentation period and then go into separate groups for discussion and projects. Family nights are common in many churches. No church expects to fulfill its educational responsibility only through family activities. Dependence upon a stereotyped, traditional Sunday School program to perform the total educational ministry of the church is no longer valid, however. The immediate future will see more and more variety in the patterns and structures of educational programs, and one of the most important will be the emphasis upon home teaching and participation by family groups.

THE CHURCH SCHOOL
AND THE ARCHITECT

The basic assumption of the Christian educator is that God is not limited, in speaking to man, to the acts of worship. The nave, therefore, is not the only essentially Christian portion of the church building. The Biblical injunction of Jesus Christ to His disciples was not to go out and conduct worship services! It was “Go ye therefore and teach all nations, baptising them in the name of the Father, and of the Son and of the Holy Ghost; teaching them to ob-

serve all things whatsoever I have commanded you.” If education is, in principle, separate from the organic life of the church, that separation should be expressed structurally. Such is obviously the case with most Protestant church buildings. Education may be in the basement, in the “education wing” or the “education building.” But if the Sunday School is organic, if both preaching and teaching are Scriptural and essential, then the church building should express that integrality. To do this, Protestant church architecture will have to develop a new form.

The distinctive feature of Protestant church architecture, then, must be the duality of focus. Teaching and preaching; education and worship. The difference in function should not imply a difference of intent or content. The difference in pattern should not imply a difference of direction, or symbolism, or relation to historic Christianity, or relation to God. If architecture is to express both the theological nature and the practical situation in Protestantism, then the educational facilities must be as clearly and explicitly “the church” as the nave. There are particular difficulties in this for the architect because most Protestant churches being built in America today require much more square-footage for education than for worship, fellowship or administration. This means that the architectural expression of the education facilities will and should influence the form and character of the whole building.

Now the educational portions of the church are most frequently copies of the local public school. The fact that the main educational medium of a Protestant church is its Sunday School should not lead the architect to the superficial assumption that all schools are alike. “School” is changed in its meaning when it is in a Christian church. Not only must the difference in program between a public school and a Church School be obvious in the architecture, but just as important the form should have a Christian meaning which is relevant to contemporary man. It must say “Christian faith” and “God was in Christ” to the child who comes Sunday by Sunday, as well as to the passer-by. It must declare its spiritual purpose not only as it houses teaching, but must itself, as a building, be a teacher of the Christian faith.

The architect who attempts to take seriously the whole challenge of Protestant church architecture must recognize that what he does will reflect his own faith. Rudolf Schwarz, in “The Church Incarnate,” rightly points out that “the architect must believe that God has revealed his own being in the sacred history and he must believe that therefore even God himself is not something or other but rather a clear form, and also that, glorifying him, one gives him back his own message when, in the building of a church, one forms creation to sacred body. He must believe that there is truth in the fantastically bold word about the birth of God among men—

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and likewise in that other word that man is the measure of all things: he is, but only because he has been measured by the measure of God." 2 The building expresses the faith of the architect just as teaching reflects the faith of the teacher and preaching the faith of the preacher. Through the understanding of his own faith the architect discerns the faith of a congregation and builds a "temple" to God which reflects that faith.

A new integral church form will speak through the symbols of space, light, and explicit content.

**Height.** Prosperous Protestantism has been prodigal in its use of land and has accepted the present one-story fad without "Christian criteria." Without meaning, and with little concern for esthetics, one-story "additions" have sprouted as "wings" around old buildings. They may be comparatively inexpensive to build, and may have provided desperately needed classroom space, but they have made it more difficult for the next generation to find a church building that witnesses to the faith for which it was built.

Educational wings and buildings have been particularly guilty of being symbols of the man-centeredness of so much popular religion. There is nothing within the souls of those who build or pay for such structures which demands either that the building express man's reaching up or God's transcendence and reaching down. Height has been lost as a dimension of much modern Protestant architecture. Even the steeple is often brought down and set on the ground beside the church building. Economy, not faith, dictates every artistic decision. The symbols of earth-bound, man-centered religion are everywhere, and they cannot for long feed the spirits of people who are rediscovering the God of Abraham, Isaac, Jacob, of Jeremiah, Jesus, Paul, Luther and Calvin.

Protestant architecture can no longer allow its building for worship to point God-ward and its building for education to point man-ward. It may be that as our land becomes so filled with people and the cost of ground becomes too great that our churches may once again look upward.

**Light.** Contemporary architecture has freed the church from cramping limitations of trying to adapt old styles to new functions, but contemporary patterns have smuggled in their own inherent symbolism. One of these is the use of light, of glass, of openness, of freedom. Light and openness can imply that all that Christianity means is obvious, only to be seen to be understood. No mystery, distance, judgment and demand are left. Yet darkness has positive meanings for which light cannot be substituted. The church is not all "light." It, too, is an arena of the struggle between light and darkness, of the contention between God and man. The form of the church should be as true to man's situation vis-à-vis God, as it is of God's situation vis-à-vis man. God is not known fully by even the "spiritual" man. All is not openness and clear rationality in Christian faith. There is length, breadth and height and depth to the Christian faith which every Christian church building should reflect.

**Simplicity.** Some contemporary church architecture is almost as iconoclastic as were the eighteenth century Puritans. Simplicity has become barrenness, starkness, plainness. Ornate decoration has little spiritual value, but there is a richness and variety to the Christian church with its long spiritual heritage which should enrich any contemporary church building. Stark simplicity can symbolize a profound disregard for the past and for other Christian traditions, it can dehumanize life, it can mean emptiness and ignorance. The new form should be a "teaching" church throughout, in which the building itself not only asserts in all its parts the basic relationship between man and God, but also reflects the content of Christian history and conviction.

The corollary of the problem of simplicity is the use of new symbols. Sentimentality and superficiality are having their hey-day in Protestant churches when flowing springs are installed to "symbolize" the Water of Life, and boxes of plantings are scattered around to "symbolize" the Living Hope, and modernistic fish are hung on the wall to "symbolize" the Fisher of Men.

These are not symbols. A Christian symbol is a product of the Christian community and must partake of the truth it symbolizes. We do not "design" new symbols. Christian symbols are Christo-centric, and though many old symbols do not speak to modern man, it is hardly significant to try to create new symbols which modern man may understand but which he cannot identify with the inner meaning of the Christian faith. Symbols, too, share the teaching ministry of the church and can help make the building itself a channel of that teaching.

Protestant church building committees so seldom recognize that the art and symbolism of the church is expressed in the basic form, in the rationale of the building. It is here that the building should be "Christian." Instead, most churches try to apply the "Christian element" in decoration. Christianity which is only a surface decoration is as false in architecture as it is in personality.

The roots and the expression of a new integral Protestant architectural form must grow from a deep understanding of Protestant Christian faith in all of its vitality, variety and complexity. A new day should be dawning in American church architecture.

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In spite of the current controversy over their merit (or meretriciousness), curvilinear forms, not only for roofs but for entire buildings, are evidently here to stay. At least Pratt Institute seems to think so. Its School of Architecture has this fall reprinted and introduced as a text a collection of papers by Associate Professor H. Seymour Howard, Jr. on "Useful Curves and Curved Surfaces," which have appeared in Architectural Record over the past four years. As Professor Howard points out, "The forms most suitable for the solution of many structural problems require facility in drawing and using curves," and he has here made readily available information on the characteristics and methods of developing curves and curved surfaces ranging from the homely catenary and the ubiquitous hyperbolic paraboloid to the exotic trochoid. There is also a lucid discussion of geodesic domes, the geometry of which has been sparsely documented in spite of the familiarity of the domes themselves. The publication is available for $2 from the School of Architecture, Pratt Institute, Brooklyn, N. Y.

By next summer, seven legitimate theaters in New York's Times Square theater district, each a member of the historic Shubert chain, will be linked to a refrigeration plant hidden away in an abandoned boiler room beneath famed Shubert Alley. The master air conditioning system will operate at about one-tenth the cost of the delightfully anachronistic system it replaces—an ice-chilling system that consumed about $6,000 worth of ice every week. It will also improve the old control system whereby an usher, noting the moist brows of the patrons, simply told the manager who told an operating engineer who threw in another chunk of ice. However, the new controls will preserve the autonomy of the theaters: an empty theater can be bypassed entirely; and a packed theater with its dials set for full cooling can re-adjust its climate for reduced occupancy if there is a sudden exodus during the second act. Its advantages as a cooling mechanism aside, the new system would seem to offer all sorts of dramatic possibilities. What stage manager could resist turning the air conditioning full on for a South Pole epic—or full off for a South Seas idyll?

The concept of functionalism as the sine qua non of modern architecture is by now so firmly entrenched that, while no one will doubt that "in many cases (it) is only partially realized," the notion that even our most streamlined buildings are, by definition, non-functional comes as a bit of a shock. However, this intriguing theory is not only propounded but thoroughly documented in Adaptable Buildings, the most recent in a series of tri-lingual publications put out by the Institute for the Development of Lightweight Structures, which is captained by Dr. Ing. Frei Otto. In a piece called "Flexibility in the Planning and Design of Structures," Antony Herrey develops the thesis that since "no structure is functional unless it can . . . potentially fulfill any function at any time . . . it is actually a mockery of the doctrine of functionalism to erect structures which conform to functional requirements at the time of construction but rapidly thereafter become obsolete." Not content with decrying the lack of flexibility—and hence of functionalism—in our architecture, he goes on to outline the "general directions for achieving [internal, external and regional] flexibility" and to cite a surprising number of proposals that attack the problem head on—from Fuller's "Dymaxion" house to the "Uni-strut" framing system.

Dr. Otto has expressed his hope that the Berlin-issued publication will stir up discussion on "a subject of general interest." If Herrey's piece, which was the longest this uni-lingual reader could decipher, is representative, it will.

This Month's AE Section

CONSTRUCTIONS TO ISOLATE HIGH INTENSITY NOISE, p. 162.
AIR CONDITIONING FOR LUXURY APARTMENTS, p. 159.
PRECAST, Prestressed Walls FOR A HIGHWAY HOTEL, p. 156.
PRODUCT REPORTS, p. 166. OFFICE LITERATURE, p. 173.
TIME-SAVER STANDARDS, High Intensity Noise, pp. 163, 164.
In the course of precast concrete's development from a new import to a structural staple, many attempts have been made to venture away from the tried and true column-girder systems in which precast units simply replace more conventional framing members, and to move toward systems in which large precast panels are themselves the columns and girders.

A recent and promising step in this direction was made in the design of the highway hotel shown on these pages. The precast floor and wall panels that serve as both framing and enclosure for its 145 bedrooms were assembled in much the same way as a giant house of cards, by stacking the floor slabs and wall panels. However, to prevent the structure's succumbing to wind loads as a card house would succumb to a sneeze, the walls were stiffened and made continuous by post-tensioning (see details page 158).

Although the Treadway Inn, an L-shaped building with all of a three-story wing and two floors of a four-story wing made up of identical-size rooms, must in any case have offered a tempting opportunity for prefabrication, the real impetus for the development of the "honeycomb" framing system was provided by the owner's insistence on better-than-adequate soundproofing. After studying the relative costs of several alternate ways of meeting this requirement, the structural engineers concluded that, since the common means of soundproofing is sheer mass, 6-in. load-bearing walls of solid concrete would perform this function and give the added advantage of built-in fire resistance.

Moreover, although the precast panels were used only for the bedroom floors, the irregular bays in the public and service areas being conventionally framed of reinforced concrete, they made possible substantial savings in overall construction time and costs. The guest rooms were framed in about two months; the precast walls eliminated the need for additional soundproofing and fireproofing; and the concrete surfaces needed no finish treatment other than painting. It was also possible to extend the precast slabs at each floor to provide a horizontal sunshade over the room windows and to extend every other wall to the edge of this sunshade to provide fixed vertical louvers, thus forming at very little added cost the shadow-box facades that are a principal feature of the building exterior.

The precast floor slabs and wall panels used for the guest room floors in both wings of the Treadway Inn were precast on the site in stacks of as many as twelve units (1), a procedure that saved on formwork and time, and also assisted in proper curing since the stacks formed ready-made curing rooms with slabs sealed at top and bottom. Although all the panels are not identical (the plans show, for instance, nineteen different types of wall panels), the variations in dimensions and detailing—openings, conduit, and so forth—were minor enough to be taken care of by modifying the forms between pours.

Essentially, there are only two types of wall panels—the full-length prestressed walls that define each two-room bay, and the shorter intermediate panels; and only two types of floor slabs (2)—solid slabs along the outer rims of each floor, and a center strip of pierced slabs that per-
mit passage of service piping for the baths along the corridor.

The floor slabs, which were hoisted flat by means of cables that, spread by I-beams, ran from the crane to eye-bolts screwed into threaded inserts in the concrete, were simply laid across the walls, meeting at the center line of the long walls and resting on the shorter walls at midpoint in each bay. The wall panels, though handled in much the same way, were lifted vertically (3) and set one atop the other at the joints and midpoints of the slabs. To brace them until they were capped by the floor slabs of the next story (4), the contractor used the corridor stud walls, which he preassembled on the site (5). Those that braced the outer ends of the walls were removed once the slabs had been placed, and set up elsewhere in the building, either again as bracing or in their final position as corridor partitions. As shown (6), the outer ends of the walls were alternately pierced and cut out to permit passage of the piping for fan-coil air conditioning units in each room.

After the wall and floor panels had been placed (7), the “house of cards” was made stable by threading continuous high-strength prestressing rods through galvanized tubes embedded in the long walls, and stressing them with a jacking load of some 20 tons. According to the engineers, it was both quicker and less costly to achieve continuity by post-tensioning than by field welding conventional reinforcement. The rods were inserted through the walls and jacked in less than half an hour each.

Another time-saver, not so easy to calculate, was the technique of erecting the wall and floor panels on steel shims which left a $\frac{1}{4}$-in. joint, later grouted with a very dry mix, between the concrete units. This not only assured uniform bearing over the full length of the walls, but also made it possible to take up small tolerances at the joints, so that time-consuming precision in forming and erection was unnecessary.
As shown in the details above, the method of anchoring the prestressing rods varied slightly from Wing B, where all the walls were precast, to Wing A, where the two lower floors were framed of reinforced concrete. Note that only the intermediate floors, one in Wing A and two in Wing B, and the roof were precast, and that the first floor walls in Wing B are 8 in. rather than 6 in. thick. The photos show the upper anchorage used for the three rods in each prestressed wall (see also Plan A-A) as well as the process of inserting and jacking them.

To prevent water's collecting on the horizontal slab projections outside the room windows, the slabs were cast with a downward slope from the spandrels to their slim outer edges. These details of the exterior joints between the slabs and the walls show how this was done without the need for a corresponding slope in the wall panels.
AIR CONDITIONING
FOR LUXURY
APARTMENTS

330 Beacon Street, Boston, Mass.

Hugh A. Stubbins, Associates
Architects

Fred S. Dubin Associates
Mechanical and Electrical Engineers

Attention to thermal comfort is as careful in its own way as that given to the elegance and amenities of design. In the central air conditioning system, each major room has individual control, and one side of the building can be heated while the other is cooled for a large portion of many of the exterior walls. This had several ramifications: There would be a greater than average demand for heating in winter and cooling in summer. The large apartments extend through the building from front to back so that each apartment has rooms with both northwest and southeast exposures. The large exposures necessitated individual room temperature control rather than a zone per apartment system, since one side might need heating while the other needed cooling. (See plan following page.)

There were many reasons—a number architectural—why a central system was chosen for the 17-story luxury apartment building, shown at the top of the page, which is going up on Boston's historic Beacon Street, overlooking the Charles River. Here are some of the conditions which led to the choice of central hot water-chilled water and fan-coil units:

1. All kitchens and bathrooms are inside rooms, requiring mechanical exhaust and a source of outdoor make-up air. (This must come from either a supply duct or from through-the-wall vents; the latter was used here.)
2. Glass extends from floor to ceiling for a large portion of many of the exterior walls. This had several ramifications: There would be a greater than average demand for heating in winter and cooling in summer. The large apartments extend through the building from front to back so that each apartment has rooms with both northwest and southeast exposures. The large exposures necessitated individual room temperature control rather than a zone per apartment system, since one side might need heating while the other needed cooling. (See plan following page.)
3. There was no space for a central duct system to be located between the ceiling and the floor above because of the number of stories that had to be provided within building height limitations imposed by zoning laws. Also good engineering practice prohibits the circulation of return air from one apartment to another.
4. Equipment life must be reasonably long because it is expensive to replace.
5. Air distribution should be draft-free, and there should be provision for directing warm air at large glazed areas to control downdrafts in winter.
6. Noise level should be unobtrusive.

This was the engineers' solution: A fan-coil unit containing a coil for chilled or hot water, blower, filter and fresh air intake was located in each living room and bedroom. The fresh air intake pierces either a porcelain enamel spandrel (SE side) or a brick spandrel (NW side). The air discharge from the fan-coil units is deflected to cover the window areas. Chilled or hot water is pumped to each unit depending on the demand of master outdoor thermostats.

The temperature control system was designed to provide fully automatic operation summer and winter. Solar and wind compensating controls change the system from heating to cooling, allowing one zone to heat and the other to cool simultaneously if required. Northwest side can heat while the southeast side cools in the winter. It is not possible, however, for one fan-coil unit to heat and another to cool on the same side of the building. The controls also modulate water temperature according to outside conditions. Final space temperature in each room is controlled by a heating-cooling space thermostat which modulates a 3-way water valve on the fan-coil unit. Each fan-coil unit has a fixed fresh air intake which provides make-up air to replace that exhausted from kitchens.

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Above: the fan-coil unit on the southeast side of the building is concealed from outside view by a porcelain enamel panel. A louver in this panel lets in fresh air. The drawing here indicates a wood enclosure. Fan-coil units on the opposite side of the building are behind brick spandrel walls.

Circled letters "A", "B" and "C" indicate different capacity fan-coil units. "A" units provide 58 MBH heating, 25 MBH cooling; "B" units, 46 MBH heating, 14.7 MBH cooling; "C" units, 29 MBH heating, 9.4 MBH cooling. On either side of "A" units is fin-tube radiation with 6.6 MBH heating capacity. Letter "T" designates room thermostat locations. Note exhaust ducts for bathrooms and kitchens.
and bathrooms. Fans operate continuously.

To supply the hot water for heating, both a low pressure steam boiler and a high temperature hot water boiler were considered. In order to install the boilers in the basement, which had a maximum permissible height of 8 ft due to a sub-surface water condition, the system was designed using compact high temperature water boilers pressurized with nitrogen.

A centrifugal chiller was selected as the primary cooling source, and was connected by 3-way valves to the main water circulating system. The circulating system was split into two zones to accommodate the building’s large glass areas having northwest and southeast orientations. Three circulating pumps, one for each zone, plus one standby, provide continuous water circulation through vertical risers at each column.

One of the not-too-usual features in the design was the use of a reverse return in the circulating system. Return lines run from bottom of the building to the top and then to the bottom again. The purpose of this is to have the same length of pipe (or friction loss) for any one fan-coil unit. Such an arrangement makes balancing easier.

Cost. The net result of all the design studies was a completely automatic heating and air conditioning system for the 17-story apartment building and an adjoining three-story garage at a cost of approximately $2.25 per square foot of floor area.

Control Center. To decrease maintenance costs and increase operating efficiency, a central control panel was designed. It contains pilot lights, flow switch lights, multi-position temperature indicator and start and stop pushbuttons. At a glance the operator can analyze the functioning of the entire system and control any phase of it from one location.

Plumbing and Electrical Features. The plumbing system includes such features as two to three bathrooms per apartment with non-clog water closets, built-in lavatories, showers and wall-to-wall mirrors. Infra-red lamps in bathroom ceilings provide supplementary heat.

The electrical system includes a private intercom between each apartment and doorman and garage attendant, a telephone outlet in each room, a master television antenna, and two-circuit receptacles with one-half of the duplex outlet connected to the light switch and the other half on constant power.

A natural gas-operated emergency generator, located within the cooling tower enclosure, ensures uninterrupted operation of the heating and cooling systems, and provides power for lighting and elevators.
Constructions to Isolate
HIGH INTENSITY NOISE

by Laymon N. Miller

Highly disturbing noise is generally associated with such things as riveting, freight trains, engine test cells and the like. It is not uncommon, however, to have noise problems in many building types due to mechanical equipment, manufacturing operations—or band practice rooms in schools. This article gives information for the solution of room-to-room noise problems such as the ones just mentioned—illustrating the method with an example.

Removal of noisy areas, such as factories and busy commercial activities, from quiet areas, such as hospitals and residences, is capable of solving many noise problems. It is usually impossible, however, to move far away from internal noise generation, i.e., noise of equipment necessary to run a building or to carry on the function of the business or industry that occupies the building.

No matter what type building an architect designs, internal noise generation may be a problem: School buildings may have band rooms situated near classrooms and auditoriums; office buildings and municipal buildings may have mechanical equipment areas located near conference rooms and private offices; hospitals may have air conditioning equipment near sick rooms and convalescent areas; hotels may have rooms and suites beside elevator shafts. Factory buildings have many, many noise generators and related noise problems.

There are methods, and fairly economical ones, for isolating noise generators so that adjacent areas can be used without interference from noise. First, the architect may plan the layout of the functions carried on within the building in such a way that the noisy areas are removed from the quiet areas. Second, he may specify adequate noise and vibration control measures to reduce the transmission of airborne and structure-borne noise from the noisy area into other parts of the building. These measures include (a) proper vibration isolation of mechanical equipment, (b) adequate enclosures of noisy areas taking into account proper floor, ceiling, wall and door construction, and (c) the use of suitable noise reduction devices to control the transmission of noise by such leakage paths as pipes, electrical conduits, and ventilation ducts. Third, when properly used, acoustic absorption material is capable of achieving small amounts of noise reduction in rooms having noise problems.

Since it is seldom necessary or economically feasible to isolate a sound generating source so completely that little or no sound is transmitted to the receiving room, attention should be given both to the noise levels generated by various types of noise sources and to the noise levels desired for various types of work or functional areas.

Obviously, noise is only one of the factors which dictates building layout; nevertheless careful consideration of the noise aspects of the layout can do much to produce habitable areas with acceptable acoustic environments. And further, noise control in the design stage is much less expensive than corrective treatments after the building is completed.

Major problems in acoustic isolation occur when it is necessary to achieve 40 db to 60 db noise reduction between adjoining rooms or areas. The smallest opening in a wall or a poorly fitted door can spoil the sound insulating qualities of a complete wall. The following data are presented for use in solving some important room-to-room noise reduction problems. (In this paper we will not go into control of vibration of machinery or structure-borne transmission of noise and vibration.)

Acceptable Noise Levels
In considering noise and noise levels, we are interested in essentially the full frequency range of hearing—20 to 10,000 cycles per second (cps). Since acoustical problems and acoustical requirements are different for low frequency and high frequency noise, it is necessary for engineering purposes to subdivide the full frequency range into smaller divisions. It has been standard practice to divide this frequency range into eight frequency bands: 20 to 75, 75 to 150, 150 to 300, 300 to 600, 600 to 1200, 1200 to 2400, 2400 to 4800, and 4800 to 10,000 cycles per second. For engineering calculations, it is necessary to specify noise levels and
HIGH INTENSITY NOISE: 1—Noise sources, Criteria

TYPICAL OVERALL NOISE LEVELS ASSOCIATED WITH VARIOUS WORK OR LIVING AREAS

<table>
<thead>
<tr>
<th>OVERALL NOISE LEVEL</th>
<th>TYPE OF NOISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>At operator's position due to pneumatic riveter or hammer</td>
</tr>
<tr>
<td></td>
<td>Outside near air hammer tearing up street paving</td>
</tr>
<tr>
<td>110</td>
<td>Wood cutting and finishing machines</td>
</tr>
<tr>
<td></td>
<td>Large punch press</td>
</tr>
<tr>
<td></td>
<td>Inside press room of large newspaper</td>
</tr>
<tr>
<td></td>
<td>Passenger compartment of large propeller-driven airliner</td>
</tr>
<tr>
<td>100</td>
<td>On busy street with heavy truck traffic</td>
</tr>
<tr>
<td></td>
<td>Noisy industrial area</td>
</tr>
<tr>
<td></td>
<td>Inside subway train at normal speed</td>
</tr>
<tr>
<td></td>
<td>Auto horn at 20 ft distance</td>
</tr>
<tr>
<td></td>
<td>In typical mechanical equipment room for air-conditioned building</td>
</tr>
<tr>
<td>90</td>
<td>In railroad coach or sleeper at normal speed</td>
</tr>
<tr>
<td></td>
<td>Due to a 1000 KVA transformer in a transformer room</td>
</tr>
<tr>
<td></td>
<td>Typical industrial area</td>
</tr>
<tr>
<td></td>
<td>Outside, 20-30 ft from 40 HP cooling tower</td>
</tr>
<tr>
<td></td>
<td>Inside residence due to airplane flying over at 1000 ft</td>
</tr>
<tr>
<td>80</td>
<td>In 1st or 2nd floor office on street, heavy truck traffic</td>
</tr>
<tr>
<td></td>
<td>75-piece concert orchestra in concert hall</td>
</tr>
<tr>
<td></td>
<td>In kitchen or laundry-room due to automatic washing machine, dryer, garbage disposal unit, etc.</td>
</tr>
<tr>
<td></td>
<td>Stenographic work in large office</td>
</tr>
<tr>
<td></td>
<td>Inside residence with auto traffic at 50 ft</td>
</tr>
<tr>
<td>70</td>
<td>In 10th to 20th floor offices above busy street in large city, with windows partly open</td>
</tr>
<tr>
<td></td>
<td>In hotel room adjoining elevator shaft, elevator passing</td>
</tr>
<tr>
<td>60</td>
<td>Noisy office, department store or restaurant</td>
</tr>
<tr>
<td></td>
<td>In living room with TV set in operation</td>
</tr>
<tr>
<td></td>
<td>Normal voice level at 3 ft</td>
</tr>
<tr>
<td>50</td>
<td>Quiet restaurant</td>
</tr>
<tr>
<td></td>
<td>In bedroom with air-conditioner in operation</td>
</tr>
<tr>
<td></td>
<td>Quiet private office</td>
</tr>
<tr>
<td></td>
<td>Quiet residence with oil or gas furnace in operation</td>
</tr>
<tr>
<td></td>
<td>Soft radio music in apartment</td>
</tr>
<tr>
<td>40</td>
<td>Quiet residence at night with no outside noise</td>
</tr>
<tr>
<td>30</td>
<td>Leaves gently rustling in a breeze</td>
</tr>
<tr>
<td>20</td>
<td>Whisper at 4.5 ft</td>
</tr>
</tbody>
</table>

*Decibels relative to the reference of 0.0002 microbar as measured on the "C" scale of a standard sound level meter. Includes all audible noise in frequency range of 20 to 10,000 cycles per second (cpm). Specific situations may vary 5 to 10 db from these values.

FIG 1: Noise criteria for different types of spaces

NC Curve | Typical Applications
---|---
NC-20 to NC-30 | Executive offices and conference rooms for 50 people
NC-30 to NC-35 | Private or semiprivate offices, reception rooms, and small conference rooms for 20 people
NC-35 to NC-40 | Medium-sized offices and industrial business offices
NC-40 to NC-50 | Large engineering and drafting rooms, etc.
NC-50 to NC-55 | Secretarial areas (typing), accounting areas (business machines), blueprint rooms, etc.
Above NC-55 | Not recommended for any type of office

FIG 2: Correction terms to account for size and shape of sound receiving room and amount of acoustic treatment in it. S, is total surface area of walls, ceiling and floor. S, is area of wall common to sound generating and sound receiving rooms.

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HIGH INTENSITY NOISE: 2-Wall and Door Constructions

FIG 3: In order to cover transmission loss for a wide range of materials, the walls are specified by their surface weight rather than thickness. For example a 50 lb per sq ft wall is achieved with 4 in. of dense concrete. Note that for doubling of surface weight, transmission loss increases only by about 5 db. For more efficient use of material, double walls are used (see Fig 4)

FIG 4 (above): Sound transmission for various double walls with different spacings

FIG 5 (right): Sound reduction doors for single and double walls. These data were taken at the National Bureau of Standards for the Jamison Cold Storage Door Co., Hagerstown, Maryland
various acoustical values in terms of these frequency bands. Experiences with many different types of offices and working and living areas has led to the development of noise level criteria, which can be used quite satisfactorily in setting up desirable noise levels in various areas. A family of noise criterion ("NC") curves is given in Fig 1. These curves show noise levels in each of the eight frequency bands which go together to make up an acceptable balance of low frequency and high frequency noise levels for typical occupancy areas.

In nice private executive offices, noise levels due to external causes, such as outside traffic noise or building ventilation system noise or nearby business office noise should not exceed the noise levels given by the NC-25 or NC-30 curves. In private or semi-private offices, occupied by only one or two persons, noise levels should not exceed the NC-35 curve. For large office areas, occupied by several persons performing quiet types of work, the noise levels due to external causes should not exceed the NC-40 or NC-45 curves. For large office areas, occupied by several persons performing work involving typewriters, business machines, telephones, etc., the noise levels due to external causes should not exceed the NC-45 or NC-55 curves. For special purpose rooms, such as radio studios, auditoriums, control rooms adjoining engine test cells, and special areas in manufacturing plants, it is necessary to select noise criterion curves based on the special acoustical needs of the rooms. It is, of course, apparent that the more noise made within a room by its own occupants, the less stringent the noise criterion for noise from outside the room.

Three acoustical problems are associated with noisy working environments: (1) the effect of noise on hearing loss, (2) noise as a work deterrent and (3) interference with speech communication.

Hearing

The effect of noise on hearing is a function of both exposure time and noise intensity. As noise intensity increases, the amount of daily exposure a person can stand without impairing hearing must necessarily decrease. The graph on page 162 gives levels in the eight frequency bands and some typical offices which should not be exceeded if the average person is not to receive some degree of hearing loss from long term exposure, say 25 years, to these noise levels. For noises containing discernible discrete frequencies such as a generator whine, the noise level values of these curves must be reduced by approximately 10 db as the ear is more sensitive to single tone noise than to broad band noise.

To illustrate use of these curves, a person could stand on a street corner exposed to 80 db overall noise 8 hours a day, five days a week for 25 years without auditory injury, but might well receive some hearing loss from two hours' use of a pneumatic riveting gun (where noise levels may reach 100 db to 110 db in the high frequency octave bands) repeated each working day for 25 years.

Work Deterrent

Contrary to popular belief, steady-state background noise does not appear to affect significantly the ability to perform either simple or involved work, although high noise levels do produce feelings of annoyance and irritation and result in reduced alertness and increased fatigue.54 Intermittent noises with a high peak, such as from a riveting gun, and the single tone noises are, in general, more annoying than steady-state broad band noises.

Speech

While high intensity noise may not adversely affect work or hearing, it does directly affect speech communication. As such communications sometimes have a bearing on output, noise will directly affect productivity.

Most intelligibility in our voices is contained within the frequency bands 600 to 1200, 1200 to 2400, and 2400 to 4800 cycles per second. When noise levels in these bands are too high, they interfere with speech communication.

With a noise background having an average noise level of 45 db in each of the above three frequency bands, normal conversation can be carried on at a distance of 6 to 12 ft. When this average noise level rises to 55 db, raised voices must be used at distances of 4 to 8 ft, and normal voices can only be used at distances of 2 to 4 ft or when in telephone communication. At 65 db or higher (in the three frequency bands), conversation becomes difficult to the extent that raised voices must be used at all times and conversation tends to become uncomfortable and intermittent.

Thus, we see that background noise levels place certain limitations on the type of work that can be done in a given noise environment. The magnitude of the noise levels and the frequency distribution also determine the amount of noise reduction that must be provided between noise generating areas and work areas receiving the noise.

Noise Reduction Between Rooms

Walls and doors are used as barriers to separate noisy and quiet areas. The effectiveness of these barriers is known as the sound transmission loss (TL). If noise reduction is to be achieved by closing off the noisy area with a wall, the transmission loss of that wall must usually be somewhat greater than the amount of noise reduction desired. This is true, generally, because when a noise source is confined, the noise levels inside the enclosure build up to higher values than if the enclosure were not there. Of course, the use of acoustic absorption material may help reduce the noise level build-up in the enclosure, and the area of the radiating wall will influence the amount of noise energy that is transmitted through the wall. It is possible to calculate thoroughly the effects of these factors, but with the following equation we can simplify the calculation for most practical purposes. The required transmission loss must equal or exceed the desired noise reduction plus a correction term in accordance with the equation:

\[ TL = NR + C \]

where TL is the transmission loss, in decibels, of the particular wall, NR (noise reduction) is the difference between the average noise levels in the noisy and quiet rooms, and C is a correction term to account for the geometry and acoustic treatment of the layout. All units are decibels.

This relation must apply for each of the eight frequency bands.

The correction term C has been calculated for a reasonable range of room conditions and is plotted in Fig 2 as a function of the eight frequency bands. Two things influence this correction factor: (1) the ratio S1/S2, where S1 is the total surface area of all interior surfaces (walls, ceiling, and floor) of the sound receiving room; and S2 is the total surface area which is common to both the sound generating and sound receiving rooms; and (2) the amount of acoustic absorption material used in the receiving room.

The correction term may be small, or even negative, for a large receiving room well covered with sound absorbing material and having a small wall area in common with the noisy room.

Continued on page 169
Plant-Applied Waterproofing Tested for Effect on Brick’s Bond Strength

When Dow Corning first introduced its new Silaneal treatment, in which a dilute sodium silicate solution is applied directly to brick as it leaves the kiln (AR, Jan. 1959, p. 181), it cited a number of advantages for the "invisible" protective surfacing: the elimination of efflorescence and dirt pickup, the improvement of handling, and laying qualities, and the elimination of the need to soak brick before layup. All of these benefits stem from the treatment’s ability to reduce the initial rate of water absorption of the brick. However, while the advantages of such a water repellent for exposed surfaces are obvious, the plant-applied treatment necessarily affects the bedding surfaces as well. Since it could be expected to reduce the absorption of water from the mortar, there was some question as to the effect it might have on bond strength.

This was determined by testing a series of 4- by 6-ft walls built of seven different types of brick, with and without the Silaneal treatment. After being allowed to age for 28 days, the test walls were subjected to transverse loading (simulating wind loading), as shown at right, until they failed.

The test results showed that, for highly and moderately absorptive bricks (suction rates above 20 grams per minute), the bond strengths obtained with the treated bricks were greater than those of untreated bricks laid without soaking, and only slightly less than those of the same untreated bricks laid wet. (It should be noted that the test bricks were soaked under carefully controlled conditions that would seldom be duplicated on the job.) With less absorptive brick, the bond strength decreased as the concentration of the Silaneal solution increased.

Two conclusions were drawn: that the treatment should be used only on the weathering surfaces of low absorption brick; and that for other types of brick, the increase or decrease in bond strength is so slight as to be negligible in comparison with the other benefits the treatment offers.

In this last regard, it is interesting to note also the recorded comments of the mason who laid up the test walls. He found that the Silaneal treated brick were easier to handle in all cases, that complete walls could be built from them without striking the joints, and that the walls made of treated brick were significantly cleaner after layup than the untreated walls. Dow Corning Corp., Midland, Mich.

Metal Clad Panels Win Two-, Three-Hour Ratings

Designers using insulated metal curtain walls can now look to the steel or aluminum faced wall panels shown at right for assistance in meeting fire insurance requirements. The five basic designs, which have UL-assigned fire ratings of up to three hours, make use of a core consisting of four or five layers of 1/4-in. gypsum board, with the fire resistance determined by the number of layers employed. Four layers gives a 2-hour rating; five, a 3-hour rating.

All the panels are assembled on the job with mechanical fasteners, and all are suitable for use as nonbearing fire barriers.

In several designs, various steel configurations may be used for either or both faces, with ribs and flutes placed inward or outward. In the designs employing aluminum on one side, special provisions are made to "beef-up" the fire resistance of the non-ferrous material, while the double wall system can be produced to meet either 2 or 3-hr fire resistance requirements, depending on the loads imposed on the frame. Building Products Div., R. C. Makon Co., Detroit, Mich.

[Note: Three-hour rating for double panel system applies when columns support panels only. Otherwise, assigned rating is 2 hrs.]
Draftless Anemostat Air Diffusers
at Sterling and Francine Clark Art Institute

The photograph above illustrates an Anemostat Straightline Air Diffuser installation in the gallery design of the Sterling and Francine Clark Art Institute at Williamstown, Mass. The conditioned air is supplied through Straightline Diffusers located on all four sides of the gallery. The diffusers not only draftlessly introduce conditioned air into the gallery, but also blend into the architectural design.

Anemostat, Round, Square and Straightline Diffusers for conventional or high velocity systems are adaptable to a wide variety of architectural designs.

Write for Selection Manual No. 60, which gives data on Anemostat’s wide range line of air diffusion equipment.
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
Types of Wall Construction

Many different wall designs and materials may be utilized to obtain any specific sound transmission loss. Walls can be either single or double. Materials can be poured, dense concrete, well-mortared brick, solid concrete block, hollow dense concrete block filled with sand, mortar or cement—or others. The use of lightweight aggregate concrete is ruled out as it is usually quite porous in weight. Any specific sound transmission loss.

Walls can be either single or double. The advantage of using lightweight aggregate concrete is that it is not more than twice the weight of a single wall, the transmission loss (TL) values are shown in Fig 3.

It may be seen from these curves that for each doubling of the surface weight of a single wall, the transmission loss of the wall increases only about 5 db. This leads to impractical wall design when the wall surface weights become 200 to 400 lb per sq ft (corresponding to 16-in. to 32-in-thick concrete walls).

In order to achieve large values of transmission loss at reasonable wall weights, it is necessary to use “double wall” construction. Two walls, structurally isolated and separated by an air space, can provide greater transmission loss than a single wall having the total weight of the two walls. The approximate TL of a few double wall combinations is given in Figure 4. The bottom curve of each of these families of curves gives the TL of a single wall (from Fig 3) having the same total weight as the double wall combination. The effect of the structural isolation and the separation of the double walls is thus compared to the TL of the single wall. For larger air spaces than shown in Figure 4, the TL might be assumed to increase approximately 4 to 6 db for each doubling of the air space; but when the double wall separation becomes large enough to give the effect of a corridor or another room, a different approach must be used.

Excellent workmanship and attention to details are required to achieve the TL values plotted for the walls in Figs. 3 and 4. This is especially true with double wall construction. Two general qualifications apply to these double wall structures. First, it is not necessary that each wall of a double wall be exactly the same weight. For example, two 75 lb per sq ft walls would have approximately the same sound insulation qualities as a 100 lb per sq ft and a 50 lb per sq ft wall combination. Reasonable combinations such as this can be permitted as long as one wall is not more than twice the surface weight of its neighboring wall.

The second qualification is that double walls be vibration isolated from each other. The two walls should be mounted on separate footings. If this is not possible, one or both walls should be supported on cork pads and resiliently joined to vertical columns or overhead beams without rigid ties. No rigid ties should be permitted to connect between two isolated walls. Careful specifications and inspections should be made to assure that no excess mortar or building trash is dumped into the air space between the two walls as this will negate the effect of the isolation mounting.

With double walls as completely separate structures constructed with extraordinary precautions to reduce structure-borne or earth-borne vibration transmission, it is possible to achieve values as much as 5 to 15 db higher than those given in the curves. But since this is not common the curves in Figure 4 will apply for a majority of cases.

Door Construction

Although an architect has many choices of wall construction to enhance high intensity airborne noise, his choice is seriously limited when it comes to doors. Wood doors of various types of construction provide only 20 to 35 db average transmission loss. To achieve 40 to 50 db transmission loss it is necessary to use sound reduction doors of special construction with sills and jambs especially engineered to such doors.

Figure 5 illustrates the construction of doors of this nature and shows some of the different mountings possible to achieve the maximum amount of transmission loss.

The sound transmission loss for both single and double doors of this construction has recently been measured by the National Bureau of Standards and the results of these tests are plotted as a function of octave frequency bands in Fig 5. For these measurements the doors were installed in their own door frames using their own gasketing to provide the door seals. The large values of transmission loss found in the high frequency region is evidence of very good acoustic seals.

Where the area of a door is only a small part of the area of the wall in which it is installed, it is possible to permit the door to have a somewhat lower TL than the wall without significantly affecting the total effectiveness of the wall. If the door area is 25 per cent of the total area, the TL of the door may be 2 db lower than that of the wall; if 10 per cent, 6 db lower; and if the door is only 5 per cent of the wall area, the door TL may be 10 db lower than the wall TL. For these conditions the total effectiveness of the wall would be decreased by less than 1 db, which can be considered negligible for most practical installations. In situations where the door TL is permitted by this means to be lower than the wall TL, it is suggested that the door be located away from the area in the receiving room which should be the quietest.

Example

The following example illustrates the solution to a typical problem:

The front end of a building is to be used for an engineering design department 40 ft wide by 100 ft long with 15-ft walls, joined to a testing laboratory along the 100-ft wall. The common wall must contain doors for the passage of personnel and equipment. Typical noise levels measured in the laboratory are as follows in the eight frequency bands: 95, 97, 102, 101, 100, 99, 98 and 96 db respectively. For easy reference, the data pertaining to this problem are listed in the table on page 171.

The desired low reverberant noise level for a large office such as this engineering department is the NC-45 criterion curve as indicated in table 1. The desired noise levels for each octave frequency band of the NC-45 curve are obtained from Fig 1 and tabulated in columns 3 of the table on page 171. The required noise reduction (NR) between rooms is then the difference between the noise levels in the laboratory area and the desired NC-45 noise levels in the office area. This required NR is given in column 4 of the table.

Multiple calculations should now be made with and without absorption materials—so that the final decision of wall construction can be based on the most economical design.

continued on page 170

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HIGH INTENSITY NOISE continued from page 169

The room area ratio $S_r/S_w$ is the ratio of the total surface area of the engineering department ($S_r$) (all walls plus floor and ceiling) to the area of the common wall ($S_w$), or:

$$\frac{S_r}{S_w} = \frac{\text{Total Surface Area}}{\text{Common Wall Area}} = \frac{12,200}{1,500} = 8.1$$

This room area ratio falls between 5.7 and 8.9 and therefore the room correction term (C) is found in Fig 4 or by interpolating between lines for other wall weights. Because of various accumulated tolerances in this method, a total tolerance of 1 to 3 db is generally permissible in one or two frequency bands in selecting a final design to meet a given requirement. In other words, if the TL of the wall selected fails to meet the required TL by 1 to 3 db in only one or 2 frequency bands but exceeds the required TL in all other bands, that wall will probably be satisfactory if it is constructed properly.

Selection of communicating doors can be made from Fig 5. Suppose that the total area of one or more doors in the common wall is less than 5 per cent of the wall area, i.e., less than 75 sq ft. For this door area, the door TL may be as much as 10 db less than the wall TL values given in Column 6 of Table II. If the single 250 lb per sq ft wall is selected, the door TL of Figure 5 would be acceptable. If a suitable double wall is selected, doors may be placed in each wall (called "doors-in-tandem") in order to preserve the TL of the double wall. With such an installation, the doors-in-tandem would easily meet or exceed the required door TL and might even exceed the required wall TL, depending on the air space between the doors-in-tandem.

From the above sample calculation and the data contained in the enclosed graphs, we see that it is possible to determine some of the basic designs required to give adequate noise reduction in rooms adjoining high noise level areas. To review the method, it is first necessary to decide on the noise levels desired in the receiving room (select the appropriate noise criterion "NC" curve), it is next necessary to measure or to estimate the average noise levels in the noisy area (these noise levels to be determined in each of the eight frequency bands), and finally it is necessary to calculate the required transmission loss of the wall and to select the possible wall designs which will meet the requirement. Associated factors such as room geometry, wall and ceiling acoustic treatment, and door TL requirements are accounted for in the calculation process.

This method can be applied to many types of conventional noise problems involving high intensity airborne noise. For very complex noise problems and for predominantly structure-borne vibration problems more sophisticated methods must be used, however. It is emphasized that for both simple and complex noise problems, systematic engineering approaches and many readily available materials are in widespread use in noise control.

ILLUSTRATION OF CALCULATION OF REQUIRED TRANSMISSION LOSS OF A WALL

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{FREQUENCY BAND (cps)} & \text{NOISE LEVEL IN TESTING LABORATORY (db)} & \text{DESIRED NOISE LEVEL IN ENGINEERING OFFICE (NC45)} & \text{REQUIRED NOISE REDUCTION IN OFFICE (db)} & \text{ROOM CORRECTION TERM "C"} & \text{REQUIRED TRANSMISSION LOSS OF WALL} \\
\hline
20-75 & 95 & 69 & 26 & 11 & 7 \times 3 = 21 & 37 \times 33 = 99 \\
75-150 & 97 & 62 & 35 & 11 & 7 \times 3 = 21 & 46 \times 42 = 193 \\
150-300 & 102 & 56 & 46 & 10 & 6 \times 2 = 12 & 56 \times 52 = 288 \\
300-600 & 101 & 57 & 48 & 9 & 5 \times 5 = 25 & 60 \times 56 = 336 \\
600-1200 & 100 & 47 & 58 & 8 & 4 \times 8 = 32 & 61 \times 57 = 351 \\
1200-2400 & 99 & 45 & 54 & 7 & 3 \times 7 = 21 & 61 \times 57 = 351 \\
2400-4800 & 98 & 43 & 55 & 6 & 2 \times 2 = 4 & 61 \times 57 = 351 \\
4800-10,000 & 96 & 42 & 54 & 5 & 1 \times 5 = 5 & 59 \times 55 = 324 \\
\hline
\end{array}
\]

1 No acoustic absorption material in receiving room. 2 Acoustic absorption material on ceiling of receiving room. 3 Full acoustic treatment (ceiling plus one-half of all walls).
Here's a different kind of floor... a floor to stimulate your imagination and delight your practical side. It's called Granwood. Design possibilities are unlimited... basket-weaves, herringbones, straight stack... even organizational emblems and insignia can be put permanently into the design. A wide range of colors is available.

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MR. SPECIFIER... check the fact chart below... see exactly how much better this new finish is. AND—SPECIFY ACRYLIC FOR YOUR NEXT JOB!

---

### Fact Chart

<table>
<thead>
<tr>
<th>Property</th>
<th>Good Quality Finishes</th>
<th>New Guth Lucite* Finish</th>
<th>Percent Better</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion To Metal</td>
<td>8.0</td>
<td>9.5</td>
<td>18.75%</td>
</tr>
<tr>
<td>Humidity Resist.</td>
<td>8.5</td>
<td>10.0</td>
<td>17.69%</td>
</tr>
<tr>
<td>Salt Spray Resist.</td>
<td>8.5</td>
<td>9.5</td>
<td>11.76%</td>
</tr>
<tr>
<td>Fume Resist.</td>
<td>7.5</td>
<td>8.5</td>
<td>13.33%</td>
</tr>
<tr>
<td>Grease Resistant</td>
<td>6.5</td>
<td>9.0</td>
<td>38.46%</td>
</tr>
<tr>
<td>Tobacco Smoke Resist.</td>
<td>6.0</td>
<td>9.0</td>
<td>80.00%</td>
</tr>
<tr>
<td>Stain Resist.</td>
<td>5.0</td>
<td>10.0</td>
<td>42.86%</td>
</tr>
<tr>
<td>Grease Resist.</td>
<td>8.0</td>
<td>10.0</td>
<td>175.00%</td>
</tr>
<tr>
<td>Hardness</td>
<td>7.0</td>
<td>22.0</td>
<td>11.76%</td>
</tr>
<tr>
<td>Mar Resist.</td>
<td>5.5</td>
<td>9.5</td>
<td>17.65%</td>
</tr>
<tr>
<td>Reoperated Adhesion</td>
<td>6.5</td>
<td>10.0</td>
<td>13.33%</td>
</tr>
<tr>
<td>Baking Color Stability</td>
<td>7.0</td>
<td>8.5</td>
<td>80.00%</td>
</tr>
<tr>
<td>Heat Resist. (1)</td>
<td>7.0</td>
<td>9.0</td>
<td>50.00%</td>
</tr>
<tr>
<td>Color Reten. Exposed to Ultraviolet</td>
<td>6.0</td>
<td>9.0</td>
<td></td>
</tr>
</tbody>
</table>

(1) 30 min. at 400° F.  *DuPont
Designers' Portfolio

... of Ceramic Mosaics, Series No. 2, contains full-color, full-scale reproductions of ceramic mosaic designs, with suggested specifications and tile descriptions on the back of each sampler sheet. United States Ceramic Tile Co., 217 Fourth St., N. W., Canton, Ohio.

Emerson-Imperial Lighting

Catalogs complete line of surface mounted residential lighting fixtures, with color photos and full descriptions of each. 52 pp. Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis 36, Mo.

Reusable Inflatable Void Forms

Describes, illustrates, and gives pertinent technical data on the use of Voidcrete void forms for precast and site-placed concrete. Catalog 601, 12 pp. Elgood Concrete Forms Corp., 378 Ten Eyck St., Brooklyn 6, N. Y.

Motels, Hotels and Restaurants

Illustrates use of Weldwood paneling in hotel, motel and restaurant interiors, and gives data on the use of paneling and flexible wall coverings in such “problem areas” as columns, curved walls, too-small rooms, etc. 8 pp. U. S. Plywood Corp., 55 West 44th St., New York 36, N. Y.

Fan and Hood Combinations


Sanymetal Integral Hinge Brackets


Lighting Standards Catalog


Unit Ventilator Controls

Application manual describes complete line of automatic control systems for hot water, steam, gas-fired and electric unit ventilators, and shows actual control applications covering all major makes and models.

Adhesive Bonding of Aluminum

Introductory material on the development of adhesives and the advantages of adhesive bonded joints is allowed by chapters on the design of joints, the various types of adhesives for aluminum, the processing of adhesive joints, and typical applications. Text is supported by tabular data and illustrations. Reynolds Metals Co., Dept. PRD-21, Richmond, Va.

Pumps and Water Displays

Catalogs full line of stock fountain units, pumps and lights. 10 pp. Canal Electric Motor, Inc., 310 Canal St., New York 13, N. Y.

Glass Doors

(A.I.A. 16-N) Describes and gives specifications and detail drawings for Twinstile stainless and Fulite stainless or bronze doors. Details of the Excel-Framing and Erecto-Framing methods are included. 16 pp. Schacht Associates, Inc., 1175 East 156th St., New York 59, N. Y.

Surface and Pendant Lighting

(A.I.A. 31-F-23) Covers new shallow profiles, new textures and materials, and new structural details for full line of surface and pendant fluorescent lighting fixtures. Specifications, lighting calculator charts and detailed drawings are included. Brochure No. 27, 24 pp. Lightolier Inc., 440 Claremont Ave., Jersey City, N. J.

“Walls-A-Way” Folding Partitions

(A.I.A. 35-H-6) Provides specifications and application data, layout and planning material, details, and installation photos of complete line of electric and manual folding partitions, as well as hidden partitions. Switches of vinyl coverings and pre-finished wood paneling are included. 24 pp. Torjusen, Inc., 213 25th St., Brooklyn 32, N. Y.

Institutional Hardware

Catalogs full line of institutional hardware: exit devices and trim, sash and door controls, combination locks, prison locks, and wardrobe hardware. Complete selection information is included. A. Sargent & Greenleaf, Inc., Rochester 21, N. Y.

*Additional product information in Speet's Architectural File

more literature on page 218
An Interesting use of Concrete...

STRENGTHENED with LACLEDE REINFORCING STEELS

In today's bold new architecture, concrete has become a medium of artistic expression, rather than a mere structural material.

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

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More products on page 186
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Brief Description on Opposite Page

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Double-Glazed Church Window

A new church window made of 2 5/8-in. deep aluminum extrusions has been designed to answer the need for an extra-strong window which can accommodate double-glazing and still conform to the unusual shapes so often required in church design. It is expected to solve a number of problems inherent in leaded stained glass installations: the air space between the two sections of glass will create an effective thermal barrier and prevent drafts; the clear glass on the outside will protect valuable stained glass from breakage and keep it clean. Each window in Vamco's 3000 series is individually engineered to fit the desired opening and comes with screw-on glazing beads for the curved sections, snap-in beads for the straight sections. Valley Metal Products Co., Plainwell, Mich.


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ARCHITECTURAL RECORD December 1959 187
At O'Hare Field, Chicago's jet airport, the United Air Lines Baggage Center handles baggage for 65 flights daily. The installation of 12 Barber-Colman OVERdoors permits fast, efficient handling of nearly 6,000 pieces of baggage a day. The OVERdoors—three-section flush doors, 8' wide by 5'4" high—provide continuous efficient operation, even during peak-load hours. Through a variety of weather and humidity conditions, the OVERdoors continue to operate efficiently, helping United Air Lines maintain its reputation for "Extra-Care" passenger service. Barber-Colman manufactures OVERdoors for almost every conceivable commercial, industrial, institutional, and residential use—Electric Operators and Controls for overhead, swinging and sliding doors, and sliding gates. Write for complete data file now.

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Barber-Colman Company
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The flexibility and unique construction advantages of GR Movable Partitions and Walls is obvious in the provisions made for wiring. The wiring can go through the base, between the panels, behind the pilasters and along the crown or cornice. When ceiling high partitions are specified, there is room to run wiring in the U-channel. Switch boxes and outlet boxes are put in the pilasters or base or they can be put in the panels. Ordinarily pilasters are recommended because they are expendable and can be easily replaced or moved to another location. Cut-outs for wiring in a particular size panel might be difficult to adapt in another location. However, cut-outs in panels can be made at the plant or in the field, if desired. GR's functionally designed movable walls and partitions solve wiring problems for you easily, quickly.

Ease installation with GR

From the standpoint of saving time, of saving on labor, of making the office available for occupancy faster . . . the accessibility of wiring raceways for the electrician . . . is a factor to consider in movable wall and partition installation. Sometimes extremely low-priced movable (without pilasters) walls are specified which appear on the surface to offer big dollar savings. Almost always such "price" buys are an illusion. The inherent poor design and construction of "price" type movable walls increases the electrical contracting cost far beyond the anticipated savings. If the purchaser is to get full value for his dollar, overall costs must be carefully weighed and evaluated. In your next job specify GR Movable Walls and Partitions and take both wiring "headaches" and "hidden" costs out of your building picture. The complete GR line . . . Portable Partitions, the Richland Movable Wall System and Metal Walls will accommodate the wiring requirements of any office regardless of size.

A complete line for design continuity regardless of decorative demands

One of the problems facing architects is the specification of different types of movable walls and partitions for different functions on the same floor or various floors throughout a building. If metal walls are designated for the second floor, wood walls for the tenth floor and portable partitions — both steel and wood — on all floors, maintaining a uniformly, attractive interior appearance must be given prime consideration. Specifying GR Movable Walls and Partitions is the way out of this dilemma since the complete line has a family resemblance.

GR PRODUCTS INC.

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Why have building supply and hardware dealers everywhere tagged Griffin as "A Good Line to Handle"? Because Griffin makes a product builders and architects respect; because Griffin offers a complete line of steel hinges, both ferrous and non-ferrous; because Griffin prices its product to offer the distributor a good profit margin; because Griffin service is exceptionally quick, dependable.

Write today for complete information. Ask for a salesman to call.

GRIFFIN MANUFACTURING COMPANY • ERIE, PA.

Product Reports

Epoxy Roofing Compound
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Easily-Installed, Heavy Duty Lock
Designed to withstand continuous hard usage in institutional, commercial and public buildings, the new Yale line of Mono-Locks features rugged construction, attractive appearance and ease of installation. (They are installed by simply sawing a rectangular opening in the edge of a door, drilling holes for the attaching screws, and then applying the lock.) The line includes a wide variety of designs in all standard finishes and in 29 different locking functions to meet specialized requirements. Yale & Towne Mfg. Co., Chrysler Bldg., New York 17, N. Y.

Versatile Latex House Paint
Formulated for wood surfaces as well as masonry and asbestos, new Gold Bond "Exterior Velvet" latex house paint allows moisture to escape through the paint film to prevent blistering and peeling, but at the same time gives excellent weather protection. The sixteen available colors are said to be exceptionally long-lasting, and the paint itself is easy-to-apply, durable and quick-drying. National Gypsum Co., Buffalo 2, N. Y.
OLIN ALUMINUM
ADDS
BEAUTY AND DIGNITY
TO
MANHATTAN'S
LENOX HILL
HOSPITAL

A handsome new landmark is almost finished on New York's famous Park Avenue. The Patients' Pavilion of the Lenox Hill Hospital displays shimmering pink panels within a gleaming grid of Olin Aluminum. This facade is further enhanced by sculptured forms, combined in decorative patterns, that give unique depth to the curtain wall.

Yet, this distinguished design has provided unusual construction economies. For example, the aluminum grid of the curtain wall has been fully integrated with the reinforced concrete frame. This has permitted wide spacing of the mullions, which, in turn, has resulted in major savings in the entire curtain wall.

Record-size sections—10 x 13'—were shop-assembled, using interlocking welded extrusions of Olin Aluminum. Olin Aluminum extrusions are also found on the operational windows, which feature a simple, economical new design and can be cleaned from inside.

ARCHITECTS: ROGERS & BUTLER
NEW YORK
GENERAL CONTRACTORS: PEATY AND FULLER
NEW YORK
ARCH METAL FABRICATOR: BROWN MFG CO.

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ARCHITECTURAL RECORD December 1959 195
HIGH SCHOOL GYMNASIUM
SPECIFIES: QUALITY*
SELECTS: NEO-RAY LOUVRED CEILINGS

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A unique impact resisting illuminated louvred ceiling for high school basketball court. Aluminum louvres are secured against displacement by impact, yet are easily removable for maintenance.

Gentlemen:
The Neo-Ray Louvered Ceiling was chosen for this particular application in that we wished a quality product that would be the proper size of grid for this application.

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... baked with enamel.
... or Ripple-Tex® low brightness, the louvre with the appearance of a lens.

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... Sweet's Architectural File for 1960
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To prevent a holocaust once a fire has started, you must *confine* it to provide sufficient time for safe evacuation. Unobstructed, a fire with its superheated air and suffocating smoke can race from floor to floor with unbelievable speed. The inevitable result is panic and loss of life.

Overly has developed and obtained Underwriters' Laboratories approval on a fire door and frame assembly that will deter the spread of fire for a minimum of 45 minutes—more than twice the expectancy of survival time in a burning building. This assembly, referred to as a smoke screen, is shown strategically located in the sketch above. It can be used to subdivide long corridors and to enclose stairwells.

Properly installed, smoke screens should enable you to secure a rate consideration from your insurance carrier. Only Overly smoke screens can give you this dollar savings because they are Underwriters' approved.

Other U.L. approved Overly fire door and frame assemblies of new and more economical constructions may be used in openings in fire walls, boiler and electrical equipment rooms where 1½-hour and 3-hour fire resistance is required. Consult your architect about the vital need for adequate fire barriers in your buildings and write us today for our new fire door literature.

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**S**ave lives with

**FIRE BARRIERS**

*by Overly*

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**OVERLY MANUFACTURING COMPANY**

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Hart's Cafeteria

see the beauty of CUSTOM MODULAR™ value and styling

With its three VaporMatic™ food warmers, three refrigerated cold pans, two pass-through refrigerated display cases with self-closing doors, and everything else that speeds work and traffic, Hart's new Custom-Modular cafeteria by Bastian-Blessing makes mealtime a pleasure for 1000 patrons daily. Open for lunch and dinner—from eleven 'till eight. Hartzell Baumstrand is the owner.

VAPORMATIC® keeps foods kitchen-fresh— the only automatic moist-heat food warmer

Eliminates the roasting-oven heat of ordinary dry-type food warmers. 1" water depth is always maintained under 212°F automatically. Foolproof Dial-a-Food controls permit amateurs to select the right heat for each food in each compartment. With compartment and food always under 212°F, food can't burn. Taste, texture, color and aroma of food are saved. Five models, four sizes, electric or gas operation—and only in Custom-Modular cafeterias by . . . The Bastian-Blessing Co., 4205 W. Peterson Ave., Chicago 46, Illinois, Dept. 4-L.

"Custom-Modular" is Bastian-Blessing's entirely new approach to cafeteria equipment design—a continuous custom top of heavy 14-ga. stainless-steel with mass-produced modular units beneath. Decorative front is crafted of Formica, plastic laminate, or popular metal . . . in continuous lengths. You get skilled integration of specialized units . . . without a "custom" price penalty.

ARCHITECTURAL RECORD  December 1959  199
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to project heat where needed on “difficult” jobs...with no waste!

When cranes, production machinery or huge inventory stacks require abnormally high heater placement, you have to be a “tough buyer” to do a proper heating job! You have to specify a unit that gets heat right where it's needed...with no waste of fuel or heat. That's why so many architects and engineers now demand the new Reznor Five-Way Heater, which projects heat downward, even from a height of 40 feet, to the spot where heat is needed, and (with the optional 5-way diffuser) in as many as five directions at once!

LOWER FUEL COSTS—By spotting heat accurately, the Five-Way Heater maintains complete comfort with less fuel; keeps fuel bills low.

LOWER INSTALLATION COSTS—The entire assembly installs quickly, requiring only gas, flue and power connections.

Available with aluminized or stainless steel heating elements and gas modulation. Electric ignition is optional.

For information, phone your Reznor distributor, or write Reznor Manufacturing Co., Dept. 62C, Mercer, Pa.

The heating world is full of tough buyers; that's why Reznor is the world's largest selling direct-fired heater!

REZNOR HEATERS
"THE TOUGH BUYERS' LINE"
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New smaller size for 100-150 watt lamps at lower price!
New diffusing glass bowl!
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New application ideas!
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Day-Brite Lighting, Inc. St. Louis, Missouri Santa Clara, California
Product Reports

**1st choice for steam in world's largest dome**

Matched pair of 200 hp Cleaver-Brooks boilers picked to supply steam for cleaning tank cars and for heating, too, at Union Tank Car's great new repair center in Baton Rouge, Louisiana.

This fabulous structure houses the most modern of tank car repair facilities. The two Cleaver-Brooks packaged boilers provide low-cost process steam for cleaning tanks — eliminating residual acids, volatile and tenacious liquids or near-liquids.

Their high-capacity performance not only meets the demands for efficiently produced steam for cleaning (guaranteed 80%), but also provides steam for heating.

Because of packaged design, the two 200-hp units (delivering 150 lbs. pressure) were easy to install, occupy minimum floor space. And the boilers are fired by either oil or gas... thus, providing operational flexibility regardless of available supplies.

So far, Union Tank Car has used steam from the Cleaver-Brooks boilers to clean out cars that have transported petroleum products, chemicals, coal tar products, vegetable oils and liquid fertilizers.

The choice of the Cleaver-Brooks boilers was underwritten by their combination of remarkable compactness, automatic operation, wide-range flexibility and around-the-clock reliability.

If you'd like to know more about this installation or how Cleaver-Brooks packaged boilers (15 to 600 HP) fit into your expansion or replacement plans, write Dept. P, 362 E. Keefe Ave., Milwaukee 1, Wisconsin.

Cleaver-Brooks®

**Soundproof Louver Door**

Of special interest for air conditioned rooms where wall or door louvers are required is a rated soundproof louver door which restricts sound transmission to 32 decibels. The louvers are incorporated in a quality hollow metal door. Pioneer Fireproof Door Corp., 811 S. Fulton Ave., Mount Vernon, N. Y.

**“In-Line” Electronic Air Cleaners**

Precipitron electronic air cleaners are now being made in styles and dimensions that match those of Westinghouse air distributing units, so that they can be bolted directly to them to become an integral part of the central air conditioning system.

Installation is simplified because the cleaners are ready for floor, platform or ceiling mounting, with duct and piping connections conveniently located and much of the high voltage wiring eliminated. Since the cleaners are only 251/2-in. deep in the direction of the air flow, “in-line” assembly also makes the over-all system more compact. Westinghouse Sturtevant Div., Dept. T-262, 200 Readville St., Hyde Park, Boston 36, Mass.

**ORIGINATOR AND LARGEST PRODUCER OF PACKAGED BOILERS**

202 ARCHITECTURAL RECORD December 1959
Great new things are shaping up in concrete block

Atlas Masonry Cement provides the right mortar

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

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WOOSTER, OHIO
Crestview of Ohio, Inc., Sylvania, Ohio
Resident Apartment Building "A"
Slated for completion in January, this residential unit is the first of several structures planned for Crestview.

The first unit of Crestview of Ohio, a project to provide luxury apartment living for the retired. It isn't completed, yet it's obvious that it won't have that "institutional" look. By skillfully combining rich brown and contrasting cream panels in an interesting pattern, this residential unit for retired folks looks more like a contemporary apartment for modern young couples.

Besides achieving a distinctive colorful facade and providing the necessary large window areas with porcelain enamel curtain walls, the architects achieved other important advantages. The combination of curtain wall construction and porcelain enamel on Armco Enameling Iron helped keep first cost within a limited budget, and assures low maintenance costs. The rich warm colors they selected from porcelain enamel's rainbow palette won't fade, and the smooth-surfaced panels will rain-wash to keep the colors bright.

For all types of structures, explore the design advantages offered by curtain walls of porcelain enamel on Armco Enameling Iron. Your clients have the choice of a rainbow of weather-proof colors in bold hues or pastels; a full range of formed, embossed and textured surfaces; panel shapes, sizes and forms that defy monotony. Write Armco Steel Corporation, 3489 Curtis Street, Middletown, Ohio, for data on Armco Enameling Iron and its use in architecture.
One manufacturer, Sargent & Greenleaf can supply all your sash and door control requirements.

There's a Sargent & Greenleaf control for every purpose; heavy duty concealed or surface mounted stops and holders for exterior or interior doors; concealed and surface friction controls for interior or exterior doors and windows; stops for doors with varying floor clearance, mutes, roller latches and pulls for quiet operation of room doors.

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ARCHITECTURAL RECORD  December 1959  213
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a door installed closer
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MOUNTS ANY WAY YOU LIKE...

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HOLD-OPEN quickly adjustable to any one of 7 points.

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ARCHITECTURAL RECORD  December 1959

214
Detroit's most modern bank features new Textured Textolite for cafeteria table surfacing...that looks and actually feels like linen.

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**REVOLUTIONARY NEW LAMINATE FINISH!**

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LAMINATED SURFACING

**NOW AVAILABLE IN THESE DECORATOR PATTERNS AND COLORS**

You'll find unlimited design application possibilities for this new and different textured high-pressure plastic laminate. With a finish that reduces noticeable wear and eliminates objectionable glare, General Electric Textured Textolite is ideal for store and restaurant fixtures, walls, partitions and room dividers, school and office equipment, fine furniture, and many other applications requiring functional beauty plus durability.

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*See our catalog in Sweet’s Architectural (14a/Ge) or Light Construction (9a/Ge) Files*

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<td>Honduras Mahogany TT-9806-T</td>
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Announcing...
Ozalid's new 30-inch
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Now you can have a compact table-top whiteprinter with "big machine" features at a slim-budget price. And you can enjoy the convenience of on-the-spot printmaking round the clock. Make all the prints you need, inexpensively and without delay. There's no make-ready or cleanup... anyone can learn to use the 100 in minutes. Check these important features:

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For institutions and other structures where a high capacity, low contour ventilator is required.

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![Diagram of ventilator](image)

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It supplies quick data on Burt's complete line of modern Roof Ventilators.

**FAN & GRAVITY VENTILATORS • LOUVERS • SHEET METAL SPECIALTIES**

The **Burt Manufacturing Company**

48 E. South St.

AKRON 11, OHIO

MEMBER AIR MOVING & CONDITIONING ASSOCIATION, INC.

**Office Literature**

*continued from page 173*

**Range Hood Ventilator**

...for Commercial Kitchens (A.I.A. 35-C-11) contains specifications and dimensions for basic models and special units in the Filtaire line of packaged range hood ventilators for commercial kitchens. A step-by-step procedure for engineering Filtaire installations is included. Catalog 1201, 8 pp. Morrison Products, Inc., 16816 Waterloo Rd., Cleveland 10, Ohio

**Customized Partitions and Walls**


**Copper Fitting Catalog**

Lists and illustrates wrought and cast fittings for copper water and drainage tube in both flared and solder joint types, with data on types of solders and working pressures, dimensions of copper water tube, and flow capacities and friction loss allowances for both tube and fittings. Catalog SF-59, 42 pp. Chase Brass & Copper Co., 40 East Farm St., Waterbury 20, Conn.

**Air Entrainment Meter**

Describes and gives operating instructions, illustrations, and information on maintenance and recalibration of a precision air entrainment meter for use in testing and designing concrete mixes. Soiltest, Inc., 4711 W. North Ave., Chicago 39, III.

**Steel City Lighting Supports**


**Louverdrape Vertical Blinds**

Gives complete information, specifications and scale drawings for each model in the Louverdrape line of vertical blinds. A special section on "problem windows" is also included. 8 pp. Vertical Blinds Corp. of America, 1936 Pontius Ave., Los Angeles 25, Calif.*

*Additional product information in Sweet's Architectural File

more literature on page 224
See why Pittsburgh Corning Products make the things you build cost less, last longer, look better

example:

PC Glass Blocks to provide maximum diffused daylight inside while preserving privacy at this community center.

Architect Vincent G. Kling found that PC Glass Blocks provided a four-way answer to an important design problem at the Jewish Community Center, Camden, N.J. The floor of the Center's gymnasium is set below grade with one outer wall facing the entrance drive and highway. Good design called for a material able to admit as much softly diffused daylight as possible without sacrificing privacy... and without breaking up the broad planes of the elevation. Because of the location, it was also desirable to have a material rugged enough to withstand substantial abuse. The wall of PC Glass Blocks pictured above met the architect's design need on all counts.

Here you see an excellent example of PC Glass Blocks used with authority to insure that the material serves the design. This preservation of the architect's authority over design is inherent throughout the full line of PC Glass Blocks; in the sweeping variety of functional and decorative patterns; in the new 4 x 12 block; and in the broad spectrum of architecturally oriented face colors available. (Continued)
Most thermal insulations absorb literally gallons of water in a surprising short time. FOAMGLAS insulation doesn’t. What’s that do to insulating value? Think back to a time when you were caught on a bitter cold day with your feet freezing in wet socks. Your socks should have served as insulators. But they were wet and couldn’t insulate. An absorbent insulator soon reaches the point where it’s no more effective than your wet socks.

And remember: most materials claiming to be waterproof do absorb airborne water vapor. When that vapor condenses inside the material, insulating value goes out the window.
100 gallons... the difference shows why
OAMGLAS® insulation guarantees constant k-factor and nothing else can

OAMGLAS, on the other hand, is 20,000 times less permeable than the
next most effective insulation. Thus, in the time it would take a given
amount of FOAMGLAS to pick up an ounce of condensed water vapor, an
identical quantity of any other insulation would pick up over 100 gallons.
This contrast demonstrates why FOAMGLAS maintains its original effec-
tiveness long after other materials have become too wet to insulate.
This illustrates why it is so important for you to compare all insulating
materials. High Voltage Engineering did and selected FOAMGLAS. See
(Continued)
example:

FOAMGLAS Roof Insulation . . . comparison tested to prove its superiority for this High Voltage Engineering Corp. roof.

Time and again, when insulations are carefully compared, FOAMGLAS gets the nod. High Voltage Engineering Corp. made a point by point comparison of roof insulations . . . and they picked FOAMGLAS for the roof of their new $1 1/2-million plant at Burlington, Mass.

They found no other roof insulation could deliver as valuable a combination of benefits as FOAMGLAS. The combination? First, moisture resistance. As pointed out on the preceding page, FOAMGLAS stays dry, thus insuring constant insulating efficiency. And strength. The average ultimate compressive strength of FOAMGLAS is over 7 tons per sq. ft., so it forms a remarkably solid base for built-up roofing. Easy to cut and fit, it slashes roof installation time and money. It's light in weight and it can't burn.

And High Voltage Engineering found that the dependability of FOAMGLAS promised to cut their heating costs by some $8,500 a year every year. Why not make your own comparisons?

(To be continued)
GLYNN-JOHNSON
the complete line of OVERHEAD DOOR HOLDERS

*overhead means out-of-the-way...
no stumbling hazards—no interference with cleaning

GJ 100 concealed (non-handed) surface type (handed)
for single and double acting doors. The finest in appearance
and long, trouble-free wear.

GJ 90 concealed surface type
for single and double acting doors. Ruggedly built for hard,
practical usage.

GJ 80 (handed) for single acting doors. For moderate
cost installations.

GJ ARISTOCRAT (non-
handed) for single acting doors. Inexpensive for hard,
practical usage.

GJ 70 (non-handed) for single acting doors. Inexpensive for low-cost installations.

GJ 300 and GJ 500 series
(non-handed) concealed for
single and double acting interior doors. Surface type for single
acting doors. Spring cushion types and friction holder type.

"Life of the building" GJ Overhead Door Holders are made of
highest tensile strength alloys requiring minimum maintenance or
replacements. They have built-in shock absorbers to cushion the
stop and are made in various sizes for any width door.

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A truly economical wall or roof: EGSCO® "SANDWICH" CONSTRUCTION

A truly economical industrial or commercial building wall or roof is the combination of insulation material sandwiched between two sheets of formed metal, providing a durable, non-combustible covering with only one-fourth the heat loss of an 8" masonry wall.

The economy of such a structure stems from three sources: — low cost of component parts; low cost of labor due to fast covering of large surfaces; minimum maintenance due to corrosion-resistant surfaces.

For complete information, structural spans and specification, please refer to Sweet's Architectural File 8b/Sm, or write for Bulletin 59S.

OTHER EGSCO BUILDING PRODUCTS: Insulated metal panels and curtain walls; corrugated roofing and siding; metal roof deck; steel concrete forms.

ELWIN G. SMITH & CO., INC.
manufacturers of EGSCO products
PITTSBURGH 2, PA.

Office Literature

Fab-Form

Technical Tips
Contains helpful hints and suggestions on the proper fabrication of Panelyte decorative laminates. 16 pp. Sales Promotion Dept., St. Regis Paper Co., 150 East 42nd St., New York 17, N. Y.*

School Lighting Fixtures
Includes detailed descriptions and illustrations of Smithcraft's "engineered economy" fixtures for classroom and other school lighting areas. 4 pp. Smithcraft Lighting, Chelsea 50, Mass.*

Zone Control Systems Handbook
Includes sections on construction, installation, dimensions, specifications and features of zone control hot water baseboard heating for residences, supplemented by a detailed section on air conditioning. 70 pp. Edwards Engineering Corp., 1 Alexander Ave., Pompton Plains, N. J.

Absorption Cold Generator

Three-Pass Power and Heating Unit

Performance of Type B Gas Vents...
for Gas-fired Appliances. Research Bulletin No. 51, reports an investigation conducted to provide information and definite technical data on the performance of Type B gas vents when used in systems to vent appliances. It also surveys available information on the ignition of wood exposed for long periods of time to moderately elevated temperatures. Public Relations Div., Underwriters' Laboratories, Inc., 207 E. Ohio St., Chicago 11, Ill.

*Additional product information in Sweet's Architectural File
Three Alcoa alloy gas water heaters put a fast stop to complaints about lack of adequate hot water in the Goldine Apartments, Highland Park, Michigan.

The three Ruud-Alcoa units are used as automatic storage water heaters for the 74 apartments and nine stores located in the single building, but they can easily be connected to auxiliary storage tanks and used as circulating water heaters. They take up a minimum amount of space in a small basement room that is often flooded from water seepage. All three units have provided trouble-free, fast-recovery, year-round service since they were installed in October, 1956—even though water often comes up over the burners.

Durability is a built-in feature you can count on with Alcoa alloy water heaters. The aluminum alloy tank is strong, solid and corrosion resistant for longer life and freedom from water discoloration. High thermal conductivity assures rapid recovery rate and low-cost operation. Specially designed units meet American Gas Association Laboratories' requirements. For more information on any application—commercial, industrial or residential—send in the coupon, or write Aluminum Company of America, 1899-M Alcoa Building, Pittsburgh 19, Pa.

Your Guide to the Best in Aluminum Value

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV
132 Andersen Flexivents® in this manufactured house by Frank Lloyd Wright

This second of three houses designed by Frank Lloyd Wright for prefabricated construction is manufactured by Marshall Erdman and Associates, Inc., in Madison, Wis. The 2-story house, on a 2' by 4' module, makes liberal use of Andersen's versatile Flexivent Windows with fixed and operating sash.

Builder Erdman reports: "I get a lot of satisfaction, as a designer, engineer and manufacturer of quality homes, out of using a top quality window unit. Out of more than 500 homes with Flexivents, we've adjusted windows on only two complaints."

For all the facts on all seven of Andersen's complete window units, see your Sweet's File, or write Andersen direct.

Window Bay provides space added by Mr. Wright after original plans (on facing page) were drawn. Exterior color is cream ocher on pressed hardboard siding. Horizontal battens and ornamental facia stained redwood. Window trim Chinese red.
Corner WINDOWWALLS in 2-story living room give feeling of immense spaciousness. Operating sash of Flexivents are installed in awning position. Upstairs rooms form "gallery" overlooking living room.

FLOOR PLAN shows house is almost square. 2,912 sq. ft. of space. Walls of upstairs "gallery" are waist high; folding doors give privacy. $28,000 to $35,000 depending on inclusion of basement and built-ins.
The Record Reports

On the Calendar

December

1-4 Annual Convention, National Warm Air Heating and Air Conditioning Association—Chase Park-Plaza Hotel, St. Louis

January

12-15 16th Annual Technical Conference, Society of Plastics Engineers—Conrad Hilton Hotel, Chicago
17-21 16th Annual Convention and Exposition, National Association of Home Builders—Conrad Hilton and Sherman Hotels and The Coliseum, Chicago
25-28 11th Plant Maintenance and Engineering Conference and Show—Convention Hall, Philadelphia

February

1-4 Semi-Annual Meeting, American Society of Heating, Refrigerating and Air-Conditioning Engineers—Baker Hotel and Memorial Auditorium, Dallas

Office Notes

Offices Opened

Winston Cordes, A.I.A., has opened an office for the practice of architecture and planning at 649 S. Olive St., Los Angeles 14.
Warren Gilbert, A.I.A., has opened an office for the practice of architecture at 1007-B Prune Ridge Ave., Santa Clara, Calif.
Irwin Luckman and Burns Cadwalader announce a new partnership, Luckman and Cadwalader, Architects, at 4241 Piedmont Ave., Oakland, Calif.

Firm Changes

Bellman, Gillett, & Richards, Toledo architectural and engineering firm, announces the appointment of Dean L. Lashbrook as acting chief structural engineer. Mr. Lashbrook formerly was with Burns & Roe.
Comparetto & Kenny, Architects and Engineers, is now the name of the firm formerly known as Mascolo, Masumian & Comparetto and Comparetto & Associates. Address: 880 Bergen Ave., Jersey City 6, N. J.
Charles L. Hendrick announces that Donald O. Phelps has been admitted to partnership and that the firm is now Hendrick and Phelps, Architects. Address: 407 Rutland Bldg., Orlando, Fla.
Charles Luckman Associates announces that Marvin G. Sturgeon has been advanced to vice president and director of engineering and that Victor A. Cusack, A.I.A., has rejoined the firm as chief designer. Address: 1220 Sunset Blvd., Los Angeles 46, and 24 E. 51st St., New York 22.
Nelson, Goldberg and Heidt, engineers and architects, announces that Eugene W. Schmieder has been admitted as a full partner. Address: 1215 Baldwin Bldg., Erie, Pa.
Skidmore, Owings & Merrill announces the appointment of E. Alfred Picardi as chief structural engineer. Mr. Picardi formerly was with Bellman, Gillett & Richards, Address: 50 W. Monroe St., Chicago 3.
Thomas E. Stanley, Architects-Engineers, announces the opening of an office at 507 Turtle Creek Bldg., Dallas.

New Address

De Leuw, Cather & Brill and Brill & Gray, Engineers-Architects, 220 E. 42nd St., New York 17.

more news on page 232
Modern plants burn coal the modern way

HILLSIDE POWER PLANT SIMPLIFIES OPERATION, DOES DOUBLE DUTY AT OTTERBEIN COLLEGE

When an engineering survey at Otterbein College, Westerville, Ohio, indicated the need for increased steam facilities, plans for a new heating plant were drawn up by the firm of Benham, Richards and Armstrong.

The new building was designed for a hillside location to take advantage of gravity in coal handling. Coal is carried by truck to the concrete slab that forms the roof of the boiler room and is delivered directly to the hoppers inside. It is gravity-fed to International-BCR Coal-Pak Automatic boilers, flows through combustion to ash residue . . . an unusually simple, economical operation. In addition, the upper level of the plant is the college maintenance building, housing college cars and trucks as well as plumbing, painting and other shops. This “split-level” design has fulfilled its function admirably: creating an efficient, easily-handled heating plant as part of a practical, multi-purpose structure.

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.

BITUMINOUS COAL INSTITUTE
Dept. AR-12, Southern Building, Washington 5, D. C.

See our listing in Sweet’s Files: A-30/Bi; PE-4a/Bi; IC-18b/Bi

SEND COUPON FOR GUIDE SPECIFICATIONS, with complete equipment criteria and boiler room plans:

BITUMINOUS COAL INSTITUTE
Southern Building, Washington 5, D. C.

Gentlemen: Please send me:

☐ GS-1 (low-pressure heating plant, screw-type underfeed stoker)
☐ GS-2 (high-pressure heating and/or process plant, ram-type underfeed stoker)
☐ GS-3 (automatic package boiler for heating and process plants)
☐ Case histories on larger plants

Name: ____________________________
Title: ____________________________
Company: ________________________
City: _____________________________ Zone: ___________ State: ___________

There's a General Electric Underfloor Wiring System to meet every electrical requirement...for any type of floor construction.

In planning an underfloor wiring system for a new building, you have to consider several factors. First, you must specify a duct of sufficient capacity to accommodate the building's probable electrical requirements. Next, the duct system must be one that can be incorporated into the specified floor construction. Finally, you may have to consider budget limitations. All of these factors can affect your choice of an underfloor wiring system.

You can solve these problems by basing your specifications on a General Electric underfloor wiring system. Each of G.E.'s four underfloor wiring systems has its own advantages to help you satisfy the requirements of the job.

General Electric underfloor wiring systems are designed for easy installation plus long-term reliability. The components are made to close tolerances so that they fit together without trouble out on the job.

All four G-E systems are listed by Underwriters' Laboratories, Inc., and meet Federal Specifications.
The G-E cellular-steel floor wiring system makes it possible to locate outlets in every 6 inches of floor area. A special capped header allows you to provide for future expansion at low initial cost.

G-E header duct offers 9.03 square inches interior cross-sectional area to provide for ever-increasing electrical needs, will accommodate 110 No. 14 Awg wires in accordance with the National Electrical Code.

In standard layouts—the G-E single-level steel standard duct system offers up to 3 services. Supplementary feeding through conduit is possible through corners of durable, cast-iron junction boxes. These boxes afford easy leveling and cover adjustment, and provide large openings for wire pulling. Compartments are available to separate services in double and triple boxes. Can be installed in fill as shallow as 2½". Duct will accommodate 41 No. 14 Awg wires, in accordance with the National Electrical Code.

For greater feeding capacity—G-E single-level steel BIG DUCT system with an 8½" cross-sectional area will accommodate 102 No. 14 Awg wires. System includes boxes, components, and accessories necessary to use BIG DUCT either by itself or with G-E single-level standard duct. Can be installed in any type of floor that has a minimum fill thickness of 3 inches.

For difficult feeding problems—The G-E steel two-level duct system is recommended for fills of 3½" and over, particularly where feeding must be accomplished from many locations. It allows complete separation of services. All feeding is done by duct on the lower level, distribution on the upper level. Ducts bypass intervening junction boxes; need for conduit home-runs is eliminated. Will accommodate 49 No. 14 Awg wires, in accordance with the National Electrical Code.
"...highest degree of sound proofness possible in a movable wall"

— from a letter by A. Joe Crye, Vice-President, The DINKLER-PLAZA, Atlanta, Alexander & Rothschild, Arch.

UNITFOLD® FOLDING WALLS

In the Dinkler-Plaza banquet room, Unitfold Walls are used to create as many as six separate areas. Sound between these rooms is blocked with the efficiency of a 10" to 12" plaster-coated SOLID BRICK WALL. This is done through double-run wall sections, lined with acoustical material and separated by sound retarding dead-air space.

All Fairhurst Walls are solid, rigid, with virtually unlimited choice of decor. Write Dept. AR for free illustrated booklet describing Fairhurst solutions to perplexing space problems.

John T. Fairhurst Co., Inc.
45 West 45th Street
New York 36, N. Y.

FAIRHURST ... First Name in Folding Walls

U.I.A. ASSEMBLY
continued from page 10

French through the U.I.A. office in Paris, but M. Abrossimov told me that if the architects of the U. S. wished it, a copy in English would be made for them.

The U.I.A. will continue to sponsor a summer school for architectural students, in Portugal, under the auspices of Professor Carlos Ramos; and a seminar, for architects, in Warsaw.

The 1960 meetings of the various Working Committees have been set up as follows: first week in May—Urbanism, in Majorca; second week in May—Professional Practice, in Madrid; June (date not set)—Sports Construction, in Rome; July 4—School Construction, in Bulgaria; July 10-16—Housing, in Hungary; July 18-24—Health, in Russia; Sept. 1-3—Research, in Rotterdam; Sept. 5-11—Executive Committee, in Copenhagen; Sept. 12-17—Urbanism, in Stockholm; second two weeks of September and beginning of October—Professional Practice, Formation of the Profession, and a Regional Conference, in Chile; October—a colloquium on the Theater, in Berlin; December—International Competitions, in Yugoslavia.

The Vth Congress and Assembly will be held in London, 22 June to 7 July 1961. There will be one plenary session at which three papers will be presented, by specialists, on the general theme of "New Techniques and Materials, their Impact on Architecture."

The Delegates and Executive Committee were delightfully entertained by the Portuguese architects and officials. There was a dinner at the ancient Castle of St. George, magnificently overlooking the city and the estuary of the Tagus, at which the Mayor of Lisbon presided. A dinner at the Hotel Avis gave the architects a chance to chat with the Minister of Public Works. The Syndicat d'Initiative turned over its delightful rooms and terrace in the Palacio do Foz to the U.I.A. as a headquarters. There was lunch at the remarkably beautiful Hotel Seteis, in Sintra, tendered by the architects' association of Lisbon. Everyone was taken to a "rodeo" and local dancing at Ribetajo, and a final dinner at the Ritz for the members of the new Executive Committee. And, perhaps, the highlight—at least for the Executive Committee—the evening at the home of Carlos Ramos, with fine Portuguese music and fine hospitality.

HENRY S. CHURCHILL, F.A.I.A.
U.I.A. Executive Committee
Another new development using

**B.F.Goodrich Chemical** raw materials

Geon seals satisfaction into window wall construction

Between each of the factory-fabricated, stainless steel window sections of this new Columbus, Ohio, building is a double gasket extruded of Geon polyvinyl material. In addition, each sash is separately protected by weather seals made from Geon.

These seals will remain springy and weather-tight even at extreme temperatures of 40 below or 200 above. Independent tests have proved that seals of Geon have a service life several times that of conventional material.

Geon can make many other products impervious to water and weathering. In extrusions or moldings, Geon provides accuracy to meet tight specifications... is already in use in dams, bridges and commercial and residential building to provide new, long-lasting seals of satisfaction. Geon is also available for coatings, films, foam, and rigid profiles.

Geon is the versatile plastic material that can open the way to a new product or new application. It is available in literally hundreds of types... resins, compounds, latices and polyblends. Our technical specialists will help you select the form of Geon that can help your product best. For information, write Dept. AW-6, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

**Architectural Record**

December 1959

233
M-Deck Provides Roof Structure

Serving the Construction Industry Through Fabrication of Structural Steel, Steel Plate Components, and Building Products
and Finished Ceiling Combined . . .
Reduces School Cost to a Minimum!

Enough Money Was Saved on the Original Estimate to Completely Furnish a 19-Room High School

☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- M-Floors (Electrified Cellular Steel Sub-Floors)
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- Steel Roof Deck
- Permanent Concrete Floor Forms
- Acoustical and Troffer Forms
- Acoustical Metal Walls and Partitions
- Acoustical Metal Ceilings
- Structural Steel—Fabrication and Erection
- Steel Plate Components—Riveted or Welded

☆ For INFORMATION See SWEET’S FILES or Write for Catalogues

The R. C. Mahon Company • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York, Chicago, Los Angeles and San Francisco • Sales Representatives in all other Principal Cities

At Left: Cross Section of Long Span M-Deck Combined Roof-Ceiling with Troffer Lighting.

of Steel and Aluminum

Mahon
NEW TOUCH OF ELEGANCE

Successful architects know that attention to detail is important—and these new Alsynite decorative embedment panels add a touch of beauty and elegance wherever they are used; in screens, room dividers for home or office, shower doors, cabinets.

These long-lasting fiberglass panels are Mist White in color, embedded with five patterns of natural foliage, butterflies and decorative elements.

For complete details on these new Alsynite panels and their uses, write for special bulletin and full color card showing all five patterns.

![Alsynite Panels](image)

Washington Topics

continued from page 54

recently was elevated to three deg at Los Angeles.

The proposed rules also would require all jets to take off to the west between the hours of 10 p.m. and 7 a.m. except when such take-offs would involve a downwind of 10 knots (11.5 mi per hr or more). This means take-offs under most wind conditions would be made over open water instead of residential areas.

Finally, en route aircraft not intending to land in the Los Angeles area would be prohibited from operating within the airport traffic pattern area unless specifically authorized by air traffic control.

In addition to the Los Angeles airport, nearby Hughes, Hawthorne, and Santa Monica airports would also be required to conform to special airport traffic pattern rules.

CAA delayed further action on the proposal until mid-December, after which all invited comments were to be considered by Mr. Quezada before any decision.

OCMD Reports on First City Surveyed for Fallout Shelter

The Office of Civil and Defense Mobilization now has determined that there is significant protection from radioactive fallout in existing structures.

Last month it published the initial findings in its survey of standing buildings and on the basis of a close look at facilities in Tulsa, Okla., concluded that:

1. Existing business district shelter capacities can be increased at modest cost.
2. There is need for additional higher-grade shelter.
3. Added shelter can be developed at least cost in areas of greatest need.
4. Shelter surveys can be made in larger cities at reasonable cost.

In the case of Tulsa, OCMD surveyed 3444 structures for both existing and potential fallout protection. Daytime population of the area is 73,000; nighttime population, 18,000. The results were projected to Tulsa's metropolitan area with its total population of 328,000. An estimated 95,000 structures stand in this larger area.

The OCMF is convinced that as its building surveys continue, wide variations will be evident in the percentages of the qualities of pro-

continued on page 240
Extrudable Du Pont LUCITE®
ACRYLIC RESINS

... for luminaires with extra resistance to paints and cleaning agents

Extrudable formulations of Du Pont's LUCITE acrylic resins are being used increasingly in lighting and sign applications. They offer all the clarity, beauty, strength, and lightness in weight you've come to expect of LUCITE – plus additional resistance to cracking, crazing and deterioration from paints and solvents. Also, improved durability reduces rejects during fabrication steps such as sawing and drilling. Specifically designed for lighting application, extrudable LUCITE makes lenses that refract light efficiently and evenly... transmit optimum light without specular glare or shadow. And since LUCITE provides outstanding optical clarity, unaffected by aging, sunlight, and moisture, it is ideally suited to both indoor and outdoor applications.

For further information to help you evaluate LUCITE for your application, write to: E. I. du Pont de Nemours & Co. (Inc.), Department R-12, Room 2507L, Nemours Building, Wilmington 98, Delaware.

POLYCHEMICALS DEPARTMENT

ARCHITECTURAL RECORD  December 1959  237
NO SUMMERTIME SLUMP With gas as the boiler fuel and York machines, the switch to summer cooling was no problem. Operating costs are low, too, thanks to Gas.

LATEST IN COOLING Gas operated York machines feature the use of tap water as refrigerant and lithium bromide as absorbent, one of the most efficient, practical refrigeration cycles developed so far. Machines start and stop automatically.

THE UTMOST IN FLEXIBILITY The units are cross-connected so that each operates independently if necessary.
MAINTENANCE COSTS TO DATE—ZERO! The Allen Company uses two York machines—a 230-ton unit serving 45,000 sq. ft. of office and cafeteria space, a 170-ton unit for process water cooling. Three small pumps and motors are the only moving parts in the entire system.

"with YORK GAS air conditioning our boilers keep us cool all summer"

"With our boilers sized for a winter load, we were naturally oversized for the summer months. But York's gas-operated Lithium Bromide absorption water chillers permit us to make efficient use of part of this steam capacity to cool," says Mr. M. J. Mather, President of the Allen Manufacturing Company, makers of hex-socket screws.

The York Lithium Bromide system eliminates the need for huge compressors found in other types of cooling equipment... which brings down the original cost considerably. And with gas the boiler fuel, you make year-round use of an otherwise wasted source of power at rock bottom costs. In addition, York machines are noiseless, lightweight, compact—easy to install and readily adaptable to almost any plant layout.

Find out how your present heating system can pay off for you all year 'round with gas-operated York automatic water chilling units. Call your local gas company or write to the York Corporation, Subsidiary of Borg-Warner Corporation, York, Pennsylvania. American Gas Association.
ALBRO means Curtain Wall, Windows and Architectural Metalwork, In...
ALUMINUM, BRONZE, STAINLESS STEEL

Over thirty years of metalwork specialization assure you of exact interpretation and precise fabrication by Albro of your every design requirement. For more information, mail this coupon today or see Albro's catalogs in Sweet's.

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Please send me Albro's catalogs.

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Title__________________________
Firm__________________________
Street__________________________
City__________________________ State

Washington Topics

Protection. Findings are being completed on surveys in Montgomery city and county, Ala., and Contra Costa County, Cal. Major conclusions are thought to be valid, however, and further checks will be made in comparisons with a fourth survey to be made in Milwaukee and others in chosen locations.

In the Tulsa results, protective quality grades were based on the single improvement of closing exposed basement windows with material equal to wall mass thickness. The six categories with number of buildings in each and shelter spaces calculated for each category: A, 56 buildings, 11,064 spaces; B, 39 and 6646; C, 51 and 51,812; D, 224 and 160,153; E, 804 and 154,122, and F, 2270, with spaces not calculated.

It was estimated the first three categories could cover 69,522 of the 73,000 daytime population of Tulsa.

A single element—improvement of ventilation—would make it possible for all 75,000 inhabitants to have A, B, or C shelter, OCDM said.

A second requirement of the survey was to determine what, if any, shielding improvements could be made to raise the structures below A, by one category, with an expenditure of $125 per space. Also sought was the cost of habitability improvements necessary to meet minimum OCDM standards for ventilation, light and sanitation.

The habitability improvements, it was found, would cost around $25 per shelter space but only $5 per space could be used to improve shielding. It was deduced from this that in most instances it would not be feasible to attempt shielding improvements.

Projecting the downtown area findings to the metropolitan section, it was found that the entire population of Tulsa would have at least ABCD quality shelter. To accomplish this, however, almost all D shelter would have to be used. Average D shelter radiation accumulation was placed at 166 roentgens in a zone of 1000 r at one hr. However, those required to be in shelters with the lowest D protective factor (10) could accumulate 500 r, leading to sickness, incapacitation, and some deaths, OCDM reported.

An old problem was found to exist in Tulsa: location of the people to be sheltered does not coincide with the site of the shelter.

Said the OCDM report: "For ALBRO TERRAZZO SEAL produces a non-porous, non-skid surface.

Get years of extra wear from terrazzo floors with Huntington Terrazzo Seal. It helps to prevent unsightly cracks and pitting, seals in color and beauty, protects against the deteriorating effects of cleaning agents and traffic. Alkalies and alkali salts won't affect it. And because it's non-slippery, the floor is safer to walk on, resists scuffs and scratches. Saves labor time and maintenance costs, too. Write for information today.

Spal Concentrate Detergent ... a soapless synthetic that cleans quickly, leaves no film. Won't crystallize and cause pitting.

Ask for the Man Behind the Drum ... your Huntington representative.

See our insert in Sweet's
File Number 13m

HUNTINGTON LABORATORIES
Huntington, Indiana • Philadelphia 35 • Toronto 2

240 ARCHITECTURAL RECORD December 1959
A new panel base for 1,000 faces

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ARCHITECTURAL RECORD  December 1959  245
Illustration: Memorial Hospital, Albany, N. Y., featured in The Modern Hospital as the "Hospital of the Month" in August 1958. This 235-bed, $3.5 million hospital replaces an older building a few blocks away. Architects: Curtin and Riley, Boston. The architects subscribe to The Modern Hospital; the hospital has three subscriptions in force: one in the name of the hospital, one to the business manager, one to the chief dietitian.

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Your free copy of Writing and Publishing Your Technical Book can be obtained without obligation from Dodge Books, F. W. Dodge Corporation, 119 West 40th Street, New York 18, N. Y.

Interior has adopted the standards established for the Inter-State Highway Program.

The new controls have as their minimum standards the highest standards set up by the Bureau of Public Roads of the Department of Commerce and by state governments, Interior explained. They are sufficiently flexible, however, to permit the department to raise the safeguards in cases where the minimum controls prove inadequate to protect scenic or other recreational values.

Applications for billboards or advertising on public lands are handled by Interior's Bureau of Land Management. Permit procedures involve the issuance of a special land-use permit which, under the regulations, incorporates the necessary standards. These permits may be revoked at any time.

Director Edward Wozley of B. L. M. said it was necessary to adopt the new regulations to expand previous coverage of the old system and to make it more comprehensive and flexible to meet the needs arising under the Federal highway and acceleration of public recreational programs.

Report on Highway Program

Watched for Impact on Spending

The report of Federal Public Works Coordinator John S. Bragdon to the President in the spring will be watched with interest by architects and engineers for its possible effects on expenditure of highway construction funds. Major-General Bragdon was asked to look into the issue of urban versus rural outlays as a result of the question being raised in Congressional hearings on the highway financing program. Excessive design and other wastes in the highway program have been targets of Congressional committees and others.

As originally announced, General Bragdon was put to work studying the relative expenditures for Federal highways constructed in cities and those in rural areas. There had been criticism that the spending was top-heavy on the side of metropolitan centers. The report is expected also to go into the question of whether or not Uncle Sam, generally, is getting enough out of his highway dollar.

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the techniques of contemporary presentation
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A masterful, major treatise explains, in text and choice illustrations, every technique and medium used in architectural rendering today. For the professional renderer, the architect, and the beginner, it offers something new and complete in its field. Every aspect of rendering receives attention here: interiors, exteriors, nature; perspective, lighting, reflections, textures; all of the media in detail; how to buy and use materials, and when; professional tricks of the trade. In addition, a history of rendering, a study of color, and other basic information. A special section of professional renderings done in various media also is included. Numerous illustrations, 17 in full color.

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Required Reading
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Stones—the story of the arch. The legend says that in the year 600 or thereabouts, a beautiful little church just completed was visited by M. Down—and, you guessed it—it came tumbling to the ground. The disheartened congregation took refuge in a cave with only a small hole in the top for light and air. They were amazed and delighted to discover that their singing and prayers seemed lovelier and stronger than ever in the arched stone cave—so they prayed and sang louder and longer. M. Down was enraged, to say the least, and began to shower boulders on the roof of the cave. You can imagine his complete frustration when two of the boulders stuck in the hole. This misadventure eventually led to the discovery of the key-stone and the defeat of the little monster. This delightful and simple explanation of the arch is beautifully illustrated by the author. Although the reported age bracket is listed as “seven to 10,” readers of all ages interested in art and architecture will be captivated.

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

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Current Trends in Construction

THE BOOM in religious buildings is one of the more impressive phenomena of the postwar period. Total contracts reported by Dodge in 1959 for religious buildings (churches, Sunday schools, parish houses and the like) will run somewhere around 750 million dollars. Because that is too large a sum to grasp handily, a few comparisons may show just how big, economically, the church building boom has become. Total church contracts this year will not be far behind contracts for electric utilities and for hospitals; they will be substantially higher than contracts for public buildings; and they will be double the contracts for hotels and motels combined. This may be a poor way, in the opinion of some, to measure the value of religious buildings—but it is at least a measure of sorts. Perhaps it would be more revealing to point out that church construction is outstripping the building of jails and penitentiaries this year by a ratio of about 14 to 1. Surely some significance can be read into this. In any case, religious building is headed for a new all-time record in 1959, some 10 per cent ahead of the previous record set last year.

AS 1959 ENDS, there are some mushy spots in the construction landscape. They seem to result principally from the great uncertainty—the steel strike—and the great certainty—tight money. The strike, at this writing, is still up in the air. The mills are back at work under the uneasy truce of Taft-Hartley, and what will come next, we don't really know. We rather suspect that steel production will continue, somehow; if it doesn't, we are faced with a situation serious beyond words. As for tight money, it doesn't offer much element of certainty. Until home-building adjusts to the situation, as it will eventually, prospects are for some dampening of the housing boom.

THESE, and quite a few other factors, make forecasting a particularly risky business. The usual yardsticks are broken, or badly bent. We did the best we could with the tools at hand, and came up with the estimate in the outlook statement, "Sighting the Sixties," which was carried in the November RECORD. But we couldn't help thinking of our experience some years ago in building a bookcase. We worked on this project for a week, and tried to be very careful about it. But no matter how much we measured and re-measured, the shelves were always turning out a half inch too short or too long. After going through several hundred bd ft of lumber, and being just about ready for the psychiatrist, we discovered that through some fantastic accident, the six-ft rule we were using was lacking a half in. Not at the end, mind you, but between the 41/2- and 5-inch marks. In one direction, it worked pretty well; in the other, it didn't. Any resemblance to the present situation is startling.

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ARCHITECTURAL RECORD

SEMI-ANNUAL INDEX

VOLUME 126
JULY-DECEMBER 1959

ABBREVIATIONS: BTS—Building Types Study; AE—Architectural Engineering; TSS—Time-Saver Standards.

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B


Auditoriums. See Recreation Building.


Auditoriums. See Recreation Building.


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