RECORD HOUSES 1956-1966: A DECADE OF SIGNIFICANT INNOVATION
ARCHITECTURE IN A NEW MANNER BY A CANADIAN FIRM
BUILDING TYPES STUDY: SCHOOLS
DESIGN FOR EMERGENCY STANDBY POWER
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COMING IN THE RECORD

ARTICLE IN THE RECORD

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PIAZZA-PUTTERING
WHILE ROME BURNS

It is not my custom to recommend the reading of Life magazine, but there's a first time for lots of things. If you haven't yet seen the "special double issue" of Life called "The U. S. City: Its Greatness Is at Stake," you just must not miss it.

It is possible that you will learn something from it, but that's not my reason for mentioning it. It is just that you will certainly be interested in so many pages of Life devoted to such a vital topic as the future of the city. If it does nothing else but jump up and down and yell, "Isn't it EXCITING?!" I shall have to insist that excitement about the city is constructive. And even if, on occasion, you feel like jumping up and down in protest to some statement or feature, well, it's good to expose even the crazy ideas to the light of public opinion.

Right now I am going to start my protesting, though the line is not new in this column. My protest is a question: will anybody want to live in that exciting city?

Let me take a minute, however, to comment on a comment of Peter Blake's (this is another first). Peter said, in Life, about architects, "most of the best known keep putting away at their piazzas..." I have raised my voice to urge architects to get busy with city problems, but if Peter means by piazza-puttering the architect's normal concern with human scale and human environmental necessities, then you'll find me in the piazza.

The Life presentation does not ignore human considerations: there is much space devoted to Negro ghettos, transportation and other human requirements and problems. But it does reach for the spectacular when it presents architectural "solutions." There are "marvels to choose from" like satellites, mega-structures, linear cities and platform towns. Some Princeton professors have modernized the old linear city of Le Corbusier (circa 1930); a U. of I. team has done a mega-structure, multi-platform city unit of 100,000 people for Chicago, and so on.

There is also the one about covering over slum sections, say Harlem, with a new city suspended from a mammoth space-frame structure. The author does not tell us what is to happen to Harlem down there underneath, or its problems. If the population is going to double, maybe numbers will compel us to use mega-this and mega-that. But if the population doubles, the human problems will more than double. And the bulldozer won't answer them.

I had an odd dream the other night, and perhaps it is germane. It seems that, in this brave new world, every individual wore a combination communication and computer gadget. As you went about your business you were in touch with the whole world, and vice versa. At one point my gadget started yelling at me, "Buy Touser's Breakfast Food." The volume was so strong it would bowl you over, that is unless you responded hurriedly. You responded by pushing a "yes" button on your transmitter. Then the noise ceased, the order was duly delivered, and the price deducted from your salary.

In that twilight zone between nightmare and wakefulness I realized that that command to buy was mere lip service to individual choice and freedom. And so it might be in the world of the linear city, the mega-thing made necessary by population statistics, or by technological efficiency. It would be stupidly inefficient to allow individual families to select and cook their own meals. No more lobster dinners. No candle-lit little suppers. Why should each family be allowed its own kitchen, in the first place? Or maybe in the first place why bother with individual families anyway—they're really not very scientific.

Well, I still like the words, quoted here before, of August Heckscher, vice chairman of Urban America, Inc. (which publishes Architectural Forum): "The result of technological forces—combined with increased numbers of people, increased wealth, increased leisure—is to threaten the existence of every geographical place which is separate and distinct, every integrity which gives the individual the possibility of standing apart and meeting the world on his own terms."

And: "The degree to which the spirit of individuality is preserved is closely related to the degree to which we can shape and control the environment."

And don't forget the piazzas.

Emerson Goble

ARCHITECTURAL RECORD February 1966 9
How criticism affected the Air Force Academy

By now you have perhaps heard that the new $40-million expansion of the Air Force Academy will not be handled by its original architects, Skidmore, Owings and Merrill, but by a combination of two different architectural organizations.

I shall always remember this item when somebody tells me earnestly how helpful public criticism of architecture is. You will remember that this complex of buildings received criticism as no other has ever had, I should guess—before, during and after construction. Frank Lloyd Wright let go at a Congressional hearing, and so on and on.

Surely nobody is going to tell me that this criticism benefited the original design, aided the cause of good architecture, helped the original architects, or changed any of their thoughts on design. Perhaps it taught the architectural fraternity that governmental departments cannot live with criticism of architecture, and I doubt if that is a very constructive result for criticism to have.

Sources of beauty in architecture

Speaking of joy and stimulus and beauty in architecture, nobody could have made a more dramatic charge into this territory than did Ben Thompson last month in the RECORD. I'm sure you'll remember those pictures of kids playing, of light playing on rain hats, of students walking in the rain.

Thompson, chairman of the department of architecture at Harvard, is determined that education of future architects will include considerable exposure to beauty, the beauty to be found all around us. As for example:

"Architecture, of all possible things on earth, has by nature such a wonderful potential for aliveness. It deals with positive things—actual buildings—so that it is concerned with vital needs and issues of our time. Is there any doubt that architects today are no longer the prettifiers and decorators of a polite society but the builders of the total society at its very core? That is why the shift of emphasis is away from isolated inanimate design—away from the monumental cultural centers occupied by mythical man to the very animated, real buildings of unpredictable, living, breathing man."

Mr. Thompson had a crew out with their cameras, taking for that presentation those reminders of the beauty in our lives. I don't mind saying that there was considerable discussion in the RECORD offices as to the propriety of spending considerable sums and considerable space on the publication of those pictures. Were they indeed too simple for an architectural magazine? And is "beauty" still an anti-intellectual word? Or do you agree that we should push in this general direction?

Write us a note about it.

And now we have "the play of light"

Perhaps an enforced stay at home can be a good idea, if that is what my recent homework represents. I have found another quotation that I can't resist being sure you see. This one (December, page 144) is from Pietro Belluschi, until recently head of the architecture and planning school of M.I.T. About his Equitable Savings and Loan Association building in Portland, Pietro remarked,

"It shows that it is possible again to derive delight from the play of light on the surfaces of a building, and one may say that it is a tentative return to a more romantic architecture."

And "...it was also possible to be concerned with old-fashioned qualities of scale and proportion and color..."

Well, a stay at home is not entirely a negative experience if it brings to attention such declarations by the "name" architects. They could lead us into a great new land at a time when a great new land so badly needs "scale and proportion and color," or even some romanticism.

Eschew the fashion, or Harry, What You Said!

Perhaps the head above is a little cute, but I am perfectly serious in wanting to emphasize what Harry Weese said (December, page 114) about his Columbus, Indiana Baptist Church:

"If present day architecture is ever to mature, it needs to eschew the fashion of the hour and consider the realities of decades. The art of building is not relerned every generation; it is an ongoing thing, ... The joy and stimulus in architecture is the discovery of fresh combinations of old ingredients appropriate to present problems. Faced with the choice, I would rather be right than contemporary."

Well, it takes a little nerve to eschew the fashion of the hour, but surely the fashions of our day are becoming more and more "by the hour." The word "contemporary" does not have the virtuous ring that it used to have. We can certainly afford to be contemptuous of "contemporary," and in favor of the "joy and stimulus in architecture...."
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2. Concise discussion outlining the advantages achieved by use of precast or prestressed concrete, typed on 8½ x 11 sheets. A minimum of two 8" x 10" photographs and one 35 mm color slide of the completed precast or prestressed concrete portions of the structure. Detailed photographs, plans, perspective drawings, or large scale details if considered significant by the entrant.

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Many other savings too — T J's light weight economizes on footings, foundations and bearing walls. Most sizes can be erected by two job carpenters. Nailable top and bottom chords provide for easy attachment of low cost roofing, ceiling or flooring materials — open webs for duct work.
Deflection is minimal even in long spans while temperature change poses no problems.
Trus Joist is a money-saving, work-saving system that's balanced, precision engineered and custom made to the architect's specifications.
Good idea?
...an idea whose time has come.
Permalite lightweight aggregate concrete gives you all the insulation you'll ever need on a flat roof deck. Just pour it on. And while you're pouring, give yourself a bonus with a slope to drain.

Form saddles, cants and crickets too. No problem. Easily placed; strong; fast drying. What could be smoother. **One** application with **one** material poured in place gives you a clean, permanent, insulated deck with "K" factors from 0.51 to 0.77—with positive drain in a pitch as low as \( \frac{9}{16} \) to 12".

Cost? **Less** than other monolithic decks of equal insulating value. Ask your local Permalite man, or write for more information.

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For more data, circle 17 on inquiry card
There seems to be something about a perfectly round knob and a perfectly round rose and a perfectly round cylinder that makes architects wild about putting them on a perfectly SQUARE door.

Maybe it's because this Tempest trim is an approach to design in builders' hardware that's as fresh as an ocean breeze.

Or it could be that they just like the solid feel of that round knob in their hands.

We like to think it goes deeper than that because underneath that Lockwood trademark is the finest mortise lock ever made.

With or without Tempest trim, it will run circles around any other lock in the world.

Tempest's big sister, the Sphere Design, features a 2 3/4" diameter knob.

For more data, circle 18 on inquiry card
for hospital walk-in
refrigeration needs...specify Bally prefabs

These hospitals, like many other institutions and places of business, are benefiting from Bally Walk-In coolers and freezers with revolutionary construction techniques and design features. Bally has set a new high in refrigeration efficiency.

When you specify Bally you can be sure that your clients will get many advantages not found in conventional prefab Walk-Ins...never available in on-the-site "built-ins"...and at far lower cubic foot cost than "reach-ins". There is never a need to accept an "or equal" or a substitute. Bally Walk-Ins are available to all dealers everywhere at uniform published prices. Write for Fact File with new brochure, specification guide and sample of urethane wall.

See Sweet's File 25a/Ba.
Are you 500 people?  
Or 5?

Executone intercom can cut your monthly phone costs.

And pay for itself in the bargain. Because an Executone company-wide intercom (500-station or 5) reduces costly callbacks. Breaks switchboard bottlenecks. Takes inside calls off your phones. Frees lines for incoming-outgoing customer calls. Tie in our pocket-page or a sound system and you get those important calls even when you're not at your desk. You're in touch with anybody and everybody in your company—and vice versa—instantly. Provable savings on your monthly phone bill will pay for your Executone system... giving you the benefits of two channels of communication for less than the cost of one! Whatever your business. You can depend on it.

For a portfolio of literature showing how Executone intercom can cut your phone costs, write Executone, Inc., Dept. M-5, Austell Place, Long Island City, N.Y. 11101

For more data, circle 20 on inquiry card.

For more data, circle 21 on inquiry card.
Our wallboard has the lowest cost two hour fire rating:

Bestwall is the original glass fiber reinforced wallboard. Bestwall Firestop, in various assemblies, meets Building Code Requirements and carries the Underwriter’s Laboratories, Inc. (UL) Label for ratings from 45 minutes to 3 hours—with the economical Semi-Solid Partitions earning 1, 2 and 3 hour ratings.
ROOFS, ARCHITECTS, AND IMAGINATION. On the one hand, there is a renewed interest in visually significant roofs. And on the other, there is a notable increase in the specification of Follansbee Terne. We believe that both of these trends happily reflect a greater emphasis on purely imaginative elements in contemporary architecture, a welcome departure from the "anti-septic line". And both are essentially interdependent, for terne is unique among roofing materials in that it provides maximum creative latitude at relatively modest cost.

For more data, circle 22 on inquiry card

FOLLANSBEE STEEL CORPORATION  Follansbee, West Virginia  Follansbee is the world's pioneer producer of seamless terne roofing
The Denver Tech Center chooses Arkla and Gas for "the ultimate" in multi-zone air conditioning.

Control Data Corporation and Honeywell, Inc., already have built facilities at the new Denver Technological Center. Part of the planned creative environment: Arkla Chillers for cooling.

The Arkla units furnish cold water and gas-fired boilers supply hot water to a highly flexible dual-duct distribution system. Mixers at the various zones blend warm and cold air so precisely that personnel in adjoining offices can dial temperature differences of 6 to 8 degrees. And the quiet absorption cooling system requires little maintenance.

Gas costs for this automatic year-round conditioning are very low. Learn more about the flexibility, efficiency and economy of Arkla Gas equipment. Call your local Gas Company Sales Engineer. Or write: Arkla Air Conditioning Company, 810 East Franklin, Evansville, Ind.

AMERICAN GAS ASSOCIATION, INC.

For heating and cooling...Gas makes the big difference

For more data, circle 33 on inquiry card
HAVE A HILLYARD ARCHITECTURAL CONSULTANT
DETAIL SPECIFICATIONS ON
TROPHY® GYM FLOOR FINISHING

DESCRIPTION: A seal and a finish specially formulated for wood gymnasium floors to give a light, durable, slip resistant playing surface that will resist rubber burning and marking.

SPECIFICATION AND HOW TO APPLY: An epoxy seal and finish. Apply with lamb'swool applicator. Seal coat fills porous wood surface. Additional seal coat may be required on highly porous wood. Game markings, using Hillyard Gym line paint, are painted in before finish coats are applied. Two finish coats are required. See Sweets Arch. File for detailed specification.

COVERAGE (Average): Trophy Seal - 350 sq. ft. per gallon. Trophy Finish - 500 sq. ft. per gallon.


GUARANTEE: Controlled uniformity. Vacuum-packed. When applied according to directions and under supervision of a Hillyard representative, all claims for the product are guaranteed—provided containers are received at job site with factory seal unbroken.

MAINTENANCE: Regular treatment with Hillyard Super Hil-Tone dressing for conditioning and dust control.

APPROVAL: Maple Flooring Mfrs. Assn., Institutional Research Council. Listed by Underwriters’ Laboratories as “slip resistant”. In use: 12 years on all major basketball tournament floors.

REFERENCES: Sweets Architectural File, section 13n.

HILLYARD FLOOR TREATMENTS
ST. JOSEPH, MISSOURI U.S.A.
TOWNS, NEW JERSEY
SAN JOSE, CALIFORNIA

The most widely recommended and approved treatments for every surface.

For more data, circle 34 on inquiry card.
Mall plan will accommodate high density of tourists

The long-range plans for development of the Capitol Mall in Washington, D.C., prepared by Skidmore, Owings & Merrill, were designed "to come up with a gracious way of handling many people." The plan calls for depressing all roads underneath the Mall from the Capitol to the Washington Monument. Trees would be planted at close intervals on either side of the Mall to create a formal atmosphere. From the Washington Monument to the Lincoln Memorial, the reflecting pool would be lengthened to surround a pedestrian island. North of the pool, where there are now office buildings, would be located a tourist center, a restaurant and a rose garden.

The highly formal east-west mall would be in marked contrast to a north-south park which would extend from the White House, intersecting the formal axis at the Washington Monument, to the Jefferson Memorial across the Tidal Basin. A Japanese tea garden would be located behind the cherry trees along the Tidal Basin, and cherry trees would be added around the Washington Monument grounds. Also included in the plan would be parking areas removed from the mall's neighborhood, with shuttle buses providing commutation. Only minibus vehicles would be permitted along the Mall. The Mall itself, from the Capitol to the Washington Monument, would be dug out slightly in between blocks so that a series of levels and terraces would be provided.

The Board of Directors of the American Institute of Architects passed a formal resolution commending the Mall proposals. Morris Ketchum Jr., president of the A.I.A., praised the plan as "magnificent planning which, like all master plans, is flexible. The basic principles are admirable. The plan will convert the Mall to a far more lively area, attracting people at all hours . . . ."

Weaver will lead HUD, President finally announces

Dr. Robert C. Weaver was named by President Johnson last month—at last—to head the new Department of Housing and Urban Development. Named as Under Secretary was Robert C. Wood, head of the Political Science Department at the Massachusetts Institute of Technology.
Technology. The appointment of Dr. Weaver, who had been Administrator of the Housing and Home Finance Agency, ended a long period of speculation over whether or not the President would appoint him and why the appointment was delayed. HUD has been in existence since November 9, 1965 without a Secretary.

Mr. Johnson said of Dr. Weaver, "I believe him to be exactly the right man to pursue the goal of bringing the full measure of the Great Society to our urban areas and of carrying forward the major new urban programs that I will propose to the Congress . . ."

Roche will design post office—Cummins contributes fees

The Columbus, Indiana firm of Cummins Engine Company, as part of its architectural enhancement program, has donated the services of Kevin Roche, chief designer of Eero Saarinen and Associates, for the design of a post office in that city. "As far as we know," said Postmaster General Lawrence O'Brien, "this is the first time the services of a nationally prominent architect have ever been donated to the Post Office . . ."

President Johnson proposes Department of Transportation

In his State of The Union message, delivered on January 12, President Johnson not only made it plain he will continue to push his "Great Society" programs, but suggested some new ones. Of special interest to architects are the President's proposals dealing with urban development, pollution and transportation.

President Johnson proposed a Cabinet level Department of Transportation to correlate activities presently scattered in 35 government agencies.

In the urban development area, the Chief Executive promised to submit proposals for rebuilding "entire sections and neighborhoods containing in some cases as many as 100,000 people." His proposals will "reward planning for the growth of entire metropolitan areas."

As for the pollution problem, the President said: "We must undertake a cooperative effort to end pollution in several river basins—making additional funds available to help draw the plans and construct the plants that are necessary to make the waters of our entire river systems clean—and make them a source of pleasure and beauty for all of our people."

Philadelphia Phillies reject rectangular stadium plan

A controversy has arisen in the plans for a new multi-purpose stadium in Philadelphia (January, page 43). According to George Harrison, executive vice president of the Philadelphia Phillies Baseball Club, the program favors football rather than baseball. The football people need 65,000 permanent seats with 7,000 temporary seats, where the baseball needs call for 45,000 to 50,000 seats. In addition to the over-all size of the structure, Mr. Harrison objects to "the rectangular confirmation of the structure which parallels the foul lines beyond first and third bases, so that spectators seated in these areas would be oriented towards the outfield and would have to turn their heads to see the infield." Mr. Harrison said that he realized that a perfect compromise in a multi-purpose stadium is impossible, but revisions have to be made. The stadium is a joint venture of George M. Ewing Company, architects and engineers; Stonorov and Haws, architects and planners; and McCormick-Taylor Associates, consulting engineers.

Museum honors Mies with exhibit on 80th birthday

The Museum of Modern Art is honoring Ludwig Mies van der Rohe on the occasion of his 80th birthday with an exhibit of more than 70 drawings (from the Museum's collection) of projects and buildings, including the famous 1919 drawings of an all-glass skyscraper proposed for Berlin. The exhibit will run from February 2 to March 20. Mies's actual date of birth is March 27, 1886.

Multi-use Learning Center offers maximum flexibility

The Multi-use Learning Center developed for the Phoenix Union High School System in Phoenix, Arizona is a circular building containing four 200-seat lecture halls and a central unit consisting of a stage and 600 seats. By use of turntables under the four lecture halls, the central auditorium can be expanded to seat 800, 1,000, 1,200 or 1,400. The concept was evolved by Phoenix architects Cartell and Rossman under a grant of $20,000 from the Educational Facilities Laboratory of the Ford Foundation. There are no plans yet to build a prototype, but the cost would be $600,000.

Obituaries

Frederick J. Kiesler, avant-garde architect and sculptor, died December 27 in New York City at the age of 75. Born in Vienna, Mr. Kiesler was a member of the De Stijl group in Europe before coming to the United States in 1926. Mr. Kiesler was better known for scenery designs (he was scenic director for the Juilliard School of Music from 1933-1957) and for architectural concepts, like the "endless house," which were renowned from exhibitions, than he was for completed work. His major completed building, designed with Armand Bartos, was "The Shrine of the Book" in Israel (June 1965, page 20).

Alberto Giacometti, Swiss-born sculptor of "matchstick figures," died January 12 at age 64. A retrospective exhibition of his work was held last summer at the Museum of Modern Art in New York.
What our new ceramic ceiling material does best is last.

We call this acoustical ceiling material Armstrong Ceramaguard™. Others have called it the longest lived material ever developed for fabricated acoustical ceilings. Small wonder: Ceramaguard is unusually resistant to moisture. It can't be hurt by freezing or thawing. It has exceptional rigidity and span strength (even soaking wet, the panels won't sag). It washes easily, takes washing repeatedly (special acrylic finish has five times the scrub-resistance of standard paints). It's even resistant to chlorine atmosphere (Ceramaguard has been used successfully in enclosed swimming pools).

So much for permanence. The rest is just as good. Acoustical efficiency—excellent (NRC Specification Range: .60 to .70); Average Attenuation Factor: (40 decibels). Light Reflectance—excellent (84% average). UL Fire Hazard Classification—Class I (noncombustible). UL Time-Design Rating on floor-ceiling assembly—2 hours (with suitable floor). Installation—fast (easy-to-install gridwork, easy-to-handle 2' x 2' or 2' x 4' lay-in panels). Design—the handsome (and versatile) Travertine pattern.

Now for the savings. Since Ceramaguard is moisture resistant, it can be installed whether your building is closed or not; whether wet work is going on or not; without special precautions for ventilation or drying. And the completed assembly is fire retardant, so you don't need any intermediate fire protection above the suspended ceiling. All this adds up to both time and dollar savings. As much as six weeks and 30¢ a square foot in some cases.

Like to know more about Armstrong Ceramaguard? Just ask. Armstrong, 4202 Rock St., Lancaster, Pa.

For more data, circle 1 on inquiry card
Imagine all you’d like to do on an urban redevelopment project, with no holds barred.

And most likely you’ll find that thin, efficient Barrett Urethane Insulation is what you need to blend your roofline with your design.

Ideal, too, for today’s modern buildings with year-round temperature control. Because Barrett Urethane Roof Insulation, with its low K factor of 0.13, gives maximum year-round thermal efficiency. Does it better than any other type of insulation.
History facility integrates separate functions within a single articulated structure

The History Faculty at Cambridge University in England, designed by James Stirling, has lecture rooms, office, and common rooms for 53 staff members and 746 students. Within the basic L-shaped structure, and under the glass "roof lantern" are a reading room for 280 students, and a library which has 12,600 feet of shelving in quadrant. The building has a tile and glass exterior.

According to the architect, the reading room has the greatest density of occupation and, therefore, is at ground level. Staff and student common rooms are at first- and second-floor level, and above are the seminar rooms. Staff rooms are on the top two floors. Student movement around the lower levels is by stairs, leaving the elevator relatively free for service to the top floors. Structural consultant for the $942,798 building is Felix J. Samuely & Partners and mechanical and electrical consultant is H. Gregory & Partners.
Office building contains 800-seat underground theater

The new home of Belgium’s Credit Communale in Brussels will have a peristyle facade made up of units shaped like squared-off “A’s,” linked in a diagonal pattern with hooped neoprene and steel units (neoprene units can be replaced by hydraulic jacking). The 18-story, 280,000-square-foot structure will have four full levels underground. Competition-winning architects are Lambichts, Grockowski and de Laveleye, and Van Impe and Delfosse.

Belgian office building has floors slung from steel beams

The $40-million Berlaymont Administrative Center, now under construction in Brussels for completion in 1969, is designed with floors slung from massive pref lexed steel beams atop a concrete central spine. Zoning regulations restricted the height of the structure to 13 stories, so half of the building’s 1.225 million square feet is below grade. The building will house the Common Market, Euratom and the Coal and Steel Pool. Architect is Lucien de Vestel.

English theater will serve as “lecture theater” for university

The Nuffield Theater at Southampton University in England, which has an auditorium and stage clad in copper, is integrated with the University’s new Arts Faculty Building, sharing entrance hall, foyer, cloakrooms and some catering facilities. Architects were Sir Basil Spence, Bonnington & Collins.
Office of Foreign Buildings is proceeding with its building program

The building program of the Office of Foreign Buildings, Washington, D.C., is once again active after a period of inactivity enforced by cuts in appropriations. The OFB has received normal appropriations for 1964, 1965 and 1966. The result: seven major projects under construction and 11 major projects under design. Serving on the architectural advisory panel to the OFB are John Lyon Reid, Dean Joseph R. Passonneau of the School of Architecture, Washington University, and Lawrence B. Anderson, dean of the School of Architecture and Planning at M.I.T.

United States Embassy and related facilities, Mogadiscio, Somalia, East Africa. These facilities, costing a total of $1.5 million, use site-produced materials (concrete block, concrete joists, terrazzo tile, stucco and plaster) since Somalia does not yet have a building industry of any sophistication. Aluminum sliding glass frames will be imported, but easily obtained teak has been widely used. Architects are Holden Egan Wilson & Corser. Design associates for the preliminary concept of the office building were Daigert & Yerkes with Albert G. Mumma Jr. Structural engineers are Throop & Feiden and mechanical engineers are Paolo E. Squassi and Kluckhuhn & McDavid Company.

United States Consulate General, Madras, India. The building will consist of three floors wrapped around a courtyard. Exterior materials are cast-in-place, exposed-aggregate concrete, with native granite spandrel panels. The first floor will contain the major public facilities—the visa area and the lower level of the two-story-high USIS library. The remainder of the second floor will contain USIS offices, and the third floor will have consulate offices. An auditorium seating 200 will be located in the basement. Architects are Burk, Lebreton & Lamantia.

United States Ambassador's residence, Manila, Philippine Islands. Architects Callister and Payne describe the residence as follows: "Essentially, our concept has evolved from the best of the environment that we experienced in Manila. A long tradition of native ways seemed to meld into hundreds of years of western influence. There seemed to be the flavor of the Philippine-Spanish days with the mere emergence of some American ideals." The result is a building of long, low lines built of native stone, Spanish plaster and tile, and some "concrete and glass, the products and luxury of the new society." The residence contains 14,348 square feet in two stories and a basement, and will cost $450,000.
Married students housing will contain 216 units

Eastgate, a 30-story structure which will house married students and faculty at the Massachusetts Institute of Technology, will provide 216 efficiency, one- and two-bedroom apartments. Architects for the $4-million, cast-in-place concrete structure are Eduardo Catalano in association with Crawley Cooper, Robert Brannen and Paul Shimamoto. The tower will be connected by a raised plaza to the recently completed Hermann Building (right) designed by the same architects (November, 1965, page 40). Completion: 1967. General contractor is Vappi and Company, Inc.

U.N. school will be built on New York waterfront

The latest proposal for the United Nations International School will place it on the East River in New York City where pier 73 now stands. Formerly, the school had been planned for a site adjoining the United Nations (May 1965, page 344). The structure, designed by Harrison & Abramovitz, is a six-story concrete building. It will have a separate auditorium and will act as a community center as well as a school. It will be financed by $7.5 million from the Ford Foundation and $1 million from the Rockefeller Brothers Fund.

School will have roof recreation area under dome

The new upper school building of The Latin School in Chicago is a four-story structure of concrete-frame and brick construction. The $2.5-million project which will accommodate 300 students, will contain a theater-auditorium for 450, basketball court with seating for 300, swimming pool and a roof recreation area covered by an air-supported plastic dome. Completion is set for the fall of 1968. Architect for the structure is Harry Weese & Associates.

Headquarters designed to be “quiet and dignified”

The corporate headquarters for Abbot Laboratories in Chicago were designed by the Perkins & Will Partnership to be “quiet, dignified, and perhaps even understated.” The corporate unit consists of a central three-story corporate officers’ building and two adjoining buildings—one for staff employees and one for divisional employees. The buildings will be faced with brick, with rounded brick used at the corners, windows and entrances. The roofs of the structures, visible from surrounding areas, will be finished with crushed green granite. Completion: 1967.
Architect-designed projects up 9 per cent  
as 1965 construction sets still another record

BUILDING IN 1965: Part 1

Architects will be glad to learn that the types of building activity they normally associate with the market for their services expanded just about twice as fast as the average for all categories of construction in 1965.

Total contract value for new construction, as measured by F.W. Dodge, once again topped all previous years' records, reaching and even slightly surpassing the $49-billion mark for the 12 months just ended. And in this big and multifaceted market, the total of architect-designed projects (the sum of all nonresidential building types in the non-residential area; excluding single-family housing) ended up nearly 9 per cent, or $2-billion bigger than in 1964. That compares very favorably with the good-but-not-great gain of 4 per cent for total construction contract value last year.

The real story of construction growth in the mid-Sixties is told by the performances of just a few key individual building types in the non-residential area:

With a healthy advance of nearly 15 per cent in 1965, educational facilities, industrial and commercial building extended the strong advance of several years' duration. In the early phase of that expansion most of the growth was concentrated in contracts for manufacturing plants; by 1965 the emphasis was shifting as commercial building (stores and offices, in particular) began displacing industrial building as the main driving force with gains in the neighborhood of 20 per cent.

Following closely behind this group of business-related building types in 1965 was the category of institutional buildings which achieved a gain in contract value for the year of well over 10 per cent.

Educational facilities and dormitories not only account for the biggest portion of the institutional building group, but in the year just past provided just about all of its growth. College and university construction was booming in 1965 at all levels—academic, research, administrative, and residential. Dormitory projects alone were up by more than one-third over 1964's already high volume, while laboratories and libraries were showing even larger increases. This general area of higher educational building promises to be a very strong market for several years ahead.

Hospital building contracts, which showed a decline of a little over 5 per cent in 1965, saw the interruption of a sharp upward trend which brought a doubling in annual value between 1960 and 1964. There is every indication that the vigorous upward trend will be resumed soon.

Residential building managed a modest increase in total value during 1965, but the gain was restricted mainly to single-family homes. The residential building market, which has been going through a moderately severe correction over the past two years, spent most of 1965 digesting previous excesses while edging slowly back from the low point reached at the end of 1964. Rental building bore the brunt of the cutback, and while 1965 brought some indications of recovery, apartment building was still off the pace at year-end.

Next month: A regional look at 1965 building.

George A. Christie, Chief Economist  
F.W. Dodge Company  
A Division of McGraw-Hill, Inc.

Building activity: monthly contract tabulations
Flush inside... or flush outside!

Each of these Carrier condensing units powers a central ducted heating and cooling system—a system ideal for garden-type apartments.

Why? It gives each tenant individual control of heating and cooling—with quiet movement of clean, conditioned air—to each room all year long.

It offers the owner low first cost, takes up no land space and no floor space, either.

It teams with a gas- or oil-fired furnace, or with an all-electric fan-coil unit indoors.

And the architect can work them into his building design in a number of unobtrusive ways. Let them project a few inches from the wall... and they disappear from view on the inside. Fit them flush outside... and let them project into a closet, utility room... or, as in the picture above, into a brick buttress that serves other purposes.

Other parts of this Carrier system? Refrigerant tubing with quick-couples at both ends for a fast, clean connection to fan-coil or furnace.

An all-electric fan-coil that can power air through long duct runs—does it quietly from any spare space—above a closet, in a furred-down ceiling, a crawl space or attic.

Only 13½ inches high, it heats with electric strip heaters or a hot water or steam coil.

Or, Carrier furnaces can provide heat and air movement from a closet, attic or crawl space location.

Details? Your Carrier dealer will be glad to give them to you.

You'll find him listed in the Yellow Pages. Carrier Air Conditioning Company, Syracuse, New York 13201. Represented in Canada by Carrier Air Conditioning (Canada) Ltd.

Carrier Air Conditioning Company

More people put their confidence in Carrier air conditioning than in any other make

For more data, circle 36 on inquiry card
The information presented here indicates trends of building construction costs in leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

William H. Edgerton
Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service

**NOVEMBER 1965 BUILDING COST INDEXES**

<table>
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<tr>
<th>Metropolitan area</th>
<th>1941 averages for each city = 100.0</th>
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<tr>
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<td>Cost differential</td>
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<td>for residential</td>
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<tr>
<td>U.S. Average</td>
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<td>Atlanta</td>
<td>7.2</td>
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<td>Baltimore</td>
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<td>Birmingham</td>
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<td>Boston</td>
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<td>Chicago</td>
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<td>8.5</td>
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<tr>
<td>Seattle</td>
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Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than in the second. Also, costs in the second city are 80% of those in the first (8.0/10.0=0.80) or they are 20% lower in the second city.

### HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

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<td>255.0</td>
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<td>268.8</td>
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<td>289.0</td>
<td>294.7</td>
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<td>266.9</td>
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**ECONOMIC INDICATORS**

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<td>135%</td>
<td>102%</td>
<td>104%</td>
<td>104%</td>
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Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0=200.0=75%) or they are 25% lower in the second period.

ARCHITECTURAL RECORD February 1966
VERSATILE BORDEN PRESSURE LOCKED GRATING

Borden's Pressure Locked steel grating is used extensively as the flooring of the continuous balconies surrounding the new Washington, D. C. German Chancery building shown here. An integral part of the design of this striking 95,000 sq. ft. steel-and-wood-framed structure, the grating adds the practical advantages of sun shading, ease of window cleaning, and requires no maintenance.

Available in many subtypes, Borden's Pressure Locked Type B, approved for all general purposes, was chosen for the above application. For complete information on this and other grating types, including Riveted and All/Weld in steel or aluminum, write for . . .

a free copy of
The 16-page Borden Grating Catalog

BORDEN METAL PRODUCTS CO.
MAIN OFFICE: 922 GREEN LANE, ELIZABETH, NEW JERSEY
Elizabeth 2-6410
PLANTS AT: LEEDS, ALABAMA; UNION, NEW JERSEY; CONROE, TEXAS

When in New York City, see our exhibit at
Architects Samples, 101 Park Avenue

For more data, circle 37 on inquiry card
SPARKLE! These are the new Flair fittings, by Kohler. Of diamond-bright acrylic.

SPARKLE! Clean of line, crystal clear, Flair fittings have a gem-like radiance.

SPARKLE! Flair fittings add the crowning touch to Kohler fixtures. Great with the new accent colors!

SPARKLE! Sparkling ads featuring Flair fittings are selling your customers now.

SPARKLE! Flair fittings are genuine Kohler fittings, through and through... acrylic and brass in the traditional quality of Kohler.

ADD SPARKLE TO YOUR SALES...ADD FLAIR!

FLAIR FITTINGS

KOHLER OF KOHLER

Kohler Co., Established 1873, Kohler, Wisconsin
ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

For more data, circle 38 on inquiry card
CONFORMISTS!

Krueger's Versatile New MODULAR SEATING

...conforms to any room size, space and seating requirement – with inviting comfort and heavy-duty durability!

Wherever people wait — seat them comfortably on Krueger Modular Seating units. Colorful, posture-curved fiberglass shells and carefree plastic-top tables are rigidly mounted on smartly-styled cast iron bases in two, three and four-unit variations — free-standing, ganged in-line or back-to-back. For added luxury, specify armless shells, foam-cushioned and fully upholstered in Naugahyde Chromata or a heavy-duty textured fabric. Take full seating advantage of any room, any size, with custom styling and selection of Krueger's New Modular Seating designs.

Write for complete information and All-New Complete Line Catalog

For more data, circle 39 on inquiry card

SHOWROOMS: CHICAGO, 1184 Merchandise Mart
LOS ANGELES, 8815 Beverly Blvd.
You don’t need a king’s ransom...
Lumi-Flo can take care of lighting and air-handling problems and be careful of budgets at the same time. Here's how: You start with a rigid deep-drawn housing. Then add a frameless lens with heat-removal dampers. Make sure the heat-removal slots are less than a $\frac{1}{2}$ inch wide and that each damper has its own piano hinge. Next, insist on a frameless lens that fits flush with the ceiling. Include another set of dampers in the housing for air supply. Pack each lens and door frame in its own styrofoam protector.

Finally, make sure it's manufactured in the most efficient lighting plant in the country.

Ours.
First choice for Over 70 years

— for maximum efficiency of door operation and maintenance

As the pioneer and originator of the interlocking slat curtain, the name KINNEAR has become synonymous with rolling doors the world over. And a highlight review of the benefits Kinnear Rolling Doors offer the building designer, contractor and owner makes it readily apparent why this has come about.

- Space-saving, upward-coiling design — out-of-the-way of damage.
- Rugged, heavy-duty, all-metal construction — for durability and maximum weather, fire or intrusion protection.
- Designed to withstand minimum wind velocity of 88 m.p.h. (for greater resistance when higher velocities are specified).
- Triple protected galvanized steel interlocking slat curtain — a design originated by Kinnear.
- Especially suited to electric power operation with choice of electronic controls.
- Every door is “Registered” for life-extension — for permanent maintenance and parts replacement.
- Available with combination curtain endlock and weatherlock for extr-tite requirements.
- Backed by a time-proven, nation-wide consulting, installing and maintenance service organization.

When you specify and insist on Kinnear Rolling Doors, you can do so with the confidence of complete satisfaction to you and your client.

Write TODAY for current catalog — or call your local Kinnear Representative for counsel on your current projects.
Mark Hampton Designs a Community Art Center in Wood

One of a series of design innovations commissioned by Weyerhaeuser Company.
Weyerhaeuser Company has commissioned a number of leading architectural firms to create design innovations which highlight the potential of wood in public and commercial buildings. This original design by Mark Hampton, AIA, of Tampa, Florida, is the fourth in the series.
"A sculptured form, designed to inspire local enthusiasm for the arts."

The emerging emphasis on culture throughout America continues to bring new challenges to the architect. More and more smaller communities are asking for buildings designed to accommodate a variety of local fine arts activities.

The building is a sculptured form, designed to inspire local enthusiasm for the arts. The cubical volume is contained in a diaphragm of laminated wood decking exposed on the interior and sheathed in wood shingles on the exterior. The exposed laminated wood ribs, in their sweeping shape, add an extra dimension of beauty and strength, and the horizontal cantilever serves as a shelter for the building's entryway and exterior courts. The ribs are weather protected by a white plastic coating.

A laminated wood ceiling grid frames a series of plywood skylight cubes. This allows natural light to flood the upper studio floor and because each floor is a free floating platform, this light also washes the Gallery walls below. Supplemental lighting is hidden from sight in reveals around the perimeter of the floor platforms.

Paintings will be exhibited on the perimeter walls of wood decking bleached to a neutral gray. A system of movable freestanding panels made from three foot by seven foot doors also provides flexible exhibition space for smaller paintings, graphics and prints.

A hydraulic lift allows easy vertical movement from floor to floor. Exposed shafts are finished in wood paneling.

The ground floor which extends outward onto open sculpture courts provides a platform for the building. Pilotis lift the sculptured form above the platform plane; thus an invitation is encouraged to the visual experiences within."

Mark Hampton
"The cubical volume is contained in a diaphragm of laminated wood decking..."

Mark Hampton's Art Center is a dramatic example of how the imaginative use of wood can solve complex problems of form and space—at reasonable cost.

And Weyerhaeuser offers a complete line of high quality architectural wood products designed to meet the needs of the most exacting specifier.

From planning through construction of your project, we back these products with the Weyerhaeuser Architectural Services Program. It's designed to provide the architectural profession with quick access to a highly comprehensive information service. Specially trained Weyerhaeuser field representatives are close at hand to offer you complete technical and engineering data on all our architectural wood products.

Call your Weyerhaeuser Architectural Representative for more details.

Or write us at Box B-2113, Tacoma, Washington 98401.


Look how all-electric design can cut first costs!

More and more architects and engineers are finding that all-electric design, with flameless electric heating and cooling, can hold down first costs for clients in buildings of all types through the elimination of such items as boiler rooms, fuel tanks, stacks and long pipe or duct runs.

Annual costs can also be reduced, since simpler control systems and lower maintenance require fewer employees.

Moreover, because of the wide variety of equipment types to choose from, all-electric design permits greater architectural freedom and flexibility. Expansion becomes easier, too. And all-electric design can also provide from 5% to 10% more usable floor space for additional building capacity.

For more facts about the proven advantages of applying all-electric design to your industrial and commercial buildings, call your local electric utility company. They will welcome the opportunity to work with you.

This plaque identifies a modern building, meeting the standards of electric heating, cooling, lighting and other applications set by Edison Electric Institute.

BUILD BETTER ELECTRICALLY
Edison Electric Institute, 750 Third Ave., New York, N.Y. 10017

For more data, circle 42 on inquiry card
For more data, circle 43 on inquiry card
For more data, circle 44 on inquiry card
NEW NAME FOR EATON MANUFACTURING COMPANY

New Dimensions in Service

On January 1, 1966 Eaton Manufacturing Company merged its wholly-owned subsidiary, Yale & Towne, Inc., into the parent corporation and adopted a new name.

The strengths and resources of both of these diversified producers of capital goods, materials handling equipment, automotive and consumer products, locks and hardware now reinforce each other. This will mean increased operating efficiencies and expanded dimensions of service to consumers, business and industry - domestic and international.

EATON YALE & TOWNE INC. • 100 Erieview Plaza • Cleveland, Ohio 44114
Tested...Trusted Products Since 1868

For a complete description of EATON YALE & TOWNE, write today for a copy of our 28-page full color book entitled "New Look for Tomorrow."
Naturally we design locks to protect. But we don't forget the other prerequisites. Like personality. Every door deserves one. So we design our locks to combine beauty with the brute. It's not easy to come by. But isn't knob appeal worth it?

YALE LOVES AS GOOD AS IT LOCKS

THE FINEST NAME IN
LOCKS AND HARDWARE
Physical education building lighted by clerestory

Construction has started on the $2-million physical education building at the University of Pennsylvania in Philadelphia. The structure, which has a gross area of 71,028 square feet, will provide an Olympic-size swimming pool with grandstands for 1,000, a gymnasium, and squash and basketball courts. Architects are Stewart, Noble, Class and partners and the general contractor is the Aberthaw Construction Company.

Student housing has 268 private patios

This 300-unit married-student housing complex at Iowa State University is a two-story, $3.25-million multi-building project within a landscaped setting to provide maximum privacy. Each of the units will contain two bedrooms and most will have private outdoor patios. Architects for the nearly completed project are Savage & Ver Ploeg; the general contractor is William Knudson & Son.

Design stresses “sobriety and proportion”

The Czechoslovakian pavilion for EXPO '67, to be held in Montreal in 1967, has a common entrance serving the culture hall and restaurant. The culture hall is glazed on the first floor with a fully enclosed second floor while the restaurant will alternate glass areas with solid slabs. Competition-winning architects are Miroslav Repa for exteriors, Frantisek Cubr for interiors.

Application Details

for LCN concealed-in-door closer
installation shown on opposite page

The LCN series 330 closer's main points:

1. Closer concealed; arm only exposed; excellent for interior doors where appearance counts.
2. Door is hung on regular butts.
3. Fully hydraulic, with adjustable hydraulic back-check to protect walls, etc.
4. Power adjustments at soffit plate and shoe.
5. Choice of regular arm, hold-open 90-140° or 141-180°.

Complete Catalog on request
or see Sweet's 1966, Section 19e/Lc.

LCN

LCN CLOSERS, PRINCETON, ILLINOIS

A Division of Schlage Lock Company
Canada: LCN Closers of Canada, Ltd.,
P. O. Box 100, Port Credit, Ontario
Modern Door Control by

**LCN**

Closer concealed-in-door

Dorado Beach Hotel
Dorado, Puerto Rico
Toro-Ferrer, Architects

**LCN Closers, Princeton, Illinois**
Application Details on Opposite Page
3 facts you should know

1. Drying hands with paper or cloth towels is obsolete. Medical tests prove that only electric hand drying (evaporation, not absorption) is most effective in getting hands thoroughly dry and minimizes the dangers of disease.

2. Paper and cloth hand drying in washrooms costs nine times more than modern electric drying.

3. World electric hand dryers are specified by more architects and engineers than all other brands combined. Only World Dryers have all of the features essential to good, service-free drying over the years.

Wire for electric hand drying...specify the world's most respected dryer...

For more data, circle 48 on inquiry card

ARCHITECTURAL RECORD February 1966
Why cover the corner when you're going to paint it?

Every exposed corner of every Weis toilet compartment—partition, door and stile is capped with a stainless steel corner reinforcement. Eliminates destructive welding, brazing and grinding which removes protective zinc coating.

*Another Weis idea for greater protection—longer life!*
Mies van der Rohe


Architect Blaser brings together in this elegant volume a group of buildings and projects designed by Mies, and organizes them into groups representative of types of construction. Since the proper study of Miesian architecture is MIESIAN construction, such an arrangement makes more sense than the more usual chronological organization. Each building or project is presented briefly, with a moderate amount of text, so the handsome drawings and photographs are given—appropriately—a chance to tell the story. One wishes the examples might have been covered in greater depth; the book has more the flavor of a sampling than of definitiveness. Nonetheless, its lessons are worth learning, and the volume worth recommending.

The graphic design of the book—which is beautifully printed—is striking, and, I am afraid, self-conscious. There are generous areas of white paper and dramatic bleed pages, but the square page format has the double disadvantage of being static in character and not ideally suited to the generally vertical or horizontal shapes of architectural photographs. Thus, a large number of photographs and drawings are extended across the center gutter, with resulting visual discontinuity and annoying distortion at the break line. The designer's use of sans serif type gives the book a dated, 1930 look, and makes reading more of a chore than would a more legible type.

In the larger sense, however, one cannot overlook the importance of Mies in the architectural scene, or belittle the tremendous influence of his ideas and architecture—upon both young and well established architects, in this country and in several others. In this confusion of change and the eternal "something new" in which we live, there is a certain comfort in the consistency and quiet poetry of Miesian architecture. And something to think about when he writes—in the book's foreword—"I believe that architecture has little or nothing to do with the invention of interesting forms or with personal inclinations."

James S. Hornbeck, A.I.A.

Stained glass


Stained glass is at once both a "lost art" and a medium being more and more widely used in secular architecture as well as in churches. But the author confesses that "to this day stained glass remains, even for some of our most distinguished artists and architects, a singularly intractable medium." Why?

Mr. Sowers' answer is that "no skill or technique is lost, but that several things are very much confused." First of all, "the phenomena of light is perhaps less understood than anything else." He demonstrates how it is not actually the coloring of the glass but the effective placement of compositions of colored glass in front of a light source that forms the basis of stained glass designing. Also, "stained glass more than any other art is dependent upon a viable architectural base for its very existence. If the art is not hopelessly lost the architect must possess a sense of how this art can be made to function as an architectural element without in the process being reduced to insignificant decoration."

In an earlier book, The Lost Art, the author made a case for the revival of stained glass. Here he analyzes the basic hindrances to that revival, beliefs he has arrived at after 10 years of designing stained glass windows for new buildings.

His text is very informative and should be useful to architects. The book is beautifully illustrated—many of the photographs are in color and many are given a full page. The text and illustrations are well coordinated. This is not a collection of the highly publicized works of stained glass but includes the lesser known, and experimental as well as the well known like Ronchamp, Maria Königin and the First Presbyterian Church in Stamford.

Parking in the city


The parking problem is a frustrating situation which thrives wherever vast metropolises exist. The author, an architect and teacher of urban planning, has gathered together more than 80 architectural problems and their solutions, answers which he obtained from architects, engineers, city planners and traffic managers. He has arrived at the same or similar conclusions as the Buchanan Report, "Traffic in Towns," (June 1964, page 78).

continued on page 74
If you’re not specifying paint

you’re asking for it.

Give your client the longest-lasting masonry finish. Specify a PLIOLITE® binder. Chemically inert PLIOLITE resins are unaffected by alkalis in masonry. Grip and hold even on a chalky stucco wall.

Dries to a tough film that resists humidity, temperature extremes, industrial fumes—every common cause of paint failure. PLIOLITE binders have proven their durability over 20 years. They’re included in eight government specifications. And used by more than 100 paint manufacturers.

We have a list telling who they are. Ask for it. Goodyear Chemical Data Center, Dept. N-84, P. O. Box 9115, Akron, Ohio 44305.

Give your client the longest-lasting masonry finish. Specify a PLIOLITE® binder.

Chemically inert PLIOLITE resins are unaffected by alkalis in masonry. Grip and hold even on a chalky stucco wall.

Dry to a tough film that resists humidity, temperature extremes, industrial fumes—every common cause of paint failure. PLIOLITE binders have proven their durability over 20 years. They’re included in eight government specifications. And used by more than 100 paint manufacturers.

We have a list telling who they are. Ask for it. Goodyear Chemical Data Center, Dept. N-84, P. O. Box 9115, Akron, Ohio 44305.

For more data, circle 51 on inquiry card.

GOODYEAR CHEMICALS
There's Nothing Equal About "Or Equal"

It's a specification phrase that does a disservice to clients and suppliers alike. Builders of quality equipment don't like it. Price-cutting suppliers of inferior goods hide behind it. But it's still included.

Presumably, "or equal" gives fair treatment to all; encourages many suppliers to bid. But it actually has a reverse effect: causing buyers to select equipment on price alone by implying that all bids cover equipment of equal quality. And, emphasis on price favors second-rate products. Quality is penalized.

Obviously, no two products are ever really equal; especially complex equipment. And, no two companies offer equal know-how or equal service.

Base bid specifications assure quality, preserve competition
The Base Bid specification does away with many of the evils of "or equal." It's prohibited only for certain Federal work.
In a "Base Bid with Alternates" specification, accurate definition of

Obviously, no two products are ever really equal.

quality is assured; maximum competition is preserved. Contractors can price their bid with confidence.

As a result, lower prices prevail; and you and your client can decide on quality, price, design, life and service of a product in advance.
Each item is clearly defined as to quality, capacity, function and performance. The manufacturer's name and model number are given.
Choice is up to the owner, architect and engineer; not the suppliers.
The contractor isn't forced to "shop" to cut his bid. He knows what he and his competitors must furnish. If he objects to a specified brand, he may request a change.
Importantly, quality suppliers are not penalized. Quality and price differences are out in the open. Buyers can specify as much quality as they want and need.

"Favoritism"—to the client
Any judgment on quality will be subject to cries of "favoritism," but the professional knows that this is no excuse for not making the judgment. Favoritism? Yes—to the client.

Architect, contractor, and manufacturer can all share in a job completed as it was conceived (and specified). And, in the last analysis, the owner of such a building benefits most of all.

Honeywell

The solutions can be subdivided into two categories: general correlations drawn from town planning and structural problems of parking facilities associated with urban areas and, in most cases, with the central business district; and the results achieved when parking facilities are provided in conjunction with specific buildings. In the latter a synthesis must also be reflected in the structural design of the building.

The correlations of the first category are associated with the redeveloped city since, as experience in Philadelphia has shown, it is rarely possible to solve the parking problem of a city in a single move. The aim of the more piecemeal approach is a city-wide differentiated system of traffic facilities. The survey indicates that the traffic situation in our cities can be fundamentally changed by this systematic provision of parking facilities. However, the point is made that the parking problem can only be solved on the basis of town planning considerations—and not in isolation. All of the considerations concerning the systematic accommodation of parking in the town center are based on the assumption that the motorist cannot leave his car at the curb. Underground garages, multi-story garages with straight and helical ramps, and mechanical parking installations are the technical possibilities described.

The possibilities of combining parking facilities with department stores and shopping centers, office and bank buildings, and hotels and housing estates are examined in the second part of this survey.

The book contains over 700 diagrams and photographs which illustrate American, European and Australian experiments in the parking dilemma. The text appears in German in addition to the English translation.

Jacoby renderings

HELmut jacoby architectural drawings. introduction by Claudius colin. frederick a. praeger, 111 fourth ave., new york, n. y. 10003. 108 pp., illus. $13.75.

Helmut Jacoby's mastery in the field of architectural rendering has attracted eminent architects to his studio. Here is a portfolio of his works with a capable introduction by Claudius Colin which includes long excerpts of Mr. Jacoby's thoughts.

It is Jacoby's aim to show a pro-continued on page 80
Twice, because space-saving Duos can serve two students at one time. Yet, they extend only 16" from the wall! And they’re trim, colorful, attractive. So, progressive architects use Duos throughout modern schools: classrooms, cafeterias, and science and art rooms.

Foot-operated Duos are doubly sanitary, too: hands touch only a spray of clean, tempered water, never germ-laden faucets. And the bowl is automatically rinsed clean by the running spray. Result: Duos are also ideal for food handling areas and first aid rooms. Finally, Duos save water and water heating costs, maintenance time, and installation costs.

Choose from a rainbow of beautiful colors and stainless steel. But always choose Bradley Duo Washfountains — they belong in modern schools!

For more data, circle 52 on inquiry card.
Glid-Tile Epoxide beautifies interior and exterior masonry while providing armor-like protection. A new polyester-epoxy resin is the secret.

Glid-Tile Epoxide is a high-solids, high-build coating that can be brushed, rolled or sprayed; it seals porous mortar joints. Saves material and application time.

Glid-Tile Epoxide resists abrasion, impact, many chemicals. Scuff marks, crayon, food stains wipe off easily. Available in gloss or semigloss. Pastel colors. Spatter or web finish.

See your Glidden Architectural Consultant for complete specifications and a listing of trained applicators.

For more data, circle 53 on inquiry card
Another Sacramento, California, improvement with prestressed concrete

This 800-car parking garage and commercial site is a new addition to the Sacramento redevelopment area. Parking is provided on two upper floors and roof, with rental space for 12 businesses on the ground floor.

All girders and joists in the new structure are of pre-stressed concrete. Inverted T joists are 60 feet long, have depth of 20½ inches, flange of 14 inches. Rectangular beams are 16 inches wide, 26 inches deep and 22 feet long.

This project provides another example of the use of pre-stressed concrete to meet special needs. Prestressed concrete provides a unique combination of advantages: Fast erection, simplicity in finishing, a minimum of maintenance, local availability, high strength-to-weight ratio, wide acceptance and adaptability to creative design.

Delta Prestress Concrete, Inc., Sacramento, California, relied on Armco and the dependable Union TUFWIRE® Strand for this project. More than 600,000 feet of TUFWIRE Strand was used.

A comprehensive booklet on TUFWIRE Products for pre-stressed concrete is available. Write for it on your business letterhead. TUFWIRE and other Union Wire Rope Products are made by Armco Steel Corporation, Department W-406, 7000 Roberts Street, Kansas City, Missouri 64125.
SPECIFY EXCITEMENT!
This exciting new way to control water, with color, makes other single control valves old-fashioned!

Dial left to full red for hottest water. Dial right to full blue for coldest. In-between for exact temperature desired.

This remarkable push-pull faucet brings new beauty and functional luxury to the lavatory, bath or shower. The Colortemp dial, a Speakman exclusive, shows water temperature in color merely at the turn of the dial. The cartridge push-pull faucet controls water flow so easily children never forget and leave the water running. An extra plus is the advanced styling in solid brass with beautiful chromium finish.

When you specify Colortemp faucets you specify a new cartridge concept that eliminates lubrication needed by ordinary gliding cylinders. Yet Colortemp gives longer wear . . . after one-half million “on-off” tests the patented Speakman cartridge cylinder still operated with smooth silent ease. One reason is Du Pont “Teflon” at friction points, the same remarkable material that prevents sticking in cooking utensils. For complete details and specifications see the new revised Speakman master catalog.

SPEAKMAN® COMPANY
Wilmington, Delaware 19899
SLAB SHORE SYSTEM
NEW METHOD OF FLAT SLAB FORMING FOR MULTI-STORY HIGH-RISE CONSTRUCTION

Symons Slab Shore System uses Symons standard Steel-Ply Forms, normally used for vertical wall forming, for all decking requirements. Material adaptability, ease of assembly, speed of erection and stripping are among its advantages over conventional flat slab forming.

Almost any slab forming requirement up to 15' in height is made possible by combining tubular steel shores and tensions. Under normal loading conditions, each shore can support up to 60 sq ft of formed deck with a minimum of lateral bracing.

Forms are set on sliding ledger angles; securely held without clamping or connecting hardware. Forms strip easily, without disturbing stringers or shores. System eliminates reshoring; allows more reuse of forming equipment.

Symons Slab Shore System, including all component parts, is available for rental with purchase option.

Free field service and engineering layouts are available for all jobs. Using this service increases the benefits of the System... means a better job, at a lower cost.

More savings from Symons

For more data, circle 56 on inquiry card

80 ARCHITECTURAL RECORD February 1966

Place your floodlights on a Pedestal-with superior Wide-Lite* features!

Fits All Types of Fixtures!

Functional Beauty!

3-Member Construction for Greater Strength!

Pre-Wiring Cuts Costs!

Aluminum or Steel!

Extra Ballast Room!

Pre-Aligned Anchor Bolt Kit!

Wide-Lite

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WIDE-LITE CORPORATION
A Division of Esquire, Inc.
4114 Gulf Freeway
Houston, Texas

*Trademark of Wide-Lite Corporation

For more data, circle 58 on inquiry card

continued from page 74

PROJECTED BUILDING EXACTLY AS IT WILL LOOK WHEN IT IS BUILT: "This might be called an impossible undertaking," states Mr. Jacoby, "because such a drawing would have to take into account different station points, seasonal changes, variations of daylight and artificial lighting, as well as changing weather conditions. The stationary elements would have to be shown in ever new relationships to the moving objects. Even the subjective impressions of future viewers who will approach the building in varying moods should be taken into consideration. If we want to continue this speculation, we will also have to take into account the changes adjacent buildings and the whole neighborhood may be subject to. No matter how true I try to be to reality, reality will always be somewhat different. Some architects believe it is better to ignore the surroundings and to draw only the building itself—as if it were a statue or a monument. Others prefer impressionistic sketches that leave it to the imagination of the viewer to flesh out according to his own ideas. In my experience, the professional requirements are more than that: they demand minutely accurate drawings."

Morandi

THE CONCRETE ARCHITECTURE OF RICCARDO MORANDI. By Giorgio Boaga and Benito Boni. Frederick A. Praeger, 111 Fourth Ave., New York, N.Y. 10003. 234 pp., illus. $20.00.

This retrospective collection of Morandi's work has great value for those who are interested in his engineer's technique with concrete. His activity has been prolific indeed. Recognition of his worth became more firmly established with the construction of the Storms River Bridge in South Africa, the bridge over Lake Maracaibo in Venezuela, the Polcevera viaduct at Genoa, the project for the Sports City in Teheran, the systems for saving the temples of Abu Simbel, and the buildings for the Fuimicino International Airport in Rome.

The authors have composed an impressive volume. The text explains Morandi's work clearly, and the photographs and drawings which illustrate the constructions are sufficiently numerous. Mr. Morandi's thoughts on the design of structures appear in the introduction.

The drawings reproduced for this book range from the simple line sketch to the meticulously detailed rendering. All are sensibly left to speak for themselves.

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For more data, circle 59 on inquiry card

MORE SAVINGS FROM SYMONS

CONCRETE FORMING EQUIPMENT
SYMONS MFG. COMPANY
120 EAST TOWN HALL SQUARE
DEER PARK, ILL.

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LaPorte:...
new beauty to build with!

Specify our elegant new pre-hung aluminum door...unchallenged in the industry...conceived with a light-as-air urethane foam core, and a virtually unlimited door color panel color selection...competitively priced against solid wood core doors: it's the lowest priced door in its own field...and available throughout the Free World!

* Patent Applied For
Components made to close tolerances are fitted together on a squared precision platen...

Urethane foam in a measured amount is pumped under pressure between door panels. Urethane foam instantly fills the door cavity. Under pressure, it spreads and fills every tiny space and actually becomes the tough, rigid inner door. As the urethane foam cures, it locks and bonds LaPorte components together forever with a strength unsurpassed in the industry. So simple, so precision made... LaPorte and frame should be the last thing you install before you make your punch list...

Only Amarlite LaPorte is monolithic!

There's only one limit to your use of LaPorte! It's your own imagination! Let your mind soar... this is the door you've hoped for! LaPorte is trim... architect designed... it's light weight, every part bonded by tough urethane... foamed-in-place to create a monolithic structure that will outlast the buildings it serves. LaPorte installs in only ten minutes; it's virtually destruction-proof! It resists condensation, sweating, warping, mildew and dry rot deterioration. It muffles sound... insulates twice as efficiently as the next best material on the market; and it's heat resistant, actually self-extinguishing! It's breathtakingly colorful. Available in wood tone panels... and in a color range as wide as your own imagination! Put LaPorte to work. See Sweet's, your Amarlite representative, or write to Amarlite, Division of Anaconda Aluminum, Main Office, P. O. Box 1719, Atlanta, Georgia 30301.
Amarlite makes it all...

From the matchless LaPorte to curtain wall... Amarlite, one of the most modern and complete aluminum fabricating facilities in the World... engineers products for distinguished architecture! Here, we make the finish more beautiful... the tolerances more precise... the package more perfect! Next time you set your mind to dreaming... think of us.

catalogs Available!

engineered for distinguished architecture...
Ironbound Continuous Strip Floor System—Individual edge-grain flooring strips are interlocked with steel splines and embedded in mastic for stability, smoothness and uniform resilience. Underlayment of 1/4” cork gives added cushioning.

Robbins Ironbound Northern Maple Floor guarantees resilience, stability, low-cost upkeep

In gymnasiums, auditoriums and many other areas, the Robbins IRONBOUND floor system gives maximum satisfaction. Installation of MFMA Northern Hard Maple edge-grain flooring by this superior method (see photo above) is made and guaranteed by experienced, franchised applicators, and backed by Robbins. From coast to coast, Robbins IRONBOUND Floors give trouble-free service and low-cost upkeep in schools, colleges and other institutions with exacting floor requirements. For detailed data on floor systems and name of nearest authorized Robbins installer, write: Robbins Flooring Company, Dept. AR-266, White Lake, Wisc. 54491. See our catalog in Sweets.
When the stock moved out, stock Andersen Windows moved in!

This architect turned a cattle barn into the elegant Hominy Hills Country Club, Colts Neck, N.J.

And once again, stock Andersen Windows came through in beautiful style. Andersen Casements, Gliders, and Beauty-Lines (3 of 6 available types) were able to contribute greatly to the architect's design scheme. Without being obtrusive. Almost like they were designed for this job alone.

That's the way Andersen Windows always perform. In conventional designs. Or under the most bizarre, most difficult circumstances. Or on monumental remodeling jobs like this. Or on the avant garde creations of the day.
Here, **extra-weathertight** Andersen Windows are combined with welded insulating glass. Golfers can cool off after a tough 18 holes in efficient, economical air-conditioned comfort. Winter fuel savings are significant, too.

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Need more proof that getting involved in custom millwork may be a waste of time? Call your Andersen distributor for a Tracing Detail File. Or check Sweet’s.
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Fiberglass tape works well with all roof insulations. But it works even better with Fiberglass insulation. Together, they're a team. A system. Maintenance-free for years. And less expensive in the long run. Make it a real long run.

Use the whole system and reduce your roofing failures.

For more information on the Tape Joint System, write Owens-Corning Fiberglas Corp., Industrial and Commercial Division, 717 Fifth Ave., New York, N.Y. 10022.

OWENS-CORNING
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What's mopped on top stays on top of a Fiberglas taped joint.

For more data, circle 60 on inquiry card

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matched look for many needs. Calculite.

The difference is in the light. Not the look! From general illumination to fully flexible accent lighting — completely recessed Calculites deliver a variety of lighting effects with look-alike units. Silver Bowl Reflector downlights provide widespread general illumination with minimal source identification. Adjustable Accent Light features easy adjustment for focal lighting. In both units black aperture cones fully shield the source, eliminate distracting brightness, and create a matched look. For maximum versatility, reversible Duo-Cast* trim provides flush trim in plaster ceiling or minimum width overlap in dry ceiling construction. Twenty-five basic Calculite groups (with more than 100 variations) offer a remarkable range of lighting techniques: general or supplemental accent lighting; vertical surface illumination; sharp or soft-edge beam patterns; minimum or articulated source identification. For the clean look . . . see look-alike Calculites at your nearest Lightolier distributor. Check the Yellow Pages or write to Lightolier, Jersey City, N. J. 07305 for brochure 44.
Planning an on-the-go office building? Specify a

Recordlift

VERTICAL MAIL CONVEYOR BY

Standard Conveyor

The ultra-modern office buildings seen here differ greatly in architectural style—yet they do have one thing in common to give them remarkable functional efficiency.

It's a Standard Conveyor Recordlift Vertical Mail Conveyor System, schematically illustrated at the left.

By providing fast, selective distribution of inter-floor mail and supplies, a Recordlift cuts operating costs by saving 100's of mailboy and messenger man-hours daily. Operation is completely automatic...all you do is load the container, set the address and Recordlift delivers. Automatically.

It's the proven way to solve office building distribution problems! Ideal for hospital use, too!


For more data, circle 62 on inquiry card
for entry ways...dining areas...enclosed patios

Your first impression of an entry area with Etruscan tile is one of carefree elegance. Floors gleam softly with any of the 5 rich, beautiful colors—Etruscan Sage, Silver, Rose, Blue and Gold. (680 Etruscan Gold shown in photo above) □ Available in large 6" x 6" flat tiles, Etruscan can be used effectively in entrance areas, breakfast or dining areas, enclosed patios and many other areas. Glazed surface will not scratch or scuff, never needs waxing. Combines lasting beauty with easiest, no-expense maintenance. Etruscan also can be used effectively for accent walls. Sample kits available to architects, decorators and builders who write on their business letterhead. Address Dept. — E6.

The Cambridge Tile Mfg. Co., Cincinnati, Ohio 45215
Jamison Food Service Doors match your brightest, cleanest, most sanitary interiors

Lightweight Jamolite® plastic doors offer modern, attractive appearance. Door in foreground is cooler door. Jamolite freezer door with Frostop® is in background.

**NSF APPROVAL**

National Sanitation Foundation Testing Laboratory, Inc. has awarded seal of approval to Jamison Metal Clad and Jamolite Food Service Doors as meeting high public health standards.

In food service installations throughout the country, attractive Jamison doors are by far the leading specification. For better appearance, for easier operation and longer life, the top choice is Jamison! Write for catalog data to Jamison Cold Storage Door Co., Hagerstown, Md.

Jamison FS double cooler and freezer doors in hotel kitchen are completely stainless clad for easy cleaning and bright appearance.

See-Thru plastic door for food service is transparent, lightweight and easy to operate. Door is acrylic plastic, 1" thick.

**JAMISON**

**COLD STORAGE DOORS**

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Calumet Shopping Center, Munster, Indiana, is an outstanding example of the form, color and texture effects achieved withformed facings of PLEXIGLAS® acrylic plastic. Because PLEXIGLAS forms easily, panels can be produced economically in sculptural shapes which can't be obtained with most widely-used facing materials.

Note the varying patterns of high-light and shadow on the Calumet Shopping Center panels, caused by the changing position of the sun. PLEXIGLAS is rigid, strong and weather resistant. It is light in weight and inexpensive to install. PLEXIGLAS is available in a broad range of semi-opaque and translucent colors. Translucent panels may be back-lighted for luminous facades.

For further information on the design possibilities with facings of PLEXIGLAS, write for a copy of our brochure, "Plexiglas for Facing Panels."
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Hospital fittings that are best any way you turn
-hand, wrist, elbow, knee or foot!

The special-purpose fittings you get from American-Standard give top performance because we design the action to the needs of the job. We never compromise or try to fit "universal" working parts into such unlike units as conventional, wrist-action, knee-control or pedal valves. Our hospital fittings are of lifetime brass. They're heavily coated with Chromard®, most durable of chrome finishes. As an extra convenience, most fittings now have color-coded index buttons—red for hot water, blue for cold. For the biggest selection now and the least maintenance in the future, see your American-Standard representative. Or write American-Standard, Plumbing and Heating Division, 40 West 40th Street, New York, N.Y. 10018.

*TRADEMARK AR&SS CORP.

AMERICAN-STANDARD

For more data, circle 66 on inquiry card
Harris Memorial Methodist Church
Honolulu, Hawaii

Architects:
Wilson Associates, Inc., Honolulu

Roofing Tile:
Ludowici-Celadon

When the Roof Becomes a Major Element in the Design...

WIDE SELECTION OF OTHER PATTERNS, TEXTURES & COLORS

Our representatives are always available to assist you on your special roofing problems

LUDOWICI-CELADON CO. 75 EAST WACKER DRIVE, CHICAGO, ILL. 60601
Manufacturers of quarry tile, the nation's largest producer of roofing tile and NAILON Facing Brick

For more data, circle 67 on inquiry card
Suppose you run a 2700-bed hospital:

What do you do when the lights go out?

When the big November blackout turned the power off at Kings County Hospital Center, Brooklyn, International® engines went on. Six of them. Driving 150 and 75 kw generators to supply key areas of seven buildings—including corridors, blood bank, operating rooms, food storage and X-ray centers.

The engines ran continuously—just as they were supposed to—until power was restored eight hours later.

Kings County prepared for an emergency before it hit. And they’re not through with their power modernization program. By May they’ll have nine International engines on standby duty.

How about your emergency power—is it as good as it should be? Get the facts on International engines. They start fast and easy. Run when the chips are down. Write Engine Information, International Harvester Company, Melrose Park, Illinois 60160.

Power when there isn’t any: International UDT-429 Diesel drives a 75 kw generator. 150 kw generators are driven by International UDT-817 engines.
Pilkingtons lead the world in glassmaking

There's no more searching test of a glass than to make it into a mirror, and reflect an object in it again and again. There's no doubt which glass makes today's finest, truest mirrors. It is Float glass invented and developed by Pilkingtons.

Pilkington glass is made or processed in up-to-date plants in nine countries, and behind every product are the vast resources of some of the glass industry's largest laboratories, working on quality control, and on research and development. Pilkington research and development produced Float glass which, with its new clarity and brilliance, outdates Plate glass in modern building, for mirror making and for toughening into safety glass. For the finest glass specify Pilkingtons.

For further information please write to: U.S.A. Sales Dept., Pilkington Bros. (Canada) Ltd., 55 Eglinton Ave. East, Toronto, Ontario PILKINGTON BROTHERS LIMITED, ST. HELENS, LANCASHIRE, ENGLAND.

FOR MODERN BUILDING SPECIFY GLASS BY PILKINGTONS—INVENTORS OF FLOAT

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HAWS WATER COOLERS

put
refreshment
in a
compact
package

High output and space-saving design join naturally in this Haws floor-mounted cooler. It projects just 13" because it’s flush-wall mounted, and occupies less than 1.5 sq. ft. of floor space.

Trim as it is, this Haws cooler offers capacities up to 22 gph—enough cool refreshment for 264 people an hour, hour after hour. Specify a Haws cooler for your next project. In Cool Mist Grey enameled finish and stainless steel receptor, they complement every modern decor. Haws coolers are also available with vinyl-covered front panel in grey or tan, or finished entirely in stainless steel. Write or call:

HAWS DRINKING FAUCET COMPANY
1441 Fourth Street • Berkeley, California 94710

For more data, circle 70 on inquiry card

HAWS Model HYFIA Series

BOOKS RECEIVED


THE GALVESTON THAT WAS. By Howard Barnstone. The Macmillan Company, 60 Fifth Ave., New York, N. Y. 10011. 224 pp., illus. $12.95.

MANUAL CRITICAL PATH TECHNIQUES FOR CONSTRUCTION. By F. Thomas Collins. Know-How Publications, Box 7126, Landscape Station, Berkeley, Calif 94717. 193 pp., illus. $9.80.


FORTS OF THE WEST. By Robert W. Frazer. The University of Oklahoma Press, Norman, Okla. 246 pp., illus. $5.95.

REBUILDING CITIES. By Percy Johnson-Marshall. Al­
dine Publishing Company, 330 West Adams St., Chi­
ago, Ill. 60601. 374 pp., illus. $15.00.

DOOBE DOO. By Ivan C. Karp. Doubleday & Com­


THE ORTHODOX BAPTISTRY OF RAVENNA. By Spiro K. Kostol. Yale University Press, New Haven, Conn. 171 pp., illus. $15.00.

THE ARCHITECTURE OF THE ROMAN EMPIRE. By William L. MacDonald. Yale Publications in the History of Art, 17, Yale University Press, New Haven, Conn. 271 pp., illus. $17.50.


TEESIDE INDUSTRIAL ESTATE FOR THE BOARD OF TRADE AND THE INDUSTRIAL ESTATES MANAGEMENT CORPORATION FOR ENGLAND. Report and Development Plan 1964 prepared by Napper Errington Lee Collerton Barnett Allott, 133 Osborne Road, New­castle Upon Tyne 2, England. 86 pp., illus.

THE TOWN OF FINCASTLE, VIRGINIA. By Frances J. Niederer. The University Press of Virginia, The Ro­
tunda, Charlottesville. Va. 68 pp., illus. $3.00.

tunda, Charlottesville. Va. 128 pp. $5.00.

SCHOOL ENVIRONMENTS RESEARCH 2: ENVIRONMENTAL EVALUATIONS. By the School Environments Research Project, Architectural Research Laboratory, The University of Michigan, Monroe at Tappan, Ann Arbor, Mich. 48104. 186 pp., illus.

SCHOOL ENVIRONMENTS RESEARCH 3: ENVIRONMENTAL ANALYSIS. By the School Environments Re­

COMMERCIAL TIMBERS OF THE WORLD. By F. H. Tittle. Chemical Rubber Co., 2370 Superior Ave., Cleveland 14, Ohio. 277 pp., illus. $15.00.

For more data, circle 70 on inquiry card

REALIZED

continued from page 80

The black and white reproductions are presented, for the most part, in full-page format.

REQUIRED READING
Over one million bricks were replaced by Plasteel aluminum panels while the hospital continued its day-to-day operation.

Plasteel Aluminum Panels Revive VA Hospital

To replace the brickwork of the 14-story Veterans' Hospital in Boston, the U.S. Corps of Engineers needed special insulated metal panels. They had to maintain design and structural criteria while keeping wall weight to a minimum. Plasteel Products Corporation of Washington, Pa., suggested the right prescription with Alcoa® Aluminum, and they were selected to supply 140,000 sq ft of bright new porcelain aluminum panels insulated with polyurethane.

Plasteel Products excels in the fabrication of protected metals for the building industry and is an acknowledged leader in the production of porcelain aluminum panels. This job particularly required extensive modular planning. The modular package design improved the architectural features and resulted in a more economical renovation. To save installation time, Plasteel partially assembled the spandrel panels at its plant and shipped them partially built-up to the site.

Insulated aluminum curtain walls offer many unique advantages. They are colorful, strong and lightweight. They reduce installation time, cut heating and cooling costs and reduce maintenance problems. But best of all, insulated aluminum panels improve the appearance of any building... new or old. For more information to meet your needs, simply write Plasteel Products Corporation, McAdam Ave., Washington, Pa. 15301.

A new metal subframe to carry the aluminum window and spandrel panels was tied into the original reinforced concrete frame.

Deep-fluted Plasteel spandrel panels, manufactured from Alcoa Aluminum, were partially preassembled at the fabricating plant.

Plasteel
PRODUCTS CORPORATION
McAdam Ave., Washington, Pa. 222-7400 Area Code 412

For more data, circle 71 on inquiry card

ARCHITECTURAL RECORD  February 1966  99
ACME America's most complete line of compact kitchens

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ACME NATIONAL REFRIGERATION CO., INC.
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This man is Henry Doelger. One of the nation's largest builders.

These two luxury apartment houses in San Francisco are his. Both are dramatically and lavishly appointed. Both are carpeted with Gulistan.


For complete description of the many Gulistan lines and services see our full-color catalog in Sweets Architectural File. Or write:

Gulistan Commercial Department
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*TM
Judgment at Lauderdale:

SINGLE-SOURCE, COORDINATED LIGHTING WINS APPEAL
IN ALABAMA COURT HOUSE CASE!

"Melding a variety of fixtures into a functional yet smooth-looking lighting system can get pretty complicated," says Malcolm E. Smith, A.I.A., of Northington, Smith, Kranert & Associates, architects. "Particularly in the Lauderdale County Court House where we had some definite ideas requiring fixtures not available in standard designs. That's where Day-Brite entered the picture. Besides standard styles which met our requirements, they also had the facilities to come up with everything we needed, on a custom basis. I can't say how much time and trouble was saved by having all our needs filled by one manufacturer. But it was considerable. And we achieved exactly what we wanted, with no design compromises. The results add up to mighty convincing testimony in favor of a one-stop source for lighting."

CUSTOM DESIGNING is just one of several ways in which Day-Brite can make a valuable contribution to your lighting needs. To learn more about these services, contact your Day-Brite representative. He's eager to help. For the best solution to any lighting problem, look to Day-Brite...where the creative answers are coming from.

CASE CLOSED

DAY-BRITE
DAY-BRITE LIGHTING A DIVISION OF EMERSON ELECTRIC
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LAUDERDALE COUNTY COURT HOUSE
Florence, Alabama
Architect: Northington, Smith, Kranert & Assoc.
Consulting Electrical Engineer: Kerest & Nell
In 1958, only Tremco knew how good its MONO® was...

NOW EVERYONE KNOWS—For over eight years, architects and contractors have relied on MONO to weather-proof construction joints on thousands of buildings of every type the world over. This wide acceptance and proved performance provide proof that the powerful adhesion of MONO offers maximum security against sealant failure: no leaking joints; no building owner complaints; no costly callbacks.

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RELY ON THE LEADER—At today’s price of construction, don’t risk sealant failures. Rely on the proven leader, MONO.

For MONO glazing and caulking recommendations, contact your local Tremco Field Advisor, or see SWEET’s Architectural File 3c/Tr, or write us.

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Which surface do you prefer?

The clean, smooth one that takes paint beautifully, of course. Bethlehem's surface. We get it by cold-forming our hollow structural sections from blast-cleaned steel sheets and plates (instead of hot-rolling them). And we give you 155 sizes and gages, square and rectangular, with which to design. Good reasons to specify Bethlehem?
OVERHEAD DOOR HOLDERS

**provide a cushioned stop...**
that absorbs the shock of violent openings, avoids damage to glass, jamb, door, wall, hinges and other hardware and cuts down maintenance and repair costs.

**hold the door open...**
during heavy traffic—at school dismissal, factory or office "quitting" time or when the theatre lets out. Heavy wear and tear of continuous opening and closing of the door is avoided.

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**overhead installation is "out-of-the-way"**

Wide choice of styles to meet varying budget and installation requirements.

- **GJ 100 • 200** concealed in top rail of door. Finest for exterior and interior doors.
- **GJ 90** the outstanding surface type. For exterior and interior doors.
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For more data, circle 78 on inquiry card
The Soft Blind is here!
The effect is soft and graceful.
New slender slats just an inch wide. New extra-slim cord and almost-invisible tape.
Look for the low metal head with the crossed L's on the installation brackets, special new hardware, and slender matching bottom rail—symbols of design by Levolor.

LEVOLOR Riviera
a venetian blind of invisible beauty
Levolor Lorentzen Incorporated, 720 Monroe Street, Hoboken, New Jersey

For more data, circle 79 on inquiry card
Looks like ceramic,
costs less than glazed brick,
goes on like paint,
provides lasting, tile-like beauty
The brilliant glazed appearance of the new Wedgwood Apartments overlooking Dallas, Texas, has been achieved with an Aroflint 505 based coating system.

Coating the exterior of the 11-story structure with this new coating system afforded the beauty and brilliance of glazed materials—at savings of up to $2 per square foot.

An Aroflint-based coating system opens up intriguing possibilities in many exterior and interior applications. It can be applied equally well over masonry, wood or metal... comes in gleaming white or bright pastels that resist fading or yellowing, or in clear finishes to accent a distinctive exterior. Like paint, it can be applied by brush, spray or roller.

The Aroflint 505 system combines the high film build, hardness and chemical resistance often associated with epoxies, urethanes and polyesters. At the same time, the Aroflint 505 system has proven far superior in color and gloss retention.

(The United States Patent Office has recognized the uniqueness of Aroflint 505 by granting Patents 3,218,274 and 3,050,480)
Now—a low-cost high-performance luminaire with a Tedlar*-clad polystyrene diffuser guaranteed not to discolor for 15 years.

A Tedlar*-clad polystyrene diffuser has been added to the LPI Highlander series of surface-mounted luminaries. The Tedlar film protects the polystyrene from U. V. discoloration and adds to the diffuser's shatter resistance as well. In 1981, Highlander luminaires you specify today with Tedlar-clad diffusers will still be virtually as free from discoloration as the day they were installed. If one does discolor before 15 years, though, we'll replace it free. Best news of all, the cost is only slightly more than that of unprotected polystyrene.

Highlander series luminaires are simple and economical to install. Both the 2-lamp 4-foot and the 4-lamp 8-foot units are UL-listed for direct surface mounting on combustible cellulose fiber-board ceilings. No spacers required.

Ingenious mechanical features, as well as superior materials guarantee the Highlander's good appearance permanently. For example, centering clips and the end cap design ensure that the diffusers will always remain centered. The end cap design also permits a nearly unbroken plane of light when the luminaires are installed in rows. Since the Highlander is only 2½ inches deep (apparent depth only 1½ inches), it blends attractively into the ceiling.

This crisply styled series is ideally suited for schools, offices, and stores. Highlander prices will appeal to you, especially if you're on a tight budget. You'll find all the features of major importance, including basic LPI quality, included in Highlander luminaires. For complete information, call your LPI representative, or write to us for the details if you wish.

*Tedlar is DuPont's registered trademark for its PVF film.

For more data, circle 81 on inquiry card
Space is utilized for maximum efficiency. Beauty is given masterful expression. Practicality, storage and maintenance are treated with the respect they deserve. Result: teaching is pleasanter, learning is easier, courses are more fascinating. If your school project includes food and sewing laboratories, arts and crafts classrooms or other casework requirements, call on St. Charles.

30 years of leadership in creating custom casework
Write for our free School Storage Furniture Catalog . . . 72 pages of ideas, plans, illustrations and information.
SCHAEFER LETS YOU PUT THE PIECES TOGETHER

for a WALK-IN COOLER, FREEZER OR COMBINATION
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ON THE CALENDAR

FEBRUARY

8-10 21st Annual Conference and Exhibit, Reinforced Plastics Division, Society of the Plastics Industry—Edgewater Beach Hotel, Chicago

MARCH

7-11 Annual Convention, American Concrete Institute—Benjamin Franklin Hotel, Philadelphia

7-11 22nd Annual Technical Conference and Ex­hibit, Reinforced Concrete Institute—Carnegie Auditorium, Cleveland

29 Fifth Annual Technical Meeting and Exhibits, American Association for Contamination Control—Shamrock Hilton Hotel, Houston; through April 1

APRIL

17-21 The Second North American Conference on Campus Planning and College Building Design—University of Illinois, Urbana, Ill.

30 Sixth Annual Conference of the U.S. Institute for Theater Technology, Inc.—University of Toronto; through May 2

OFFICE NOTES

Myron L. Fetch, architect, has opened an office at Doylestown, R. D. #2, Bucks County, Pa. 18901.

W. Caldwell Smith, A.I.A., has opened an office at 374 East Paces Ferry Road, N. E., Atlanta 30305.

NEW FIRMS, FIRM CHANGES

Bolt Beranek and Newman Inc., a research and consulting firm of Cambridge, Mass. has formed a consulting group for the planning, programing and operating of theaters, concert halls and auditoriums.


Robert H. Chapman, A.I.A. and John M. Garber, A.I.A. have opened two offices for the practice of architecture and the provision of planning services at 29 Claremont Ave., New York City 10027 and 2109 St. James Ave., Cincinnati 45206.

Peter Randall Stark has joined Curtis and Davis Architects to head the project development staff of the firm’s New York City office.

Vernon DeMars and Donald Reay have terminated their partnership. Mr. Reay has opened Donald P. Reay, Architect & Planner; Mr. DeMars and John Wells have formed DeMars and Wells, Architects and have appointed Edward J. Bennett, Jack T. Sidener and Robert D. Hill associates. Both offices, 2161 Shattuck Ave., Berkeley, Calif.

Dean Kennedy & Associates, Architects have become Kennedy-Basom Grieco Associates of 750 South Atherton Street, State College, Pa.

Peter A. Thomas has become a partner of Morehouse and Chesley, Architects which will consequently be known as Morehouse, Chesley and Thomas, Lexington, Mass. continued on page 115
They said all hinges look alike?

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OFFICE NOTES

continued from page 112

Mueser, Rutledge, Wentworth & Johnston, consulting engineers of New York City, have announced that Salvatore V. De Simone has become a partner and James D. Parsons a senior associate.


Eberle M. Smith Associates, Inc., architects and engineers of Detroit, announce that Edward Hammarskjold and Joseph C. Watts rejoined the firm and that Vernon L. Wheeler, formerly of Wheeler, Becker and Associates, Inc., is now a member of the firm.

Smith Haines Lundberg & Waehler is the new name of the New York City architectural firm of Perry Coke Smith, Charles Haines, Robert S. Lundberg and Frank J. Waehler.

Smith, Hinchman & Grylls Associates, Inc., Detroit architectural, engineering and planning firm, has appointed Thomas H. Klausmeyer, A.I.A., an associate.

Roy E. Hunt has become vice president of the soils and foundation engineering firm of Joseph S. Ward and Associates, Caldwell, N. J.

John Carl Warnecke and Associates, architects and planning consultants, main offices in San Francisco, have appointed John Bruce Webb an associate.

Frederick P. Wiesinger and Eugene P. Holland have opened the office of Wiesinger-Holland Structural Engineers, 127 North Dearborn Street, Chicago.

Allen J. Wright and Carson K. C. Mok have formed Wright & Mok Consulting Engineers at 817 Silver Spring Ave., Silver Spring, Md. 20910.

NEW ADDRESSES

Daniel Comm Associates, architects, 10 South, New City, N. Y.

Gray and Karolyi Associates, architects and engineers, 265 Little Tor Road South, New City, N. Y.

West Coast headquarters of Victor Gruen Associates, architectural, planning and engineering firm, 6330 San Vicente Blvd., Los Angeles 90048.

Lundquist & Stonehill, Architects, 539 East 81 St., New York City 10028.

Phelps-McCleskey, Architects, 205 North Conception Street, Mobile, Ala.

Zywotow & Eckert, A.I.A., Architects, 304 S. 12th St., Newark 07103.

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In the 10 years since 1956, Record House awards have been made by ARCHITECTURAL RECORD to 143 architects, for 214 houses and to their owners, in 34 states. Taken as a group, these houses form a significant documentation and cross section of the better work of the period, from worthwhile experimentation to sensible, sound design. To help give a clearer perspective of what actually has developed in these 10 years, a selection of the houses is shown on these pages in roughly chronological order of their publication in Record Houses, with notes on some of the trends or passing fancies they have represented. There has been no attempt to rank or grade them in any particular order. The limited number shown reflects only the limitation of space.

The real laboratory for inventiveness in architectural design has long been the architect-designed house. The reasons are many and some are obvious, the ubiquity of houses being not the least of them. Houses are relatively less costly, are built for one client instead of boards or committees, and are designed by almost every architect; indeed the reputations of many architects are founded on significant house designs.

Ten years ago, Record Houses was launched by ARCHITECTURAL RECORD to document this inventiveness, and to help stimulate it by annual awards to architects and clients. Ten years is not a long period in architecture, but in reviewing the 10 issues of Record Houses it represents, one becomes increasingly conscious that there have been some radical changes in fundamental design thinking, both in approach and in "taste," during the decade.

Many, if not most, architects active in designing houses have drastically altered their "styles," though it is true that some have used the period to refine their established idioms: Neutra is still Neutra, and Mies is eternally Mies. The "ideal" house of the more sophisticated circles, as well as of the general public, is quite a different thing now from what it was in 1956. Indeed, there are even those who say they consider the whole idea of a house outmoded. The fact is that there are far more really excellent contemporary houses being built now than before, and — happily for the education of the general public — with far more attention from all facets of the press.

Few can deny that the 10-year-old Record Houses have retained a remarkable degree of freshness and suitability. But, by and large, the newer houses are bigger, more complex, more conspicuously opulent — even if some of the symbols of opulence and status have also altered. And all this in the face of constantly rising costs. For a broad, simple analogy, one might say that the modest, open, tightly budgeted, two-dimensional "house of cards" of 1956 has metamorphosed into a more intricate, more closed, more costly, three-dimensional "house of blocks."

In the avant garde, 1956 found us toying with some new forms, but generally it was still a somewhat Miesian era: elegant, and deeply concerned with spatial arrangements of Mondrianesque planes. The house by Bolton and Barnstone on the cover of the first issue of Record Houses is a fairly representative example. A close runner-up for influence was the warm naturalism of the "Northwest School," of which Bellus-
1956: Anshen and Allen use exposed post-and-beam structure to define space in builder house.


1956: steel A-frame by Truett Const is an innovation in design.

1956: neo-classic symmetry of plan and structure by Cecil Elliott.

1956: texture and eyebrow sun-shade characterize Breuer house.

1956: Rudolph experiments with three-level cantilever design.

1956: opposite, top, an early example of modern atrium by Schweikher & Elting; bottom, disciplined Mondrianesque interior by Bolton and Barnstone.

1956: Neutra's beautifully detailed glass walls, elegant then as now.

1956: textu re and eyebrow sun-shade characterize Breuer house.

chi's wooden houses are prime examples. For want of better terms, houses were often categorized as being of the "hard" or "soft" school of design, and each had some very vocal adherents.

"Honest expression of structure," "modular dimensions," "utility," and "functionalism" were still by-words and dominant standards of design judgement. The search for "spaciousness," as opposed to any attempt to add real space, was in full swing and nurtured such concepts as indoor-outdoor rooms and gardens, flexibility and multi-use areas, storage walls and minimal furnishings, and sometimes sheer optical illusion.

Besides that of Mies, the design philosophies of Wright, Gropius and Corbu were, then as now, the deep roots of much that was done. But another name was lurking to be added to the list—that of Louis Kahn, whose teachings and 1952 museum at Yale were generating a strong following. His carefully rationalized concept of boldly expressed "service towers" has spawned a readily discernible progeny, even if the family resemblance is often only visual.

A more immediate influence was being exerted by two highly publicized houses built in 1949, houses which typified diametrically opposed concepts: Marcel Breuer's house for the garden of the Museum of Modern Art, and Philip Johnson's own house. The former, as we all recall, was steeped with bi-nuclear privacy, butterfly roofs and "natural" materials; the other, utterly simple openness boxed in by steel and glass. And of course, both were, different as they seem, out-growths of the Bauhaus efforts: the Breuer one more or less in the Gropius vein, the Johnson one obviously after Mies. However, there is one outstanding similarity. Though totally different, each tended to relegate the mechanics of structure and utility (in its purely mechanical sense) to a secondary position vis-a-vis the organization and handling of space. The Johnson house probably marked the peak of one clearly defined trend (which Johnson, himself, no longer visibly follows), while the Breuer gently forecast another.

But each was a stimulus to what followed: the near fetish of the post and beam (in whatever material) to "free" interior arrangements, the expansion of the picture window into the window wall, the open family-room-kitchen, living-dining areas, the Barcelona chair, steel as a house material, and many other items relate to the Johnson concept; the Breuer house can be associated with more defined rooms,
1959: Integral lighting used by Eliot Noyes to dramatize house's architectural form.

1958: Victor Lundy shelters house beneath free-standing, wood arches.

1958: Chard Webb achieves a sense of order in compact steel-frame.

1959: Rudolph develops bolder form: increases living levels to five.

1960: Wood grilles give shelter to southern house by Mark Hampton.

zoning (for sound, use, privacy), linked pavilions, pattern as a design element, and of course the shed roofs inherent in the wings of the "butterfly." Certainly, neither house was the first to do any of these things, but they functioned as quite efficient pep pills to stimulate further action.

In the first, 1956, Record Houses, the criteria used to select the majority (20) of the houses clearly echoed the mood of that moment, having: a price range in that middle bracket which permitted some initiative in design—above the minimum, pared-down budget and below the absolute luxury class where economy is not a consideration; suitability for typical-size-family living, with three or four bedrooms; adaptability to an average site."

One by one, in the succeeding issues, all these were dropped as standards for selection, obviated by the rising economy, by the rise in first, second and retirement houses, by a decline in the baby boom, and by the increasing desirability of (and methods of building on) bypassed and "odd" sites. And a number of builders discovered the value of better architecture in lower-cost houses.

The kernel of the criteria that remained for the awards was simply the best architecture that could be discovered—each house best for its own program and money available, and contributing something of significance in new ideas or the refinement of older ones, without encouraging the uselessly self-conscious, wild confections.

However, in 1956 too, along with the 20 houses for "family living," nine were published apart in Record Houses as frankly experimental or "adventuresome." Among them were an A-frame by Truett Coston, a house by Paul Rudolph with some (at this writing) rather hesitant level changes and cantilevers, and a house by Jones & Emmons with a loft plan and movable partitions. All these concepts multiplied, it seems, infinitely—both in houses and other building types.

Within a short time, none of these houses would have warranted an adventurousness label. The "new freedom," as we then called it, was loudly proclaimed and led to all sorts of structural and design muscle-flexing: spectacular cantilevers, windowless houses, hyperbolic paraboloids, cork and metals and plastics all over the place, and of course all those grilles. Everyone seemed determined to test the generally held assumption that "now we have the means to build anything we want."

But in the process, a whole dictionary of useful new design techniques
1961: imaginative use of wood in Wright idiom by Roy Johnson.

1963: Opposite: soaring laminated arches by Jules Gregory with muted color tones demonstrate the influence of Japan.

1962: glass living pavilion by Philip Johnson after Mies.

Marc Neuhol

1961: Kessler's V-shape roof of family house.

1963: sculptured concrete forms by Rudolph advance to many levels.

1963: in this addition by Franzen the podium in effect becomes the house.

was added to our architectural vocabulary. It also pretty well ended any argument that certain materials and design ideas or appearances were limited to specific building types: concepts were bandied back and forth, from designs for churches to houses to filling stations to schools... on and on. And a lot of materials—notably concrete block, aluminum, and steel—gained a new respectability. Renewed favor was also openly given to regionalism, and to historic and foreign antecedents. Insect-ridden areas added back the screened porch (as a “Florida Room”), overhangs and “eyebrows” shaded hot sun, pitched roofs fended off snow, and central courts gave protection from winds. Neo-“neo-classic” houses proved, once more, that “formal” balance can be pleasing.

And the East, (near to far, and notably Connecticut, Delhi and Japan) surged forth again as a major design influence. In short, modern house architecture bolted from family traditions for a while, even changed its name to “contemporary,” then grew up a bit and reclaimed its somewhat Victorian relatives.

Centers of influence, however, seldom reign in solitude for long. After encountering the East, architecture met the Mediterranean, where visually enchanting villages cascade in clusters of truncated cubes down the hillsides, from Spain to the Greek Isles. And, more recently, it would seem that some quick visits have been made to the remaining Crusader castles. There are certainly spas of current houses that tilt the mind in those directions.

But, style aside, probably the major change in these 10 years is the basic attitude of architects towards house design. Technology and science still held a dominant hand in 1956; but a resurgence of interest in “art” was beginning, and everyone was also beginning to admit that most houses were in “neighborhoods.” Today, after the safari into methodology, there is a decided shift of emphasis by many architects. As an example, when we asked about his personal change of views over the decade, Ulrich Franzen wrote the following: “What is required today is the recognition that the dignity of man and the quality of his life, in an industrialized urban society, is the central problem. We feel that solutions which mortgage the experiences of life and the dignity of daily existence to some future goal are inhuman. Therefore, an architecture which is only concerned with universal values, dreams of perfection and gestures in the direction of a technological paradise seem curiously out of place from where I stand. Today,
1964: strong expression in brick and concrete by Tasso Katselas.

1964: Edelman and Salzman's design makes use of all-steel components.

1964: builder house by Mary Lund Davis to sell for $5995.

1964: I. M. Pei creates arches of bearing brick and poured concrete.

1964: Henrik Bull's four pavilions form well zoned builder house.

the evolution of a perfect style as a means of restoring harmony to our environment is of little or no interest. The architectural problem is of every day—today—not tomorrow. The architect must provide the tangible experiences of existence. Technology and science are tools—useful only when appropriate to the quest of creating an architecture and environment for man. Architecture then becomes not the celebration of technology or science—but the celebration of man and his life by the forms and spaces it creates."

In other words, the emphasis seems to have shifted from the how to the what, even to the why; from the method to the building itself; from the functionalism of chores to the function of living, maybe to humanism. Perhaps, all the way back to that vaguely romantic idea of "home"!

Franzen's work, for example, has gone through an evolution fairly typical of many architects, especially the younger ones. The first issue of Record Houses featured his own house—an airplane-roofed tour-de-force which revealed in innovative technique, a glass pavilion hovering on its light podium. We even developed a technique of adding candid photos to the usual architectural ones, in our presentation, to demonstrate the livability of the house. Year by year, Franzen's podiums outgrew his pavilions in successive designs, until the solid masonry gained equal billing, then dominated in stolid shafts and towers. On the interiors, clean-cut openness evolved into variety and chiarascuro.

As noted earlier, another style evolution was Paul Rudolph's rising concern with levels and sculptural forms. In 1956, we were very intrigued with his one-level drop in an open-plan living area adjoining a fireplace (what ever became of the conversation pit?), and we relegated a three-level house he designed to the adventure-some category. Its tidy cantilevered wings rested on a simple podium of concrete block. A number of years and houses later came the Milam residence—an assertive, involved, geometric sculpture of concrete block and of seemingly countless levels and spaces.

Yet another conspicuous and evolving change can be seen in Edward Larabee Barnes' houses. Always true to an intellectual as well as esthetic ideal, Barnes was designing "platform houses" in 1956—crisp, flat-topped, and often neatly balanced, white structures, raised above natural fields on well-tended earth podiums. Somewhat later came his "woodland houses"—informal, rambling, russet-colored homes punctuated
1965: skylight and porthole windows distinguish Jacobsen's compact design.

1965: opposite, top, Richard Meier creates simple, sculptured interior and uses effective color contrast; below, Elting applies modern techniques to traditional regional concept of the country house.

1965: Colbert's light pyramids dominate a monumental-style house.

1965: oval slit windows enliven Meath Kessler's disciplined house.

by occasional roof peaks fitted with colored glass. And, lately have come the village-like compounds of artfully fenestrated, but very simple, single-material, shed-roofed units. No label seems to have been applied to these as yet, but to fill the gap, one would-be-wit has dubbed them "Barne's barns." But no anonymous farm architecture these. Their influence has been great.

One could go on at some length in documenting this swing from relative simplicity to fairly involved designs in the work of individual architects. These three have been singled out because of the considerable, and sustained, attention their work has attracted during the decade. All this exposure, plus the fact that all have done some teaching, add up to a considerable influence. It is astonishing how many of the houses done recently by very young architects bear a marked resemblance to the work of Barnes, Franzen or Rudolph.

It is not astonishing, though, that another trend has gained strength in these years. The increase in town houses, row houses, houses set in walled-in lots, was inevitable with the increasing density and rising land costs in suburbs as well as central cities. Of all the prototypes for this sort of house, probably one of the most interesting is José Sert's own house, published in 1959. Based on a central-courtyard, partially shed-roofed scheme, and with simple, white, but dramatically shaped interiors, bedecked with brilliant-colored pieces of art and handicraft, the house still represents a major force in current tastes.

As mentioned earlier, costs have had a steady, over-all rise, which it seems probable will continue. William Edgerton, of McGraw-Hill's Dow Services, has provided us with some pertinent comments: "For 10 years, average U.S. construction costs have increased at an almost even rate of 2.5 per cent per year, with a slowing down to 2 per cent per year recently evident in the Southeastern, South Central, and New England regions. Some annual increase can almost always be expected due to the long-term inflationary nature of our economy. The actual increases, however, have been due almost entirely to increases in wage rates and fringe benefits paid to construction labor. Although building materials manufacturers have faced and met demands from their workers, they have managed to increase their efficiency and productivity at the same time, thus maintaining (or even reducing, in some instances) very stable selling prices. The productivity and efficiency of con-
construction labor has not kept pace with its increased compensation, causing a continuing rise in total building costs. The results of this increase are nothing short of amazing: the $7,500 dream house of 1941 came with a price tag of $14,850 10 years ago, and today costs $20,205; office buildings in the current $25.00 per square foot class cost $9.27 in 1941 and $17.50 just 10 years ago. Residential land costs per lot have increased even more: 47 per cent nationally in the last four years alone!

“Our crystal ball indicates quite clearly a 2 to 3 per cent increase in the cost of construction across the country in 1966, with less than 10 per cent of this increase due to materials price increases.”

Such prognostication is, indeed, more difficult in architectural design. The seeds of what will come are undoubtedly with us now—but even with careful nurturing, which ones will germinate and flower? There are some that seem fairly obvious: a continuing development of the more three-dimensional design approach—with, perhaps, some increasing subtleties; more architect involvement with all design facets (interior design, landscape, neighborhoods); continuing influence of bigger houses on the smaller ones, as well as on other building types; and more attempts to provide better livability, especially in areas of denser population. And obviously there will be some stimulating new houses which launch the careers of some new architects, some reactionaries, some extremists.

But the inevitability of continuing change is quite clearly demonstrated by a recent remark of a fledgling architect about a certain new house: “But you couldn’t like that—it looks like something out of the 1940s!”

1957: “I sure miss the good old days when I could tell everybody to stay out of the kitchen!”

Alan Dunn has kept a critical eye on the evolution of Record Houses over the years.
AFFLECK DESBARATS DIMAKOPOULOS LEBENSOLD & SISE

FIVE ARCHITECTS IN CO-PARTNERSHIP ESTABLISH A NEW STANDARD OF QUALITY FOR CANADIAN BUILDING

This Montreal based firm—known informally as “ARCOP,” a name short enough to be stenciled on their hard hats—was founded in 1953 by five men who had known each other as students or teachers at the School of Architecture, McGill University, in Montreal. As their names suggest, the partners are of varied cultural backgrounds and share five languages among them. The firm’s cosmopolitanism, and its juxtaposition of Turks, young and not so young, may account for the special quality of its work, which is marked by avoidance of fashionable clichés and scorn for the creation of monuments to individual self-expression—in favor of an emphasis on inventive control of materials and construction processes, and fine detailing. Affleck, Desbarats, Dimakopoulos, Lebensold and Sise first joined forces to enter a competition for the design of the Vancouver Queen Elizabeth Theater and Vancouver Civic Theater. They won first prize and the commission. Since then the firm has grown to approximately 140 persons and has completed over $42.7 million worth of work not including the $85 million Place Ville Marie done in collaboration with I. M. Pei and Associates. Work currently on their boards or under construction will cost over $128 million, and includes large urban complexes such as Place Bonaventure, now under construction in Montreal (to be published in a future issue); and multi-theater cultural centers (see “Canadian Center for the Arts in Ottawa,” December 1964). The spectacular growth of ARCOP can be attributed in part to Canada’s building boom—which has lately become “for Canadian architects only” under new legislation designed to keep U.S. firms on their own side of the border except as associates. But more importantly, the ARCOP partners’ big share of the work has been earned by the consistent vigor and precision of their architecture...
NEW WORK BY MONTREAL FIRM

A CITY HALL, JAIL AND FIREHOUSE, DESIGNED WITH A PLAN FOR THE FUTURE, COMPLETE THE FIRST STAGE OF LAVAL CIVIC CENTER

|--------------------|--------------|------------|---------|----------------|-------------|---------------------------|-------------------|----------------------|-------------------|

1. Cafe teria
2. Offices
3. Lobby
4. Engineering
5. Drafting
6. Electrical sub-station
7. Mayor's office
8. Aldermen's offices
9. Committee rooms

10. City Council chamber
11. Main entrance
12. Treasurer
13. Men
14. Women
15. Receptionist
16. Archives
17. Garage
18. Vaults

| GROUND FLOOR | 2|
| 12 |
| 13 |
| 14 |
| 15 |
| 16 |
| 17 |
| 18 |

| FIRST FLOOR |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |
| 13 |
| 14 |
| 15 |
| 16 |
| 17 |
| 18 |

| MAIN FLOOR | 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |
| 10 |
| 11 |
| 12 |
| 13 |
| 14 |
| 15 |
| 16 |
| 17 |

1. Furnace room
2. Garage
3. Detective offices
4. Police offices
5. Cells
6. Fire-truck garage
7. Court offices
8. Fire Chief
9. Firemen's quarters
10. Policemen's quarters
11. Chief of Police
12. Officer in Charge
13. Municipal court
14. Storage
15. Vault
16. Laboratory
17. Darkroom
18. Storage
19. Inspector
20. Dispatcher
21. Hose-drying room
22. Storage
23. Men
24. Secretary
25. Captain
26. Dressing Room
27. Lounge
28. Cells
29. Women
30. Assistant Chief
31. Judge
32. City Clerk
THE SITE PLAN FOR THE CITY OF LAVAL CIVIC CENTER IN QUEBEC will be developed in increments as the surrounding area grows. Right now two newly completed buildings stand in a vast empty plain, and the town whose nuclei they will someday become can be seen in the distance. The city hall and the combined jail and firehouse were constructed first, on a plaza which consists of a raised earth platform which will eventually conceal a garage. A sunken open-air amphitheater will serve as both a focal point for the projected ensemble and a link to the not-yet-developed portion of the complex: a municipal court, post office, library, theater, art center and offices for the schoolboard.

The main pedestrian and automobile approach is on the northwest and leads directly to the city hall public lobby on the ground floor which gives access to those offices frequently visited by the citizens. A secondary but more ceremonial entrance on the raised plaza, shown in the photograph below, leads directly to the council chamber, and to a corridor which connects the more formal and private administration spaces on the first floor. The jail and firehouse also has a ceremonial entrance at the plaza level leading to the present municipal court room, which will eventually relate to the main facade of the projected municipal court building. Police and fire vehicles have a separate driveway leading to garages at the ground level underneath the plaza. Six on-site parking areas are planned.

NEW WORK BY MONTREAL FIRM: CIVIC CENTER

The over-all design of the completed buildings appears in the photograph above, which looks toward the raised plaza. The steel-sheet metal wall which encloses the upper level of the city hall is set within a strong frame created by the reinforced concrete base and two end towers. The refined detailing, smooth surface, and dark-brown matte finish of the steel structure contrasts effectively with the bush-hammered concrete texture of its base and towers. The adjoining police and fire building is built entirely of reinforced concrete with the same surface treatment. The plaza and the ramps are edged by poured concrete walls, and the stairs and the amphitheater are constructed with red cedar trunks, detailed in the manner of traditional wood railway structures. The council chamber interior is shown below.
ARCOP's attention to detail is evident in the handling of the concrete and steel surfaces, and in the design at the juncture of the building bases and ground. The sheet-steel wall is a bearing element which transfers the loads of the steel-framed roof either to the concrete girders and columns or to the continuous concrete walls at the ground floor perimeter. The vestigial buttresses which project at third points along the base of the city hall at the plaza level assert the columnar module of the structure. Crushed stone surrounds both structures. Indentations in the concrete were left by the formwork.
NEW WORK BY MONTREAL FIRM

A WELL PLANNED SCHOOL FOR ARTS AND SCIENCES ON A CONSTRICTED SITE

STEPHEN LEACOCK BUILDING
1. General auditorium
2. Lecture rooms
3. Gallery
4. Lecture auditorium
5. Entrance
6. Balcony
7. Elevator lobby
8. Ticket booth
9. Offices
10. Seminar
11. Classroom
12. Teaching assistants
THE STEPHEN LEACOCK BUILDING AT Mcgill University was designed for the expansion of the faculty of arts and sciences to the west and southwest of the original arts building, on a plot with a less-than-ideal shape. The solution for the first stage of expansion was a low link to the old arts building following the diagonal street line and culminating in a ten-story tower. Raymond Affleck, the partner-in-charge, describes the organization of space as follows: "The two main elements of the program consist of a great variety of lecture rooms ranging in size from 30 seats up to 200, and including 650 in the large Leacock Auditorium. These lecture rooms were distributed through the three lower floors, which are easily accessible to mass student circulation. . . . Faculty offices, graduate study rooms, seminars, etc. were placed in the tower block where they could be serviced by elevators. The student facilities such as common rooms, undergraduate reading rooms, and the like are grouped on the lowest tower floor, situated vertically between the lecture rooms and the smaller facilities above. "It was found that the grouping of lecture rooms as interior spaces and the location of circulation along outside walls with splendid campus views worked out better than the traditional system of interior corridors.

"Cast-in-place concrete was used at the lower levels whereas modular load-bearing precast concrete floor and wall panels were found to be more appropriate for the tower. Mechanical equipment housed on the roof of the tower was given a copper hat to match the copper roofs of older campus buildings."

The key to the site solution is the link structure in the photograph above which contains the 650-seat auditorium below grade shown at the bottom of this page and several large lecture rooms at the mezzanine level. The two-level corridor shown at left is located at the base of the tower and affords fine views of the campus. Meeting rooms, like the one shown above opposite, are in the tower's central core. Faculty offices, like the typical one on the opposite page, are on the perimeter. Interior materials are consistently of the character shown in the stair photograph, and were chosen to withstand student punishment over the years.
NEW WORK BY MONTREAL FIRM

STUDENT CENTER REFLECTS A CLEAR AND DISCIPLINED SYSTEM

UNIVERSITY CENTER
1. Coffee lounge
2. Exhibit lounge
3. Lounge
4. Reading and dining
5. Council room
6. Offices
7. Tickets
8. Meeting rooms
9. Lobby
10. Cafeteria
11. Dining
12. Kitchen
13. Studio
14. McGill Daily
15. Post graduates lounge
16. Bookstore
17. Music room
18. Servery
19. Make-up room
20. Rehearsal theater
21. Ballroom
THE McGill University Center uses three kinds of concrete: precast and prestressed, precast only, and cast-in-place. Precasting has advantages for a small site such as this one, with little room for the storage of materials; and it makes sense, of course, in a cold climate like Montreal’s, since the pouring can be done off the site under controlled conditions. Having made their choice of material and structural system, the architects developed an organizing principle for this building which is so clear and well articulated that it can be quickly perceived by an examination of the main facade below, with the aid of the plans.

Since precast concrete is an advantageous material only when there are many identical members to be cast, re-using the same forms, partner in charge Guy Desbarats established an essentially symmetrical concept which required two separate exterior panel systems of many units. One system, which encloses the second floor, consists of 72 units, each five feet wide and nine feet, six inches high. On the first floor 18 more of these units appear, six at a time, at the center of each secondary facade. The third and fourth floors are enclosed by 36 two-story panels, 10 feet wide and 27 feet high, set in groups of three. The first-floor walls at each corner are cast-in-place and project in front of the precast, prestressed girder to indicate they are non-structural. Columns are also cast-in-place. Two vertical glass-enclosed slots on each facade mark the short spans within the structural grid. Just below the cornice is a series of skylights.

Designing the ballroom to work within the system proved difficult, because the interior column clusters, which posed no difficulty in the planning of the lower floors, arrived abruptly in the ballroom. The solution was to make them carry projecting balconies for spectators. Two sets of interior wall panels, of differing acoustical properties, are removable and interchangeable. The reflective panels are made of two layers of wallboard covered with vinyl fabric. The absorptive panels have three-inch fiber glass batts, covered with an expanded metal screen with a surface of sound transparent fabric.

The modular coordination of the structure is well expressed on the inside. At left is the lounge. The ceiling is of exposed precast ribs into which are set precast concrete ceiling panels. The floors, stairs, landings and skylight grid within the central staircase bay are cast-in-place. Stiffeners at five-foot intervals on the girders emphasize the module. These girders have been cast with special slots in the lower flange to conceal fluorescent tubes. On each floor the space between the bottom girder flange and the underside of the shallow slab on the short spans is used as duct space and return air plenum. The laminated stair rail has a solid wood cap.
Mechanical and electrical ducts are located in the four towers at ends of the building. Ductwork is carried underneath the short spans.

QUIET ARCHITECTURE
FOR A QUIET PLACE

LIBRARY
1. Office
2. Work room
3. Cataloging
4. Circulation desk
5. Offices
6. Foyer
7. Coats
8. Stack area
9. Reference area
10. Reading area
11. Office
12. Seminar
13. Study rooms
14. Microfilm
15. Periodicals
16. Light well
17. Bibliography
THE GEORGE P. VANIER LIBRARY AT LOYOLA COLLEGE IN MONTREAL —like the Stephen Leacock building—is a far more conservative design solution than either the City of Laval Civic Center or the McGill University Center—but no less handsome. In its scale, structure and handling of materials, this library reminds one of the approach to design best represented by the work of The Architects Collaborative. The ARCOP partners acknowledge a familiarity with the better architecture in the Northeastern United States, indeed point out that Cambridge is not too far from Montreal and that McGill University recognizes Harvard. Since all four buildings were designed at approximately the same time the quiet manner of the library cannot be attributed to an earlier approach to architecture. It therefore becomes clear that the design character of ARCOP's work varies from building to building, partly because each solution reflects the attitudes of the individual partner in charge, but more importantly because of the extent to which each building is a meticulous answer to well defined problems.

According to Fred Lebensold, the partner in charge, this building's silhouette and choice of materials were selected to blend harmoniously with the existing buildings of the college. "The whole college is planned in a series of precincts and it is hoped that the new library building will form the beginning of a new precinct on the site." The building was designed for future expansion on the main axis of the entry hall. The basement includes a lecture hall and book storage areas. The stacks hold 150,000 books.

Architects: Affleck, Desbarats, Dimakopoulos, Lebensold and Sise; partner in charge: Fred Lebensold; project manager: James Donaldson; structural engineer: Dr. Felix M. Kraus; mechanical and electrical engineers: Brais, Frigon & Hanley; lighting consultant: William C. Lam; general contractor: Douglas Bremner Contractors & Builders Ltd.
The structure seen from the exterior consists of cast-in-place columns and girders which rest on a heavy concrete basement wall. The projecting brick walls enclose a convective on each floor and a concealed vertical pipe space for the heating risers. Each concrete element receives separate surface articulation. Heavy striations left by the formwork help define the base of the building, and the deep window reveals increase its apparent mass. The formwork pattern of the girders is less pronounced and the column faces have no vertical lines.

In the major interior spaces, the structural framing is left exposed. The long spans of the stairhall and the reading area are framed by precast, prestressed concrete beams. Both spaces extend from the first floor to the roof and are covered with plastic skylights.
THE ARCHITECT IN PRACTICE

CURRENT PRACTICE INNOVATIONS
DEFINITIONS
OBSERVATIONS

New design department puts all disciplines to work on building concepts

In an earnest effort to bring creative minds from many disciplines to bear on design phases of the architectural process, Smith, Hinchman & Grylls Associates, Inc. have regrouped key individuals from architectural, structural, mechanical and electrical departments into what is essentially a new "design" department.

"By moving these people closer together physically in a design department," says Robert F. Hastings, president of the firm, "we hope to develop a more comprehensive and effective interplay that will broaden the base of the design function in keeping with the complexities of structures in the modern world. The purpose of the new arrangement is to more firmly establish the concept of a building in early stages of design through better communication of ideas among various disciplines that must be employed in its ultimate development.

"Creativity is not an exclusive province of architects among the building professionals. It is a habit of mind evinced by contributions of many other individuals whose talents must be brought to bear upon complete integration of the building. Obviously, it is a characteristic more evident in some individuals than in others. Obviously too, the selection of individuals for assignment to such a department must be done with the utmost care. But the importance and complexity of today's design problems call for a real effort to bring these disciplines together in a practical and workable way."

How it works
Those who are assigned to the new department will be divorced from production routine so that their energies can be devoted to design problems. It is expected that about half their time will be devoted to basic research problems, while the other half will be applied to crystallization of actual building concepts.

The flow of work will follow the normal path of acquisition and execution except that development of the concept of the building and execution of preliminary design will be more intimately exposed to the modifying disciplines of all professions in a more truly creative interplay. Among practical rewards of such an arrangement would be added assurance that the ultimate concept will produce better architecture and will proceed through production phases more smoothly and rapidly.

Management of the new department, or more properly the design enclave, will be clarified as problems develop. The individuals assigned to it will still report to the heads of the departments from which they are chosen but in a manner somewhat removed from the day to day disciplines implicit in their former relationships. They will have access to resources of all departments, but the basic objective is to bring all of these resources together in a unified complex so that the ultimate building design will reflect total cognizance of all disciplines.

"If the idea can be made to work in spite of its manifold psychological hazards," says Mr. Hastings, "it will help solve some of the basic problems of today's architectural practice. These problems are even now reflected in the interdisciplinary efforts to revise curricula in some architectural schools. But they are problems that need solving in the working world right now, and this is one conscientious attempt to do so."
Instant interiors: ask about our lay-a-way plan

A straw in the wind of competition for architects' interior design departments is a discount purchasing plan courtesy card which came in the mail recently from a furniture manufacturer-distributor. One side of the card offers "free interior decoration and unconditional service guarantees." The offering seems to be confined to home decoration in various styles. A curious line describes the establishment as "a show room to the trade—admission by this card only." Not to quibble at the possible inconsistency of a line on the other side of the card which says "use me—save me—or pass me on," one really has to wonder what "trade" is being offered free interior decoration. If interior decorators are the trade, as one sometimes hears them call themselves, this furniture company seems to be offering to do their work for them. Or is the company really in competition with its own and only customers? Anyway, we are urged to "ask about our lay-a-way plan" and are assured that deferred payments can be arranged without interest charges.

IRS defines professional corporation for tax purposes

More than half the states permit the corporate practice of architecture and they tax incorporated firms accordingly. Not so the Federal Government. While the Internal Revenue Service has no objection to professional service corporations as such, the interpretation filed early last year (T.D. 6797, Federal Register, February 3, 1965) clearly denies corporate tax status to firms "merely because the organization was so labeled under local law."

The A.I.A. has entered a formal protest supplemented by documented response from members, but to no avail. No court test can be made, of course, until after 1963 tax returns have been filed.

No attempt is made here to take cudgels. But since some corporations in some jurisdictions still may be able to meet the standards of the new regulations, a summary of some of the fine print of the Internal Revenue dictum may be pertinent as the tax year enters another round of analysis and interpretation of the code.

The regulation points out that a particular organization might be classified as a trust under the law of one state and a corporation under the law of another. Similarly the term partnership is not limited to the common-law meaning of partnership in many jurisdictions. Thus, while local law must be applied in determining the legal relationships of members among themselves and with the public, the Internal Revenue Code takes the position that labels applied by local law are in and of themselves of no importance in the classification of organizations for purposes of federal taxation.

A professional service organization is treated as a corporation only if it has sufficient corporate characteristics to be so classified. Organization for profit is not enough. In professional service corporations, says IRS, relationships of members to each other, to clients and to the public are inherently different from the relationships characteristic of an ordinary business corporation. In determining the nature of these relationships, consideration must be given to the character, articles of association, by-laws and all other facts pertaining to such relationships as they exist in the usual course of the practice of the particular profession.

Continuity of life

A professional service organization does not have continuity of life, within the meaning of the Code's definition of a business corporation, if removal of one member for any reason will cause the dissolution of the organization. A business corporation has a continuing identity as an entity which is not dependent on a shareholder's active participation in the production of income of the corporation. Furthermore, the shareholder's right to a share in profits is not legally dependent upon his participation in the production of the corporation's income.

The IRS contends that the interest of a member of a professional service organization generally is inextricably bound to the establishment and continuance of an employment relationship with the organization, and he cannot share in the profits unless he also shares in the performance of the services in a real way.

If a member or his estate is required to dispose of this interest in the organization when the employment relationship terminates, the continuing existence of a professional service organization depends upon the willingness of its remaining members to acquire his interest. The continuing existence of such a service organization is similar to that of a partnership and is essentially different from the continuity of life possessed by an ordinary business corporation.

Centralization of management

Centralization of management is another key characteristic in the IRS definition of an ordinary business corporation. A professional service organization does not have centralization of management where the managers do not have the continuing exclusive authority to (1) hire and fire professional members and other employees; (2) determine compensation of members; (3) establish the conditions of employment; (4) determine who will be accepted as clients; (5) decide who will handle each individual case or matter; (6) set policies; (7) set fees; (8) decide what records are to be kept; and (9) determine the times and amounts of distributions of earnings.

Although a measure of central control may exist in a professional service organization, IRS contends that where members retain traditional professional responsibility they cannot have the continuing exclusive authority to determine all of these matters. Instead, control is no more than that existing in an ordinary larger partnership which has one or more so-called managing partners and in which a member retains traditional professional autonomy and his traditional responsibility of the professional to the client. Such measure of central control is essentially different from that existing in an ordinary business corporation, according to IRS.

Limited liability

A professional service organization has the corporate characteristic of limited liability only if the personal liability of its members (towards obligations of the firm) is no greater than that of shareholder employees of a business corporation. If, under local law, a mutual agency
Diversification induces rapid growth of a school-oriented firm

The working staff of Tarapata-MacMahon Associates, Inc. increased from 38 in 1964 to 67 at a recent count in 1965. A sixth principal (Richard K. Albyn) joined the firm early last year. Asked the reasons for this seemingly sudden expansion of a firm that was established in 1956, principal Mark Jaroszewicz reviewed a history of slow but steady growth over a long period during which the firm was somewhat specialized in the educational field. The collapse of several proposed school bond issues caused financial difficulties to some similarly specialized firms, and Tarapata-MacMahon decided to diversify. Beginning about three years ago, each of the principals made concerted efforts to acquire various kinds of business. Departments of the organization were set up to offer comprehensive services in a variety of fields. An urban planning department was set up (it handled the award winning Central Plaza Development in Canton, Ohio in association with Johnson, Johnson and Roy) and the interiors department was increased from one to four people and is still growing (partly to handle complete interiors design for the new General Motors Institute). The result has been accelerating growth.

The firm operates on a principle of vertical client responsibilities in which one of the principals functions as administrator for each project. In addition, each principal has horizontal responsibilities within the organization. Charles MacMahon Jr. is president in charge of general management; Peter Tarapata is executive vice president and director of design and planning; William J. Hayes, vice president, is responsible for production operations; Mark Jaroszewicz, Maurice B. Allen Jr. and Mr. Albyn are each vice presidents with major design and planning responsibilities in addition to direct client contacts.

Government construction grants generate over-regulation of plans, New York architects protest

One of the effects of government spending for construction through the various programs of grants, subsidies and guarantees now rapidly expanding at federal, state and municipal levels is an increasing complexity of regulatory supervision. Qualifying surveillance by those who dispense public funds can hardly be regarded as intrinsically undesirable by the tax paying public. But the effects of regulation emanating from a multiplicity of concerned government bodies can be vexing if not stifling to both the fiscal and creative aspects of architectural practice as it is generally understood.

Government programs for the development of health facilities provide a case in point. In a report titled "The
Effect of Regulatory Agencies on Hospitalization Costs in New York State," the New York Chapter American Institute of Architects points to an "unimagineably complex" system of regulatory agencies with overlapping and frequently conflicting requirements. The architects state that much of the time and expense in building a hospital is spent in attempting to obtain the approval of a multitude of federal, state, municipal and private agencies, each one of which has rules and regulations to enforce which require submission of building plans and extensive background data on the institution and its region.

The last straw
Although architects had been coping with these burgeoning bureaucratic requirements for many years, the ultimate protest was triggered by still another state regulation (New York's Metcalf-McClosky Act) put into effect in 1964. It has the laudable intent of eliminating unnecessary duplication of medical facilities and providing for their better distribution by controlling construction on the basis of public need. The State Department of Social Welfare and State and Regional Hospital Review and Planning Councils are assigned the "awesome responsibility" of determining whether or not any medical institution may or may not proceed with construction plans with any hope of bringing them to pass.

It was with considerable shock, says the report, that architects first obtained their application forms from the area office of the State Department of Social Welfare. The forms, some 14 pages in themselves, require complete data on the institution and its region, including such abstruse information as the financial reliability of hospital directors, the competence of its staff, demographic information about population in the area to be served and kinds of existing services now provided within that area.

The architects contend: "The question must now be faced as to whether or not medical facilities can continue to develop under this unimaginably complex situation."

The fact is, the report says, that experienced hospital architects practicing in New York State are so aware of the disaster a disapproval by any one of the many agencies may bring to a project that they tend to advise their clients against any proposal that might even risk a disapproval. Thus, an artificial limit is set on advances in hospital design and construction that could effect savings in hospital costs.

The partial list of approving agencies gives some idea of the complexity of this problem. While no single project would require approvals from the entire list, each of the agencies claims jurisdiction over hospital construction in New York State.

AGENCIES WITH JURISDICTION
OVER HOSPITAL CONSTRUCTION
IN NEW YORK STATE

FEDERAL AGENCIES
Bureau of the Budget
Department of Defense
Department of Air Force
Department of the Navy
Veterans Administration
Department of Justice
Department of Labor
U.S. Housing & Home Finance Administration
-Community Facilities Administration
-Office of Education
-Office of Vocational Rehabilitation
-Public Health Service

STATE AGENCIES
N.Y.S. Department of Health
N.Y.S. Hospital Facilities Program
N.Y.S. Division of Hospital Review and Planning
N.Y.S. Bureau of Maternal and Child Care
N.Y.S. Bureau of Tuberculosis Control
N.Y.S. Narcotic Control Section-Executive Division
N.Y.S. Environmental Sanitation
N.Y.S. Department of Mental Hygiene
N.Y.S. Department of Social Welfare
N.Y.S. Department of Public Works
N.Y.S. Department of Labor
N.Y.S. Education Department

MUNICIPAL AGENCIES
(Varies, depending on location, the following is for N.Y.C.)
Planning Commission
Building Department
Fire Department
- requires separate filings for oxygen, sprinklers, interior fire alarm, exterior fire alarm, refrigeration, standpipe, fire prevention, involving a number of bureaus.
Department of Water Supply, Gas and Electricity
Department of Health
- Division of Hospitals and Institutions
- Maternity and Newborn Division
Department of Hospitals
Department of Air Pollution Control
Department of Highways

The type of health facility, its geographical location, its financing, and its ownership determine the applicability of these agencies' requirements.

The Chapter's hospital and health committee has outlined a research program to develop a comprehensive index of all hospital codes and regulations in order to lay a factual basis for development of an effective statewide program of guidance and regulation.

"There is some overregulation everywhere," points out one observer, "But don't forget that 40 per cent of the money to build hospitals is now coming from federal and state sources. Without that money, there wouldn't be all that work, and one can't reasonably expect to get tax money without some regulations."
ONE GOOD CIVIC CENTER DOESN'T MAKE A CITY

Vincent Kling's design for Norfolk's municipal buildings creates an island of calm in a disorderly environment.
The Civic Center's pedestrian precinct can be reached only by automobile...
The geometrically landscaped plaza in the Norfolk Civic Center is a quiet and orderly place, where low masonry buildings form a setting for the square, glass-enclosed tower. This civic space, obviously designed to be walked through, is surrounded on three sides by major traffic arteries. Construction will soon begin on a fourth highway, which will isolate the Center completely. Four lanes of traffic away, across St. Paul's Boulevard, is another pedestrian mall (4, 5) organized on a completely different grid. There is no physical connection for the pedestrian, and no architectural connection either. Instead there is a clear confrontation between two approaches to urban design: the one followed for the Civic Center, the other taken by the rest of Norfolk's renewal.

Norfolk was one of the first cities in the country to have an urban redevelopment program, and its guidelines were set at a time when massive slum clearance and extensive highway construction were the unquestioned basis of every city's renewal strategy. There is no doubt that there was much in Norfolk that deserved to be cleared, and that improved automobile circulation was needed. Clearance removed the old honky-tonk East Main Street district and vast quantities of ramshackle slums (2, 3); and new roadways improved existing lines of communication. But clearance also eradicated the historic scale and texture of the city, leaving the surviving buildings alone in a wasteland where the street signs were the only other landmarks.

A downtown redevelopment plan was drawn by Charles Agle in the mid-1950s (1). It was essentially a concept
Organizing all city functions in one place reduces operating costs 15 per cent...
study which embodied basic decisions on the location and massing of buildings without being specific about programs or architectural character. Such studies are a necessary part of redevelopment programs, but they seldom seem to survive translation into actual buildings. In the case of Norfolk, increasing traffic that followed the completion of the bridge and tunnel network linking Norfolk to the other Tidewater cities has further distorted the original plan. The result, so far, has been that the Norfolk redevelopment program appears to have been carried out on a pragmatic, project-by-project basis; and its dominant motifs are high-speed highways and extensive surface parking.

The Civic Center complex consists of four elements: The first to be completed was the Public Safety Building (August, 1961, pages 111-114). This building contains city courts, police headquarters and the jail. Then, while elements of the Agile plan went up across the street, work began on the final three components of the center: a State Courts Building; the Public Service Building, containing the tax and licensing functions with which large numbers of people have direct contact; and the 17-story glass tower, which contains administrative offices and the City Council chamber. When the over-all design was announced, Vincent Kling commented: "It has been estimated by our space planning consultants that the complete integration of government agencies in this Center will reduce the cost of city administration by some 15 per cent below the cost of a scattered and decentralized operation."
The Public Service Building contains a large sky-lit hall with counters on three sides, permitting large numbers of people to wait in line during periods of peak use. About 80 per cent of the people coming to the Center on business go directly to this room, so it is placed where it is immediately accessible to those arriving by car. A glassed-in link connects it to the office tower and the plaza.

In order to have good views from the office tower and still insulate the building from excessive heat and glare, a screen of 3/4-inch heat absorbing glass was hung on a steel Vierendeel truss system three feet away from the outer skin of the building itself. This screen reflects or dissipates over half of the solar energy that hits it, and half of the remaining energy is reflected by the building itself. A horizontal grill helps diffuse glare and acts as a walkway for window washers. There is evidence that the warm air caught between the two layers of glass acts as a blanket of insulation during cold weather.

The final construction cost of the Civic Center was just over $28 a square foot. The second construction phase was financed entirely out of operating funds and surplus revenues, saving Norfolk some $3 million in interest charges.

SCHOOLS THAT LOOK TO THE FUTURE

All the schools in this study have a considerable investment in the future. Many of them anticipate fairly dramatic increases in enrollment and have planned for physical expansion by allowing for an additional floor or wing, by grouping individual buildings so that another can easily be added, and by placing communal facilities within easy reach of any planned additions.

As educational trends and teaching methods continue their rapid development, any new school must inevitably be carefully designed to accommodate these changes, if the building is not to be quickly outdated. Flexibility of use has been achieved in a number of ways. Most of these schools make extensive use of movable partitions; in some cases central auditoriums can be subdivided to form a base for team teaching; libraries can often be expanded into resource centers for different kinds of teaching aids.

In large schools, many of which expect to become larger, care has been taken to give human scale to the buildings so that students can maintain their own identity and develop individual talents. In some of these schools, academic sections are divided into separate “houses” to give a family type of unit with which each child can identify. Interiors are generally warm and friendly with informal areas where staff and students can meet in small groups.

The individual school studies are followed by a discussion of the “educational park” — a school campus system proposed by a number of experts as a solution to some of the pressing educational and social problems of our cities.

C. Thurston Chase Learning Center, Eaglebrook School, Deerfield, Massachusetts.
Learning Center Focuses on Multi-Use Library

School days are often described as the "happiest days of our lives," but many of us with memories of somewhat rundown, impersonal buildings are inclined to regard this description as typical of the romanticism with which we sometimes look back at youth. However, if we had spent our school days in an environment half as pleasant as that created for the boys of Eaglebrook School, we might concede there was some truth in the observation after all. The design and execution of the new buildings, the way they are grouped in relation to the existing buildings, and the educational principles they incorporate, all combine to make this one of the most interesting and attractive new school complexes in the country.

The final design for the new buildings is the culmination of intensive study by the architects (The Architects Collaborative and Campbell, Aldrich & McNulty), the Stanford Research Institute, The Educational Facilities Laboratories, (which gave a grant for development of the system), and by a number of individual consultants. The resulting scheme is a group of three buildings (see plans opposite): one housing classrooms, a language laboratory and an audio-visual classroom; one housing meeting hall and library; and the third including a science wing with a small planetarium.

The focus of the complex — both physically and educationally — is the library (see photos on following pages) which is placed over the meeting hall in the center building. The main floor of the library consists of a large, carpeted room with study tables for students and bordered by book stacks. A glass-fronted librarian's office, conference room, and five departmental offices, each large enough for five or six members of the faculty staff are also included on this floor. In addition, a central work area is provided to give an opportunity for developing team teaching projects. In addi-
an entrance lobby and open staircase. The headmaster's office on the second floor has easy access to both library and classrooms, and a view over the campus.
tion to conventional library facilities, a mezzanine above has been planned to give opportunities for individual student-teacher programs making use of the most up-to-date teaching aids and methods. There are 10 small rooms, each for two people, equipped with language lab and TV facilities, and two larger rooms for groups of four to five people. Space is provided for 18 student study carrels and individual research areas for faculty members which adjoin a small, informal lounge area. Storage space is included for records and microfilm as well as for books.

These plans in effect achieve "a library-centered school where the book remains the central business of the place," but where ample provision is also made for all the latest teaching methods and equipment. The school is planned to encourage close personal contact between staff and students, and the needs of the faculty members have been given the kind of imaginative consideration all too often denied them.

All of the school facilities have been planned with an eye to the future. Movable partitions between classrooms make possible large and small groupings as required, and the meeting hall is a suitable base for team teaching programs. The language laboratory, modern furnishings and equipment, television monitors, projection equipment to encourage the use of film media, and the provision of a small planetarium are all indicative of a progressive approach to education.

Structure of the building is essentially steel and concrete with brick and concrete walls and plywood roof decks with built-up asphalt shingle. A large skylight gives additional daylight to the library area.

C. THURSTON CHASE LEARNING CENTER, EAGLEBROOK SCHOOL, Deerfield, Massachusetts. Architects: The Architects Collaborative—project team: Sarah P. Harkness, Herbert K. Gallagher, Sherry Proctor; and Campbell, Aldrich & Nulty—project team: Walter Campbell, Carmen di Stefano; structural engineers: Souza and True; mechanical and electrical engineers: Jackson and Moreland; lighting design: William M. C. Lam; educational consultants: Donald Mitchell, Robert Anderson.

Interiors of the school have a light, spacious feeling, but sufficient warmth and intimacy so that students d
lose a sense of their own identity. The open planning of the library is modified by smaller spaces and furniture groupings arranged for individual study.
Faced with the problem of providing an extensive expansion to an existing high school, the architects of this extremely interesting scheme concluded that "a single high school, if properly organized into a decentralized campus of smaller sub-schools or 'houses,' could provide the necessary individual pupil identification inherent in a small school, while furnishing a scope, depth and variety of resources, staff and facilities which only a large integrated plant can offer." Four cross-shaped houses are grouped within a road loop and around a large, carefully developed social court and a resource center (reference and teaching aids library). Each of the two-story houses contains all general academic and science facilities for 600, as well as an administrative unit and a commons area for assemblies, lectures and dining. The food is supplied from a central kitchen. Several classroom groups are interconnected by folding walls for possible team teaching.

The existing building was remodeled to provide two additional houses and areas for specialized instruction. The resource center is located for easy access from all areas. The new buildings are light steel frame with brick panel walls.

academic buildings around a central resource center. The area between buildings, surrounded by covered walkways, provides a pleasant "social court."
MAXIMUM FLEXIBILITY FOR A JUNIOR HIGH

This handsome school is an excellent example of a structure designed for a fairly standard, departmentalized junior-high program, but capable of simple and inexpensive adaptation to new organization and teaching methods.

The school is loosely but sensibly organized in an irregular plan, with direct and fairly short circulation corridors. The gymnasium and auditorium are placed with related facilities in two connecting wings, and classrooms (grouped into three houses) pinwheel out from a library center on the upper floor of a third wing. Inherent throughout the planning is an effort to reduce the scale of the building to maintain student identity. Each house has its own dining area, project-study area and lockers, and its own identifying color (blue, green or ochre) on doors and the like. Many of the classrooms are fitted with easily removable walls to create larger-sized spaces when, and if, they are needed. Thus the many varieties of spaces included in the plan could easily be adapted for a team teaching program. The auditorium, also designed with this potential change in view, is divisible into three medium-sized lecture halls, or can be used as one big assembly space. The current project areas could be adapted and related to the library as an expanded resource center. Although the actual library area is comparatively small, the surrounding spaces could easily be converted into individual

The strong concrete, brick and glass elevations are softened by the rather informal layout of the plan.

Phokion Karas photos
Small courtyards are created where children can talk and play. The three separate “houses” at right end are connected to “shared facilities” by administration.
SCHOOLS
KENNEDY JUNIOR HIGH SCHOOL

carrels and group study rooms. There are plans for future expansion of the library in the angle between it and the adjacent house.

The building has a present capacity of 900 pupils, and was planned for the future addition of a fourth house for an additional 300 children.

In addition to the main central administration offices, each of the houses has its own suite of offices for guidance counselors and administrative personnel. Adjoining are spaces for seminars, small group instruction and conferences.

Structure of the building is poured in place concrete with brick and exposed concrete exterior walls.

The Educational Facilities Laboratories' report on Middle Schools comments that "Only time (an approved New England commodity) can tell whether Natick school people and their architects have produced a truly flexible building — so that no matter which way the curriculum swings, this building will swing with it. The evidence on hand supports the belief."


Planning of the school has taken into account the future possibilities of team teaching. The auditorium can

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be subdivided into three separate rooms for this purpose. Classrooms are designed to relate easily to the library, which can expand into a resource center.
The architects were asked for a building "to house a modern educational program in an atmosphere at once appealing to the children, and pleasant, efficient and most workable for the teachers," with "sufficient physical flexibility to accommodate future changes in teaching methods." Further, it was designed to be "up-to-date in concept and function, but to blend into a traditional residential neighborhood."

The Quinnipiac school satisfies all these requirements and provides what should be a stimulating environment for 290 children from kindergarten through fourth grade. Future expansion of the school will be accommodated by adding a second floor similar in appearance to the academic wing of the building.

Flexibility within the building was achieved in a number of ways. Each classroom has a simple shape, and is provided with movable equipment, so that individual teachers can arrange the room to suit the specific needs of their program. Two pairs of classrooms in both the completed structure and the planned addition have movable common walls to allow for larger groupings of students and cooperative programs between teachers, if desired.

The basic structure of the building—reinforced concrete channel columns and beams—permits the addition of the second story without the need for interior columns. The open spans, in turn, permit complete rearrangement of partitions.

The interior surfaces are exposed concrete and brick, and the floors are carpeted, to keep maintenance to a minimum and to provide a good background for colorful displays of art work.

The building has been sited to take advantage of a view over a river and to allow the use of an adjoining city park as a pleasant playground for the children.
This private school for girls is planned for a current enrollment of 500 in grades from kindergarten through the twelfth, but the plans show an expansion for an additional 500 students, and provision for easy changes of any interior partitioning to accommodate varied and/or changing teaching methods.

There are 24 classrooms, two large audio-visual rooms and a number of smaller seminar rooms arranged in an H-shaped plan on two levels. The teaching wings are linked by a large, pleasant hall with study rooms, the library, and a dining area which can double for additional study or lounge space. Food is provided by an outside catering service, which—the school administrators feel—gives significant savings on equipment, space, personnel, maintenance and the like.

To add to the flexibility of interior partitioning, all mechanical systems are ranged around the perimeter of the building in a special sill-and-spandrel unit, which also includes louvers for fresh air intake and exhaust. The structure of the building is concrete, with triple-T-slabs. The per-square-foot cost is reported to be about $15.

This allows considerable freedom of circulation and flexibility of use. Perimeter mechanical services and easily varied partition system give extra flexibility.
The Richland Technical Education Center is an unusual facility for teaching specialized technical skills to high school graduates. The design provides three separate buildings—two of them air conditioned—to house administrative offices, laboratories and classrooms, and a shop area—all in an environment which has much of the feeling of a university campus. This was achieved, the architect reports, at a cost of less than $10 per square foot.

The buildings were designed to take advantage of a sloping site. The administration building, which contains office spaces, library and faculty office, overlooks the rest of the campus from a higher level, and is connected by a covered walk to the classroom and laboratory building, where a snack bar and glassed-in lounge are also housed. Windowless classrooms and laboratories are all fully air conditioned. The shop building is not air conditioned, but includes service openings which face away from the other buildings towards student parking areas.

The administration building—constructed of prefabricated, insulated panels and glass areas in an exposed steel frame—contrasts effectively with the other two buildings, with their bearing walls and exposed steel roof structure. But despite the contrast the three buildings together constitute a well-balanced whole. The students should indeed "not just acquire the necessary technical skills, but also experience some of the wider social and environmental benefits more often associated with a university campus."

RICHLAND TECHNICAL EDUCATION CENTER, Columbia, South Carolina. Architects: Lyles, Bissett, Carlisle & Wolff.
covered walks. Administration building has exterior walls of glass and insulated panels, other buildings have painted steel fascia and utility brick surfaces.
THE CASE FOR EDUCATIONAL PARKS

The preceding pages have explored some of the design ideas being used to handle one kind of change in our schools—the need for enough flexibility to keep pace with changing teaching methods and booming school populations.

Other new design concepts are needed to cope with the accelerating change in our social and economic structure—the demands of the Great Society for the best possible education and opportunity for all students.

One much-talked-about solution—controversial because it questions the time-honored system of neighborhood schools—is the educational park. Under this system, all levels from kindergarten through high school would be accommodated in a single complex large enough to serve the whole community.

On the pages that follow, three leading proponents of the educational park—Dr. Max Wolff, sociologist and consultant on school desegregation to several communities; Dr. Esther Rothman, psychologist and principal of a New York City high school, and architect Leopold Berman—answer questions highlighting the problems and advantages and the architectural challenges of the educational park.

Are there school systems which have already developed or are developing educational parks?

Dr. MAX WOLFF: I have been proposing the "educational park" as a new type of centralized school system for several years, but the first actual park was started two or three years ago in Fort Lauderdale, Florida. In spite of the schools which exist in every neighborhood and community served by the educational park, requests for admission to the park are about two to one to the spaces presently available for pupils. Pupils are transported to the park from a distance of up to fifteen miles. There is another educational park called Cité des Jeunes near Quebec. One of the purposes behind the creation of this park was to offer a meeting ground for pupils of French and English background attending separate schools.

Pittsburgh is working on detailed plans for educational parks, as is New York City. Other communities presently discussing and planning educational parks are as varied as Mount Vernon, New York; Philadelphia; East Orange, New Jersey; Los Angeles; Chicago and Cleveland.

Could the educational park be a factor in helping reverse the decline of our cities?

WOLFF: The city, for its own survival, must counteract the development of ghettos of the socially deprived with their attendant despair and discontent. Continuing concentration of poverty in more and more sections of our cities will make it practically impossible for them to sustain themselves and to be the impetus for further growth of the country. By counteracting the ghetto, both the concept and the reality, the city will counteract its growing image as the jungle of our industrial society. The development of a modern, high-quality public education system may well be the essential ingredient in reversing the present decline of our cities.

The educational park would, in my view, be the most promising frame for such a development. In it, the best the city has to offer would be made available to all the teachers and all the pupils alike. No status would be connected with any specific school because all of them would belong to this community school complex. In smaller cities, one such center would suffice. In larger cities, a number of equally well-endowed centers would be established.

No private institutions can compete with the educational park if local government recognizes the importance of making it the glowing symbol of what the city is able to offer its children.

Can communities expect state and federal support for the development of educational parks?

WOLFF: Yes. For one thing, educational parks, carefully planned, should be more economical than neighborhood schools of comparable quality. Further, almost all states have provisions of legal participation in the costs of pupil transportation, which is a factor in this concept.

In addition, New York State, for one, plans to submit to its legislature this spring a law offering financial support of measures specifically geared to counteract socio-economic and racial segregation. And a number of Federal acts invite applications for financial support for all kinds of innovations in the development of such educational facilities as educational parks. These include Urban Renewal Act, Community Mental Health Act, Civil Rights Act, National Defense Education Act, Elementary and Secondary Education Act, and Economic Opportunities Act.

Would most children have to be bused to school and will travel adversely affect them?

WOLFF: It would never be necessary to transport all children attending an educational park; in the densely populated areas of our cities, many of the pupils will live in the vicinity of the park and—without proper protection—be able to walk to school. For the smaller children in need of transportation, special facilities will be made available; measures are at present being worked out to make sure that the bus ride will not be "lost time," and to solve specific traffic problems in the context of overall traffic plans.

Dr. ESTHER ROTHMAN: Many educators do argue that the child needs the se-
curity of a school near his home. But how do they know that an out-of-neighborhood school is not as desirable as an in-neighborhood school? Surely thousands of children who have traveled to attend private schools have not been damaged by their experience. . . . The question should rightfully be: "Is the school to which the child travels a good one?" The answer is obvious. It is not the traveling that is important. It is what the child travels to that is important.

What advantages does the educational park hold over many individual schools?

WOLFF: With the creation of the educational parks, substantial economies are effected through the full-time use of auditoriums, gymnasiums, libraries, science buildings, art and music facilities. In the neighborhood schools, where such facilities exist at all, they are idle facilities such as administration, gymnasiums, buildings on a single site and places over many individual schools? What are the advantages of the educational park? The greatest virtue of the educational park is the educational value received for the investment made. The libraries, music rooms, language laboratories, remedial centers, science labs and athletic fields and facilities that would jointly serve the cluster of classroom units comprising the educational park can incorporate the most modern advances known to educators and architects. The professionals staffing these special facilities will themselves be specialists and all the children will equally receive the most advanced education now obtainable, even in the most favored neighborhood school.

What educational program do you envisage for the educational park?

ROTHMAN: In the educational park, it is essential that children, particularly in the elementary grades, be grouped within each school on the basis of age and social maturity, and not on grade level, achievement or ability. Thus children would not be grouped by first, second, or third grades, but rather by age groups. Five- to seven-year-old children might be considered as one grouping; eight- to ten-year-olds another grouping, and so on. Instructional groups could vary with the group and with the subjects being taught. Some five-year-olds would be studying arithmetic with seven-year-olds, while some six-year-olds might be reading with 11-year-olds. Ability grouping on specific age levels would be completely discounted, for it must be finally recognized that ability groups tend to reinforce segregated groups.

The high schools will be comprehensive in the true sense of the word, offering programs for the extremely gifted as well as the retarded. The curriculum will offer courses in the sciences, for instance, as well as in the automotive trades. In addition, a relatively unexplored area will be added—that of school work programs. The high school would include industrial and work buildings providing many different kinds of setting for legitimate work to be done. For advanced students, the work experiences could be challenging, creative and realistic. For handicapped children, the work experiences could be in the context of a sheltered workshop.

For those children who are in need of very specialized teaching skills—for example, those who have any disabilities—special classes would have to be formed within several school buildings. In an educational park, it would be possible to group these children at need. For example, disturbed children are often not disturbed every minute of the day, every day of the week. They should be able to filter in and out of other groups, depending upon the activity and the setting. Similarly, other handicapped groups need not be isolated as often as they are now. There can be many activities which all children can share and some activities which only some children can share. In this kind of flexible grouping, talented and creative children have a unique contribution to make and a unique lesson to learn. Beginning at this early stage of education they can see themselves as contributors to society. In addition, they can clearly see that children who are handicapped are not really different but only have a different set of circumstances.

The educational park setting would provide a unique opportunity for teacher training. Experimentation in all areas could be carried out and brought directly to the teacher in the classroom. Universities and colleges could correlate their courses to fit into the over-all educational structure of the park for some advanced courses. In this way, the park would truly be a center of learning. The teachers would be students as well as teachers and learning would take place on all levels.

What about adult education and the use of facilities by the community?

WOLFF: The educational park and its excellent equipment can serve as a vigorous center, as diagrammed in Figure 1, for adult community life after regular school hours: for education, training and retraining for new trades and professions, for entertainment and recreation, for art and music and hobbies. Health facilities, a necessary ingredient in every educational park, will serve also the community-at-large. If properly constructed, the educational park will help in responding to the justified demand for more open space in our cities.

Thus, for the parent and for all others in the community—the park can become the focus of community living.

What are the challenges for the architect?
WHAT ARE THE CHALLENGES FOR THE ARCHITECT?

LEO BERMAN: For architects, this educational park concept offers an unparalleled opportunity. They must apply the best elements of school design already in existence, and spare no effort to make the educational park the most imaginative and efficient environment for learning and teaching.

The exciting social and educational goals must be matched by new planning and design approaches. An educational park could easily become massive, impersonal and institutional, while what is needed is exactly the opposite: a building and program in scale with the child and his needs. It should not stand as an ivory tower, but as an integral part of the city, interwoven in the fabric of the community. Its size will almost surely require that the land be acquired through an urban renewal program. If this is coupled with the improvement of the surrounding neighborhood, then the educational park could serve as stimulus for both physical and human rehabilitation.

Each child has individual needs, problems, potentials, all of which can be recognized and attended to only in an intimate atmosphere where the child can identify with the school and be known by teachers and administration. An essential element, therefore, of the educational park would be the home school units, to which 400 to 600 children would be assigned. This would be a significant improvement over present practices in many city schools, where enrollments of as many as 1,500 in elementary schools, and 5,000 in secondary schools, are not uncommon.

Within each home school there would be a number of classrooms varying in size, with enough flexibility to allow for a variety of new programs and teaching methods in the future. For example, it is now recognized that children from slum neighborhoods often require smaller classes for proper learning. Just as important are the more intangible elements not often found in our city schools. They must be friendly, cheerful, imaginative and intimate. The scale and size of the buildings could vary with the age of the children, providing an element of novelty and excitement as they progress from the lower to the higher age levels.

Adjacent to the home schools would be those facilities which are shared by several of them (Figure 2). In the lower grades some of these would be auditoriums, language laboratories, music rooms, gyms and swimming pools. In the upper grades, in addition, there would be shops, industrial arts, science and home economics labs, theater and dance facilities. Besides the greater economies made possible by the better utilization of these specialized activities, they will be designed for their specific use and will not have to serve a multiplicity of functions as is often the case in smaller schools.

Each home school will have its own reading room (see Figure 3), but there will also be a central library and resource center which will serve the more specialized needs of students and faculty, perhaps also be combined with a public library. Special rooms will be provided for research and study program preparation. It will also serve as the center for educational television broadcasts.

While each home school should have a certain amount of administrative autonomy, there will be a central administration and services building (see Figure 4). This is where general policy would be made, and programs like teacher training and student work would be coordinated. It would also provide for social contact between teachers in the various schools.

Food service will be handled from a single large kitchen, thus effecting economies in equipment and purchasing. Hot food will be catered to each home school (see again Figure 3) where as few as 100 children might eat in a commons room. Counseling services and remedial reading programs will also be centrally located, adjacent to the clinic and mental health center, the latter serving the community as well as the home school. A large theater and auditorium, well equipped for stage and musical productions will be used for programs in the performing arts by the schools and visiting groups.

The central facilities which form the core of the educational park might be grouped around an open space which would then become a neighborhood square and park, active both day and night. Dances, club meetings, athletic events, adult education, community meetings, all would contribute to a close relationship between school and community. In the amorphous landscape of most of our metropolitan areas it will act as a visual focal point for the whole district. The impact of such a symbol on the surrounding areas might be significant, helping stabilize the neighborhood, encouraging new housing, and providing a stable anchor for community life.
M.I.T. auditorium roof passes weathering tests

The new lead-sheathed roof of M.I.T.'s Kresge auditorium has weathered over two years of sun, snow and rain without need of maintenance, reports the school's plant engineering department.

The sheet-lead roofing replaced a roofing system of acrylic resin and stone mix over 2-in. concrete fill and 2 in. of insulation. The original installation ran into trouble because of movement in and between the insulation and fill layers, due to changes in weather and sunlight. (The insulation and fill layers were not bonded or secured to the structural concrete.) Eventually the concrete topping ruptured, resulting in cracks up to ½ in. in width.

To solve the problem, the concrete fill was first scored ½-in. deep on 48-in. centers. Then steel studs were anchored in the structural slab to tie the fill to the slab. This fill, although anchored, could crack along the predetermined scored lines. Next a mesh of stainless steel wire was welded to the studs and to itself on 2-ft centers. Finally, 2-ft-square sheets of 6-lb soft lead were slipped into the wire grid and lapped 2 in.; all edges were then welded with a small torch.

Some fresh approaches to environmental research

An English researcher's ideas on what environmental research is and how it should be conducted were presented by Dr. R. G. Hopkinson in his inaugural lecture as Haden-Pilkington Professor of Environmental Design and Engineering in the University of London. Prior to this appointment, he headed lighting research at the Building Research Station.

He pointed out that observations of what people feel about a particular environment (visual, aural, or thermal) is only so much raw material until and unless it can be digested into some basis for design and engineering techniques. The first aim of research in environmental physics, he said, should be to establish building standards based on the psychological and physiological needs of building occupants. The second aim should be to develop architecturally or technically valid technologies for achieving these standards in real buildings. The third aim should be to develop methods of evaluating completed buildings to see whether the standards for subjective reaction had been met. Dr. Hopkinson pointed out that if standards of this kind could be arrived at, the decision as to whether or not to adopt them would become primarily an administrative one. In the face of proven desirability, such matters as cost and individual tolerance to imperfect standards would be weighed.

Although environmental physics has been given an increasing amount of attention both in England and in this country, and a number of research projects have been undertaken, results have been disappointing, perhaps because insufficient thought has been given to translating subjective data into practical design terms. Dr. Hopkinson's work in the lighting field while at the Building Research Station was largely concerned with relating results of the study of the individual with practical lighting technology, which should indicate that his program will have a sound basis.

Destroying buildings for engineering knowledge

While much load testing has been done on structural components such as beams, columns and frames, practically none has been done that tests finished buildings to failure. But next month, this type of testing is scheduled to take place on three World's Fair structures. The three chosen are conventional types, since test information on these obviously will have more widespread application than that of unorthodox structures. Originally suggested by the American Society of Civil Engineers, the project is under the auspices of the Building Research Advisory Board. Planning and supervision of the testing is being done by Jack R. Janney of Wiss, Janney, Elstner and Associates of Des Plaines, Illinois.

The three structures, all in the Belgian Village, include the Rathskeller, which has a 120-by-180-ft waffle slab; Bourbon Street, a 400-ft-long bar joist structure, with spans from 16 to 30 ft, and the Chimes Tower, a 50-ft-high structural-steel framework.

There are four stages to the project:

1. Plans, drawings and specifications.
2. On-site observation of existing stress characteristics.
3. Methodical destruction to test designed stresses, destruction stresses, vibration tolerances, seismic loads, flexure and shear.
4. Laboratory model buildings to reproduce conditions for further testing, accuracy of model testing proce-
tures, and additional research on the effects of the building's composite action.

Only the first three stages, estimated to cost $200,000, are included in the project at the moment.

B.R.A.B. hopes the study will show how well engineering designs are carried out in the field—by testing concrete composition, steel reinforcing placement and other internal construction details. "The contractor, the designer, the component manufacturers, etc. had no idea we'd be tearing apart the building scientifically," says a B.R.A.B. spokesman.

As far as is known, there have been only two previous buildings scientifically destructed after use. One was tested in Africa by clay product interests, and the other was a timber structure from the 1939 San Francisco Exposition.

More industry scientists to do research at NBS

Expansion of the National Bureau of Standards' Research Associate Plan to include two new research projects—one on construction materials and one on fire protection—may have important implications for the building industry. Under this plan, industrial groups sponsor research associates to carry out experiments in an area selected for its interest both to the sponsoring body and to the nation as a whole. The research assistants are paid by industry but carry out their work in the Bureau laboratories in association with Bureau staff.

Two industrial chemists, Dr. William F. Brucksch of the U. S. Rubber Company and Dr. Joseph F. Clark of the Grace Chemical Company have recently been sponsored by the Manufacturing Chemists' Association to study the processes involved in the weathering of plastics. Their work is designed to complement research already under way at the NBS building research laboratory where colorimetric techniques have been devised for measuring the accelerated degradation of plastics.

The other project with implications for the building industry is a study of fire prevention through the use of experimental models in the NBS laboratory. The research associates appointed for this study are Dr. John Rockett and Lawrence Orloff, whose work is sponsored by the Factory Mutual Engineering Division. The aim of this study is to help in designing fire protection systems for large structures such as industrial plants.

An airport design that goes 'round in circles

Tests recently completed by the U.S. Navy indicate that a circular airport may have significant advantages over traditional airports both in safety factors and in the economics of space. The main runway would take the form of a banked track which would form a circular perimeter around the airport. The control tower would be at the very center of the airport, and would have an unobstructed view of every portion of the runway. A circular passenger terminal would in turn form a ring around the control tower, and its outer wall would face the runway, providing a maximum number of loading positions for planes. Taxi-ways and high-speed turn-off ramps arranged rather like spokes on a wheel, would connect loading areas with the runway. The result would be that aircraft would have an infinitely long runway on a much smaller site than that used for conventional airports—even those which now suffer severe runway length limitations.

Test landings and take-offs were conducted by pilots of the US Naval Weapons Evaluation Facility using General Motors proving ground at Mesa, Arizona. Pilots reported that they were surprised by how easily take-off and landing could be accomplished, that the circular runway provided exceptional lateral stability, and that crosswinds were no longer a factor. Other advantages of the circular plan were reported to be that several planes could take-off simultaneously; on a diameter of 10,000 ft, three planes could take off at the same time.

Clean Water Act gets quick industry reaction

The stick—fear of Federal intervention—may prove more effective than the carrot —clean water—in the fight against pollution of our waterways. The powers and intentions of the Federal government as expressed in the Federal Water Quality Act of 1965 seem to be sufficiently strong to convince even those individual companies most resistant to the idea of Federal intervention that the government means business. The Act in effect says that if individual states do not adopt acceptable standards for the quality of interstate waters by the middle of 1967, the Federal government will impose its own standards and see that they are enforced.

The President of the U. S. Chamber of Commerce, Robert P. Gerholz defends his opposition to federal intervention on the grounds that individual effort is likely to be more effective: "I submit that better results will emanate from voluntary and cooperative efforts of municipalities and state governments to conserve and redeem water resources than from programs handled by Washington's many agencies."

John E. Wood, president of Frontier Chemical Company's Division of Vulcan Materials Company, at the 15th annual meeting of the Manufacturing Chemists' Association cited federal intervention as a strong reason for individual companies to assist the states in developing and enforcing acceptable standards: "If we don't elect to do so, we have only ourselves to blame if the standards and the enforcement take on some of the undesirable aspects of a bureaucratic approach."

Three volumes sum up environmental research

Results of a five-year project surveying what is known about the effect of physical environmental factors on the learning process have now been published by Architectural Research Laboratory at the University of Michigan. The School Environments Research Project, sponsored by the Educational Facilities Laboratories, Inc. originally brought out a 765-page volume, entitled "Environmental Abstracts." This volume presented, in lively and highly readable form, condensations of over 600 documents significant in relating environment and human behavior.

The final two volumes in the series are now available: SER 2: Environmental Evaluations and SER 3: Environmental Analysis. SER 2 is a collection of technical papers prepared by the project staff attempting to summarize state of the art. A number of the chapters deal with the physiological aspects of light, sound and heat and how these factors affect some aspects of human performance in accomplishing tasks. But the over-all effect of environmental influences on human behavior appears to be treated mostly in the first chapter on "Interactions of Man and His Environment."

SER 3 is an outline of what the staff believes belongs in environmental research. For example, they include under, "What Constitutes the Learning Environment:" cosmic factors, human factors and cultural factors. SER 1 is $15.00 a copy, SER 2 is $5.00, and SER 3 is $4.00; all are available through the Publications Distribution Service of the University of Michigan, 615 East University, Ann Arbor, Michigan.
Simplicity produces a neat, inexpensive stadium

Not structural gimmickry, but careful use of standard precast elements was the key to the design of a 17,000-seat stadium in Massachusetts.

Attention to detail paid off both in cost and design quality in this stadium for the University of Massachusetts at Amherst. Careful organization of seating, supporting walls and stairs led to the simple and disciplined lines seen in these photos. Further, the architects eliminated clutter by putting ancillary facilities outside the stadium itself: locker rooms and public washrooms are in the long rectangular building, and refreshment stands are in the small circular structures seen in the top photo.

While precast elements have been used for the seating in many recent stadiums, the span here is 50 ft instead of the usual 25. The seating is comprised of modified single-Ts bearing on poured-in-place walls; diaphragms at the ends of the Ts keep them from over turning.

Design of the stadium, which cost less than $100 per seat, was a collaborative effort between the office of Paul Weidlinger, engineer, and the New York office of Skidmore, Owings & Merrill.
Modified Lin T's spanning 50 ft are arranged in an arc to improve sight lines. They are notched in the center to allow for steps, and have diaphragms at the ends to prevent tipping. The diaphragm is shown in section A-A, notching of the T in section B-B. The diaphragm and web of the T are supported on poured-in-place walls as shown in the drawings at bottom of the page. Photo was taken before wood seats were installed.

To provide for expansion of the 50-ft-long Ts, bearing is designed so that the T can both slide and rotate at the free end, but only rotate at the fixed end. The free end rests on a combined pad of neoprene and graphite. The fixed end has only a neoprene pad. Leveling for the Ts is by grout.

The steps were poured after reinforcing had been set. Wood seats of cypress were provided to avoid cold and dampness. Since slope line of the seats get less steep toward the bottom to allow for proper sight lines, the blocking varies in height to maintain same distance from a seat to an aisle.

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**SECTION B-B**

**SECTION A-A**

**DIAPHRAGM**

**PRESTRESS STRANDS**

**LEVELING**

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**1/8" NEOPRENE (7" x 2")**

**WET MORTAR**

**1/8" NEOPRENE**

**SAND-EPOXY MIX**

**LEVELING PAD**

**FIXED END**

**SLIDING END**

**CYPRESS**

**INSERTS**

**CYPRESS BLOCKS, BOLT TO TEE**

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**3 BARS**

**INSERTS**

**18" NEOPRENE**

**GRAPHITE**

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**3 #3 IN FLANGE**

**3 #3 ADDITIONAL**

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**INEXPENSIVE STADIUM**
PLANNING FOR RELIABLE ELECTRIC POWER

By F. J. Walsh, Consulting Engineer

The massive power blackout of last November exposed serious deficiencies in the "fail-safe" reliability of utility networks and systems. As a result, architects, engineers and building owners planning new buildings are asking themselves what they must provide to protect life and limb. The fact that scores of people were trapped in stalled elevators dramatically underscores the inadequacy of present code requirements.

Providing for egress is the minimum that an emergency system should do. Some occupancies require a higher degree of protection than others, so that normal, important building functions can continue. Obviously, in a hospital, the emergency system should provide power and light for operating rooms, diagnostic equipment and patients' life-sustaining equipment and for selective use of any elevators.

This article is concerned primarily with emergency power systems for hospitals, but much will apply to institutional and commercial buildings. It will describe the various systems involved in providing for power continuity, how the reliability of power sources and distribution systems can be judged, and the planning involved in designing for various normal, essential and emergency loads.

The reliability concept

The mistake is frequently made of equating an emergency system with provision of standby power. But overall reliability of power continuity depends on two distinctly separate elements: the power source, and the system that distributes the power.

This holds true whether the system is a utility company, an on-site power unit for a building, or local unitary engine-generator or battery source serving individual loads within a building.

Obviously, power source reliability requires that any generating plant must:

Be capable of being self-started, without reliance on any outside power supply;

Have adequate energy supply under all possible contingencies;

Be capable of continued operation and generation of power, even though there may be disturbances within the distribution system. For example: In a power supply system, surges which occur for various reasons such as failure of a generating plant or a large supply line are all reflected back into each generating plant through the distribution system.

Design for power-distribution-system reliability is becoming increasingly complex particularly because building systems are using more power fed from higher-capacity utility-company network systems. The trouble is that utility networks are allowed to continue to feed into building systems which have become obsolete and hazardous. Building owners are not required to up-date their electrical systems since codes are not retroactive.

Thus to make sure a distribution system is highly reliable will require:

a. Proper system design and proper application of all equipment, with periodic updating and re-thinking through how the entire system operates;

b. Proper operation; and control of power use with suitable instruments and recorders;

c. Proper maintenance, testing and replacement of system elements and components.

The Federal Power Commission report of December 6 points out, surprising as it may seem, that prior to the blackout of last November, most power companies did not have standby power for their individual generating plants to assure power source reliability. This was the principal reason for the long delay in return of power, as in the case of New York's Consolidated Edison system. Also, the FPC report indicates that various of the other criteria stated above are still inadequately met. One utility company executive was quoted, anonymously, in the New York Times, as saying "it looks as if we'll have to re-think our system."

Undoubtedly, the immediate steps being taken by electric utility companies to correct obvious inadequacies will limit any possible future blackout to a much shorter period. While reliability problems eventually will be solved, repetition of the same type of chain reaction power failure is still possible.

The November blackout involved a failure in reliability of both power distribution systems and power supplies of the utilities, with resulting complete failure of power supplies to owners' distribution systems. By and large, electrical systems for new buildings are designed only with standby provision against the single contingency of failure of utility company power supply, and not for continuity in case of faults in the building's distribution system.

Working out the nature and extent of provisions needed to assure continuity of power in a hospital can be complex. The reasons: the critical type of occupancy and the fact that hospitals are subject to many more regulatory agencies and code restrictions than other buildings. Logical planning must take into consideration all types of possible failure, internal and external; the extent of possible damages; and evaluation of the probability of simultaneous failures.

State and municipal codes and ordinances now require separate power distribution and supply systems to provide lighting necessary for egress and power for various alarm systems in places of public assembly and hospitals. These segregated systems are termed "emergency systems" and are intended to function regardless of main service and switchboard failure caused by internal building fire or other disruption.

Continuity for a hospital

In practice, a hospital in almost every case would be served through two utility company transformer vaults, separate service switches, and separate switchboard rooms. Present minimum design standards would call for automatic throw-over of emergency power supply in the event of failure of power supply at a single service entrance point.

This arrangement, its basic form, represents the minimum called for by the National Electrical Code. (Electric power supply from batteries is also considered as an alternate.) The trend, we must assume, will be a general upgrading of these requirements to include additional on-site standby power.

The design of segregated systems should allow for the inclusion of obvious loads beyond the mandatory loads called for by code. It is a matter of judgment and economics whether other loads are best served by additional segregated systems, through the normal electrical distribution system, or by some other means such as local batteries. Loads to be considered include: diagnostic equipment; essential refrigeration, fans and sump pumps; elec-
Electronic equipment for central record keeping and for patient monitoring.

Power sources—how reliable; how fast a start

Utility company supplies: Some possibility of complete outage must be presumed, regardless of the number of separate utility company services from different substations.

Power supplies from stored prime energy sources: Various energy sources can be converted directly to electric power; or converted readily through an engine driving a generator, without the need of auxiliary power or energy for start-up. Examples: battery power, stored compressed air or steam.

Prime energy from district steam utility. A highly reliable source for operating pumps, refrigeration compressors, etc.

Battery source power is immediately available if batteries are charged. Today's battery systems have greater capacity and reliability, and more flexibility in utilization. Alternating current can be produced by solid-state current inverters. Both lighting and motor loads can be served.

Internal combustion engine generator plants require auxiliary power for cranking over the engine, or, in the case of the gas (spark-ignition) engine, electric energy for the spark. Both types of engines are capable of self-sustained operation at a small fraction of their normal operating speed. Compressed air or a battery-energized electric motor is used for starting. Engines can be started within a few seconds, as long as they are kept warm.

Gas turbine generators require an auxiliary power source to bring the turbines up to speed and to provide power for compressing the combustion air at operating speed. The gas turbine is not capable of self-sustained operation until it is brought almost to full speed. Where the fuel supply is gas, and the gas supply is not from high...
pressure mains, gas compressors and a high-pressure gas storage tank must be provided. Light fuel oil or bottled gas also can be used. Required starting time would vary from perhaps 10-15 seconds for a small unit to one minute for a unit on the order of 750 kw. As with all turbine-type heat engines, starting problems and relative need for attended start depend on size and degree of complexity of the unit. Start could be by battery-energized starting motor.

With a steam plant, the operation of the entire plant depends on the continuous generation of steam at adequate pressure. Steam boiler plants depend in varying degrees on an adequate supply of auxiliary electric power for start-up. Once a plant is in operation, energy for plant auxiliaries can be steam or electricity. Some hospitals have their own steam power plants with partial on-site power generation, but rely on the utility for all additional power. Where the present steam plant is not used to produce electric power, this should be considered. Since district steam companies are usually owned by electric utilities, they do not permit steam use for on-site generation.

An emergency steam-engine-driven generator, whether of the reciprocating or turbine type, would have to be of the simplest design for building application and would be an adjunct to a basic boiler plant. Reciprocating engine units can be started, regardless of size, in about 10 minutes. Small non-condensing turbine generators of about 50 kw size can be started in the same time. Turbine units of 1,000 kw might take as much as an hour for a safe start. Start-up of steam units requires an operator. Units can be kept “on the line” with a minimum load, but operating cost is excessive unless all steam exhaust can be used.

Emergency stand-by power vs. an on-site electric power plant

There are three factors to evaluate: Start-up time factors. Regardless of a
hospital's normal electric power source—utility company or on-site power plant supply—code requirements covering critical lighting and power loads demand that this electrical load be reenergized within 10 seconds.

In some cases, back-up electric battery power for critical light and power could be combined with steam-engine-generated electric supply to satisfy the time criterion.

All types of internal combustion engine generator units, as well as smaller gas turbine generator units, are capable of starting and taking over load within the 10-second limitation mentioned.

**Reliability of service continuity.** Where a power plant is used for emergency stand-by service, it must periodically be run "hot" (under adequate minimum load) to avoid the harmful effects of low-capacity operation common to all types of engine equipment. N.F.P.A. Bulletin 76 of 1962 indicated a 5 per cent possibility of emergency generator set failure to start.

Obviously, one way to increase plant reliability is to increase the number of units handling the load. This is mandatory for on-site power to allow for scheduled down-time. The increased operating hours of on-site equipment reduces its relative reliability compared to that of the same equipment reserved exclusively for stand-by power.

Partial on-site generation operating continuously year-round could be used to handle all electric loads above a firm base load, with possible over-all savings. This equipment could also serve as stand-by. But provisions would have to be made for gradual shifting of load from one source to another and "dumping" part of load normally handled by the on-site plant.

**Combined usage.** Since an emergency generator is conceded to be mandatory for hospitals, this equipment might be considered for multiple uses to improve over-all economy. Also worth

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**BEEMAN-DOWNTOWN HOSPITAL:**

**EMERGENCY WIRING**

Above: original segregated wiring system for handling mandatory emergency load. Below: modified emergency and normal service wiring system. Emergency standby system has full capability for handling any desired load anywhere in the hospital.

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considering: the value of recovering rejected heat from engine jacket water and exhaust gases. An example would be a dual-drive for compressor and/or generator, with normal refrigeration compressor load dumped when emergency stand-by electric power is required.

This arrangement is also possible when a steam-turbine-driven compressor is used. Its disadvantage is extremely slow start-up when the centrifugal compressor is not already being run for air conditioning. This arrangement would be more practical when the compressor is used in a central heat pump installation, with compressor running year-round, or when there is a continuous year-round demand for all the exhaust steam.

Quality of electric current supply
Utility company electric current supply—in terms of voltage, frequency stability and waveform characteristics—is almost impossible to match with power produced in an on-site plant. For example, only the tremendous energy capability available from utility-company supply feeders and networks allows the starting of large size motors on customers' premises without voltage dips.

Further, technological advances in electric generator and voltage regulator design render almost obsolete much of the equipment used in on-site plants as little as 15 years ago. This is particularly true of the electrical equipment available for matching with the new high-speed internal-combustion engine-generator sets designed to meet very precise requirements of the military. This means that continuous normal operation is feasible for any size facility requiring precise power supply (for example, a laboratory, parts of a hospital, or computer installation).

The starting point for design analysis of any emergency stand-by or normal on-site electric power is to establish the necessary minimum current charac-
teristics which will allow satisfactory operation of each load served. For this reason, the engineer cannot simply take a packaged engine-generator set off the shelf, based on its ability to perform according to the minimum requirements given in a code.

Where a few small loads require very precise and stable power it would be advisable to utilize stabilizing type regulators rather than to use two different engine generator sets with the one of these sets being reserved to provide precise power for steady power loads, lighting, for example.

Sudden power demands
Provisions to allow for increased electric power demand from an emergency standby plant can be relatively simple, if it is reserved strictly for this purpose. This is less true where the plant is also used for partial on-site electric power generation, or is normally used to provide power for air conditioning.

Design of the standby generator plant must consider normal maximum surge current demand, both from intermittently cycled motors serving pumps and compressors, and from elevator motors. The nameplate rating of the generator cannot be exceeded by more than a small amount without a marked falling-off of total energy capability, with excessive and unpredictable falling-off in voltage. The instantaneous voltage dip caused by maximum instantaneous surge current will depend upon inherent generator voltage regulation. For instance, it should be expected that a 20 per cent voltage dip would result from an instantaneous load application of 100 per cent of generator rating. Thus, limiting any voltage dip to 5 per cent for an occupancy such as a hospital would necessitate sizing the emergency generator plant at at least four times this surge value. Plant capacity to handle the accelerating current of one 400 h.p. elevator motor generator set would be in the order of 300-400 kw.

Power supply and internal distribution for a typical downtown building
For simplicity, the reliability diagrams shown on page 189 are limited to buildings served by the most reliable type of utility company supply—a network grid system in a downtown metropolitan area, on page 188.

In these installations, the engineer is concerned almost exclusively with the protection and clearing of electrical faults involving: (1) main service switchboard and protective devices; and (2) main switchboard switching and protective devices, and their associated feeders, interconnected copper bus and equip-

ment enclosures. A typical basic service and distribution installation is illustrated in the large sketch on page 188.

Actually, most electrical failures—excluding those which are purely accidental in nature—could be prevented. However, achieving such reliability would require replacement or upgrading of much obsolete electrical equipment; improved maintenance, test and power-usage-control procedures; and a knowledge of the limitations of existing equipment and engineering design guides.

Emergency systems
Emergency electrical distribution systems, are those mandatory systems which are absolutely essential to maintain or protect life or health.

Lighting for safe building egress and lighting and power for equipment and tasks immediately essential for protecting and maintaining life or life processes (such as in a hospital) constitute a relatively small power requirement. For an occupancy such as a hospital, portions of which must continue to function as close to normal as possible, return of full power to most elevators must be almost immediate, with delayed return of power permissible for many of the other essential functions.

Power to certain critical fans, pumps, heating system components, etc., might be considered indirectly in the emergency category, regardless of occupancy type.

The segregated emergency systems designated “E,” in the “power reliability evaluation diagrams,” refer to minimum basic and absolutely essential code or regulatory emergency systems.

Increased reliability results from addition of an emergency standby power plant—as illustrated in the diagram showing a typical installation. There are many possible modifications. For an existing building requiring a considerable number of loads to be served in addition to minimum essential emergency loads, re-wiring costs could be excessive; feed through main switchboards with selective load dumping would prove more practical.

While it is the consulting engineer’s responsibility to design for a particular degree of reliability, he does not have a free hand in this matter. First of all he must be guided by certain code and regulatory authority requirements. Secondly, he must be guided by the owner’s evaluation of the essential operating loads to be served, and of the amount of time outage allowable for each load. Then the engineer will make an independent review of the loads, particularly with regard to possible future additions to the emergency system, and to maintenance of essential mechanical loads such as sump pumps.

Regardless of building type, there are no adequate “design guides” on emergency standby power plant design or electrical distribution system wiring.

Architects and consulting engineers working on hospitals are familiar with the recommendations of N.F.P.A. Bulletin 76 of 1962, “Essential Electrical Systems for Hospitals.”

This bulletin was excellent in many respects, particularly for its evaluation of the relative critical nature of the electrical loads to be served and for its specific recommendations on operation and maintenance. But this bulletin and its 1965 revision more or less ignore the practical aspects of over-all electric system design reliability and economics. Also no distinction is made between power source reliability and distribution system reliability. The 1962 edition called for extensive segregation of electrical systems and left little to the discrimination of the consulting engineer and the hospital administrator. The 1965 revision has been modified extensively to make most recommendations optional rather than mandatory.

Design for a New York hospital
The emergency standby power installation for the 200-bed Beekman-Downtown Hospital in New York City, A. Gordon Lorimer, architect, is unique in terms of over-all basic concept and in certain important design details. The system, designed by the author, and put into operation in 1963, is designed for ultimate reliability through automatic paralleling of engine-generator sets and for very high quality power through the use of modern voltage regulator equipment. Upon failure of power to the normal utility service feed, two 200 kw engine generator units are started simultaneously, paralleled and are ready to take load within 10 seconds.

The standby power was fed through the main switchboard which minimized rewiring costs and allowed complete flexibility via selective use of facilities. Such arrangement gives complete freedom in hospital planning and future relocation of facilities.

The Beekman power plant design is, in effect, a simplified version of the multiple unit power plants installed for the Project Mercury and Gemini tracking stations. The consulting engineer now has at his disposal highly advanced generator and voltage regulator equipment for small internal combustion engine-generator application, primarily as a result of requirements set by the military about 10 years ago.
DRAMA in architecture beautifully serves drama in the performing arts: for the new Fine Arts Center at the University of Oklahoma, Tulsa architect A. Blaine Imel selected a slender steel Fenmark grid system to carry the grayed glass of the foyer; and cellular steel longspan "D" panels for the floor and roof. A contemporary classic utilizing all the advantages of the latest structural systems by FENESTRA. A representative will call at your request. Fenestra Incorporated, Lima, Ohio 45802.
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- **Vapor Permeability:** 25 Perms @ 73° F. and 51% Relative Humidity
- **Concentration Load Indentation:** 1/16” @ 77 lbs.
- **Compression Resistance:** 185 PSI (50% Consolidation)
- **Fungus Resistance:** Complete
- **Flame Spread:** 25 (Non-combustible)
- **Smoke Developed:** 5
- **Wt./Sq. Ft./1” Thick:** 0.8 lbs. Approx.

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Minimizing cracks in on-grade slabs

By William C. Perry, Kalman Floor Company

Cracks in concrete floors is a subject that is increasingly important to owners of industrial buildings. First, the edges of cracks often deteriorate rapidly as they are pounded by materials handling vehicles. Second, a cracked floor is difficult to keep clean, and in food plants, for example, sanitary standards cannot be met unless the cracks are repaired. Third, cracks detract from a plant's well-kept appearance. While they can be repaired, the disfigurement remains.

What can be done to eliminate or reduce the number of cracks in concrete floors? Fortunately, the precautions do not involve overly complicated installation procedures or design requirements, because the two basic causes are easily pinpointed. They are (1) dimensional stability of the concrete; and (2) stresses induced into the concrete from adjacent structural members.

However, two qualifications should be made: Crack-free concrete surfaces cannot be designed and installed with success guaranteed; despite the best efforts by all concerned, some cracks may occur. A crack-free surface is desirable; but in many industrial plants a few small random cracks are not important. Some cracks are only "cosmetic" in nature. Others are thicker and deeper — sometimes extending all the way through the cross section of the slab — and these almost certainly will produce trouble.

Since most industrial buildings today use slab-on-grade construction, this article deals only with that type of construction. Structurally reinforced slabs are of a different nature and are influenced by several factors not present in the ordinary slab-on-grade.

• The first area of potential trouble is the sub-grade itself. This is so obvious that one hesitates to mention it — yet it is so often overlooked that one must mention it. The on-grade concrete floor is no better than the grade on which it is placed, for if the soil subsides or expands, the floor on which it is placed will inevitably crack.

• Concrete shrinkage, however, is probably the most important factor affecting slab-on-grade cracking. Shrinkage occurs as the slab loses the water which is in excess of that which the cement can use during hydration.

Shrinkage actually takes place in two steps. It first occurs during the "initial set" while the concrete is relatively plastic. Stress induced from this cause seems largely absorbed. Some small amount of stress, short of that needed to crack the slab, undoubtedly is induced by setting shrinkage. (In unusual temperature and quick-drying conditions this phase of shrinkage will actually cause cracks, during final set.)

The next stage of shrinkage is caused by drying of the slab. Drying shrinkage starts when curing is ended and the escape of water from the concrete is no longer prevented. It takes place over a long period of time, most rapidly immediately following the termination of curing. Under continuous drying conditions it is generally considered to be about 80 per cent complete at the end of a year.

Thus, the ill effects of shrinkage may not be seen for some time. If no other complicating factor were present, even this stage of shrinkage would not cause cracks. If the slab were free to move, no stress would be induced (see figure 1).

But a complicating factor in this process is sub-grade drag. The natural inward movement of the slab caused by shrinkage is resisted by the friction set up between the bottom of the slab and the top of the sub-grade. When the stresses set up in the concrete exceed the tensile strength of the slab, a crack develops (see figure 2). It is this factor which makes drying shrinkage the real culprit in causing cracks in slabs on grade. If the slab could be placed on a friction-free surface, unrestrained, no tension would build up and no cracks would occur. A patented process involving zinc sheets under the slab takes advantage of this in the construction of skating rinks.

• The most important factor affecting shrinkage is the volume change resulting from high water content. Without controlling this factor, other provisions cannot produce their maximum effectiveness. In fact, it is safe to say that without adequate water control, other crack control provisions are worthless.

Only 2.8 gallons of water is needed to hydrate each bag of cement. But the average 3,000 psi ready-mix concrete will have in the order of 5.5 gallons of water per sack of cement in 2- to 3-in. slump concrete. The extra water is needed for workability.

As this free water escapes by evaporation, concrete shrinks. The shortening can be as much as 3/32 in. in 100 ft.

A maximum slump of 3 in. is not unreasonable and certainly reduces shrinkage noticeably compared to concrete placed with higher slumps.

While it is impossible to be exact in this matter, experience indicates that above 3-in. slump, excessive shrinkage cracking can be anticipated.

• Other factors which must be taken into account are: aggregates, cement content, curing, and temperature. Coarse aggregate should be increased as much as possible and, ideally, the sand fineness should be lower than 30 mesh. The reason is that as the coarse stone content is increased, the ability of the mix to shrink will be diminished because the stones themselves in contact with each other will make it difficult for the mass to move.

The value in reducing the sand fines (for this discussion anything below 30 mesh) is that the smaller particles con-
tain more surface area for a given volume of materials. This, in turn, necessitates an increased quantity of cement paste, and, therefore, an increased quantity of water—all of which increases the stress build-up when the slab begins to dry after curing.

In addition, both fine and coarse aggregates must be as dense as possible. Otherwise, the aggregate will contain some shrinkage will have taken place in the topping itself.

But because of the general assumption that the higher the compressive strength the better the floor, extra cement often is used as a safety factor to make sure the floor will be as strong as it should be. Unfortunately, the results are sometimes the reverse of what is hoped for.

When an “extra bag of cement” is used without regard to other factors, excessive cracking often appears because cement is also a factor affecting drying shrinkage. This is not to diminish the value of cement in obtaining good surfaces. For years, we have used a 12-bag mix in deferred toppings; but the aggregate design and water control is such that it can benefit by this high cement content.

Temperature of the mix itself is often not considered, except for winter placing, but in terms of dimensional stability it can be quite important. If concrete of high temperature is placed, as during the summer, the base dimension is increased since heated materials expand. Thus, the shortening of the base dimension involves not only the change due to drying, but also an additional change as the slab temperature drops with lower ambient temperatures. The additional slab shortening due to temperature drop can significantly affect floor cracking. If concreting must be done when the temperature is high the concrete should be cooled to a temperature at least as low as that of the sub-grade.

If a deferred topping is used, shrinkage cracks in the surface can be further minimized. There are two reasons for this:

First, since the surface is deferred, it is not, normally, installed until the base slab has hardened. This means that some shrinkage will have taken place in the slab. Therefore, the stresses normally put into the surface from this cause will not be present. The only shrinkage of note then will be that caused by the topping itself.

Second, since deferred toppings can be installed with a higher percentage of aggregate and with adequate water content, shrinkage will be minimal. Naturally, if the base slab cracks after the topping is installed, the topping will also crack.

Thus, despite the greatest care in slump, concrete temperature, aggregate, cement content, even during the most desirable weather conditions, shrinkage may still occur. And cracks almost certainly will develop unless some provision for shrinkage stress control is provided. There is yet another precaution:

- Stress relieving joints should be placed in the floor to “prelocate” cracks.

In general, the panels so formed should be square. An excessive length-width ratio (more than 1 1/2 to 1) will almost surely result in a crack, normal to the long axis, in the middle third, regardless of block size. Naturally, the smaller the panels, the less likelihood of shrinkage cracks occurring. But if very small panels are cast, the result may well be a surface with an undesirable number of joints.

According to the Portland Cement Association, and others, it is desirable to limit spacing between joints to the 20- to 30-ft range and we believe this recommendation is soundly based for average construction procedures. With above-average design and construction procedures, joint spacing can be increased to 40 ft with only slight extra risk of random cracking.

- There are two methods of creating these panels—the checkerboard method and the strip-pouring method. While both produce the panel size desired, the strip-pouring method holds the most advantages. Checkerboard, or alternate bay, placing is so named because each bay is poured independently of its neighbor. Neighboring bays are not cast until the adjacent bay has been in place for 24 hours or more.

The thought behind the checkerboard method is that by pouring one bay at a time, shrinkage stresses will be lessened because of the complete separation from the adjacent bay. This result is obtained. However, by casting the bays in this way, an abnormally large number of construction joints are formed—actually twice as many as would be formed in the strip-pouring method. This is not desirable. Construction joints are to be avoided wherever possible because of their vulnerability to rapid deterioration under traffic. Construction joints should never be allowed to intersect, but should always be on column centerlines, in buildings with normal column spacing, for the point of intersection will be highly vulnerable to damage.

There are several reasons for this:

1. One is the problem of slab curl. When drying shrinkage occurs, the shrinkage develops initially on the surface and only later on the remaining portion of the slab, because the surface is exposed to the air before curing protection is applied and after that protection is removed. This produces a tendency for the top portion of the slab to pull slightly, raising the edge. When this happens—and it happens much more commonly than is usually thought—it seldom raises both sides of the joint the same amount. The high side is more vulnerable to impact.

2. Any joint formed by bulkheads has a tendency to be weaker than the rest of the floor. This is because the float and trowel machines are round and are not as efficient at bulkheads as in the rest of the floor. Hand troweling of the edges—and a lot of it—is the only way to strengthen these edges properly.

3. Bulkhead construction joints cost more than saw-cut contraction joints.

Figure 3: weight is uniformly distributed at (1), but at construction joint (2), where no load transfer exits, slab edge is depressed.

Figure 4: a concrete key works at first, but fails to distribute load as the slabs pull apart.

Figure 5: steel dowel continues to distribute load even after slabs shrink and pull apart.

continued on page 204
Wall-mounted contemporary lighting

These plastic and metal indoor lighting fixtures are part of a coordinated line of indoor and outdoor wall units featured in a recent series of catalogs.

The metal half-cylinder is particularly useful for closets and for lighting shelf areas, and can be mounted vertically as well as horizontally. The shield is available in polished chrome, matt black or white finishes in four different sizes and can be used with 60-, 75- or 100-watt lamps depending on the size of the unit.

The cylinders are made of translucent plastic and/or metal, can be tilted 45 deg. in all directions and rotated 355 deg. Metal hardware is available in polished brass, polished chrome or matt white. Outlet box or wall pinup attachments are supplied.  Habitat Inc., New York City.  Circle 300 on inquiry card

Small floor lamps

The “Tin Hat” and globe floor lamps shown here have an over-all height of 53 in., which makes them particularly suitable as arm-chair reading lamps. Both are for use with 100 watt bulbs.  Koch and Lowy Inc., New York City.  Circle 301 on inquiry card

Fluorescent lens for vertical surfaces

A new prismatic lens specially designed for lighting murals, facades, control panels, wall-mounted exhibits and other indoor and outdoor vertical surfaces is made of injection-molded acrylic plastic and can be supplied in sizes up to 9 in. by 47 in. Correct transverse positioning of the lens can direct light at any oblique angle between zero and 15 deg. Various degrees of light concentration can be achieved by proper adjustment of the lens elevation. Oblique distribution is obtained by means of longitudinal prisms molded in the face of the lens. Transverse flutes in the back of the lens keep brightness low, give a uniform appearance and serve to shield the lamps.  Holophane Company, Inc., New York City.  Circle 302 on inquiry card

...and a new quartz-light fixture

Designed for use with the 1,000-watt, T-6 quartz iodine lamp (right) for general purpose floodlighting, this new fixture features a hinged rear lamp housing so that lamps can be quickly and easily changed. The lamp can operate in any position and realign itself.  Shalda Lighting Products Company, Ardsley, N. Y.  Circle 303 on inquiry card

more products on page 208
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For more data, circle 101 on inquiry card
CONCRETE DESIGN / A series of technical advertisements giving detail drawings and recommended uses for different types of concrete construction has been reprinted in the form of a loose leaf folder of structural data sheets. Among the subjects covered are: concrete floor joints; concrete slab design; prefabricated balconies; hyperbolic paraboloids; dome shell roofs and a number of other types of roof construction; demountable classrooms; exposed aggregates; and reinforced concrete columns. * The Portland Cement Association, Chicago, Ill. Circle 400 on inquiry card

CERAMIC TILE / A 16-page brochure gives colored illustrations of the different designs available in the Contour CV line of 12-in-square decorative tile modules. A brief note is also included on the work of the design team (directed by Millard Sheets) which was responsible for the unusual handcrafted effect. * Interpace, Los Angeles, Calif.* Circle 401 on inquiry card

EXPOSED STEEL DESIGN / A quick reference handbook designed to acquaint architects with the latest advances in this field gives information on the whole range of steels available for exposed application in painted or unpainted state. The booklet, "Exposed Steel Architectural Design Details," is in looseleaf form and is divided into seven basic sections dealing with: general history of use of exposed steel; fire protection; availability; bare steels; fabrication and erection of unpainted steel; finishing and painting specifications. * United States Steel Corporation, Pittsburgh, Pa.* Circle 402 on inquiry card

LAMPS AND LIGHTING / Some 250 contemporary lamps and lighting accessories are illustrated in a new 60-page catalog. Many of the designs shown originated in Europe; of particular interest are a collection of lamps by Raak of Amsterdam and a series of colored glass pendants from the furnaces of Vetriera Vistosi on the island of Murano. * Koch and Lowy Inc., New York City. Circle 403 on inquiry card

PLYWOOD FOLDED PLATES / This type of glued roof construction is the subject of a well produced 24-page booklet. Span tables for spans from 24 to 100 ft. cover six different plate slopes from 20 to 45 degrees and eight bay widths from 7 1/2 ft. to 22 1/2 ft. Connection details and refinements for design modifications such as wing panels and overhangs are included in the roof systems described. Stages in the design assembly of the plates are explained by means of a series of detail drawings. * American Plywood Association, Tacoma, Wash.* Circle 404 on inquiry card

INFRARED HEATING-LIGHTING / A collection of application data sheets is designed to give comprehensive information on some of the most popular commercial and industrial uses of electric infrared fixtures. Each data sheet includes specifications, photos and diagrams showing fixture, wiring and mounting techniques required to produce heat and light in specific situations. Data on the information sheets is based on studies of actual installations. * Luminator Inc., Plano, Tex. Circle 405 on inquiry card

DATA ON CEILINGS / Up-to-date information on the Cel-o-Flow acoustical, air distributing ceiling system is given in a series of three booklets. One booklet contains product description and guide specifications, the second covers design application, and the third gives details of a series of air dispersion tests. These tests were conducted to compare the downward penetration of air through Cel-o-Flow perforated tiles and conventional slotted ceiling material. * The Celotex Corporation, Tampa, Fla.* Circle 406 on inquiry card

ARCHITECTURAL METALWORK / A wide range of components for metal railings, curtain-screens and trellises is displayed in a 40-page catalog. Detail drawings and renderings of assembled units are included as well as dimension tables and written descriptions where necessary. * Julius Blum and Company, Inc., Carlstadt, N. J.* Circle 407 on inquiry card

KITCHEN PLANNING STANDARDS / To assist kitchen planners to keep pace with the development of new standards, this publication offers a scoring system for counter and storage space and arrangement, which enables plans to be tested before building or remodeling is undertaken. The scoring system also allows for the detection of weaknesses in existing kitchens. New standards recently introduced by the Building Research Council take into account more frequent use of the dishwasher in conjunction with the growing popularity of built-in surface cooking units and an increase in the number of small appliances in common use in the kitchen. Price 15¢ from * University of Illinois Small Homes Council, Building Research Council, Urbana, Ill. Circle 408 on inquiry card

NEW TYPE OF DOOR HINGE / Roton Continuous Hinges, which run the full length of the door and have the appearance of an architectural trim rather than a conventional hinge, are described in a foldout brochure. Advantages of the new hinge are said to be high load-carrying capacity; ease of installation and maintenance; elimination of danger of finger catching; and built-in weatherproofing, sound-proofing and light-proofing qualities. Details of installation and operation are set out in two supplementary booklets. * McKinney Sales Company, Scranton, Pa. Circle 409 on inquiry card

ARCHITECTURAL GLASS / Different kinds and applications of laminated glass are discussed in a 12-page booklet, which includes photos of installations, and charts and tables giving details of sound and heat transmission. Among the six types of multi-purpose laminated glass discussed in the brochure are Acousta-Pane which is said to stop sound without obstructing vision and Frost-Lite, a new laminated white-tinted glass that combines opacity with a high level of light transmission. * Amerada Glass Corporation, Elk Grove Village, Ill.* Circle 410 on inquiry card

*Additional product information in Sweet’s Architectural File

For more information circle selected item numbers on Reader Service Inquiry Card, pages 273-274

ARCHITECTURAL RECORD February 1966 201
OPEN INVITATION TO ARCHITECTURAL ELEGANCE
The strength of lustrous stainless steel eliminates the unnecessary, unsightly bulk that obstructs natural light. Its warp-resistance keeps doors and frames perfectly aligned and snug-fitting, so heat stays in and weather stays out. Its rugged resistance to forcible entry stops intruders, adds maximum security. And of course, its resistance to corrosion and marring means minimum maintenance.

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Now—as the result of new fabrication techniques—slim-line doors and entrances of stainless steel are available from stock at a price that puts them within reach of every architectural budget. Contact the manufacturers credited above for detailed information on stainless doors and entrances. Write to our Architectural Services for further information on stainless steel.

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For more data, circle 102 on inquiry card
Strip pouring, by comparison with the checkerboard system, reduces the number of construction joints by half. The division of the strip into relatively square blocks to minimize shrinkage stress build-up is achieved by creating stress relieving joints, about one-fourth the slab thickness in depth. (For a rough slab these joints can be created with a chisel or T-bar—providing a straight line is created; for finished surfaces the joint usually is created by sawing.) When shrinkage stress builds up, the stress will accumulate at this built-in plane of weakness, resulting in the opening-up of some, or all, of the concrete beneath the cut. This opening will be irregular, however, causing an aggregate interlock between the sections. Thus, the joint will hold itself together in the vertical plane.

- Because of the moving loads in any industrial plant, any two adjacent slabs must be together, or will move independently of each other as loads move across the construction joints. If adequate provision for the transfer of this moving weight is not made the following deficiencies may result: edge raveling, a hollowing-out of the earth foundation beneath the joint, and eventual cracking of the slab several feet behind the joint.

- There are two designs normally used to transfer moving weight evenly into the floor at a construction joint. The keyed construction joint is the traditional weight transfer mechanism. This joint is created by inserting a beveled piece of wood on the wooden bulkhead to create a depression in the side of the construction joint. This depression is then filled in by the next day's pour, thus, in theory, "keying" the pours together. But the joint rarely remains tight. As the slabs shrink, the key loses contact with its matching recess. Then, as a weight moves over the joint, the slabs move. There are, therefore, inherent drawbacks to this design (see figure 4). Further, the upper lip of the key is quite often broken-off when the bulkhead is stripped.

The other method of providing for weight transfer, seems to perform its function better and has a greater factor of safety in heavy service. It uses steel dowels—3/4-in. round by 12-in. long, and placed on 12-in. centers. This design ties the adjacent slabs in the vertical plane but allows free movement in the horizontal plane. Less steel has been successfully used for lighter loads. By greasing the dowel, the slabs can move freely in shrinkage and yet the joint opening is never wide enough to cause the row of dowels to bend (see figure 5).

- Reentrant corners are the designer's nightmare when trying to produce a floor with as few cracks as possible. A reentrant corner, of course, creates a notch or indentation in the field of the floor. It is, therefore, the place where stresses will concentrate. Since these are natural areas of stress concentrations there is no way to avoid a crack (except by being lucky) unless stress relieving joints can be run off the point of the reentrant corner. If this is not possible then a series of, perhaps, three bars (deformed) placed in the slab at a point off the corner will hold the crack together when it develops, and, possibly (again if one is lucky), this reinforcing might prevent the crack.

It is obvious that crack control in concrete floors demands attention to many details. Yet the details are far from overly complicated. But the most that can be hoped for is crack control and not crack prevention.
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Much more than a specifications guide, this important manual pinpoints coating problems by material, location, use and service conditions. Then--it pinpoints the answers including recommendations for Rust-Oleum coating systems, surface preparation, application, short form specifications and a selection of almost 150 color standards.

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ARCHITECTURAL RECORD  February 1966  205
If this tile could talk it would probably say

It's been dumped in steam at 100 psi, soaked in boiling water, measured more ways than a beauty contest winner, peered at for visual defects and given a thermal shock test for good measure. In all, it's gone through 11 tests to make certain that it's good enough to bear the mark "Certified Tile." All part of a program by the Tile Council to provide you with a positive way of getting the qualities you look for in ceramic tile.

"Certified Tile" meets the highest standards of the industry as determined by independent laboratory testing and carries this triangular certification mark. You can rely on it.

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Only Troy offers the exclusive fused rubber-steel "sandwich" design. These isolators completely eliminate bulky steel springs and hefty hydraulic shock absorbers. Actually there are no moving parts at all, and no lubrication or maintenance. Depend on the free-thinking people at Troy to find the best way out of a shaky situation.
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- I have Chromalox 180M Manual but it needs updating.
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See what we're cheering about. Hold your own Simmons Pep Rally soon. We'll bet you hold another in 1986.

Free! Attach this ad to your letterhead for our new Work Saver portfolio of acetate overlays. It will make your specification of built-in furniture easier and faster.

Pep Rally 1966

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Here is yet another example of how the architects, by "designing with copper in mind," created the unusual without sacrificing the practical.

Copper does exactly what they wanted it to do, esthetically as well as structurally. Because of its richness, color, texture, and its maintenance-free characteristics, copper, in terms of the form of the building, was the most appropriate material to select. And, in order to emphasize the various changes of planes of the roof, the batten seam form of construction was used.

Yes, you can do so many more of the things you want to do when you "Design with versatile copper in mind."

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Provides one of HOUSTON'S most modern apartment buildings with water at constant pressure at constant speed at all fluctuating demands.

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Typical installation photo of a Uni-Pressure System illustrates the compactness of a type II System. This equipment is designed to provide a maximum of 150 GPM and a system pressure of 83 psi.

Owner: The Lumbermens Company, Austin, Texas
Mechanical & Electrical Engineers: Bovay Engineers, Inc. Houston, Tex.
Structural Engineers: Heinzman & Clifton, Washington, D. C.

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*Patents Pending

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Flintkote translates engineering ingenuity into action. Now in two significant developments you get the finest quality roof deck ever made: (1) in longer planks, providing lower in-place cost of application directly on joists, and (2) in the application of INSULROCK tile and the ingenious new DUAL TEE Sub Purlin.

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No. 943—Back mounted double fitting with vacuum breaker. Gooseneck spout can be rigid or swing type.

The Chicago Faucet Company
2100 S. Nuclear Drive, Des Plaines, Ill. (A suburb of Chicago)

CHICAGO Faucets
Lost As Long As the Building

Distributed through the Plumbing Trade exclusively.

AEROFIN
Smooth-Fin Coils offer you:
Greater Heat Transfer per sq. ft. of face area
Lower Airway Resistance—less power per c.f.m.

Aerofin smooth fins can be spaced as closely as 14 per inch with low air friction. Consequently, the heat-exchange capacity per square foot of face area is extremely high, and the use of high air velocities entirely practical. Tapered fin construction provides ample tube-contact surface so that the entire fin becomes effective transfer surface. Standardized encased units arranged for simple, quick, economical installation.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.

For more data, circle 117 on inquiry card
variety of shapes
long lengths • quick erection
wide range of permanent colors
maintenance-free
light, strong
easily cleaned
insulated or non-insulated
for old buildings or new
... we're talking about

Robertson’s answer to
“What’s New in
Metal Curtain Walls?”

H. H. ROBERTSON COMPANY
ARCHITECTURAL PRODUCTS DIVISION
PITTSBURGH, PA. CONNERSVILLE, IND.
Plants in Ambridge, Pa., Connersville, Ind., and Stockton, Cal.
Sales Offices, Agents and Plants in 60 Countries around the world
Write us for complete details about Vitralume.

*Robertson's exclusive process of fusing glass to aluminum at approximately 1000° F.
Add Elegance at Low Cost with LENAPE CERAMIC KNOBS AND PULLS

American-made, solid ceramic
Glazed-on colors and designs
No paint or tarnish problems
All decorations 22 kt. fired-on gold
Easy to install, inexpensive
Wide choice of styles and sizes
Available in custom decorations

Write, wire or phone.
Lenape Products, Inc.
113 Stokes Avenue, Trenton, N. J. 08605
Phone: (609) 882-7412

For more data, circle 122 on inquiry card

Specify Duragold for bright, economical, durable gold exterior and interior coatings. Shown above, the Indiana State Capitol dome and the Johnson’s Wax Golden Rondelle at the New York World’s Fair, both covered with coatings containing Duragold pigments. For the names of manufacturers using Duragold, plus a free gold spray can, write or call...

CLAREMONT Polychemical Corp.
39 Powerhouse Rd., Roslyn Hgts., L.I., N.Y. 11577 • 516 MA 1-8800

For more data, circle 121 on inquiry card

For more data, circle 120 on inquiry card
The only thing about concrete block that is without variety is its quality.

Concrete block, manufactured to Q BLOCK® specifications, is concrete block at its best.

see other side…
The concrete block industry has instituted a national quality control program, designed to provide the architect, designer, builder and owner with maximum assurance of product quality. It is called the Q BLOCK® program.

The registered hallmark “Q BLOCK” identifies concrete block which is manufactured to Q BLOCK specifications. These specifications, established by the National Concrete Masonry Association, reflect all the high standards that modern research, technical development and testing facilities can provide. To assure that these high standards are maintained, concrete block manufactured by participants in the Q BLOCK program must be tested at regular intervals. Following each test, the manufacturer is issued a certificate by the National Concrete Masonry Association indicating he is a qualified Q BLOCK producer.

Now, with this established national quality control program, you have complete confidence that the concrete block you specify by the Q BLOCK name has structural integrity second to none.

The Q BLOCK program puts concrete block in a most enviable position, offering the building industry not only the most versatile, attractive, fire-safe, sound absorbing, care-free product on the modern day market... but a building material with a proven reputation for high quality.

Members of the national Q BLOCK program are identified by this registered mark. Look for it whenever you specify concrete block.

Write: Q Block Program • National Concrete Masonry Association • 2009 14th St., North • Arlington, Va. 22201
Sometimes a building material itself can help suggest new concepts in design. This imaginative use of color accents was inspired by permanently colored Glasweld.

Glasweld's remarkable freedom from maintenance makes it practical for you to use color freely in out-of-reach places such as these orange and yellow panels mounted behind pressure-treated 2 x 3's. A simple hosing down is the only maintenance these and the adjoining black Glasweld sandwich panels will ever need.

For window inserts, curtain walls, and fascias, Glasweld's unique properties make it a most valuable building material. It is a completely weatherproof asbestos-reinforced panel with a permanently colored mineral surface. Glasweld machines cleanly, appears optically flat, resists impact and abrasion, and is 100% incombustible.

For technical data, write United States Plywood, Dspt. AR 3-66, 777 Third Avenue, New York, N.Y. 10017.

Glasweld, sold only by United States Plywood.
Not every client you have is ready for Weldwood blueprint matched architectural paneling. That's why we make Weldwood Gold Label paneling, too.

A limited budget is no reason to forego the matchless warmth of real wood paneling in your designs. The high degree of care that goes into the selection of veneers, the workmanship, and the quality control in the production of Weldwood® Gold Label paneling make it a most excellent architectural material.

The handsome reception area shown here is paneled in Weldwood cherry with the new Patina 2 finish. This 30-step finishing process adds unprecedented character and dimension to each "plank" in the hardwood panels.

Weldwood prefinished paneling offers limitless new design possibilities to you. There are more than 70 different kinds in a wide price range: from exotic teak and rosewood to domestic hardwoods such as hickory and elm.

For assistance in the selection of Weldwood paneling, write United States Plywood, Dept. AR 3-66, 777 Third Avenue, New York, N. Y. 10017.

Only United States Plywood makes Weldwood® paneling.
"HERE'S AIRTEMP'S BRAND-NEW, AIR COOLED CONDENSING UNIT. IT'S ALUMINUM-LIGHT! This little sweetheart, the HAR-50 [50 ton model], is light and compact [2,860 lbs., covers 76.5 sq. ft.]. It's the strong, silent outdoor type [aluminum construction in cabinet frame, heat-transfer surfaces and legs]. Of course you'll want to know more about this whole series [20-100 tons]. Just ask my Airtemp friends. They're listed in the Yellow Pages."

Airtemp

CHRYSLER CORPORATION
Tests prove Bethlehem Slabform structurally sound in composite design

In order to prove that Slabform, Bethlehem's solid steel centering, achieves maximum effectiveness in composite beam design, a number of tests were conducted by our Homer Research Laboratories using Slabform and composite beams.

Three T-beams, all with shear connectors, were used. One supported a reinforced slab cast on Heavy-Duty Slabform, the second had a reinforced slab cast on Extra Heavy-Duty Slabform, and the third had a conventional slab in direct contact with the steel beam.

The test results proved that Slabform in no way interfered with the desired steel-concrete interaction. The tests also showed that the Slabform corrugations could be ignored and the beam designed as if the slabs were solid and no openings existed over the beam. (Bethlehem does not supply punched Slabform sheets.)

We'd be happy to give you full details on these tests. Just write or call the nearest Bethlehem sales office. We're at your service. Bethlehem Steel Corporation, Bethlehem, Pa.

BETHELHEM STEEL

Test set-up contains concrete slab 18 to 26 days old over Slabform. Loads were applied by a 300-KIP, hydraulic testing machine.
Each Raynor overhead-type door is on data film to assure easy replacement of damaged parts. Anytime.

Every Raynor door detail is permanently registered on data film for positive identification and quick replacement of damaged parts years from now. Data film registration is exclusive with Raynor, and covers all Raynor overhead-type doors — wood, Raylon (fiberglass), aluminum and steel. If a Raynor door is ever damaged or you want to match existing doors for a building addition, Raynor makes it easy. Any time. Ask your Raynor representative about our exclusive architectural shop drawing service — another way you can depend on Raynor.
It's All Right To Stack Them Up...

BUT!

Unless You Build Right, All You Are Doing Is Stacking Up Trouble

Today, more and more parking facilities are multi-storied garages, both above and below ground.

This means avoiding "drip-through" porosity is a vital construction factor.

* Carlisle Sure-Seal Rubber Membrane installed in decks and ramps forms an impassable moisture barrier...completely eliminates "drip-through" and saves your clients thousands of dollars in repairs and possible litigation.

Write today for complete information and specifications. Carlisle Sure-Seal has been both time and torture tested.

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CARLISLE TIRE & RUBBER DIV.
CARLISLE CORPORATION
CARLISLE, PA. 17013

For more data, circle 127 on inquiry card

232 ARCHITECTURAL RECORD February 1966
THE FIRST HOT DIP GALVANIZED BRIDGE IN THE U. S. WILL SPAN A RIVER OF MAINTENANCE 20 YEARS WIDE

A zinc skin will provide 20 to 50 years of protection without maintenance for this bridge being built over Stearns Bayou near Muskegon, Michigan.

The bridge is 420 feet long with a 30 foot roadway and a 5 foot walk on each side. There are 8 spans, two at 60 feet and six at 50 feet. Design loading is H2O-S16-44. All structural members, fasteners and other steel parts are protected against corrosion after fabrication by hot dip galvanizing specified at 2.3 ounces per square foot. Structural techniques proven successful in a hot dip galvanized bridge opened near Quebec City, Canada, in 1963 assure full friction of fastener contact surfaces plus the corrosion resistance of an unbroken zinc coat.

The cost of galvanizing today is surprisingly close to that of a proper paint system. When maintenance costs are considered, galvanizing with its 20 to 50 year life expectancy is by far the most economical.

ST. JOSEPH LEAD COMPANY
Producers of Zinc for American Industry
250 Park Avenue • New York, New York 10017

ARCHITECTURAL RECORD February 1966 233
ACOUSTONE Acoustical Tile in new GLACIER pattern presents a deep-fissured surface for ceilings that is unique in its ruggedness, unique in its natural beauty. No problem of monotony in appearance because no two tile textures are exactly alike. No break in the one-surface look because the fissures minimize all joint lines. GLACIER provides a noise reduction coefficient of .80. It is adaptable to all standard installation systems for acoustical ceilings and meets building code requirements as an incom­ bustible product. GLACIER is the latest advance in ACOUSTONE Ceiling Tile...a name that is synonymous with high-quality sound control in construction.

GLACIER ACOUSTONE® Mineral Acoustical Tile... another breakthrough by

UNITED STATES GYPSUM

For more data, circle 128 on inquiry card

New Translucent Suspension System Softens GRID Effect in Illuminated Ceilings!

Introducing the PARATRAK CEILING SYSTEM, the first really different idea in suspension tracks. Parallel translucent plastic channels match the louvers to create ceilings that seemingly float. Slim track design aligns louvers perfectly, yet permits quick, easy removal for periodic maintenance. Only a hint of the suspension system remains...a pleasing suggestion of pattern.

With the plastic PARATRAK system, cross members are eliminated. The self-aligned panels lock in flush with the track for a directed yet uninterrupted sweep across the ceiling. New effects are possible. New visual excitement...and with the plus of reduced installation costs.

This new ceiling is designed to take the following louvers, both U.L. and F.M. listed for use under sprinklers.

DEMICEL—2' x 4' one-piece molding in light stabilized styrene.

ACRYCEL—2' x 4' one-piece molding in long-life virgin acrylic.

For more information, write Wilson Research Corp., Box 5037, Erie, Pennsylvania, Phone (814) 838-1981.

FOLDING PARTITION / The SonicWall (STC 36) vertical wood panel, acoustically-rated partition, has an accordion-type folding action, and consists of dual panels, each lined with sound-dampening material. Heavy-gage-vinyl hinges seal and protect panel edges and provide a cushion between adjoining panels which is said to eliminate panel-to-panel sound reverberation. The dual panel accordion configuration allows each side of the partition to dampen sound independently in a manner similar to staggered stud wall construction. Ball-bearing wheels on each 8-in. module, and 14-gage steel panel support brackets give quiet, simple operation and durability. • Panelfold Doors, Inc., Hialeah, Fla.

Circle 308 on inquiry card

FLOOR SINKS / Enameled cast-iron floor sinks are designed for use in restaurant, kitchens and other establishments where sanitary, easy-to-clean drains are required. The drains are set in concrete flush with the floor and are said to be hard wearing and acid-resistant. • American-Standard, New York City.

Circle 309 on inquiry card

For more data, circle 129 on inquiry card
With new "INSTANT ELEVATORING" just touch the button... and your Otis is on its way. Any time.

This remarkable V.I.P. system of electronic controls automatically adjusts elevating service to any traffic needs. Anticipates service demands and instantly dispatches cars to where they're needed.

Call your Otis man in on your building designs. Ask him for complete details on this remarkable Otis development... how "INSTANT ELEVATORING" can be designed exactly to the needs of your client.

CORRUFORM AND TUFCOR
Lightweight, low-cost, tough-temper steel base for concrete floor or roof slabs over joists or light beams. Easy to handle and place, goes down fast, provides a safe, convenient working deck for trades. STANDARD CORRUFORM for spans up to 3' 6"; HEAVY DUTY CORRUFORM (Illustrated) for spans up to 5' 0"; TUFCOR, with insulating lightweight concrete, for roof spans up to 8' 0". Available uncoated or galvanized.

COFAR, CEL-WAY, A-E FLOOR
COFAR: the combination form and reinforcement for concrete slabs. With new shear connectors, it is adaptable to composite construction (Illustrated). CEL-WAY: the ideal way to electrify structural slabs. Steel cells and new dual service floor fittings put telephone and power outlets where they're needed. A-E FLOOR: Combines air and electrical distribution in one compact floor system, with shallow plenum and steel cells sandwiched between finished floor and structural slab.

ROOF DECK
High-strength steel deck for use with rigid insulation and built-up roof. Extremely lightweight (usually 3 psf, including deck and insulation). For spans up to 14'. Five different patterns, six different gages to choose from. A deck to fit your needs exactly; gives you full value for your roof deck dollar. Protected with durable baked-on enamel primer or light, hot-dip galvanized coatings.
Complete Floor and Roof Systems
from One Dependable Source:

GRANCO

Here's convenience plus: a single time-saving, trouble-saving source of steel products for floor and roof construction. They give you the strength, performance, and permanence you need at the economy you want. Granco products are easily handled and placed, save on construction materials, keep work schedules moving briskly ahead. They provide design flexibility for today's varied architectural needs, and are adaptable to meet just about every technical problem. Learn more about the many Granco products that are available from this one dependable source. Our floor and roof manuals contain all the information you need. See Sweets file, or write to Granco Steel Products Company, 6506 North Broadway, St. Louis, Mo. 63147. A subsidiary of Granite City Steel Co.

IMAGINATION IN STEEL

For more data, circle 130 on inquiry card
Do you know that fully 16% of the Continental boilers being sold today are going to customers who are already enjoying the economy and efficiency of these outstanding boilers? The loyalty of these "repeat users" reflects their satisfaction and is proof of Continental's economy, dependability, and service year after year. Write for latest catalog.
Red Cedar Handsplit Shakes: Very much at home in Samoa.

When the architects began planning some new government buildings at Pago Pago, American Samoa, they faced two major roofing problems. First, what would survive more than 10 years in Samoa's hot, moist, salt-laden air (and occasional hurricane winds)? Second, what would complement the local native thatch roofs? Their attention was steered to red cedar when someone discovered some island buildings with red cedar shingle roofs still in place after 28 years. Further investigation led to life expectancy predictions of 30 to 40 years for handsplit shakes, and to a decision to use them for the roofs of 11 new government houses, 200 individual school units, an airport terminal and an auditorium (shown above). Detailed information on Certi-Split handsplit shakes (and Certigrade shingles) is available in our Sweet's Catalog listing, 8d/Re. Or give us a call. Or write.

RED CEDAR SHINGLE & HANDSPLIT SHAKE BUREAU
5510 White Building, Seattle, Washington 98101
(In Canada, 1477 West Pender Street, Vancouver 5, B.C.)

For more data, circle 132 on inquiry card
The Bishop Dwenger High School, Ft. Wayne, Indiana
Architect: Mox Pohlmeier & Associates, Ft. Wayne, Indiana
Modernfold Product: Coil-Wal
Why does an operable wall manufacturer put over 500 men in the field?

Because we do not yet have 1,000.

With today's rapid acceptance and ever-increasing use of Modernfold operable walls, we will soon need at least that many.

Operable wall specialists can't be expert overnight. They have to be trained and knowledgeable about sound control, interior design, construction, engineering, space division and a hundred other things.

We have all come a long way since 1950. School needs changed. Became overcrowded. Educational TV was introduced. Non-graded classes, team teaching and audio-visual aids became most important.

New uses for Modernfold products emerged. Walls that divide a large gym into space for several P.E. classes. Walls that deaden sounds better than concrete block. Walls 27' high and 150' wide, that move on or off their sub-division jobs electrically with the turn of a key.

Walls with tough vinyl covers. Rugged steel frames. Walls made of coiling wood and wood panels. Walls of aluminum. Walls designed for specific use instead of just one type for every application.


Even though we now have over 500 men working with architects and administrators, in order to better keep up with your needs, we're looking forward to having many more.

We have a full color brochure that illustrates many of our products in use. For your free copy, simply write: New Castle Products, Inc., P. O. Box 353, New Castle, Indiana 47362.

Or, contact your Modernfold man. He is a trained specialist.

For more data, circle 133 on inquiry card
Are the bugs out of all plastic flashings? Just one—

Saraloy 640R.

There are only two reasons for not specifying flexible flashing: (1) you’ve tried it before with mixed results, or (2) you don’t like to try new things. Well, now we think we can reassure you on both counts. Early flexible flashings (and a few that are still around) had their faults. These have been corrected in Saraloy® 640R plastic flashing. Second, flexible flashings are not new. They’ve been some time reaching the state of perfection embodied in Saraloy 640R flashing. Consider the advantages of Saraloy 640R. Since it’s flexible, it can adjust to the building movements that occur. It can withstand extreme roof temperatures—either hot or cold— without thinning out or getting brittle. And it lasts and lasts.

It cuts on-the-job installation costs and is a joy for roofing contractors to work with. Doesn’t it sound like it’s worth a try?

For more information, contact The Dow Chemical Company, Plastics Sales Department, Midland, Michigan 48640, or consult Sweet’s Architectural File 8g/Do.
PROJECTED WINDOWS / An aluminum vault-action window has a smooth, sloping sill that eliminates weep holes, grooves, fastening, and other obstructions that hold water and dirt. Units are vinyl-weather stripped. There are a variety of sizes and arrangements available. • Amarlite, Division of Anaconda Aluminum Company.

Circle 312 on inquiry card

SNOW MELTER CONTROL / This control for electrical heaters imbedded in concrete or asphalt slabs automatically prevents accumulation of snow or ice, and can differentiate between "cold temperature" and "cold moisture" on a surface. • Nelson Electric Manufacturing Company, Tulsa, Okla.

Circle 313 on inquiry card

For more data, circle T35 on inquiry card

For thirsty kids less than 42" tall

Wall mounted water cooler with low-level accessory fountain — designed with kids in mind. Available in stainless steel cabinet, baked enamel in choice of colors, or vinyl-laminated steel in silver spice, or mocha brown. Write for NEW 1966 Catalog or look us up in SWEET'S FILE or YELLOW PAGES.

THE HALSEY W. TAYLOR COMPANY
1560 THOMAS ROAD • WARREN, OHIO

Complete line of electric water coolers and drinking fountains
THE SUPERHUMAN CARPET
After all, isn't that what you really need in an office? Or a hotel? Or a motel? A superhuman carpet to fill human needs like those of a client who doesn't think he can afford a good carpet? But still doesn't want to settle for traditional hard floor covering?

You could get some pretty good carpets up till now. But none of them could give you enough.

You could get carpets with a good dense pile and a bonded foam back. But they were only 54 inches wide. Or you could get one 12 feet wide, but maybe it wouldn't be foam-backed. Or it was the cost. A lot of good carpets were just out of reach.

You had to give up something. But not any more.

The Superhuman Carpet has all these things. Including an affordable price. And all the other advantages that Lees can give you.

To begin with, we gave the Superhuman Carpet a good dense pile. We made it a tight flat loop that doesn't mat down. And we bonded it to a high density foam rubber back. So it doesn't need a separate pad.

We made it a big 12 feet wide. Not a skimpy 54 inches. And we had special machinery built for us so we could make a carpet this dense and 12 feet wide.

Why did we go to all that trouble to make it 12 feet wide? Because when we put it on your floor, you get half the seams you get with 54-inch carpet. And the fewer the seams a carpet has, the better it wears. And looks.

There's one thing that we didn't give the Superhuman Carpet. A superhuman price. It costs a little more than $1 a square foot, completely installed.

But we did give it all the care and all the rugged inspection every carpet gets before we give it the Lees name.

We also gave it a name of its own. Bold Venture.

As for installation, the Superhuman Carpet is cemented down. So it won't wrinkle. Or need restretching.

We put 20% more face yarn into it than you'll find in many carpets that cost just as much. Or even more.

For more data, circle 136 on inquiry card
The firm of Brewer & Mundy had good reason for specifying copper plumbing for this 29-story, 414,200 sq. ft. area building soon to add new beauty to Atlanta's skyline. It is lighter, easier and faster to work with, so installation costs are less. Copper tube and the compact fittings can be placed in areas where other piping would be too bulky and cumbersome. This advantage, if used in the engineering stages, often results in construction economies and more useable space.

The engineering firm also pointed out that “dependability” was probably the most important reason for recommending copper. In multistory buildings, repairs to the plumbing system are difficult and costly work. Copper eliminates the possibility of rust-caused trouble in future years, and solder connections, tube to fittings, are superior to threaded joints for leak-proof joints.

Above is one of many majestic structures, completed or in progress, whose owners will benefit from copper plumbing. Their architects and engineers know that to effect speed, space and labor-saving economies, it pays in the early planning to specify copper... Anaconda copper.

Anaconda plumbing products include Copper Water Tube, Copper DWV Drainage Tube, Copper Tube Fittings and Valves, Red Brass and Copper Pipe. For further information, write: Anaconda American Brass Company, Waterbury, Connecticut 06720.

For more data, circle 137 on inquiry card.
Who provides an authentic design service for only a 5¢ stamp?

Answer: Hartmann-Sanders, world's leading manufacturer of classical columns.

Authenticity of detail and adherence to proper proportions as well as correct material choices and true craftsmanship are the important elements in column manufacturing. It is why we are still, after 65 years, the largest custom manufacturer of classical columns.

Equally important to the success of the total concept are the design and construction details of the other traditional components: the cornice; the portico; or entablature.

While we are well aware of the architect's historic design prerogative, our exposure to and detailing experience in the classical architectural forms may be of some help to you.

At your request a Hartmann-Sanders Company representative will be happy to consult with you, our design staff will review your details or if necessary assist in their development. Production responsibility for these items may be assigned to anyone you choose.

This service is provided wherever Hartmann-Sanders columns are used and costs no more than a phone call or a five cent stamp. Our column brochure is, of course, available upon request.

Hartmann-Sanders Company 1717 Arthur Avenue, Centex Industrial Park, Elk Grove Village, Illinois, Phone 312-439-5600

For more data, circle 138 on inquiry card

ARCHITECTURAL RECORD February 1966 249
Lester can't tell a joke

Or if he can, he won't.
Not on your time.
On your time, Lester's all business.
He'll talk vinyls. Acrylics.
Epoxies. Sealers.
Talk about what's new in masonry coatings.
Fire retardants.
Rust-fighters.
And Lester just won't talk about your color book.
He'll care for it.
Keep it up to date with all of Devoe's 1086 colors.
And the 1087th, when that comes out.
The same way he keeps you up to date. Ably. Accurately.
That's Lester. And Sam. And Arthur.
And every Man from Devoe.
They don't tell jokes—not on your time.
But they do talk your language.
You can depend on the Man from Devoe.
X-panda® SHELF

Maintenance-Free
Glamour-Enameled Steel-Strong

Never needing painting, repair or replacement, all-steel X-Panda Shelves provide a professional, finished appearance to your closets. They are available in a choice of five bonderized enamel factory finishes, with gleaming brushed satin-tone rods and brackets...will support up to 30 lbs. per linear foot...can’t warp, splinter or burn. These handsome shelves can be affixed to any type of wall construction...offwall brackets permit installations in closets with obstructions, such as pipes or ducts. See Sweet’s Catalog 38d/Hom...A.I.A. File 17-D... or send coupon.

X-Panda SHELF is available in depths and lengths to fit all applications.

Please send literature and specifications on X-Panda Shelf and X-Panda Hi-Lo Wardrobe Shelf.

products co.

Box 68, Princeville, Illinois, Phone 309-385-4323

Name
Firm
Address
City State ZIP

AUTOMATIC DOORS / The basic operating mechanism of this line of fully automatic doors is a simple pneumatic direct drive cylinder-piston system which is actuated by low-voltage electrical controls. A special locking mechanism allows doors to be unlocked, opened, closed and relocked from a remote or local position. Doors will continue to operate automatically even in the case of power failure if the company’s special permanent power pack unit is used. Even without use of the power pack, doors can all be operated manually if power is cut off. Although these doors were originally designed for penal institutions, the company reports that they are becoming widely used in banks, plant and apartment entrances and in hospital detention wards. • Horton Automatics, Inc., Corpus Christi, Tex.

Circle 315 on inquiry card

PIPE INSULATION / Molded, one-piece pvc insulation covers can be fitted around piping and taped, stapled or banded together in a very short space of time. The prestressed design is said to result in a leakproof seam which can be fitted with urethane foam for cryogenic applications, where particularly high insulation qualities are required. • Zeston Inc., Perth Amboy, N. J.

Circle 314 on inquiry card
See what happens when Contractor Ed Krygier meets up with one beautiful frame!

starring sultry Heather Browne

See Heather install a new FenDry “Clamp-On” frame, complete with a flush-seamless Executive door in ten minutes, fifty-four seconds ...while Ed puts up a conventional frame in the conventional way. FenDry (U.S. patent applied for) is the fastest Drywall frame with a UL Label—and the Executive door is the first standard flush-seamless to earn the UL “B” Label. Send for this new film to show at your next architectural or contractor meeting. Just phone your local Distributor or write Fenestra Door Division, 4040 West 20th Street, Erie, Penna.

FENESTRA

For more data, circle 141 on inquiry card
Go ahead. Stack it up; Stretch it out; Even bring it indoors. Western Wood siding loves a good design challenge.

Western Wood siding is the real thing and its potential is unlimited. Here's a design material that gives you freedom of expression and lets you toy with innovation in structure and perspective. Just look at the styles available: Bevel, Clapboard, Board on Board, Board and Batten, Channel Rustic, Drop and Flush-Joint sidings—with variations in each.

The tough site problem shown here was deftly solved with Western Wood siding and imaginative design. The property is dotted with trees that had to stay; it is narrow and hilly. The result is a home that responds to a natural setting without becoming a part of it. The siding used here has a re-sawn face. Its rough texture makes weathering of nature an asset, not a maintenance problem. Its good looks will mature with the years and scrapes and scuffs will become a part of its rugged character. The Clapboard installation lends itself to the handsome, tailored design. Subtle shadows and definitive lines contribute to the overall impression.
Solid Western Wood sidings come in three surface textures: resawn (a refined, sophisticated roughness), head-rig rough (very rough) and standard surface (smooth-planed) siding. All three hold finishes like a friend—not only paint, but stains which bring out Western Woods' warmth and richness.

Western Wood siding is the genuine article with natural characteristics that cannot be duplicated. No two boards are ever the same—the grain and pattern of solid wood give individuality to every piece.

Western Wood siding is a familiar material requiring no special tools or instruction for use. It is readily available everywhere. And while it often can be custom-made locally into special profiles, standard patterns and styles offer a wide latitude for creative exterior—and even interior—design.

Send for our new Western Wood Siding Use Guide. And for our new full-color idea book on the many moods you can create with solid Western Wood Siding. They are both yours, free.

For more data, circle 142 on inquiry card
METAL DOORS AND STEEPLES / Two new catalogs describe prefabricated metal church spires and a line of UL approved sliding fire doors. The Spire catalog, No. 35c, discusses five basic types of construction. Specifications are given and typical installations illustrated.

TERMINAL CONTROLS / Coordinated systems and devices, described as "nerve centers" for modern hydronic air-conditioning installations, are the subject of a 20-page bulletin, No. 1857 entitled "T is for Terminal Controls." The booklet reprints a series of recent articles defining terminal controls, outlining their basic functions and reviewing their application to various types of piping systems. Three types of terminal control design—line-voltage; low-voltage and self-contained mechanical—are discussed in relation to typical applications. Schematic drawings are included to illustrate different types of system control. American Standard Controls Division, Detroit, Mich.*

Circle 411 on inquiry card

DIAGO REPRODUCTION / A new 48-page booklet on adaptation and application gives tips in such areas as reducing design time and making top-quality presentation prints, color-coded progress prints, and large overlay foils for adding colors to the work of architects and designers. Blu-Ray, Reproduction Engineering Corporation, Essex, Conn.

Circle 412 on inquiry card

OFFICE FURNITURE ACCENTS SEAMS / A 16-page brochure pictures and describes the desks, modular units, credenzas, tables and accessories available in a new line of steel furniture and equipment. The Linear / 7000 Line is named for the linear "reveals" which use a wide range of enamel finishes to provide contrast to the units. Columbia-Hallowell Division, Standard Pressed Steel Company, Jenkintown, Pa.

Circle 413 on inquiry card

CORROSION PROOF INDUSTRIAL FLOORS / A new 24-page technical manual helpful in selecting the right combination of corrosion-resistant flooring materials includes an analysis of problems involving chemical processing, food and metalworking industries. There are comparative analyses of performance as well as installed costs of monolithic toppings, acidproof brick, and floor coatings. A two-page chart helps in making preliminary evaluations for individual conditions. The Celcote Company, Berea, Ohio.

Circle 414 on inquiry card

PHYSIOLOGICAL MONITORING / These 25 pages show various practical equipment applications for hospitals and other medical institutions. Of particular interest to the hospital architect are the chapters on the general requirements of the built-in monitoring system. A "check-list" is included. American Electronic Laboratories, Inc., Lansdale, Pa.

Circle 415 on inquiry card

* Additional product information in Sweet's Architectural File

More literature on page 260
our secret ingredient

This ancient Chinese water heater still works after three thousand years. Light a fire under it and the water bubbles right up—fresh, clear and pure. Have a cup of tea courtesy of the Shang Dynasty.

There's only one reason this water heater has staved off rust and corrosion for more than thirty centuries. It's made of copper—the talented metal that water can't rust or corrode. And copper is the only metal touched by water in a Ruud Copper Sanimaster commercial gas water heater.

You'll be glad to hear Ruud Sanimasters come in all sorts of sizes. Something for every apartment, motel, factory, laundromat, restaurant—something for every place where large volumes of hot water are needed. They're compact enough to install easily near the point of use. If you need more hot water than our biggest unit supplies (300 gallons per hour), Ruud Copper Sanimasters link together with manifolds. Special Ruud sizing guides make sure you get the right water heater whatever your hot water requirements. Some neat accessories are available, too. Like the Duo-Temp mixing valve that delivers 180 degree water and general purpose hot water at the same time. And there's a circulator that holds the temperature constant at hot water outlets.

And as far as trouble free performance and long life are concerned, our honorable Chinese ancestor is still working after more than 3000 years. We're not implying that the Ruud Copper Sanimaster will last that long... but then again... it just might.

RUUD MANUFACTURING COMPANY • A division of Rheem Manufacturing Co., Dept. AR-2, 7600 S. Kedzie Ave., Chicago, Ill. 60652

For more data, circle 144 on inquiry card

ARCHITECTURAL RECORD  February 1966  257
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High ratio of surface area to face area
High air velocities without excessive friction or turbulence

Write for Bulletin S-55

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SUSPENDED CEILING SYSTEM

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Ours travel from floor to floor, of course. But, like the concrete and asphalt ribbons that link our cities, they're vital traffic arteries. On the job 'round the clock carrying people to their destinations with speed, comfort, safety. The elevators and escalators we design and build are second to none... products of nearly a century of leadership in invention, innovation and quality ideals. We back them with service, nationwide. Fast. Expert. Fairly priced.

HAUGHTON ELEVATORS/ESCALATORS

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This is the story of a very special fill-type roof deck insulation that can be applied even during sub-freezing weather because it contains no water. You are assured of a dependable insulation and a dependable application of this outstanding insulation... because it is applied only by trained, licensed applicators in your area.

Check these features... then specify this insulation by its registered trademark—

**All-weather**

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**All-Weather Crete** offers a K Factor, better than any other poured roof deck insulation!

AWC can be slopped to drains thus preventing dead level roofs or water pockets.

Its amazing working properties make it ideal for covering conduit or other roof irregularities!

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- Underground Pipe
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- Tank Bases
- Installations List

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For more data, circle 148 on inquiry card
Continued from page 256

SMALL PACKAGED LIQUID CHILLERS / This 8-page bulletin, No. 91-562A, which covers the company’s recently developed water-cooled and air-cooled line shows eight space-saving, portable models ranging from a 2- to a 5-ton capacity. In addition to specifications and suggested uses, there are charts showing Btu/hr capacity data and physical data, cooler and condenser water pressure drop. * Acme Industries, Inc., Jackson, Mich., and Greenville, Ala. Circle 417 on inquiry card

COMMERCIAL FOOD REFRIGERATION / A 32-page booklet presents a wide range of sales cases (air-screen type, open frozen food, open meat, etc.), storage freezers and coolers, condensing units, checkout systems, and shelving for retail stores, hotels, restaurants and institutions. There are descriptions and illustrations of each unit with information on dimensions and Btu requirements. * Tyler Refrigeration Division, Clark Equipment Company, Miles, Mich.* Circle 418 on inquiry card

THREE-IN-ONE ROOFING / A fireproof vapor barrier and adhesive have been added to the Permalite roof insulation product line to guard against moisture, fire and heat. Complete information on this new Permapak system is available in a 4-page company brochure. * Great Lakes Carbon Corp., Chicago.* Circle 419 on inquiry card

ALUMINUM SLIDING GLASS DOORS / A 12-page catalog presents a new line of four separate configurations to meet a wide variety of building situations. There are diagrams for each series as well as architectural specifications and charts with types, sizes and other technical information. * Northrop Architectural Systems, City of Industry, Calif.* Circle 420 on inquiry card

CONTROL OF SOLAR AND LIGHTING HEAT / The Lite-Therm System is described as using non-refrigerated water for heat transfer to eliminate the refrigeration of lighting and solar loads during the summer and to heat the building from the lighting during the winter. A 24-page booklet with illustrative drawings explains the process in detail and gives information on installation of the systems and components. Typical explanations include direct and indirect transfer systems, floor piping distribution, air distribution, equipment room layout, etc. The booklet includes a complete set of specifications and an in-depth bibliography for further research assistance. * Environmental Systems Corporation, Conyers, Ga. Circle 421 on inquiry card

HOSPITAL STORAGE AND WORK FACILITIES / The findings of recent nationwide research on equipment value in such areas as central service, utility rooms and sterile storage show eleven major problems which have been identified with construction or installation. This information is presented in an 8-page report which discusses the criteria for hospital shelving. * Market Forge Company, Everett, Mass.* Circle 422 on inquiry card

STEEL LIBRARY EQUIPMENT / This 8-page booklet subtitled “Concepts in Color” describes and shows four types of shelves available in seventeen colors. In addition there are other library products such as tables, and book supports. * W. R. Ames Company, Milpitas, Calif. Circle 423 on inquiry card

*Additional product information in Sweet’s Architectural File

If you want elegance, buy a chateaux . . . or specify Monaco

The “latest thing” in some floor coverings will seem out-of-date in a few years. But magnificent Monaco by Wood-Mosaic is as timeless as the historic Mediterranean patterns which inspired it. Monaco is one of many masterpieces in wood for those who believe every fine home should be unique. Wood-Mosaic floors last generations with little upkeep, flatter every decor. And they cost no more than other fine floor coverings. Write for brochure showing all patterns. Look for us in the Yellow Pages.

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CORPORATION
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For more data, circle 149 on inquiry card
Today's vocational school is specifically designed and intended to prepare individuals for meeting the increasing demands of a technological society. It must offer a comprehensive educational program, but with emphasis on vocational training. In so doing, it will enable those individuals to play an immediate role in that society, and what is equally important, it will prepare them to meet the changes that are inevitable.

"Building materials, as such, cannot impart knowledge. But architecture can create form and a space environment that is conducive to learning experiences," declared Architect James Foley of Kellam & Foley, Columbus, Ohio, and Indianapolis, Indiana. "Intelligent use of glass permits the architect to visually expose each student to all facets of this terminal educational process."

L·O·F commissioned this firm to plan a vocational high school which could double for adult education at night. The institution envisioned is shown on these four pages.

The entrance to the complex is made through an administrative mall located beneath the research center and is essentially four structural forms enclosed with glass walls. Further interior divisions for guidance and counseling areas are made with tinted glass walls to reinforce the special concept of openness.
The Research or Resource Center would be walled on all sides with glass and the sense of confinement within the building is dispelled with the butted glass corners. Solar control is achieved within the building by the use of the book storage wall as seen in the accompanying sketch. Four closed study carrels allow for privacy necessary for concentrated study. Light is introduced into these areas from light monitors above.

Data Processing, Office Practice and Lab Technician training areas in this imaginary school would have outside walls of Parallel-O-Bronze® plate glass to blend with the stone and to control sun heat and glare. A Parallel-O-Plate® wall would separate the Office Practice area from Data Processing. A skylight of wired glass is introduced to daylight the lab storage wall, and a glass vision strip to illuminate the work surfaces.
The Trade and Industry area is planned with a workshop well and related classrooms on the balcony. One-half-inch laminated safety glass partitions would separate machinery alcoves to isolate the noise and for visual student surveillance.

The side glass wall is equipped with a series of transparent overlays. Instructors can illustrate complicated systems and diagrams graphically upon this wall. There is a glass wall separating this room from the shop level for reasons of acoustics, yet it allows visual access to the shop and a full view to the hills.
The Vocational Agriculture department would have a controlled-environment garden completely enclosed with Parallel-O-Plate glass wall and clear wired-glass folded plate mechanical roof to admit as much sunlight as possible. Work areas around the "greenhouse" have vision strips at work-counter level.

L·O·F makes a particular type of glass for every purpose in Open World design. Refer to Sweet's Architectural File, or call your L·O·F glass distributor or dealer, listed under "Glass" in the Yellow Pages. Or write to Libbey-Owens-Ford Glass Company, 811 Madison Avenue, Toledo, Ohio 43624.

Libbey·Owens·Ford
Toledo, Ohio
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Quartette's absolute control of lamp heat is completely new-concept, unequalled by any other ceiling system.

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ARCHITECTURAL RECORD  February 1966  265
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Polyvinyl chloride is impervious to moisture. We put it on our window four times as thick as paint, using a Ceco-researched method, an exclusive process. This is a resilient finish. It doesn’t crack or chip. It gives. We call it Cecoclad. There is no other finish like it.

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We’ll be glad to sell you whatever window you want. We make them all. But if you’ll take our unbiased advice, you’ll specify the Cecoclad window. It’s incomparable.

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SURFACE DOOR HOLDER SERIES SG-1190

This newest model in the wide S&G line of sash and door controls is constructed of sturdy architectural bronze channel 1 1/4" x 3/4". The control knob may be pre-set to hold the door open automatically and the hold-open tensions are adjustable. The SG-1190 is reversible for installation on right or left hand doors. And just like every S&G building hardware product, this door control is built for years of attractive and functional service and is specially designed for heavy duty applications.

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PHILIP CAREY

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100% WEATHER-PROOF

COOK TYPE TW WALL VENTILATOR

All-aluminum construction. Quiet centrifugal wheel, 7" to 24" diameter. Water drains away from wall, won't leave streaks. Integral conduit. Automatic dampers optional.

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For more data, circle 155 on inquiry card
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Color compatibility is a way of life with us.

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A new Mosaic tile color must blend with our existing colors; with other construction materials. And must have the temperament to stay in the background of your design.

Attributes which happen to apply, you’ll notice, to the Faientex #1491 (broad stripe in the free-standing wall); to the new Faientex #1891 (narrow accent stripe in that same wall).

Color compatibility also makes new Golden Olive #6452 (back wall) such a useful color — a perfect foil for browns, greens and yellows.

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Those revolutionary new light sources you've been hearing about will work best in a revolutionary new floodlight.

This is it... from Wide-Lite, of course.

The entirely new Wide-Lite* SW floodlight retains the traditional quality features that have made the "Wide-Lite" mercury vapor fixtures famous—and adds to them advantages that make the SW model ideal for use with all the new light sources.

The SW floodlight installs easily—and is symmetrical in either horizontal or vertical position. All components—including ballast and complete pre-wiring—are within the beautifully compact body. Made of cast aluminum, it shrugs off the effects of time, weather and vandalism. Dirt, moisture and bugs are kept away from the reflector and lamp by a tempered glass lens so tough that BB shots bounce off it. That means continued lighting efficiency without maintenance expense.

For rapid heat dissipation, the SW unit has cast-in cooling fins, top and bottom. In addition, the lamp and ballast are separated by a unique cooling duct. Also unique is its patented, highly efficient "Wide-Lite" reflector system made up of precisely positioned Alzak aluminum segments which make possible a large selection of patterns. The lamp is held firmly in its proper position by the patented Stabilux socket system.

This new "Wide-Lite" floodlight gives more light with fewer fixtures. Want more facts? See your "Wide-Lite" distributor, or mail the coupon.

For more data, circle 157 on inquiry card
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...and you have a choice of 30 attractive colors with Inland Wall Systems

1. Panel is prepared with Inland's exclusive Ti-Co continuous galvanizing.
2. Chromate coating provides a bond between galvanizing and paint.
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Inland Steel Wall Systems save on maintenance costs, even after years out of doors. A rigorous exposure test in salt-air climate has proved the weatherability, color fastness and chalk resistance of Inland's two-coat, oven-cured Duofinish. Duofinish gives the designer a palette of 30 weather-tested colors. Inland Wall Systems are available in 5 different panel profiles, each with its own distinctive configuration and shadow line. Panels may be used insulated, uninsulated, and as fire walls.

For complete information, see Sweet's section 3b/Inl. Or write today for catalog 243 to Inland Steel Products Company, 4107 West Burnham Street, Milwaukee, Wisconsin 53201.

Inland Steel Products
O'Brien's New Mira-Plate

The miracle strength epoxy that goes on like paint, looks and lasts like ceramic tile!

Here's superior protection and tile-like beauty—at a fraction of tile's cost. O'Brien's MIRA-PLATE beautifully coats everything paintable—including new or previously painted plaster, brick, concrete, wood, metal. Ideal for heavy traffic areas. Superior to paint. Defies wear, weather, chemicals, fumes, peeling, and cracking. Unique waterproofing properties defy moisture. Brush it, roll it, or spray it on—and MIRA-PLATE may be recoated or retouched at any time. Many popular colors and attractive fleck patterns. Ask your O'Brien dealer, your painting contractor, or simply send the coupon.

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STAIR TREADS

The durability and economy of these treads will appeal to the building owner. Their clean, attractive appearance and safety appeal to users.

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Gold Rondo, above, is available in blue. Counter top is Consoweld Off-White Whisper. Other Total Look designs are shown at the right.
"Land sakes, why doesn't Wheeler get on the stick

...and make a
two-lamp Ultima II"

"And," she said, "be sure to build it as sound, sensible and good-looking as the single-lamp Ultima II."

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ARCHITECTURAL RECORD February 1966 279
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As dramatic as nature's primitive handiwork, Alcoa® Duranodic* 300 finish for aluminum has a wide variety of construction uses. With good reason.

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**At Night: Protected**

These two Cookson Side-Coiling Grilles close-off a full 200 feet of store-front.

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Architect: Frank Grad & Sons, Newark, N. J.


Paint Contractor: J. I. Hass, Jersey City, N. J.


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- One-coat protection that really adheres to concrete

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MODAC provides outstanding adhesion on slick or chalking concrete surfaces because its unique solvent system bites deep into the surface. It fills and seals concrete and cinder block as a heavy duty waterproofer. Yet, it provides a breathing film to transmit vapor from within. And MODAC provides color retention far superior to conventional coatings.

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MAKE US PROVE THE LOWEST POSSIBLE AMORTIZED COST COMES WITH MODAC.

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Paint Contractor: Cumberland Decorating Co., Buena, N. J.
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Architect: Young & Schultze (formerly Baeder, Young & Schultze)
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40,000 FEET OF PRESSTITE TAPE

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Wells Fargo Bank, San Francisco, Calif.
Architects: Ashley, Keyser and Runge, San Francisco, Calif.
Stainless steel vault door and flanking walls:
The Hermann Safe Co., San Francisco, Calif.

Bowery Savings Bank, New York, N. Y.
Architects: Gibbs and Hill, Inc., Consulting Engineers, New York, N. Y.
Stainless steel stair rail:
Tri 0 Industries, Inc., Bridgeport, Conn.

When you design and build with stainless steel

Jefferson Trust and Savings Bank, Peoria, Ill.
Architects: Lankton, Ziegler & Terry, Peoria, Ill.
Stainless steel rigidized panel curtain wall:
Fenestra Incorporated, Lima, Ohio.

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For the IBM building 10 DMS units are being used to provide 220 tons of cooling; four million Btuh heating.

For specific data write: Lennox Industries Inc., 679 S. 12th Ave., Marshalltown, Iowa.
Office building renovation respects former traditions

The old New York Times Tower at Times Square in New York City lives again—this time as the Allied Chemical Tower. The tower, designed by the firm of Eidtitz and McKenzie, was completed in 1905. The face-lifting operation was under the direction of Smith Smith Haines Lundberg and Waehler, successors to the original architects.

The Times Tower was acquired by Allied Chemical in 1963, stripped to its steel framework in 1964, and rebuilt from 1964-65. The shape of the original building was retained and was resurfaced with white marble panels and glass. Retained in the new structure are many of the traditions of the old: the moving illuminated news sign around the base of the structure; the out-of-town newspaper stand at the north end of the building; and the lighted ball on a pole atop the tower which is lowered to herald the New Year.

The building has 23 stories and a total floor area of 127,462 square feet. In addition to office space, the structure will house a restaurant seating 200 on the 15th and 16th floors; and an exhibit area on the first three floors.

The theme of the permanent exhibit, which is open to the public, is "Twentieth Century Man—Creator of New Horizons." Included in the exhibit are a model of a typical moon city; a film of the planned path for NASA's Apollo moon shot; a chemistry display; and daily fashion shows.

General contractor was the William L. Crow Construction Company.

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Stadium Parking Garage East of the Civic Center Redevelopment Corp.'s Downtown Sports Stadium Project, St. Louis, has nine parking decks, each 510' x 216', providing for self-parking 2,640 cars. Levels 2 through 9 have beams (2'3" deep) and slabs (5" thick), both post-tensioned using Prescon positive end anchorage tendons. Concrete for the columns was placed only after the deck and beams to be supported had been post-tensioned. This permitted elastic shortening of the lightweight concrete decks, without restraint.

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If you are concerned with design flexibility or construction costs, or time, you should check the advantages gained from the positive end anchorage Prescon System of post-tensioning.

Write for copies of the Prescon NEWS describing many types of structures using post-tensioning.

THE PRESCON CORPORATION

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Gymnasium facility is designed for sloping site

Hallenbeck Hall, an instructional building for physical education at Saint Cloud State College, Saint Cloud, Minnesota was designed by Traynor & Hermanson, architects, to conform to a site which slopes 35 feet from north to south. The $1.9-million structure contains 134,820 square feet.

The upper level—basically of load-bearing construction with reinforced concrete and exposed, precast concrete, tee-suspended slabs, exposed steel joists and steel roof deck—contains varsity and practice gymnasium playing floors, auxiliary gyms (folding bleacher areas), spectator seating, handball courts, gymnastic room, wrestling room and dance studio.

A concrete skeleton system was used in the lower level with exposed steel pan floor and roof construction. Contained in this section are spectator seating, locker rooms, offices, classrooms, custodial areas, and swimming pools.

General contractor was the Conlon Construction Company.
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Texas apartments designed for difficult site

A 99-unit apartment development in Fort Worth, Texas was designed by Houston architect Morton L. Levy to utilize a difficult site criss-crossed by ravines and drainage easements, resulting in many leveled terraces, bridges and a natural lake. A prominent feature of the design is the roof line, which according to the architect is “a composition of gables and dormers in several colors, designed both for interest within the project and for the elevated viewpoints which surround the site.”

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