Creative styling: an inherent quality of Azrock floors. An outstanding characteristic of Azrock vinyl asbestos floors is their ability to reflect any mood or decor, to emphasize or understate as desired.

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*Also known as Viro-Lux.
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Beveled leaves, bearing segments that nest neatly, finish that brings solid brass to rich luster... you could stop there and have a quality hinge, complete and attractive, far beyond the ordinary. But Hager carries design right out to the tips. The tips in ten different designs, from the tall Cathedral to the short Crown cap, all suggest motif that can further emphasize interior decor. May we send you more details on this special decorator hinge group? HAGER HINGE COMPANY, St. Louis, Mo. 63104. Hager Hinge Canada Ltd., 61 Laurel Street East, Waterloo, Ontario.

Everything Hinges on Hager

On Readers' Service Card, circle No. 362
THIS MONTH IN P/A
Progressive Architecture, July 1965

COVER
This photo of H. H. Richardson, the influential 19th-Century American architect, served as inspiration to P/A's Editor for this month’s Editorial.

VIEWS
Our readers’ comments on the architectural scene.

NEWS REPORT
Our News staff reports on the latest developments in significant new projects and personalities in the architectural world; plus round-ups of what is new in the area of Products and Manufacturers’ Data.

READERS’ SERVICE CARD
A monthly service to our readers who desire additional information on advertised products and those described in the News Report.

EDITORIAL
P/A’s Editor discusses the problem, already hinted at in our Cover and Frontispeice, of the profession’s preoccupation with the “image of the architect.”

EDITORIAL FEATURES

MOTION: An article by Landscape Architect Lawrence Halprin sets forth an innovational technique of notating movement graphically that should prove to be a significant aid to the architectural designer.

NEW ENGLAND TRADITION CONTINUED: A presentation of six country houses that are a sophisticated combination of traditional and contemporary architectural idioms. JOHN ROGERS, ARCHITECT.

CHANGES IN THE OFFICE ENVIRONMENT
A presentation of three new buildings that emphasize a psychologically pleasing environment as a primary design consideration.
RESEARCH FACILITIES: A building complex for research scientists that has been skillfully integrated into a setting of exceptional beauty. HELLMUTH, OBATA & KASSABAUM, ARCHITECTS.

REGIONAL HEADQUARTERS: A wide promenade encircling the building contributes to a more gracious working environment. CURTIS & DAVIS, ARCHITECTS.

RENTAL OFFICES: Skylighted interior court serves as core around which office areas are grouped. ANDERSON, BECKWITH & HAIBLE, ARCHITECTS.

INTERIOR DESIGN DATA

INTERIORS FOR THE FEDERAL GOVERNMENT: Interiors of the Federal Courts Building in Chicago are subjected to a critical scrutiny.

SELECTED DETAIL: Tree Planter, Federal Courts Building.

SELECTED DETAIL: Fountain, IBM Advanced Systems Development Division Laboratory, Los Gatos, Calif.

MATERIALS AND METHODS

BRICK-FORMED CONCRETE TOWER: Structural design and construction analysis of newly erected Frank Murchison Memorial Tower, San Antonio, Texas.

THE NEW WALL COATINGS: A review of the latest findings on the two broad classes of specialty coatings: inorganic and organic.

SINGLE-DUCT AIR CONDITIONING FOR RECONSTITUTED HOSPITAL: Meshed into the architectural planning of this hospital are developments in hospital air conditioning that, among other refinements, achieve the clean, low-bacterial-level environment of a 100 per cent fresh-air system at reasonable cost.

P/A OBSERVER

CBS: SOMBER POWER ON SIXTH AVENUE: A structural and design analysis of Saarinen's CBS Building.

UP-AND-DOWN, IN-AND-OUT FLEXIBILITY: William Mileto's design ideas in planning a New Haven elementary school.

SEATTLE: METAMORPHOSIS FROM FAIR INTO CENTER: Donlyn Lyndon assesses the achievement of the architects who have been converting Century 21 into a Civic Center.

MECHANICAL ENGINEERING CRITIQUE

William J. McGuinness explains how electric draft barriers were used to prevent large exterior glass areas from cooling interior air.

SPECIFICATIONS CLINIC

Harold J. Rosen outlines a uniform system of presenting information in the technical section of the specifications.

IT'S THE LAW

Bernard Tomson and Norman Coplan discuss principles of owner/contractor arbitration.

BOOK REVIEWS

A cross-section of significant new books.

JOBS AND MEN

DIRECTORY OF PRODUCT ADVERTISERS

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VIEWS

Vote of Thanks

Dear Editor: You deserve a vote of thanks from everyone for your fine and forceful Editorial in the May 1965 P/A. This is my share of the thanks.

In your clear and reasoned analysis, you summed up the essence of the sorry contradiction. Many people are aware of it, but few seem to care.

It would be good if your Editorial could be reprinted in many places: places like the real estate sections of all newspapers, the Congressional Record—well, you know the list.

But, at this distance from the dream, I simply want to thank you again.

ETHEL DEAN
New York, N.Y.

The Best Issue By Far

Dear Editor: The April 1965 P/A is by far the best issue of an architectural magazine that I have seen in several years. Presenting more than pretty pictures and building techniques, it indicated some of the underlying thought that is presently coming out of the profession. Obviously I am speaking about the article, "The Psychological Dimensions of Architectural Space." Here are presented concerns of the architect that have too long been ignored by both the profession and the magazines.

Also to be commended is the productively critical article on the San Mateo Junior College—a fine dialogue of ideas, both good and bad, that suggests that more self-criticism would be beneficial for the profession.

I look forward to more issues that repeat the quality of the April issue of P/A.

CHARLES M. EASTMAN
Berkeley, California

Author Answers Critic

[The writer of the following letter is author of a book that was reviewed by James C. Rose in the January 1965 P/A. Previous limitations of space prevented publication of the letter till this time—Ed.]

Dear Editor: It is unfortunate and unreasonable for a book review to be based upon a pet thesis of the reviewer having but poor application to the substance of the book being reviewed. My Japanese Influence in America falls victim to this misleading injustice.

The book first is criticized for failing to mention that Antonin Raymond (whom James C. Rose, the reviewer, has

Continued on page 8
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On Readers' Service Card, circle No. 353

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WHATEVER HAPPENED TO THAT "MACHINE FOR LIVING"?

However rhetorical the question, it at least reflects our personal gratification that the work of so many outstanding residential architects is increasingly oriented toward elegance, imagination and environmental harmony. And we are even more gratified—albeit not unselfishly—by the high percentage of these architects who have recently specified Follansbee Terne on major projects. For Terne, its functional integrity validated by two centuries of use, is unique among roofing materials in that it provides both form and color at relatively modest cost.

"STORNOWAY", Ligonier, Penna.—featured in 1965 RECORD HOUSES.
Architect: Winston Elting, AIA, Chicago, Illinois

Follansbee is the world’s pioneer producer of seamless Terne roofing
Continued from page 8

The reviewer seems especially adverse to pictures, apparently because they present evidence too convincing in support of the text. He prefers to dismiss the combination as "a word-and-picture merry-go-round called 'influences.'" The pronouncement is flippant, opinionated and anti-intellectual, besides being in poor taste and unworthy of a magazine of P/A's caliber. The reviewer sees fit to go off on a tangent concerning R.H. Blythe's book, Zen in English Literature and Oriental Classics, categorized as a "scholarly treatise," being pictureless, and propounding the coincidence thesis, nowhere suggesting that Zen parallels in Shakespeare are "because Marco Polo refused to stay home." Of course Marco Polo never went to Japan, and, being an adventurer, rather than an intellectual, he failed to bring back little, if anything, of any cultural significance from the Far East. There were, undoubtedly, other channels of spiritual and artistic flow from Eastern Asia into Western Europe during the Middle Ages, but the remoteness of the period has left little record of them.

It is quite otherwise with my subject. Dealing with a recent period, I present concrete evidence of Japanese influence upon specific American works, especially architecture, beginning with that of the first Japanese building erected in this country at the Philadelphia Centennial of 1876. Further proof is furnished through the writings of leading architects and contemporary critics, who speak out in no uncertain terms. If, indeed, as the reviewer surmises, preferring in the face of authentic documentation to maintain that "who got there 'first'—is of no importance," then we may as well close up our schools, universities, museums, and libraries, and just sit down and wait for the coincidence of the Russians to discover America.

One final word: The reviewer’s last paragraph on my volume is so garbled that it is impossible to make any sense out of it. The quotations given—all from the last page—would be valid only in context and to people who have read the book through, and the reviewer’s use of them is evidence that he has not. Among them is one in which it is claimed that I have said something about "Abstract Impressionism." I must vindicate myself by declaring that I never heard of the term, I have never used it in my life, and certainly it does not appear anywhere in The Japanese Influence in America.

CLAY LANCASTER
Brooklyn, N.Y.

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Clymatron II incorporates new features of maximum benefit to the architect, engineer, contractor, and owner. It's the first combination air/light diffuser with factory-installed internally insulated air fittings (for 1.9 times greater heat transfer efficiency than uninsulated fixtures). It also features new internally adjustable air pattern control • built-in dirt trap (for cleaner ceilings) • continuous air supply slot • an integral housing for electronic “Dynamic Sensing” temperature control • and regressed splay that accommodates both framed and frameless lens • two side or one side air delivery.

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Energy can neither be created nor destroyed; it can be conserved and put to more efficient use. For example, when you buy light, you get light plus heat, whether you like it or not. Until recently, this light-generated heat represented wasted energy.

The Heat-of-Light energy conservation system changes this!

Barber-Colman engineers challenged traditional thinking. They asked, "Why should the building owner use an air conditioning system that throws away the energy (heat) he has already paid for in another form (light)?" The answers to this and other questions led to the modern Barber-Colman Heat-of-Light System.

One of the numerous ways that this energy conservation system works is shown at the right. How Heat-of-Light can best be applied to your next building project can be determined through one of our computerized Feasibility Studies. Simply contact your nearest Barber-Colman field office for details. No obligation.

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In the Heat-of-Light System, heat generated by lighting fixtures is drawn into the ceiling cavity (through the lamp compartment of the Clymatron II). Automatically controlled Barber-Colman Jetronic mixing units mix some of this warm air with cool primary air from the central air conditioner. This tempered supply air is then distributed to the conditioned space. Since there is more heat available than required for local comfort conditioning needs, the remaining Heat-of-Light is available for use at the building perimeter, if required, to offset heat losses.
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In fact, the corner joints in a Dorm Line wardrobe are welded so securely that they could actually support the dormitory roof. Compare this with a millwork frame, with corners that are only nailed and glued.

Over the years, Simmons Dorm Line furniture comes out way ahead with the lowest maintenance costs of any furniture available.

When you take into consideration that most built-ins are financed for a minimum of 18 years, you certainly should expect them to deliver full term service. Plan to specify Simmons Dorm Line built-ins for your next dormitory project.

Homecoming 1985

(And the Simmons Dorm Line furniture is still here)
Seal of superb styling: personalized fired copper roses. SARGENT. Lustrous colors handcrafted for amazing detail in patterns, crests, trade marks. Permanent. A distinctive addition to a complete line of advanced architectural hardware: 

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We'll sell you any kind of space conditioner you want.

As long as it's right for your conditions.

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Steel is tops
Houston dome steelwork completed 30 days early

This spring the Houston Astros moved into the world’s first indoor baseball park, a nine-acre steel-framed building topped by a 642-ft.-diameter dome that soars 202 ft. above the playing field. Because the Harris County Stadium is the first of its kind, architects-engineers Lloyd & Morgan and Wilson, Morris, Crain & Anderson faced a series of knotty problems, including a complex air-conditioning system, extraordinary acoustical difficulties, and tricky skylighting to admit sunlight for turf.

The first major decision was the type of structure to use for the dome. A number of systems were studied, including steel and aluminum geodesic suspension-type cantilever trusses, aluminum and timber space frames, and even an inflated flexible covering. The final selection—most economical of all—was a steel Lamella trussed structure designed by Roof Structures, Inc., of St. Louis.

Once under construction, the Lamella design proved even better than anticipated. The 2,890-ton dome—plus 6,110 additional tons of steelwork—was fabricated and erected in less than four months, 30 working days ahead of schedule.

Today, most large domes are built with steel because steel has the most favorable strength-weight-cost combination of any structural material. Steel can be erected in any season, and generally is less likely to be damaged in handling than other materials.

Lamella is a registered trademark of Roof Structures, Inc.

Owner: Harris County; Architects: Lloyd & Morgan and Wilson Morris, Crain & Anderson; Consultants: Praeger-Kavanagh-Waterbury; General Contractors: Lott-Drake, Inc.; Dome Designers Roof Structures, Inc.

Steel design most economical for Houston’s record-span dome. This Lamella design in steel was the least expensive of several systems considered and actual costs came in under the budget estimate. All members are standard structural steel sections.
The USS Family of Steels provides a range of strength levels to fit the designer's requirements.

Another striking example of steel's economy is Syracuse University's field house dome. With 700 tons of USS structural steel in the dome and canopy, it has a rise of 32 ft. and a diameter of 300 ft. In a competitive bid with a design using another material, steel saved $193,500.

At the Memphis Coliseum, an intricate and highly functional network of steel forms a gracious Lamella dome 105 feet high and 325 feet in diameter. Two other designs were originally considered—thin shell concrete and a conventional steel dome. Both were more expensive and would have taken longer to construct.

For information about the widest available range of structural steel shapes, or for design assistance, contact a USS Construction Representative at our nearest District Office or write United States Steel, Room 8216, 525 William Penn Place, Pittsburgh, Pa. 15230.

United States Steel: where the big idea is innovation
Fathers and sons from homes like this...

Eljer's new commercial fixtures are a refreshing departure from the ordinary "institutional" look. Their graceful lines and warm colors take their cue from Eljer's celebrated Master Crafted residential fixtures. Their advanced styling allows the architect greater latitude in washroom design—and they cost no more than conventional makes. Their upkeep is nominal...no hard-to-clean nooks and crannies. The acid-resistant surface provides easy maintenance and protection of your investment for years.

Get the entire story. Call your Eljer representative or write The Murray Corporation of America, Eljer Plumbingware Division, Dept. PA, P.O. Box 836, Pittsburgh, Pa. 15230.
That's the beauty of it. The subtle glow of the ACRYLITE luminous wall in this salon creates a mood of quiet elegance — and a sense of spaciousness. Back-lighting the facia provides glare-free, evenly diffused illumination.

Textured ACRYLITE panels in gradually intensifying hues set off the semi-circular divider as a dramatic design motif.

With ACRYLITE, in fact, unusual design ideas are as limitless as your imagination.

ACRYLITE acrylic sheets come in over 70 exciting patterns and colors — velvety smooth or exotically textured...transparent, translucent or opaque. Lightweight, fade-proof, impact-resistant and lastingly beautiful, ACRYLITE is the unique new way to divide space and control light dramatically.

Look what you can do with ACRYLITE:

Twist it
ACRYLITE, when heated, can be permanently twisted or bent into unique and interesting forms.

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ACRYLITE works like wood; can be cut, sawed, drilled, routed, ground, sanded and polished with ordinary tools.

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ACRYLITE is easily formed by conventional thermo-forming methods. Ideas become reality with this versatile material.
Cleveland architect A. A. Papesh specifies Inland Radiant Ceiling Panels with 3M Brand Velvet Coating

American Greeting Card Building combines superior heating, cooling, acoustics with near-perfect light diffusion

"Has excellent hiding qualities. Even the seams between panels flatten out in appearance," says architect Alexander A. Papesh about 3M Velvet Coating on Inland Radiant Ceiling Panels.

By finishing Inland Radiant Ceilings with 3M Velvet Coating, new beauty has been added to the system of controlling temperature nature's way: through transfer of radiant energy.

Uniform and glare-free, 3M Velvet Coating is an optical rather than a chemical formula. It has virtually perfect light diffusing properties — giving a soft, suede appearance with rich, uniform color over a wide range of viewing angles.

And while conventional flat finishes burnish when cleaned, 3M Velvet Coating stays glare-free—even after 250 scrubblings. Dirt and light abrasion marks remove easily with no change in appearance.

3M Velvet Coating and Inland Radiant Ceilings—a simple, economical system of temperature and acoustical control—plus glare-free, velvet-soft beauty to complement the interior decor.

For detailed information on Inland Radiant Ceilings, write: Inland Steel Products Company, P.O. Box 393, Milwaukee 1, Wisconsin.
San Sebastian, Spain Three members of the University of Virginia's architecture faculty have won $20,000 in an international competition sponsored by the Gran Kursaal Maritime and Real Estate Company of San Sebastian. Their winning design is for a multiple occupancy building complex, which will replace an old existing structure, and which will include 105 luxury residences and apartments, a luxury hotel with space for 300 guests, 300,000 sq ft of shopping arcades, underground parking for 350 cars, an auditorium seating 1000 persons, a covered skating rink, an indoor swimming pool, an elevated public terrace and gardens, restaurants, etc. The three winners—Jan Lubicz-Nycz, lecturer in architecture, Dr. Carlo Pelliccia, assistant professor of architecture, and Dr. William Zuk, professor of architecture, who served as structural consultant—conceived their project as a "container": a distinct structure related to the city of San Sebastian. The site is a triangular one at the mouth of the Urumea River, which runs through the center of town. (San Sebastian is located 12 miles south of the French border on the Cantabrian Sea; and during the summer months, it becomes not only a popular resort but also, when "El Jefe" is there, the capital of Spain, much as Johnson City becomes the U.S. capital at barbecue time). Designer Jan Lubicz-Nycz had this comment about the concept behind his winning entry: "In times when the process of urbanization is rapidly gaining momentum, architecture as a discipline of a single building for a specific purpose—school, church, house, factory, etc., placed on its isolated site defined by property lines and arbitrary street patterns—results in urban forms that are inefficient and uneconomical aggregations of small buildings, are wasteful in the use of land, means of communication, and services, not to mention the poverty of their spatial matrix. A possible direction for the future of architecture is that it will become a discipline concerned not with the single and competing buildings but will seek conceptual and formal solutions in terms of multioccupancy structures which, for lack of a better term, are here called "containers."

According to the promoters, the structure will be built as designed, probably at a cost of about $6,000,000. Jurors for the competition were architects Secundino Zuazo Ugalde, Heikki Siren, Ernesto N. Rogers, Pierre Vago, Julio Cano Lasso, Rafael La Hoz Arderius, and sculptor Eduardo Chillida Juantequi.
I'm a young architect who specifies DURCON® sinks

I'll reach the top because I do good work and insist on the best products. For corrosion resistant laboratory sinks, I use DURCON. It is attractive, light weight, sturdy, low in cost, and will last. When I'm an old architect these sinks will still be in use, and I'll be a wealthy architect because I've done good work and used the best products.

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He goes on to say: "At the same time, the technology of architecture is becoming a larger and more complex area of the field. Engineering schools are training fine minds for research and pure science. But there is a definite lack of graduate engineers trained in the technological, practical aspects of engineering needed by the building industry. The new Division of Architectural Technology will help fill that gap."

Smith (1), who becomes the fifth dean in the 94-year history of Columbia's School of Architecture, was born in 1905, educated at Massachusetts Institute of Technology, and, by 1935, was an associate in architecture at Columbia. He has been there ever since. In 1937, he became assistant professor, and resigned as vice-president of Wininger & Selby, Inc., a construction firm. He became associate professor in 1946, professor in 1953, assistant dean in 1957, and associate dean in 1962.

Giurgola comes to Columbia from the University of Pennsylvania, where he was Professor of Architecture. Born in Rome in 1920, Giurgola, who is now a U.S. citizen, graduated summa cum laude from the University of Rome and earned an M.S. degree in architecture from Columbia in 1951. Besides maintaining an active architectural practice (his firm Mitchell/Giurgola, Associates, of course), won the recent competition for the new AIA headquarters), Giurgola has taught at Cornell University, and was art director and architectural editor of Interiors magazine from 1952 to 1957.

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He is also currently a design consultant for Philadelphia's City Planning Commission.

Charles Abrams, who was born in Poland in 1901, has a legal, administrative, and academic background. He helped write municipal housing laws in the 1930's, and was New York State Rent Administrator in 1955. From 1955 to 1959, he was chairman of the New York State Commission against Discrimination and a member of the Governor's Cabinet. He is the author of five books on housing and planning. He has in addition taught at the Massachusetts Institute of Technology and in the Graduate School at the New School for Social Research.

Mario Salvadori, who was born in 1907, has doctorates in both civil engineering and mathematics from the University of Rome. He has written numerous books and papers in his fields, and is a member of the Columbia University Seminar on the Influence of Technology on Society. The separation of powers, administrative and pedagogical, looks good to P.A.—at least on paper. Too often, good designers and teachers have been forced to spend most of their time on red tape. Now, Smith may be able to relieve Giurgola, Abrams, and Salvadori of these chores.

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**Refreshing Approach to Urban Renewal in Mint-Julep Land**

**LOUISVILLE, KY.** The last major architectural competition in Louisville was held more than 30 years ago. This spring, the city's Urban Renewal and Community Development Agency held another. The results were announced recently, and the winning design, unlike many competition winning designs, has an excellent chance of being built in its original form. To help insure that unwarranted changes are not made, the agency has retained two of the architectural jurors—Ralph Rapson, Dean of the University of Minnesota's School of Architecture, and George W. Qualls, Associate Professor of Architecture at the University of Pennsylvania—to act as continuing consultants, representing the city in overseeing the project.

The nationwide competition, which drew submissions from 31 architect-developer teams, was for the design of a neighborhood residential-commercial complex (apartments, town houses, shopping centers) on 34.4 acres of land in the west downtown area.

The winning design was presented by Louisville architects McCulloch & Bickel, who are working with two New York finance-developer firms, Taylor Hurley Associates, Inc., and David Rosen Associates, Inc. The contractor will be Wittenberg Engineering and Construction Company of Louisville.

Called Village West, the community will bar automobile traffic, but will provide off-street parking space for all of the 712 dwelling units in the community. Around the perimeter of the village will be a series of five-story terrace apartment buildings. These will overlook interior groupings of town houses, playgrounds, schools, churches, shopping center, etc., amid generous landscaping. All entrances to apartments in the five-story buildings are from the outside. First- and second-floor duplex units will be entered from grade, Single-level apartments on the third floor, and duplexes on the fourth and fifth floors, will have entrances off long promenade terraces, which are reached by exterior stairwells. Commenting on the favorable aspects of the design, the jury stated: "One of the strongest features of the design is the pedestrian system of movement and closed spaces along diagonal paths by courtyards alongside open spaces, which provide varying experiences on a trip through the entire site." The jury feels it is worth mentioning further that the results of the competition seem to amply justify the time and expense of carrying out this competition. It is doubtful whether the result could have been obtained without benefit of the competition, which will produce a community offering more in the way of living quality than this type of housing has produced anywhere else. Hopefully, the competition will have significant impact on the future developments of this type in other cities."

Cost of the land was fixed by appraisal before the competition at $262,000, or about $700 per unit. All developers had to agree to pay that price, and it is anticipated that financing will come under the FHA 221 (d) (3) program, which sets limits on both construction costs and family income of occupants. Rents in the housing units will range from about $70 a month to about $100 per month.

Juryors were (besides Rapson and Qualls): Lewis E. Kitchen, David Rosen Associates, Inc.
Executive Director, Northeastern Illinois Planning Commission, Chicago; Roger C. Wilkins, Vice-President, Travelers Insurance Company, Hartford, Conn.

Work on a $2,500,000 pilot project, which includes the shopping center and some apartments, is expected to be underway by the beginning of next year.

Reynolds Awards Goes to British Building

LONDON, ENGLAND The coveted $25,000 R. S. Reynolds Memorial Award, the most remunerative annual international award in the field of architecture, was presented to James Gowan and James Stirling for their Engineering Building at Leicester University.

Administered annually for the last nine years by the AIA, the Reynolds Award honors architectural achievements making “significant use of aluminum.” The 1965 award, presented here last month by Morris Ketchum, then first vice-president of the AIA, is the first to go to British architects. Their winning design—a low-budget, low-maintenance complex—uses standard aluminum patent glazing bars throughout to support glass and cladding panels.

Considerable controversy has been stirred up by this complex building, which dramatically overshadows an extraordinary campus. The forms are simple—the architects have admitted a strong Wrightian influence—but they are arranged in a very distinctive way.

The angular, concrete frame structure is split by expansion joints into three blocks: one, a three-storied workshop, is attached to the second, a long, one-storied workshop, 125-ft high. Both buildings are roofed by spectacular skylights of diamond-shaped glass—a folded plane, north light construction designed to carry heavy hydraulic pipe runs.

Two tower elements of unequal size and split by a circulation area—separate concrete towers for stairs and an elevator—fit close against the workshops to form the third block. The tall tower, sheathed in translucent glass, houses administrative offices. The smaller tower, which is divided into lecture halls, has a tile-clad exterior interrupted by wrap-around strips of jutting windows that complement the angular workshop skylights. The towers rise above windowless, cantilevered podiums shaped like the prow of a coal barge. Here and there, exhaust pipes of varying sizes poke up. What results is a startling interplay between vertical mass and the horizontal thrust. The solid parts of the building are faced in red brick and Dutch terracotta tile.

The building’s interior looks efficient—and somewhat unfriendly: it has been economically finished in tile, brick, and metal; pipes are all left exposed; bare spots light the corridors. One wonders what this building is like during a typically dreary spell of English weather.

Nevertheless, the complex is meticulously worked out. In addressing his audience at the awards dinner, Ketchum said, “an American going abroad is likely to have too tolerant an attitude toward the industrialization of the country he is visiting. After all, he has been told that America’s vaunted technology created the highest living standard in the world. And then an American architect comes to Great Britain and finds that you are ahead of us in the industrialization of buildings.”

In addition to the $25,000 honorarium, Messrs. Gowan and Stirling received an original sculpture, in aluminum, by Elbert Weinberg.

Urban Design for San Francisco Civic Center

SAN FRANCISCO, CALIF. A breath of Parisian air blew into “Baghdad on the Bay” this spring with the announcement of the first prize winners in an international competition for the Beautification of the San Francisco Civic Center Plaza. Sharing the first prize of $3750 were two Bulgarians, now residents of Paris: Ivan Tzvetin, 36, and Angela I. Danadjieva, 34. With the award went a strong jury recommendation for the project’s realization. The jury consisted of Thomas Church, chairman, landscape architect, San Francisco; Sibyl Moholy-Nagy, professor of architecture, Pratt Institute, New York; Andre Bloc, sculptor and editor of L’Architecture D’Aujourd’hui, Paris; Moses Lasky, attorney and art
patron, San Francisco; and Luis Barragan, architect, Mexico City.

Selected from 317 entries, the first-prize winner represents a series of flat terraces, 100’ x 100’, that are stacked, juxtaposed, and arranged much like rugs in an attractive department store layout. One terrace will be a water-filled reflecting pool. Others will be covered with grass and may serve as places for the display of sculpture or for seating during public assemblies. Some, as they appear in the design, are concrete slabs covered with incised text telling the history of San Francisco.

Unanimously praising the winning entry, the jury said: “This design, instead of being just another municipal plaza, is so unique that it will be a matter of comment around the world and will prove to be a perpetual attraction to the visitors. Any other selection would have presented a compromise and would not have permitted an inspiration for future significant contributions in sculpture, paving, lighting, and other aspects of this Plaza. A new beginning in the design of a truly urban environment could emanate from this winning project.”

Second prize of $3250 went to Iwona Sadowska, Andrzej Gorczynski, and Marek Lewandowski of Warsaw, Poland.

Third prize, $3000, went to Americans Sidney Katz and Albert Bobnick, William Vitto, and Albert Lorenz as associates.

New P/A Associate Editor

This month, Forrest Wilson joins Progressive Architecture as Associate Editor, Features, replacing Ilse Meissner Reese, who is returning to full-time practice.

Readers of P/A will remember Wilson’s article on “Mayan Stone-Age Masonry” (November 1964 P/A), and his incompatible drawings for “The Busy Architect’s Guide to the World’s Fair” (October 1964 P/A) and “Progressive Architecture’s Washington Vade Mecum” in last month’s issue.

Wilson’s construction experience ranges all the way from ship’s carpenter during World War II to construction field superintendent and designer for Maria Bergson Associates. He has most recently been assistant professor in charge of the construction program for the Department of Interior Design at Pratt Institute. Besides his knowledge of structure and design and his talent in presenting them visually and verbally, Wilson is an accomplished sculptor, having studied and worked in France, Mexico, and the United States. His varied talents and steady enthusiasm will make him a valuable member of P/A’s editorial staff.

Design for an Urban Campus

Diamond Head Imperiled Again

Honolulu, Hawaii When Diamond Head was threatened by an onslaught of get-rich-quick apartment-house builders a few years ago, concerned islanders started the usual round of petition signing and button-holing of legislators (p. 79, October 1962 P/A). Things quieted down for a while and even showed signs of improvement in 1963 when the City Council was prevented from making any zoning changes within the city until a general plan for the city and county was adopted. This May, however, the City Planning Commission, in a cloak-and-dagger meeting, voted to recommend the change on the zoning of the property on Diamond Head from single-family residential to apartment-hotel classifications. Immediately, groups such as the AIA and the Oahu Development Association leapt to the barricades with cries of “Foul!” and excla-

mations of worry over the future of one of the United States’ most famous landmarks.

While the conduct of this affair on the municipal level is (however blatantly the city government has moved) a local matter, the future of Diamond Head is not. The vision of this imposing promontory being laid helpless before the ravishing of the real-estate speculative is disturbing, to say the least. It is all too easy to imagine Diamond Head ringed round with hotels and apartment buildings that would put Miami Beach to shame. And it takes only a little more thought to envision the same thing happening to the Grand Canyon or the Black Hills or Mount Kennedy. The Hawaii State Legislature has, since the action of the City Planning Commission, declared Diamond Head a state monument. Perhaps this will give fuel to the fires of those trying to prevent the defacing of this monument. If not, Secretary of the Interior Stewart Udall had better step in to save Hawaii from its own folly.
000,000—a top of a $1,000,000 loan from the Ford Foundation to finance its expansion.

A major planning problem faced the architects. The newly acquired land lies across from the present campus but is separated from it by the Hempstead turnpike, which is soon to be doubled in width. WBT&L decided to build a new library at the foot of the existing campus next to the turnpike, where it would act as a focal terminus. Construction of the library was begun this spring. The original Hofstra campus, completed in 1935, was laid out like Jefferson’s University to be doubled in width. WBT&L acquired land lies across from the turnpike, where the open land beyond them. One drawback in an otherwise skillfully detailed plan may be the delivery provisions for the dining-room kitchen. Because of the way the building is situated, all loading and unloading is accomplished on the side of the building away from the kitchen, and provisions must be wheeled down the corridor that runs through the main approach to the bridge. If not carefully controlled, deliveries at peak traffic hours could be disturbing and disturbed.

AIA HONOR AWARDS

WASHINGTON, D.C. Announced at last month’s AIA convention here were winners of the 1965 AIA Honor Awards. Four of the 11 winners, selected from 388 entries, received First Honor Awards, the rest received Awards of Merit. First Honor Award winners were: Sert, Jackson & Gourley of Boston for the Francis Greenwood Peabody Terrace at Harvard University; I. M. Pei & Associates, New York, and King & King Architects, Syracuse, for the S. I. Newhouse Communications Center at Syracuse University; Reid & Tarics, Architects & Engineers, San Francisco, for the Eleanor Donnelly Erdman Memorial Chapel, Robert Louis Stevenson School for Boys, Pebble Beach, Calif.; and Eero Saarinen & Associates, Hamden, Conn., for the Deere & Company Administrative Center, Moline, Ill.

Awards of Merit went to: Roger Lee Associates, San Francisco, for Terrace East and Terrace West Apartments in Berkeley; William D. Warnock, Providence, R. I., for the Gordon School in East Providence; Robert Damora, Bedford Village, N.Y., for a pre-fabricated tract house for the New Seabury Community on Cape Cod; Crites & McConnell, Cedar Rapids, Iowa, for Ray D. Crites’ residence in Cedar Rapids; Clark & Beuttler, Architects, with Charles W. Moors and Alan F. Morgan as associates, for the Headquarters Building for the Savings & Loan Association, San Francisco; Kirk, Wallace, McKinley & Associates, Seattle, for the Japanese Presbyterian Church of Seattle; and R. Gompe Roesser, Austin, Texas, for The Oaks in Austin.

Jury members were: Willis N. Mills, Stamford, Conn., chairman; Phillip Johnson, New York; Donald Lutes, Springfield, Ore.; Nathaniel Owings, San Francisco; and Peter Tarapata, Bloomfield Hills, Mich.

There’s No Business Like Business Business

WASHINGTON, D.C. The prime architectural achievement of the Federal Government since World War II has been the distinguished series of embassies and consulates erected by the State Department’s Foreign Buildings Operation. This notable program, which has produced such famed buildings as Saarinen’s embassies in Oslo and London, Stone’s New Delhi embassy, Johansen’s Dublin embassy, and Weese’s Accra embassy, is now imperiled with “improvement” by a group of businessmen asked by President Johnson for advice on how to create an “American atmosphere” in our American embassies. This raises the specter of an approach summed up by mottos like: “This embassy looks good, like a good American embassy should,” or, “Our embassy has 34 per cent fewer cavities than your embassy,” or, “The U.S. embassy cleans like it’s 10 feet tall.”

Visualization of what this all may lead to is seen here. Fair warning, Mr. President: Leave the design of our buildings in the hands of the professionals!

Eavesdroppings

“Today, much more so than in Wordsworth’s time, the world is too much with us. Business and industry, which have done such a wonderful job of seeing to it that we have so many more things nowadays to live with, could well take some time out to be concerned with the possibility that we may yet find ourselves with too few things to live for.”

“Urban renewal, which is concerned with the blight of our real estate, could well have some counterpart which is concerned with the blight of our “unreal estate”—which is what Nabokov calls that intangible property which is rememberable—the net that we are left with after we have seen and learned things. This is the realm of memory and imagination, and this is the province of the arts.” Arnold Gingrich, Publisher, Esquire magazine, at New York Board of Trade’s “Business in the Arts” luncheon.

“The source of man’s power over life is through the effect he can have upon his environment.” Dr. Jonas Salk.

“Every vigorous age has had its own vision of urban splendor. Why should we be deprived of it?” Walter Gropius.

“Once we have stemmed the flood of automobiles from the heart of the city... we can bring back the tens of thousands of residents who have fled; we can bring back the artistic, social, and cultural functions which have either died off completely or found a more remote existence in refuges homes in suburbia; we can bring back works of the fine arts, fountains, sculptures, trees and flowers and architecture of excellence—because we have re-established the possibility to contemplate them without the fear of being killed by an automobile in the procedure.” Victor Gruen at Awards in Urban Studies dinner of the Pittsburgh Plate Glass Foundation.

“My father told me as a boy that I could recognize a bad carpenter by his hair; each was
Courtyard Complex for Connecticut Elderly

We have, I fear, confused power with greatness. . . . An American renaissance [can come about through] . . . the building of handsome and balanced cities . . . the saving of our wildlife and wild land, the preservation of our historic landmarks, the cleansing of our air, the restoration of our countryside and the redesigning of our cities and suburbs." Stewart L. Udall, Secretary of the Interior, in commencement address at Dartmouth College.

Heads at Hampton, Cooper Union

In September, Bertram Berenson, who has been Research Associate Professor of Architecture at Louisiana State University, will become Chairman of the Department of Architecture at Hampton Institute. Joining Berenson will be three new staff members: Bernard Jensen, a San Francisco architect, who will teach full-time, and David Cooper and Armando Guerra, both of Hampton, who will teach part-time. Berenson writes P/A: "Although I have made no definite plans for the organization of the curriculum, I anticipate that the course sequence will be experimental and will include parallel studies in planning, design, the humanities, social sciences, and technical course work toward a five-year undergraduate professional degree in architecture."

John Hejduk will become chairman of the Department of Architecture at the Cooper Union School of Art and Architecture, effective September 1. Hejduk's appointment climaxes a two-year search for a chairman following the promotion of former department chairman Esmond Shaw to dean of the school. Hejduk's teaching experience includes work at the University of Texas, Cornell, and Yale, and most recently at Cooper Union, where he has been Associate Professor of Architecture for the past year.

Pennsylvania Avenue Plan Forges Ahead

WASHINGTON, D.C. Nathaniel A. Owings of Skidmore, Owings & Merrill, who was appointed chairman of the Temporary Commission on Pennsylvania Avenue by President Johnson, talked recently with P/A of his plans for making the planned grand design of the avenue become reality.

His first act was to call a meeting of the commission at the Octagon to iron out general procedures. Among the members are the Secretary of the Interior, Secretary of the Treasury, Secretary of Labor, Secretary of Commerce, Attorney General, Postmaster General, Administrator of General Services, Housing and Home Finance Administrator, Chairman of the Commission on Fine Arts, Chairman of the National Capital Planning Commission, Secretary of the Smithsonian Institution, President of the Board of Commissioners of the District of Columbia, Director of the National Gallery of Art, and the Architect of the Capitol.

Chairman Owings said he has asked the new National Park Service to categorize Pennsylvania Avenue as a "National Historic Parkway," a move that presumably will help smooth whatever obstacles might lie ahead in the field of real estate economics or land acquisition. Actually, Owings foresees no major problems in these areas, feeling that the entire program can be accomplished with existing agencies under existing laws.

First physical evidence of the new avenue will probably be the new building for the FBI, across from the Federal Triangle. After the commission had helped the architect (Charles F. Murphy Associates), the FBI, and GSA in advancing a design that will be appropriate to the new look of the thoroughfare, a private developer who owns property nearby on what is the site of the Raleigh Hotel announced willingness to go along with a design of his own to enhance the avenue.

Possibly the first major space to take form along the avenue will be Archives Square, which will run from the Archives Building to the Portrait Gallery. Private investors will be asked to take a hand in this area, particularly with a large hotel that will replace the rooms lost when the Willard and Washington hotels near the Treasury are demolished to create the new National Square. National Square itself is expected to be the next development on Pennsylvania Avenue. Present plans call for two private developers to cooperate on the creation of this area, with the remaining space to be
Reverberations at Lincoln Center

NEW YORK, N.Y. Philharmonic Hall at Lincoln Center, designed by Max Abramovitz, will undergo a thorough acoustical treatment last summer when some of the padding from the seats, replacing fabric on their backs with wooden panels, and replacing carpeting on the floor with vinyl. Although the removal of the carpet will also remove some of the plushness and elegance traditionally associated with fine music, Keilholz believes that the changes will make sound in the hall enveleging, rather than directional, as it has been. As a result of the changes, reverberation time will be increased from 1.6 seconds to a more favorable 2.1 seconds.

Moreover, the new acoustical treatment will make it possible for musicians on stage to hear each other better, as well as for the audience to hear the musicians better. But if stage and audience walls will be better integrated acoustically, they will also seem more harmonious visually. For the dark acacia wood placed on the walls of the stage last summer will blend with that put in the auditorium this summer. Architect Abramovitz, who advised on the changes, believes that the wood-covered walls will provide more reflected light in the auditorium, giving the performer a feeling of being closer to the audience. The hall will no longer appear deeper than it really is. By removing the padding from the backs of seats and by adding more 21-in. seats, (in place of the 22-in. seats now in use), room will be created for additional seats, increasing the hall's capacity from 2658 to 2858. Philharmonic officials believe this will allow 70,000 additional admissions a year. The extra income will pay for the acoustical work, and Lincoln Center officials will not have to dip into capital funds or solicited more contributions. Since Philharmonic Hall opened in 1962, $800,000 has been spent so far on correcting the acoustics.

Personalities

Dr. Norman Bienefeld, president of the Alumline Corporation of Pawtucket, R.I., has been elected to a second term as president of the National Association of Architectural Metal (NAAMM) . . . Winner of the 1965 Wood Structure Design Award given by the National Lumber Manufacturers' Association is the architectural firm of Callister & Associates of Tiburon, Calif. . . . Jacob Robbins, Bay Area architect, has been named chairman of the Oakland (California) Planning Commission . . . William A. Doebelle, Harvard professor of city and regional planning, has become Associate Dean for Development of the Harvard University Graduate School of Design . . . Whitney North Seymour, Jr., will succeed Giorgio Cavaglieri as president of the Municipal Art Society of New York . . . Named as a trustee of the Committee for Economic Development was Chicagoan and SOMian William E. Hartmann . . . Dr. Hermann Schenck, president of the German Iron and Steel Institute and Pierre van der Rest, president of the Belgian Iron and Steel Institute, were made honorary members recently of the American Iron and Steel Institute. Strong are the ties that bind . . . The New York Chapter, AIA, has elected Max O. Urbahn, New York architect, president. Marcel Breuer was given the Chapter's Medal of Honor "in recognition of distinguished creative design for construction and industry, of outstanding architectural design achievements . . . of significant contributions to the profession . . . of the ability to recognize the importance of and to use all the visual arts in the creation of a complete architectural environment." Norval White, received the R. B. Rutkins Memorial Award "for his creative leadership and devoted service to the Chapter, the profession and the community." Charles Abrams, housing expert, was also honored . . . Los Angeles architect, Robert E. Alexander, has been named by Governor Brown to the Advisory Council on Good Design . . . The American Institute of Steel Construction awarded research fellowships to David L. Cote of the Drexel Institute of Technology, David M. Harris of the University of Houston, and to William C. Russell of Oregon State University. New appointment to the Potomac River Task Force is Donn Emmons, partner in the San Francisco architectural firm of Wurster, Bernardi & Emmons. The Task Force also includes Arthur Odell, Jr., Edmund R. Bacon, R. Max Brooks, Francis D. Lethbridge, Ian L. McHarg . . . Gilbert A. Stayner, a third-year student at the University of Southern California School of Architecture, has been chosen winner of the Mentorship Award established by Los Angeles architects Daniel, Mann, Johnson & Mendenhall . . . Lewis Mumford was recently awarded the Emerson-Thoreau Medal of the American Academy of Arts and Sciences . . . Edward L. Tagwerker is now Associate Deputy Commissioner for Operations of the Federal Housing Administration . . . C. Maxwell Stanley will receive the National Society of Professional Engineers Award for outstanding service to the engineering profession . . . David A. Crane, planning administrator of the Boston Redevelopment Authority, will become, this fall, an associate professor of civic design in the University of Pennsylvania's Graduate School of Fine Arts. He will serve as chairman of the school's committee for civic design.

Doughnut on the Hackensack

HACKENSACK, N.J. Rising above the banks of the Hackensack River are the newly opened offices of a petroleum terminal that are distinguished by pleasing designs. In an industry where the height of architectural elegance is a square concrete-block building decorated by a stenciled sign that says something like "No Dumping" or "Danger: Inflammable," the offices of the Reinauer Brothers Terminal are striking in deed.

What the brothers and their father have done in Upper Saddle River, N.J. (with the de-
PROGRESSIVE ARCHITECTURE announces the thirteenth annual Design Awards Program. Awards will be made to architects and their clients for projects now in the design stage to be built in 1966 in the United States.

PURPOSE of the Design Awards Program is to give recognition to good design in the period of design development, rather than after completion, in order to encourage the designers and owners of the projects so honored.

AWARDS and CITATIONS will be given by the Jury listed below to the best projects chosen from nine categories—COMMERCE, EDUCATION, DEFENSE, HEALTH, INDUSTRY, PUBLIC USE, RECREATION, RESIDENTIAL DESIGN, RELIGION—on the basis of site use, choice of structural system and materials and methods of construction, solution of the client’s program, and over-all design excellence.

The Jury will assign projects to the various categories, and reserves the right to withhold an Award or Citation in any category.

FIRST DESIGN AWARD may be given to the one best building submitted.

FIRST DESIGN AWARD, AWARDS, AND CITATIONS may also be given in Planning and Urban Design. Under this phase of the program, the Jury will consider projects in Urban Redevelopment, Campus Planning, Industrial Park Planning, Recreational Area Planning, etc.

JURY will be composed of: EDWARD CHARLES BASSETT, Partner, Skidmore, Owings & Merrill, Architects, San Francisco, Calif.; WILLIAM J. CONKLIN, Partner, Whittlesey & Conklin, Architects and City Planners, New York City; KEVIN ROCHE, of Eero Saarinen Associates, Hamden, Conn.; VINCENT SCULLY, JR., Professor of the History of Art, Yale University; DR. AUGUST E. KOMENDANT, Consulting Engineer, Montclair, N.J.

JUDGMENT will take place in New York during September 1965. Winners of Awards and Citations will be notified (confidentially) immediately after the judgment.

ANNOUNCEMENT of the winning projects will be made at a presentation in the home town (if practicable) of the recipient of the First Design Award. Winning projects will be featured in January 1966 P/A. As in the past, P/A will arrange coverage of winning projects in news media, particularly those in the localities of all the Award and Citation winners.

SUBMISSIONS do not require filing of an application blank. For each project you submit, simply send:
1. On a 5" x 8" card, type the client’s name, location, and proper name of project; name and address of the architect; and identify all items included in the submission.
2. Brief explanation of the program and your solution.
3. Description of materials and construction methods used, and the reasons for their use.
4. Site plans; basic building plans; pertinent sections and details.
5. Perspective or model photographs.
6. A statement that (a) the project is now in the design stage and that construction is anticipated in 1966, and (b) that submission of a project for judgment gives PROGRESSIVE ARCHITECTURE first rights in the architectural field to publish both the project and the finished building if it receives an Award or Citation.

It is preferred that you submit 8" x 10" prints, photostats, or photographs. Original drawings, actual models, or mounted exhibit panels will not be accepted. No material is to exceed 11" x 17" in size; if drawings cannot be reduced to this size, they must be folded to a size within this limit. Each project is to be submitted under separate cover.

DEADLINE FOR MAILING is August 31, 1965. Address entries to Awards Editor, PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York, N. Y. 10022.

P/A will guard and return all submitted material.
**PPG Competition Winners**

**San Francisco, Calif.** Two fifth-year architectural students at the University of Illinois won $1200 this spring for an urban renewal design for the Hunter's Point Ridge location, overlooking San Francisco Bay. The national competition for architectural students, won by Terry Ernst and Charles Miller, was sponsored jointly by Pittsburgh Plate Glass Company and the National Institute for Architectural Education.

The winning design for a community of 20,000 has horseshoe-shaped apartments following the contour lines and slopes of the ridge site. Ernst and Miller said this about their design: "We main-
tained the identity of the individual inhabitants in a complex of mass-produced units through the use of human scale and also by utilizing the natural contours to bring about a seemingly arbitrary placement of living units. This resulted in an infinite variety of spaces within the complex itself, yet maintained an ordered circu-
tation toward the central community space. The curvilinear form of the central space was used as the focal point of the housing, reflecting its form. It encompassed the central park and directed the community's view toward the Bay."

Second prize, $750, went to three New York City architectural students: Secundino Fernandez, Joseph Fleischer, and Dennis Singer. Third prize, $500, went to Sally Waxman and Richard Kajmowicz of the University of Illinois.

**Schools**

URDOA, Urban Redevelopment Division of the ACTION Council for Better Cities, in cooperation with NAHB and NAHRO, will present short summer-school sessions on urban renewal projects; the courses will be given in Chicago (July 27-28), and in Den-
er (August 16-17). Reservations and registration fee ($95, $75 for ACTION, NAHB, and NAHRO members) should be sent to ACTION, Inc., Urban Redevelopment Division, 1025 Connecticut Ave., N.W., Washing-
ton, D.C. 20036...Southern Counties and Southern California Gas Companies have established a $1,000 annual

**Cooper Union Studies Staten Island**

NEW YORK, N.Y. The completion of the Verrazano-Narrows Bridge, linking Brooklyn and Staten Island, is expected to bring considerable development of the island, with attendant planning headaches. In last month's 106th annual exhibi-
tion of student work at Cooper Union, a solution was shown that proposed vertical cities housing 52,000 persons each, with all necessary community services, stores, communica-
tions, and service facilities. These 1600-ft towers, using members in tension as the basis of the structure, would be sur-
rounded by parks and wooded areas. A sketch of a completed tower is shown here, together with a view out from the core showing residences, walkways, roads, and distribution of me-
canical ducts. Design is by students Kenneth M. Baresich, Jeffrey Ollswang, Michael J. Pittas, Charles P. Reiss, and David C. Rib.

**Yak Felt Yurts Passe**

According to a report in The New York Times, Mongol herdsmen of Inner Mongolia have begun to live in plastic yurts, or tents, rather than the traditional felt-covered variety. The yurt-dwellers say that the traditional felt-covered variety suits the temperaments of the people who work in it. The site includes petroleum tanks, bullrushes, and wire-mesh fence along the river; the building itself is a doughnut-shaped concrete block projection off a regulation one-story ware-
house. Built around a carefully landscaped atrium (pool, bushes, trees, flowers), the offices all face outward to cap-
ture views of the river and bullrushes, avoiding the petroleum tanks. The ceiling is composed of 60 precast, pre-
ressed concrete vaults, each weighing 7800 lb, and each resting on the circular concrete block walls. Half-moon-shaped, tinted-glass windows fill the space between tops of the arches and the wall beneath, and at night light shining through these windows makes the roof seem as if it is floating.

What do Reinauer Brothers have to gain from such pleasant architecture? Nothing really—except an appealing envi-
ronment for themselves and their employees. As distributors for Phillips "66" petroleum products in northern New Jer-
sey, their customers never visit their offices.

Back in 1948, vice-president Franklin Reinauer II met Frank Lloyd Wright on the site of the Guggenheim Museum in New York and talked with him for 10 minutes. "It was an unforgettable experience" says Reinauer, who keeps a draft-
board outside his office. Reinauer's interest in architecture was the initial inspiration for the building. And it is to the credit of almost everyone connected with the project that both offices and warehouse were constructed at a cost of roughly $15 per sq ft.

**URDOA, Urban Redevelopment Division of the ACTION Council for Better Cities, in cooperation with NAHB and NAHRO, will present short summer-school sessions on urban renewal projects; the courses will be given in Chicago (July 27-28), and in Denver (August 16-17). Reservations and registration fee ($95, $75 for ACTION, NAHB, and NAHRO members) should be sent to ACTION, Inc., Urban Redevelopment Division, 1025 Connecticut Ave., N.W., Washington, D.C. 20036...Southern Counties and Southern California Gas Companies have established a $1,000 annual scholarship fund for architectural study at the San Luis Obispo campus of California State Polytechnic College.**
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O.K. Now forget it.

(Until your next roofing or wall insulation job.)
Watterson Steps Down

WASHINGTON, D.C. Joseph Watterson, for more than eight years editor of the AIA Journal, is resigning his position June 17. He plans to travel, and to take on assignments in architectural writing, editing, consultation, and lecturing. For over 30 years, before he became Editor of the Journal, Watterson was a practicing architect, first in Cleveland, then in Mineola, Long Island, N.Y., where he had his own office. During the Depression, he taught at the College of the City of New York; and he is the author of the book Architecture—5000 Years of Building. His successor will be Robert E. Koehler.

Down in the Dumps

NEW YORK, N.Y. There is the story of the young history student, who, pressed for the date of Columbus's arrival, went to the library and couldn't find it. Watterson, who is unsure of himself, added, tentatively, "more or less." In 1641, more or less, this farm house, known locally as the Pieter Claesen Wyckoff House, was constructed in what was then New Amsterdam. Today, 324 years later, it is still standing there, but it is now in Canarsie, which is part of Brooklyn—which, of course, is part of New York City. The City has encroached on the old farm house in more than name. The house stands surrounded by a dump, by piles of rusting automobile bodies, discarded tires, and other artifacts of our culture. Instead of the rolling meadows that were there in 1655 when Pieter Claesen Wyckoff signed a contract to "superintend the Bouwery and Cattle of Director General Pieter Stuyvesant," there are today the clutter and dirt of a largely industrialized area. But the house still stands, patchy, drafty, and aged, an example of what someone once called "Old New York folk architecture."

Although the house has been occupied continually, ownership has changed hands many times. It is now the property of the Wyckoff House Foundation, set up by the Board of Regents of the University of the State of New York in 1959, which purchased it for $30,000 in 1961. The Foundation is now trying to raise $50,000 to $70,000 to restore it. Meanwhile, its occupants—a divinity student, his wife, and 2-year-old twin daughters—fend off souvenir hunters and tourists, who "walk right in" and try to slyly understand a piece of architectural history.

WASHINGTON/FINANCIAL NEWS

BY E. E. HALMOS, JR.

In all the pronouncements and news stories about that recent "White House Conference on Natural Beauty" in Washington, the most important point was never mentioned. But it ran through every session of the two-day meeting like a thread:

The whole approach to "beauty" is being sparked by—and is likely to be turned over to—the "planners": the sociologists, urban theorists, and others, rather than to the professionals who have the factual background and must actually do the job.

Architects, engineers, and the construction industry are very much on the defensive, very much under attack on several fronts.

Key speakers throughout the meeting talked of over-all concepts, landscaping, social and economic impacts—and, when they mentioned the construction group at all, spoke in such terms as "narrow concepts," "single-purpose operations," "lack of broader viewpoints." They virtually ignored the role of the construction industry as a professional planning group in its own right—and also completely ignored the structures (such as available public funds, existing conditions, and the like) that limit the work of the industry and its professionals in the practical sense.

Many observers who sat through the two long days in the State Department's over-done palace on Virginia Avenue were disturbed by the tone of the sessions, which, at the very least, was condescending.

The two-day "conference" also proved to be a rather obvious stage setting for a Presidential message and a series of no less than four bills on the subject of beautification of highways.

What made it obvious was that conference leaders reported the results of their deliberations to the President at 5 o'clock one evening—and the next morning at 9 o'clock, press releases and the exact text of the four new bills were made available to White House correspondents.

The four bills contain some laudable objectives—screening of junkyards, construction of scenic roads after 1972—and at least two highly controversial points: diversion of about one-third of highway funds to beautification work, and a flat demand that states agree to eliminate billboard-type advertising, on pain of losing some 38 per cent of all highway "user" taxes now flowing to the Treasury, vowed a battle.

Engineers found something to be concerned about in highway sections of the recently passed "Appalachia" bill: a section permitting states to "give special preference" to the use of mineral resources of the region (principally coal derivatives) for "road use" in the area.

This, said the Asphalt Institute, constitutes a legal "invasion" of the engineering prerogative of selecting materials and designing roads.

Labor Rules

Employers should take note (if they have 75 or more employees) that one of the major provisions of last year's Civil Rights Act goes into effect July 2: the ban on discrimination in hiring. In subsequent years, on the same date, the number of employees required for a firm to be brought under this provision drops to 50, then 25.

The discrimination sections also affect labor unions (if they operate hiring halls, for example); but that wasn't labor's principal concern in Washington in early June.

Of much more immediate concern was the President's call for repeal of Section 14(b) of the Taft-Hartley Act, which permits some 19 states (including the President's own Texas) to enact so-called "right to work" laws under which workers need not join unions to protect their jobs.

Fact is that existence or nonexistence of such laws admittedly has had little effect on union membership, and lit-
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July 1965
In Washington itself, among all the discussion of "beauty-vs.-freeways," it began to appear that the capital would soon become a city of highway tunnels.

Biggest road tunnel planned would be a half-mile section of the long-proposed Center Leg Freeway, cutting at (west) of the dozen streets at the foot (east) of the Capitol; others planned would go under the Lincoln Memorial and the Tidal Basin, one would take 9th Street under the Mall.

Financial

The construction economy continued to move ahead at predicted speeds, showing (for April) a total value for new work put in place of $5.1 billion—up 1 per cent over that of a year ago.

But there was an encouraging note in the figures: For the first time in months, the seasonally adjusted rate of private dwelling units started-bottomed the figures for the same month a year ago. In April of this year, the rate was 1,548,000—up a modest 1 per cent over that of a year ago. Just how encouraging this might really be, however, was in some doubt. The Federal Housing Administration suggested one reason: FHA has received more applications for new-home approvals in the past month or so, in anticipation of a rise in application fees that went into effect May 1.

On costs, there were some indications of a momentary steadying, after some recent jumps. The Bureau of Public Roads reported its highway costs index at 103.2—down 0.5 per cent (after jumps totaling 4.4 per cent in the last two quarters of 1964).
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Air/Temperature

Heat Pump, 98 Per Cent Reliable

G.E. has announced that 87 important technical improvements have been made in its "Weathertron" electric heat pump. This electrically-powered unit is an air source heat pump that ranges in capacity from 2 to 10 tons. In 1962, G.E. decided to withdraw the Weathertron from the northern U.S. market because it was not performing with consistent reliability. By using computers to interpret information obtained from the field and from physical tests, they sought to develop a unit that could withstand the operating stresses in northern climates particularly. G.E. learned, for instance, that a heat pump operating in Chicago must withstand seven times the stress load of a unit operating in New Orleans. Furthermore, 75 per cent of the early unit failures resulted from compressor motor overheating. Among the most important tests was the "Monster Test," which simulates one year's stress in four weeks, using 24 units. Among the 87 improvements are a new insulation on the compressor motor windings that is said to be capable of withstanding all-known stresses; a thermostat installed in the motor winding that prevents overheating and burn-outs; an improved indoor comfort control system that prevents "temperature droop"; simplified control circuits; prevention of false defrost; and simplification of controls to prevent flooding, which occurs when unboiled liquid refrigerant is permitted to return to the compressor. Of some 13,500 Weathertron heat pumps tested in the field, reliability exceeds 98 per cent. General Electric, Appliance Park, Louisville, Ky.

On Readers' Service Card, Circle 100

Construction

Gas Concrete for Thin-Shell Designs

Thin-shell designs can be created by employing steel for outline and framing, gas concrete for cladding, and membrane coatings for protection. Elimination of temporary forms with gas concrete system permits greater design flexibility. System is used for on-site applications or in precast modular units. Gas concrete is a stable lightweight concrete in which minute air cells replace a part of the aggregate. It is produced from portland cement, sand or fine aggregates, and "Vinfoam" additives, mixed to a formula protected by a pending patent. Gas concrete can withstand a temperature of 2000 F for 30 min., according to test results. Because of Vinfoam additives in the mix, problems of cold joints or striation, despite application in layers, are eliminated. Vin-Lox Corp., 1352 N.W. 29 St., Miami, Fla.

On Readers' Service Card, Circle 101

Electrical Equipment

Danish/Italian Spot

"Milano" spotlight is designed by Danish Architect Fredrik Fogh and Italian Architect Edorarado Berlgani. Spot uses Par-38 and R-30 reflector type lamps. Canopy and lamp shield are black anodized aluminum. Socket enclosures and tubing are satin chrome. Unit is available as a wall bracket or a pendant. Prescolite Mfg. Corp., 1251 Doolittle Drive, San Leandro, Calif.

On Readers' Service Card, Circle 102

Decorative Ceiling Bubbles

All plastic, flush-to-the-ceiling lighting fixtures have been developed for residential use. Called "Bubble Lights," they are 12" in diameter, 6" deep, and accommodate three 60-w bulbs. Plastic diffusers assure low-intensity, glare-free illumination; decorative collar (ring), of wood, plastic or sculptured glass, offers 12 design variations. Lumitex Company, 1250 17 St., San Francisco, Calif.

On Readers' Service Card, Circle 103
Furnishings
Folded and Molded

Two pieces of laminated teakwood are shaped by Danish architect Grete Jalk into a sculptural tour de force. Chair is 25" wide, 30" high, and 30" deep. Foam-rubber cushion is optional. Chair is included in a collection of architectural lighting systems, lamps, furniture, and rugs at Danlite, Inc., 301 East 61 St., New York, N.Y. 11041. On Readers' Service Card, Circle 110

Insulation
Automatic Insulation With .12 k-factor

Continuous automated application of polyurethane foam in thin uniform coatings is used for the first time as insulation and backer for aluminum siding. "Therm-O-Back" insulation is 90 per cent closed cellular product with a k-factor of .12, which compares with .23 for expanded polystyrene and .30 for fiberboard. Manufacturer states that "this lower k-factor produces a higher insulating value and is expected to reduce average home heating costs 30 per cent." Therm-O-Back is sprayed as a liquid but immediately expands to 30 times its volume and can be handled within 90 seconds. System provides ¾"-thick insulation to a standard length, 8'-wide aluminum siding panel at the rate of 1 sq per min. Insulation has good solvent resistance, low moisture permeability, and minimizes possible condensation problems. It does not rot or mildew. System is available on a rental basis with purchase option. Siding is fed to a conveyor and moved, back-side up, through the spray unit. Callery Chemical Co., Callery, Pa. On Readers' Service Card, Circle 107

Special Equipment
Perspectives
By Computer

"Illustromat 1100" is a computer-directed drafting machine that draws perspective drawings. Machine produces perspectives from two-dimensional mechanical drawings in considerably less time than it takes to calculate and produce similar three-dimensional perspectives by hand. The 1100 consists of a tracing table, a control panel, a solid-state analog computer, and a vertical, motorized x-y plotter. Two tracing styluses, supported by a movable gantry, are above the horizontal table. Styluses are connected to the x-y plotter pen through the analog computer. Illustromat can plot perspectives from any angle. When front and side views of a building are given, accurate perspective views are perspective and easily be drawn, with subject assuming an angle of rotation and tilt. It is said that, in some cases, the 1100 can draw a perspective in one-sixtieth the time it takes to draw one by hand. Perspective Inc., 4400 Seventh Ave., South, Seattle, Wash. On Readers' Service Card, Circle 108

Glass-Fiber Plywood

"Bonate" is a glass-fiber-reinforced, plastic-coated plywood that has high impact, abrasion, and corrosion resistance. Panels cannot be bent or curved, but they can be fabricated into a variety of geometrical shapes. Coated plywood is available in standard 4' x 8' sheets, with 3/32" thick coating of the glass fiber reinforced plastic laminated to a sheet of "ex-terior grade" plywood. Material is available in a glossy black color. Beetle Plastics, 198 Airport Rd., Fall River, Mass. On Readers' Service Card, Circle 109

Light-Diffusing Walls

Interlocking concrete block (8" x 8" x 4"), designed by Erwin Hauer and called "Design #8," is the latest addition to the collection of three-dimensional screens, which can be used for interior and exterior walls. Chiaroscuro effects achieved by repetition of one form distinguish this rectilinear design. Arts for Architecture, Inc., 50 Rose Place, Garden City Park, New York, N.Y. 11041. On Readers' Service Card, Circle 110


Surfacing
Terrazzo Tiles

Terrazzo tile uses thermoset "S-200" epoxy resin binder instead of conventional cement. Tile may be installed on or below grade, on vertical surfaces, over radiant heated floors, and as patio flooring. Tests by manufacturer indicate that this terrazzo tile is three to six times stronger than concrete. It is resistant to cracking, and to damage from diluted acids, alkalis, oils, greases, and detergents. Tile is available in 14 colors that supposedly never fade. Cost compares favorably to
COMPLETE CONTROL
FOR EVEN YOUR "PROBLEM" DOORS

NORTON
SERIES 6100
UNI-TROL

A COMBINATION DOOR CLOSER AND DOOR HOLDER

Regardless of the type of building there's always a number of doors that receive more abuse than others. The pounding volume of traffic through these doors can, in some cases, result in door closer failure.

To overcome the problems associated with these high traffic areas, the Norton Series 6100 has been developed. It basically combines a door closer and a door holder into a single product. It is a coordination of both functions to give complete door control. Acting as a door closer it keeps door closed when it should be closed. Acting as a door holder it easily engages the holding device when a large amount of traffic comes through. A spring acts as a cushion to absorb the jarring effect when the door is opened quickly.

The over-all effect is less abuse to door, frame, closer, and holder with improved control. Extreme testing conducted prior to the introduction of this product confirmed the benefits of unitized door control. If you're interested in seeing for yourself how well this new closer-holder operates, contact your builder hardware distributor and arrange for a test installation. Or, if you wish, send the coupon at the bottom of the ad and we'll have our representative arrange a test installation. Give it a fair test, but install it where it will get lots of use, or, if you wish, abuse. It'll take it. You'll find the investment well worthwhile.

SEND COUPON FOR TEST INSTALLATIONS

NORTON® DOOR CONTROLS
372 Meyer Road, Bensenville, Illinois 60106

On Readers' Service Card, circle No. 448
Fabric-Backed Vinyl

McCordi's line of inexpensive fabric-backed vinyl wallcoverings has five new patterns for contract interiors: "Aragon," a travertine effect, (shown) is available in five-colorways (best are "Alabaster" and "Sand"); "Flat Cut Walnut" in natural wood tones, and "Shadow Stripe," an embossed stripe, are among the group. All patterns come in 54" widths at 10¢ per sq ft. Standard gage is .016-.018. "Master Swatchbook" has complete details. McCordi Corp., Mamaroneck, N.Y.

On Readers' Service Card, Circle 112

Original Textures

Weaving and knitting simultaneously on one machine is a new process that yields new textures in a collection of three semi-sheer casements called "Firelon-R." All contain Dow Chemical's saran flat monofilament, "Rovana," which is blended with "Verel," spun rayon, and "Dacron." Reportedly flame-resistant, immune to chemicals and sunlight, and unbreakable, the fabrics are 60" wide and available in five or six color combinations. The Georgia Company, Inc., 276 Fifth Ave., New York, N.Y.

On Readers' Service Card, Circle 113
“Using G-E Silicone Construction Sealant our cost was 16% less...”

Stanley A. Fredrick, President, Hall Aluminum Products, Inc., Fort Wayne, Indiana

“We ran a cost study of porcelain panel installation on two identical schools. Installing 198 panels with a two-part polysulfide cost $665. Installing 198 panels with G.E. Silicone cost $555.

<table>
<thead>
<tr>
<th>Material</th>
<th>Polysulfide</th>
<th>Silicone</th>
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<tr>
<td>Labor</td>
<td>333.50</td>
<td>105.00</td>
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<tr>
<td></td>
<td>$665.00</td>
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“These panels were installed before the windows were erected. If the panels were field installed the cost would have been about the same.”

(Today, Hall Aluminum uses G.E. Silicone for all panel installation—field or shop.)

According to Mr. Fredrick’s cost study, labor savings more than offset material costs. That’s because one-part G.E. Silicone Sealant needs no mixing, heating or chilling. It flows on and bonds securely to all common materials even at extreme temperatures.

Once it’s on, you can forget about costly call backs. G.E. silicone rubber retains its flexibility for at least 30 years. It resists severe strain, sunlight, ozone, weather, hot and cold temperatures. So it won’t ever sag, shrink, crack or crumble.

The Sealant comes in standard caulking cartridges and 5-gallon containers, in white, black, aluminum, neutral, translucent and 18 new colors.

For more information, contact a G.E. distributor listed on the opposite page. Or write: General Electric, Silicone Products Department, Section. Q 7149 Waterford, New York.

On Readers’ Service Card, circle No. 359
**Acoustics**

Aluminum Ceiling Tile

“Acousti-Clad,” an incombustible, aluminum-faced, sound-control ceiling tile, is available in white, silver, copper, or gold finishes with either “Perlite” or “Sprintone” core materials. Perlite is a rigid, multicellular board formed from expanded perlite plus mineral fibers and binders. Sprintone is composed of mineral wool fibers bound together in rigid, monolithic construction. Sizes are 12" x 12" for both 3/8"-"thick Acousti-Clad “P” and 5/8"-"thick Acousti-Clad “S.”

On Readers' Service Card, Circle 200

**A/C Selection Guide**

"Modern Equipment Guide" (MEG) contains information necessary for selecting any type of air-conditioning control system. MEG is divided into two manuals. First one, 166 pages, describes package equipment up to 60 tons, which includes furnaces, roof-top units, air handlers, remote condensing units, etc. Second one, 319 pages, contains information on equipment ranging from 20 to 3,500 tons. Worthington Air Conditioning Co., Ampere Station, East Orange, N.J.

On Readers' Service Card, Circle 201

**Computing A/C Loads**

Heating/cooling loads and energy requirements may now be calculated by computer on a charge basis. Load program determines heat gains and losses for each zone or conditioned space within a building. Among the variables that contribute to the final computation of the total peak load are outside temperature, solar radiation, wind velocity, building materials, shading, ventilation, building orientation, window arrangement, hourly weather and solar conditions, number and distribution of people, hours of use, inside temperatures, nighttime temperature setback, and electric loads. Calculations account for variations in parameters for every hour of every month throughout the year. Computation calculations such as these are, according to Westinghouse, “an impossible undertaking using the classical method of slide rule calculation.”

On Readers' Service Card, Circle 202

**Electric Heating/Cooling Combination**

Heat generated by lighting systems can be re-used as the major source for heating systems. Depending on the type of system employed, heat may be recirculated when needed, transferred by heat exchanges, mixed with outside air, or exhausted to the outside. Subject of all-electric heating/cooling is discussed in considerable detail in the 24-page booklet entitled "Electric Space Conditioning.”

Sizing and installing of commercial water-heaters are examined in 44-page technical manual. Included in discussion are consumption factors, temperature requirements, and occupancy percentages. Sizing tables and installation drawings of water heaters for installation in apartment buildings, motels, hotels, swimming pools, restaurants, schools, etc., are also given. General Water Heater Corp., 4851 So. Alameda St., Los Angeles, Calif.

On Readers' Service Card, Circle 204

**Construction**

Concealed Joint Aluminum Panel System

"CCP," or 12"-wide modular aluminum roofing and siding system, is thoroughly examined in 24-page booklet. CCP combines corrugated, ribbed, and V-beam roofing and siding with textured, stucco-embossed surfaces. Building types include shopping centers, manufacturing plants, schools, etc. Panels are available in 60 "Colorweld" finishes that do not chip, peel, or crack. Panel lengths range from 3' to 39' and are supplied cut to any specified length within this size range. Booklet includes details, photos, specs, and load data, and related information. Reynolds Metals Co., Building Products and Supply Div., Park Ridge, Ill.

On Readers' Service Card, Circle 205

**Double Tees**

Double-tee prestressed-concrete floor and roof members, 7'-5" by 20' deep, are used for building spans 20' to 60'. Minimum strength of concrete at transfer of prestress is 3,500 psi and 5,000 psi after 28 days curing. Property charts detail 7'-6" x 20' roof member and 7'-6" x 20' floor member with 2" topping. Allowable superimposed load (psf) chart, recommended specs, and photos are included. Dickerson Structural Concrete Corp., P.O. Box 160, Youngwood, Pa.

On Readers' Service Card, Circle 206

**Slide-Rule Beam Calculator**

Slide-rule calculator simplifies selection of steel beams employed in residential and light commercial structures. Span conditions range up to 23' and uniform loads up to 10,000 per lin ft. Calculator aids in selecting proper size beams and in checking deflection of laterally supported beams under uniform loads. It can calculate steel beam requirements for three span conditions: simple, two equal continuous, and three equal continuous spans. U.S. Steel Corp., 525 William Penn Place, Pittsburgh, Pa.

On Readers' Service Card, Circle 207

**Precast Concrete Members**

Precast concrete slabs, waffle units, channel slabs, concrete...
HOW WELL DO YOU KNOW YOUR BUILDING?

This is modern ROOF DECKING to go on it

Easy-ply by homasote

in four thicknesses and for spans up to 60" o.c.

INSULATING • WEATHERPROOF • TERMITE-PROTECTED

On metal frame building you speed completion time with Homasote roof decking. In one application you have a structural deck, constant insulation and an interior finish that needs no decorating. Attachment is simple—nail directly to wood nailers on the frame—or fasten to frame with special Homasote profile clips. Ceiling-side finishes are available in color-coated white, white kraft with vapor barrier, vinyl film, white polyethylene film or fire-retardant paint. Approved by B.O.C.A., I.C.B.O. and S.B.C.C. Get to know more about Homasote Roof Decking on all types of roofs: bonded built-up, metal-frame, conventional and A-frame sidewalls . . . write for technical bulletins to Dept. G-3.

homasote Company
TRENTON, N. J. 08603

On Readers' Service Card, circle No. 367

July 1965
joints, and tongue-and-groove planks are described in 12-page booklet. Featured is “DuLite” roof slab, which is available in thicknesses of 3", 3 1/2", and 4", and in spans up to 8' 4". Slabs are unaffected by water and do not retain moisture. DuLite insulation concrete, 3" thick, is equal to 2" of rigid insulating board. Slabs do not weigh over 10 psf when thoroughly dry, compared to 40 psf of ordinary concrete. Its insulating value is about four times that of ordinary concrete. Grout in the joints has same low U-factor as slab itself. Details, roof insulation data, and lead tables are included for all types of precast concrete members. Duwe Precast Concrete Products, Inc., Oshkosh, Wis.

On Readers' Service Card, Circle 208

**Plywood Siding**

Use of plywood siding for residential design is illustrated in 24-page booklet. Among contents are plywood siding styles, installation procedures, strength and durability tests, and finishes. Also included are window and door details for applications to studs, information on the insulation value of wall sections with plywood sidings, and color and black-and-white photos. American Plywood Assn., 1119 A St., Tacoma, Wash.

On Readers’ Service Card, Circle 209

**Doors/Windows**

**Aluminum Window/Sliding Door Specs**

1965 AAMA specs cover aluminum windows and sliding glass doors. First booklet on aluminum windows, 50 pages, contains general specs for commercial, monumental, and residential construction. Detailed specs are then given for double-hung, casement, projected, awning, horizontal sliding, jalouise, jal-awning, vertical sliding, top-hinged, and vertically pivoted windows. Wind-zone map, standard window size chart, and membership list are also included. Second booklet on aluminum sliding glass doors, 18 pages, contains specs for commercial and residential structures. Spec and design check list, wind-zone map, and standard size and nomenclature charts are included. Architectural Aluminum Mfg. Assn., 35 East Wacker Drive, Chicago, Ill.

On Readers’ Service Card, Circle 210

**Fire Door Facts**

Information is available on hollow-metal fire doors and frames. Booklet includes chart that shows typical openings in variety of buildings and label classifications of the door that should go into that opening. Type of hardware used, test results, and specs. Steeclcraft Mfg. Co., 9017 Blue Ash Rd., Cincinnati, Ohio.

On Readers’ Service Card, Circle 211

**Finishes/Protectors**

**Wood Overlay**

"Forbon" is a recently developed vulcanized fiber overlay for lumber, plywood, and particle board. A commercially available system permits continuous lamination of Forbon at speeds over 100’ per min. This resin-free cellular plastic prevents warping, cracking, or delamination. It can be used as subsurface for top-coating with film overlays or factory-applied solution coatings. Other advantages include high tensile strength and good burst strength to prevent knots or defects from rupturing the overlay. Forbon does not require heat for curing and is compatible with wide variety of finishing systems. Coating can be furnished in lengths, widths, thicknesses, and colors to meet architect's requirements. It can be printed or embossed as well. Uses include siding or facades, furniture or paneling, and stadium seats or benches. National Vulcanized Fiber Co., Wilmingtong, Del.

On Readers’ Service Card, Circle 212

**Aluminum Finishes**

Aluminum Association has recently issued the second edition of the “Designation System for Aluminum Finishes,” which attempts to eliminate the confusion resulting from the many proprietary designations introduced for finishes on aluminum. Covered are three types of finishes: mechanical finishes, chemical finishes, and coatings, which include anodic coatings, resinous and other organic coatings, electroplated and other metallic coatings, laminated coatings, and vitreous coatings. This system employs numbers to represent the mechanical and chemical finishes and each of the five types of coatings; two-digit numbers represent various finishes in each class. The Aluminum Assn., 420 Lexington Ave., New York, N.Y.

On Readers’ Service Card, Circle 213

**Flexible Carrels**

Study carrel-modules may be used individually or in combination, thereby establishing a flexibility in space planning for schools, libraries, or institutions. Standard units, 50” high by 36” or 48” wide, consist of tubular steel construction with baked epoxy enamel finish, individual lighting, work shelf, electrical and audio outlets with concealed wiring, nonglare laminated surfaces, and leveling feet for use on any carpeting or flooring surface. “Modulcars” may also include matching laminated storage compartment with sliding perforated doors, coat hook, one-box drawer and file or three-box drawers, post-leg extender for visual barriers, chalkboards, racket-type shelves, flush bracket shelves, and sloping magazine shelves. Monroe Industries Inc., 1050 South McComas, Wichita, Kan.

On Readers’ Service Card, Circle 214

Guide to lead roofing and flashing includes detailed drawings that illustrate layout in flat pattern, forming of sheets, and final installation of all standard joint systems normally used in sheet metal roofing but with special reference to lead. Performance data, table of gages, and specs are included. Lead Industries Assn., Inc., 292 Madison Ave., New York, N.Y.

On Readers’ Service Card, Circle 215

**Lath and Plaster Specs**

“The 1965 Specifications for Metal Lathing and Furring” describes each type of metal lath and plaster assembly. Discussed are specs, design assumptions, partitions, vertical furring, wood studs, ceilings, fireproofing, and reinforcement of other plaster bases. Metal Lath Assn., Engineers Bldg., Cleveland, Ohio.

On Readers’ Service Card, Circle 216

**Sanitation/Plumbing**

Group Washing

Group washroom equipment is presented in 12-page booklet. Covered are circular, semicircular, and counter-type wash-fountains; column, multistall, wall, and modular showers; and drinking fountains. Details, photos, and colors available are

July 1965
Your number's up...automatically!

It's your winning sealant number. And now, it's decided automatically by the job you're planning to do! No more questions or concern about your sealant.

All because of this fabulous family of single-component, non-staining urethane sealants developed by Standard Products. Each has been given special characteristics to do specific jobs. Yet, all are of that same unique urethane chemistry that reacts directly with any primed substrate...concrete, brick, aluminum, steel, glass, marble.

These sealants come to the site ready for application. No mixing...no "middle chemistry."

And from that point on, no sealants in the business can match their performance. They seal for sure. They never sag. They have phenomenal deterioration resistance...stay for years without signs of weakening. And they never "bleed"...never stain your work.

So, get the full engineering details today. And from that point on, let your winning sealant number come up automatically.
Service by means of which architects can have their preliminary drawings reviewed within 48 hours by Blumcraft engineers. Blumcraft of Pittsburgh, 460 Melwood St., Pittsburgh, Pa.

Integrated Hospital Lighting/Service Unit

"Pal-Lux" integrated and mechanical service center is used in patient rooms. Entire unit includes room lighting unit, patient reading light, examination light, night light, oxygen/vacuum system, nurse call system, remote TV control, telephone outlets, and I.V. support brackets. ("Luxo" lamp is manufactured by Luxo Lamp Corp. of Port Chester, N.Y.). Pal-Lux units are installed semirecessed in new construction or surface-mounted in modernization projects. It accommodates all major nurse call and oxygen/vacuum equipment. Special units are available for intensive care and recovery rooms. Photometric charts, selection charts, and specs are given. Pacific-Associated Lighting, Inc., 837 Folsom St., San Francisco, Calif.

Postal Planning

U.S. Post Office Department has published an important booklet entitled "Planning for Postal Service in Office Buildings." They suggest that architects employ the "Vertical Improved Mail" system (VIM), which provides off-street loading and unloading; area mailroom for postal operations; and, for large buildings, vertical conveyor systems. In small office buildings, a planning factor of ½ sq ft of mailroom for each 1000 sq ft of leasable office space is adequate with a minimum size of 24 sq ft. In medium-sized office buildings, the planning factor for the mailroom size is 1.5 sq ft for each 1000 sq ft of leasable space. In large office buildings, the main mailroom should be about 3 sq ft per 1000 sq ft of leasable space. Vertical conveyor system can transport trays of mail to and from proper floor levels at 12 per min., thereby increasing the speed and amount of mail deliveries.

If It's a Thin Shell Roof, Make It

SPECTACULARLY WHITE... with Addex Color-Shield® over Addex Heavy Duty Roof Shield®

Here is the ideal waterproofing and decorative surface specification for any thin shell roof contour you can draw. Roof Shield — the waterproofing component of the specification — provides a smooth, unbroken surface without unsightly lap lines, seams or taped joints. It has the longest proven performance record of any monolithic waterproofing specification available today. Color-Shield is a highly pigmented emulsion coating for Roof Shield. It resists soil penetration and retains its brilliant whiteness for years. Also, because Color-Shield permits only one-fifth as much heat to enter the building through the roof as a conventional black surface, it keeps interiors cooler in hot weather and cuts air conditioning costs.

On Readers' Service Card, circle No. 322
MAHON IS IDEAS IN ROLLING STEEL DOORS

SEE HOW MAHON "COVERED THE WATERFRONT"
for the Port Authority of Duluth—64 doors in one installation

Take it from the Port Authority of Duluth—Mahon is not only rolling in rolling steel doors. It is also rolling in ideas... about steel door applications.

The Port Authority should know, too.

For recently Mahon "covered the waterfront" at Duluth with steel doors. It supplied 64 (count 'em) Mahon Chain and Crank Operated Rolling Steel Doors for the Authority's public marine terminals. And Mahon did this in one installation... for the sake of economy, efficiency, and flexibility.

Is Mahon interested only in huge installations?
Not at all.

Mahon will sell you one door as quickly as one hundred.
Mahon manufactures manually-, mechanically-, or electrically-operated rolling steel doors. And each door is engineered to assure positive security, fire safety, permanence.

Today, write for Mahon catalog C-64. Write to... The R. C. Mahon Company, 6565 East Eight Mile Road, Detroit, Michigan 48234.

On Readers' Service Card, circle No. 384

July 1965
For large or little loads...

SPECIFY
DONLEY PRE-ENGINEERED SUCCESSFUL INCINERATORS

In apartment houses and other buildings, rubbish and garbage are burned under different conditions, varying with the day, even the time of day, the season, and the number of people being serviced. To help you select the correct incinerator for the specific application, Donley provides a neat, complete package—a simple-to-use Selector Chart, Catalog, and then dimension drawings, parts, burners, doors, grates, etc., and detailed instructions for installation by local masons. Depend on Donley. Write today for Selector Chart and new Incinerator Catalog.

Donley
THE DONLEY BROTHERS COMPANY
13933 Miles Ave. • Cleveland, Ohio 44105

Tile Specs
1965 spec manual for installation of ceramic tile is offered. Floor and wall costs are compared in chart form. Details include interior, exterior, and chemical resistant floors; interior and exterior walls; countertops; control joints; shower receptors; swimming pools; tile tubs; steam rooms; and refrigerator rooms. Each detail also includes recommended uses, limitations, preparation, specs, and materials to be used in application of the tile. Tile Council of America Inc., 800 Second Ave., New York, N.Y.

On Readers' Service Card, Circle 220

Walnut Gypsum
Two wood grain patterns have been added to standard line of "Durasan" vinyl-covered gypsum wallboard. "Modern Walnut" and "Heritage Walnut" combine with previously introduced "Presidential Walnut," all of which are lightly embossed to simulate the appearance and texture of wood. Durasan wood-grain panels can be sawed like lumber or cut to size by scoring the surface and snapping the core. Panel sizes are 4' wide; 8', 9', and 10' long; and 3/8" and 1/2" thick. Brochure contains samples of the three walnut textures. National Gypsum Co., Buffalo, N.Y.

On Readers' Service Card, Circle 221

PROGRESSIVE ARCHITECTURE
NEWS REPORT
430 Park Avenue, New York, N.Y. 10022
Editor: Jan C. Rowan
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On Readers' Service Card, circle No. 347
WHEREVER THERE'S SPACE

there's a Norris Walk-In to fit

Wherever there's space, there's a Norris walk-in cooler, freezer, or cooler-freezer combination to fit, for Norris walk-ins provide complete installation flexibility. Available with or without floors, Norris walk-ins are pre-fabricated in two- and three-foot wall sections, four-foot door sections (7½' high), and can be set up in one-foot increments in any size—in almost any space—in new or existing buildings. The only tool necessary is a light hammer.

The modular panels of Norris walk-ins are all-metal—no wood to absorb moisture—and extremely light-weight. Standard exteriors are bonderized steel finished in white baked enamel, interiors are 22-gauge galvanized metal, with custom exteriors or interiors optional at extra cost. Ideal for every industrial, commercial or institutional refrigeration need, Norris walk-ins can be supplied with the proper self-contained or remote refrigeration equipment to meet any application.

WRITE FOR DESCRIPTIVE LITERATURE!

LIGHT WEIGHT

as low as 4½ lbs.
per sq. ft.
—reduces freight costs

Norris Dispensers, Inc.
2715 Lyndale Avenue South
Minneapolis 6, Minnesota
Norris—the first name in milk serving and storage equipment

Lighting News

AT RCA COLOR TV COMMUNICATION CENTER
1964-65 New York World's Fair

"No breakdowns allowed" was the basic design requirement for lighting and controls in the single studio designed by RCA for continuous transmission of color TV programs (12 hours every day) during the 1964-65 New York World's Fair.

By helping RCA with the design of the first all quartz-iodine base-lighted TV studio, Kliegl experts have again demonstrated skills that are important to you. There is a background of more than 60 years in solving lighting problems as complex (or as simple) as those represented in your immediate projects or those of the future. It costs you nothing to gain the advantage of Kliegl assistance—call today.

Our lighting advisors will be pleased to assist in the planning of any installation, using standard or special units to meet your requirements. Full details on request.

Kliegl designed compact quartz-iodine units and 4-scene SCR® solid state dimmer control (above) to deliver sustained periods of uninterrupted service.

Our lighting advisors will be pleased to assist in the planning of any installation, using standard or special units to meet your requirements. Full details on request.
Here’s a Keyless Lampholder with Grounding Outlet that’s always “Live”

Just what you’ve been asking for—for crawl spaces and many other locations.

OUTLET IS ALWAYS “LIVE”— LAMPHOLDER ONLY IS CONTROLLED BY WALL SWITCH.

Fine quality P&S porcelain—in popular one-piece design (no screw ring to drop and break). Extremely shallow—only 13/4” height overall.

Has separate feed to grounding outlet—grounding terminal is identified by green hexagonal screw.

Elongated screw holes with knockouts fit either 3/4 or 4” boxes.

Fully supported, special alloy contact shells fit porcelain bodies tightly. Lamps insert easily and line up perfectly.

For more information write Dept. PA 765

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Syracuse, New York

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Flexibility is the key to successful school design today. That is because contemporary design must accommodate both current and possible future teaching concepts—from large-group teaching to small-group seminars, from simple blackboard presentations to elaborate audio-visual presentations. It's done with walls that move, with self-contained modules, with cluster construction that offers individual "family" and group environments. The exciting picture story appears in the August issue of PROGRESSIVE ARCHITECTURE.

There's more. A follow-up to P/A's earlier discussion of design for psychotherapy; a presentation on interior design featuring the offices of Sperry & Hutchinson (S&H) in New York; a report on the materials and design of lightweight structures; advice on leasing architectural office equipment.

Like its predecessors, the August P/A is a lively one, in tempo with you and your needs and interests. Send your $5 check immediately and you'll receive the August issue plus eleven more, including the exciting January Design Awards issue. Address Circulation Department, PROGRESSIVE ARCHITECTURE, Reinhold Publishing Corp., 430 Park Avenue, New York, New York 10022.
Central signal station automatically controls these fire station doors—closes them 90 seconds after signal sounds

For unfailing, emergency response rely on The “OVERHEAD DOOR”

When seconds can help save lives... fast, reliable door operation is vital—as critical as design flexibility and structural integrity to the functional plan. All sound reasons why The “OVERHEAD DOOR” continues first in architectural preference year after year. No matter what the closure need, our Architect Design Service can help you meet it with the versatility of The “OVERHEAD DOOR.”

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Industrial, commercial, residential... there's a dependable AUTOR-MATE Automatic Operator to control any installation of the “OVERHEAD DOOR.”
Specific types include: remote control consoles, pull cords, pushbuttons, pull switches, treadles, time delays, interlocks, safety switches, time clocks, photo electric units, radio controls.
See Sweet's File 16-J for full details.
The Cathedral of Notre Dame is the most famous religious edifice in Paris. It measures 139 x 52 yards. Built with very slender internal supports, it exemplifies the grandeur of a balance between vertical and horizontal lines. Central spire was added during 19th Century restoration.

Could the brothers Parret have improved their “symphony in stone” with Castell?

The greats of 12th Century Gothic had the leisure to surmount crude drawing tools. It is a matter of conjecture whether Locktite Tel-A-Grade holders and Castell leads would have added to the genius of Auguste, Gustave and Claude Parret when they designed Notre Dame Cathedral in 1163. Victor Hugo called it a “vast symphony in stone”.

But the thought lingers that if nothing else were available today, a stick of Castell #9030 lead and a Locktite Tel-A-Grade 9800SG are all the tools you would need to give wings to your creative imagination—whether you are an architect or an engineer, a designer or a draftsman.

Tel-A-Grade is light, perfectly balanced, with a clutch that is convoluted like the inside of a rifle to grip the lead like a bulldog. It has a long tapered finger grip with serrations to prevent slipping and reduce finger fatigue. A window reveals degree in use.

Castell refill drawing leads are identical to world-famous Castell wood pencils in solid, non-feathering, non-spreading lines. Each of the 19 degrees, 7B to 10H is eternally constant, never deviates, never encroaches on neighboring degrees. Fits all makes of standard holders.

Creative professionals need and deserve Castell. Call your Dealer.

See reverse side for other fine Castell products.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>JANUS #40:46 Pencil Sharpener for architects, artists and draftsmen who want a long fine point on their drawing pencils. Brass, with renewable double-edge tempered steel blade. In synthetic leather case.</td>
</tr>
<tr>
<td>2</td>
<td>No. 5070 PRECISION LEAD POINTER sharpens Refill Drawing Lead with simple twisting motion to whatever point is desired. Catches lead dust in receptacle to prevent soiling fingers, drawings and clothing. Leave it on your board or carry it in your pocket.</td>
</tr>
<tr>
<td>3</td>
<td>CASTELL LOCKTITE TEL-A-GRADE #9800SG drawing lead holder with gun-rifled clutch that grips lead like a bulldog, won’t let it slip or turn. Serrated barrel prevents fingers slipping, reduces fatigue. Finest quality professional pocket holder to carry with you.</td>
</tr>
<tr>
<td>4</td>
<td>No. 9005SG CASTELL LOCKTITE Pocketaire Drawing Lead Holder with sturdy clip. Has famous gun-rifled clutch that grips lead like a bulldog, won’t let it slip or turn. Serrated barrel prevents fingers slipping, reduces fatigue. Finest quality professional pocket holder to carry with you.</td>
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<tr>
<td>5</td>
<td>CASTELL LOCKTITE #9400 drawing lead holder same as Locktite Tel-A-Grade in basic parts, and quality. Has serrated non-slip finger grip on plastic barrel. Our ever popular Model T—a great value 19 degrees, 7B to 10H. Each holder separately degree marked.</td>
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<tr>
<td>6</td>
<td>CASTELL #9000 wood pencil: 20 degrees—8B to 10H. Made with finest graphite that tests to more than 99% pure carbon, assures maximum opacity without oily additives. Reduces smudges and stains on all drawing surfaces. Low index of friction lets you work smoothly, effortlessly. Castell Sealed lead-bonded-to-wood process gives points a 50% higher than average break-resisting strength. Lays down solid, graphite-saturated lines that won’t flake or feather. Gives hundreds of clean, crisp prints.</td>
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<tr>
<td>7</td>
<td>CASTELL 9201 POLYCHROMOS Crayon Pencils offer a complete range of 72 pigment colors—bright, beautiful and light-proof—for sketching, drawing, rendering and map making. Widely used by artists, architects, designers, draftsmen, and engineers for any coloring required.</td>
</tr>
<tr>
<td>8</td>
<td>No. 1966 MAGIC-RUB STIK wood-encased vinyl drafting eraser, especially formulated for polyester film. Excellent for close detail erasing. Sharpens like a pencil to a slender, medium or blunt point in any pencil sharpener.</td>
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<tr>
<td>9</td>
<td>No. 7021 CASTELL PARAPINK soft, pliable drafting eraser. “Erases without a trace.” yet is so gentle it does not abrade even the most sensitive drawing surface. Practically eliminates graphite smears and smudges. No. 7065 Parapink Peel-Off paper-wrapped pencil-shaped eraser contains the same quality material as Parapink. Excellent for detail erasing.</td>
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<tr>
<td>10</td>
<td>No. 1965 MAGIC-PAD Draftsman’s Cleaning Pad filled with fine vinyl powder. Made from the same formula as our popular non-abrasive Magic-Rub vinyl erasers. Cleans away stains, dirt, and graphite pencil marks from any drawing surface. The only vinyl cleaning pad on the market.</td>
</tr>
<tr>
<td>11</td>
<td>CASTELL #9030 Black refill drawing leads for Locktite and all standard lead holders. Same quality and Companion to world-famous Castell wood drawing pencil. 19 degrees, 7B to 10H. Packed in green plastic tube with gold cap.</td>
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ACTUAL OPERATION

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JULY 1965

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Titusville, Florida

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Titusville, Florida

HOSPITAL CONSULTANTS:
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Stanley salutes you on your 25th Anniversary.

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Da-Lite Screen Co., Inc., Warsaw, Indiana

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B. 110 Westinghouse-Sturtevant 73-inch fans, like this one, take in, circulate, return and exhaust air through large built-up air handling system in new home of Smithsonian Institution's Museum of History and Technology (right). Total area serviced is 754,000 square feet.

E. Westinghouse completely air-cooled packaged chiller on roof of famous Cattleman's Restaurant in New York (right), keeps customers comfortably cool while they enjoy elegance out of the Old West.

G. In the famous Pan Am Building, world’s largest commercial building, every cubic inch of air is handled by Westinghouse equipment. Total of 82 Westinghouse fans includes Centriline® fans, industrial fans and centrifugal fans. 236 Westinghouse specially designed large air handling units complete the job.

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Associate Architects & Engineers: Mills, Petticord & Mills, Washington, D.C.  
Consulting Engineer: Jaros, Baum and Bolles, Washington, D.C.  
Contractor: Norair Engineering Corporation, Washington, D.C.

Mechanical Engineer: Donald Lindstrom & Assoc., Atlanta, Ga.

E. Architect: Raymond Lookey and William Smith, New York, N.Y.  
Mechanical Contractor: Jaffe Contracting Company, Inc., New York, N.Y.


Consulting Engineer: Jaros, Baum & Bolles, New York, N.Y.  
Mechanical Contractor: Raizer Corporation, New York, N.Y.

H. Engineer: Fred Roslyn, New York, N.Y.  
Mechanical Contractor: Temperature Design Corporation, New York, N.Y.

Mechanical Engineer: Brewer & Mundy, Atlanta, Ga.  
Mechanical Contractor: Sockwell Company, Atlanta, Ga.

Engineer: Derek C. C. Peters Jr., Atlanta, Ga.

M. Architect: Emery Roth and Sons, Inc., New York, N.Y.  
Engineers: General Engineering Associates, Washington, D.C.  

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JULY 1965 P/A

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LEWIS Mumford
Image of an Architect, or how others see us, seems to preoccupy a great number of architects. This is not surprising, considering that we live in an age of image-building, an age where the mask is more important than the face behind it, and camouflage is no longer a sly deceit but a respected marketing technique. Many of us frantically deodorize not only ourselves but also the world in which we live.

A few months ago, one of the local television stations ran a series of programs on personalities in New York City. The first person they chose was architect Philip Johnson—not because he is an architect but because he is a well-known personality.

Philip Johnson is a wit, has a jumpy nervousness about him, loves to make wild statements for the sake of shocking people, and his interest in architecture is purely aesthetic. These are some of his most salient characteristics and the director of the show put considerable emphasis on them. Even the cutting of the film purposefully accented the speed of movement, shifts of thought, tenseness of action, and the contradictory, volatile nature of the character being portrayed.

After the program was put on the air, there was a great outcry from the architects: "Our image has been ruined," they said, "it will take us 50 years to build it up again."

The "image" they were talking about is of an architect as a sensible, serious, competent, businesslike technician—a sort of well-qualified, pseudo corporation-man who thinks, talks, and acts in the manner of the committee-encrusted corporation-men whom he usually serves. Why this should be the ideal image of the present-day architect I don’t know, but it is an image favored by the AIA and probably by most practitioners.

Perhaps it is due to a reaction to the excesses of the Beaux-Arts period, when the arty beard-cum-beret get-up was the rule and emphasis on peculiarity often got to the point of clowning. The illustration on the facing page, taken from the January 1928 issue of P/A’s predecessor, Pencil Points, is a good example of such clowning: in this case, a winner of an architectural competition proudly displaying his entry.

So clowns they were, but did they have less prestige in the community, fewer commissions, less control over the job? From the biographies I read, it does not seem so. And they certainly had more fun.

H. H. Richardson, whose portrait, reproduced on the cover of this issue, provided me with inspiration for the "image" subject, was a giant of the 19th Century architectural scene. Kimono or no kimono (or whatever it is he is wearing), he managed to snare important clients, and to design and build important buildings. Perhaps that dangling tassel even helped him in his task. Perhaps his was the right image—for him.

After much effort, the American Medical Association managed to build up the image of doctors into efficient, never-wrong, scientific super-beings. It is no coincidence that one of the curses with which the medical profession now has to live is an avalanche of lawsuits. People never thought of suing the friendly, often bumbling, always human doctors they used to know. But when faced with the new image of impersonal and supercilious machines for curing, they took delight in slapping them down.

Today, to talk about the image of an architect is quite futile in any case. The profession is much too diversified. As long as the word architect can apply to somebody who is basically a businessman, or an engineer, or an administrator, as well as to a person who is primarily an artist, there will never be a “correct” image. It is as silly for a businessman to parade as an artist as it is for an artist to parade as a businessman.

No doubt the public would benefit greatly if industry would cease being preoccupied with its images and concentrated on producing better products; chances are it would also benefit if architects would stop worrying about their images and concentrated on designing better buildings.
In line with current directions in "kinetic art," a movement notation system has been evolved that may prove valuable in architectural design. Landscape Architect Halprin's work has always been nonstatic, due partly to the influence of his wife, Ann, who is a dancer; today, he is involved in urban freeway and rapid transit design as well as in landscaping.

BY LAWRENCE HALPRIN

In a world intensely involved in the development of motion through space, little has been done to express it graphically. Movement is all around us; mobility has permeated not only our engineering but our arts as well. High-speed engineering for freeways and rapid transit systems has become an obvious concern of environmental designers; recently, even sculptors and painters have broken through the barrier of static form, and musicians have dropped their fixations with established instruments, scales, and positions-on-stage in a search for mobility in space as well as in time. It is imperative that we have a system to express this movement graphically—a tool that will permit us to work with movement itself as an essential and determining element in design.

I noted this need some two years ago in my book Cities (Reinhold Publishing Corporation, 1963), where the subject of motion through environment is discussed in relation to urban design:

"In order to design for movement, a whole new system of conceptualizing must be undertaken. Our present systems of design and planning are inevitably limited by our techniques of conceptualizing and our methods of symbolizing ideas. We know only how to delineate static objects, and so that is all we do. Since we have developed techniques for showing buildings and objects, and outlining the spaces which they confine, we plan by architectural symbols, projected in conventional methods, on paper. We use the plan and the elevation, the isometric projection, and sometimes a model. But all these accepted systems of architectural language describe only the fixed surroundings, the structures and the spaces which they enclose. Landscape plans, which tend to be less rigid and exacting, are still limited to a description of plants as static phenomena, or of hard masonry structures in the environment. This limitation of symbols affects our results. Since we have no techniques for describing the activity that occurs within spaces or within buildings, we cannot adequately plan for it, and the activity comes, in a sense, as a by-product after the fact. It is true that any good designer or planner will think, while he is designing, of the activity that eventually will occur within his spaces. But he cannot design the movement, for he has no tools to do so. Even highway engineers, who deal exclusively with movement, have no method for describing it.

"A new system should be able to focus primarily on movement, and only secondarily on the environment. This would have use as a technique for designers working kinesthetically. Though many painters have painted action, they naturally have always been completely qualitative and subjective and have not intended to codify a transmittable or universally understandable system. We need a system to program movement carefully and analyze it, a system which will allow us to schedule it on a quantitative as well as qualitative basis. Since movement and the complex interrelations which it generates are an essential part of the life of a city, urban design should have the choice of starting from movement as the core—the essential element of the plan. Only after programming the movement and graphically expressing it, should the environment—an envelope within which movement takes place—he designed. The environment exists for the purpose of movement."

For some time now, even prior to the publication of my book Cities, I have been working toward a system of movement notation, and recently the system has been considerably refined. In setting myself this task, I assumed that such a system ought to be useful for designers working with pure movement: in dance and theater; for the newer choreographers whose aim has been to fuse sculpture and painting with theater; as well as for those of us designing for environment—architects, planners, and landscape architects. My system of notating movement is a tool that should prove very useful for environmental design, but it was not developed for that purpose alone. I hope it will have universal application for every kind of movement.

Immediate parallels with other explorations in notation come to mind. The most comparable are those in music. Traditionally, music has isolated notes for established instruments and has fixed their positions in space and time on bars, using clefs and variations in note duration. In most cases, the musicians themselves have stayed in one position; only the sound has varied. More recently, musical notation has burst its accepted form, for various reasons comparable to ours. In electronic music, for example, sound is developed, and the resultant tones cannot be scheduled in reference to any fixed system of instruments or notes. The need for new notation arises out of the inability of the traditional system to express new concepts.
The escape from the traditional note scales can be seen in a score by Morton Subotnick, titled “PLAY! (1) for Wood Wind Quintet, Piano, tape” (left, top). Here, the composer is no longer indifferent to the environment in which his music is played, but makes the environment become a part of the music. Some of the composer’s instructions read: “Players may move from left to right or right to left but must always move through a head turning square. The diagram on the left indicates long tones, their general intensity, quality, duration, and pitch. Stems extending from each note help to locate the pitch and duration.”

Further changes have occurred in music. In many of the newer works, such as those of John Cage, an essential element in the presentation is the movement of the performers, who change position on stage in a kind of choreographed procession, moving about from instrument to instrument while they make their sounds. Dance has invaded the environment of music.

In the dance itself—the purest form of movement—choreographers have been working for centuries to devise systems with which to record their movements. The most recent and complete system to date is Labanotation (left, bottom), developed in Europe by Rudolf Laban. This is a system whose purpose is to record dances so that they can be compared and analyzed and to serve as a record for other dancers in reconstructing the dance. Labanotation is detailed in its recording of gesture; it is a fine tool for conveying precise movements of arms, legs, step patterns, and attitudes. It does not attempt to grapple with the issue of the environment of movement. But Labanotation is, in certain important ways, parallel to our system in its use of vertical staves. And where a detailed portrayal of finite gesture is important, the system can be used concurrently.

**Motation**

Environments change their qualities with the variation of speeds they generate. As we move through them, they move around us. On our freeways and rapid transit systems, the variation in environmental speed becomes clearer when we observe the contrast in the high-speed foreground and the low-speed background. Sitting at the window of a train, for instance, one gets a certain feeling from passing a series of verticals, a feeling very much determined by their number and the distance between them. Passing piers that are quite close to each other surprise the passenger again and again with a sense of their nearness. The change of speed is made more apparent in this way, so that, on a route, a pattern of acceleration is soon established. We have all observed telephone poles and track markers alongside a railroad track rush by at great apparent speed while objects on the horizon seem to move hardly at all. As another example, an automobile can be defined as an instrument for moving you to the city, but it can also be defined as a means of moving the city to you. In terms of the individual whose only true continuity is his own awareness, it can be said, with all psychological justice, that the environment moves. This is an essential basis for my notation system.

**The System**

For clarity, I have called this system of movement notation “Motation,” a name that is very close to auto-definition.

Any notation system should be reasonably simple, readable, and should possess a graphic quality that expresses at a glance the nature of what is being recorded. The idea of the Motation system resembles the technique of the animated film in that individual pictures or “frames,” separated in space, are related in time to form apparent movement.
An environment—which can be a stage, a city block, a forest, or a continent—is set off in divisions of space. The notater bases his record on what is to be visually inventoried—depending on the purpose of the voyage—at each of these divisions. The primary features affecting the movement are indicated. For instance, the record will be conditioned by the speed of the journey, and when the separate notings are read serially, they should reflect a sense of speed—just as if running off the still frames of a film at different speeds (Fig. 1).

The Symbols

In Motation, the “frames” are notated with a series of 26 basic symbols; other symbols have also been devised to augment the symbology. By themselves or in combination, this “alphabet” produces the “words” of the Motation “language.” The dot, the arc, and the straight line are the basic symbols. Using these geometric elements, a rational linguistic structure has been developed that is symbolic and purposely nonpictorial.

The horizontal symbols lend themselves to meaningful associations. For instance, the dot stands for a human being. A human is a moving being; the dot, therefore, is used as a part of the symbols for other things that move. The circle, for example, which is an open dot, suggests a wheel; further, a dot within a circle symbolizes a car. The arc represents organic forms in the landscape and is used to symbolize a hill. With an interior semicircle, it becomes a mountain. The half-circle of “hill” becomes “dome,” but by placing a dot within it, suggesting movement, it changes to “cloud.” The straight line is symbolically abstracted to represent vertical, horizontal, or diagonal elements, regardless of their real categories. A straight line can be a wall on edge, but also a standing human, on the Vertical Track, when notating stage events. (See Fig. 2 and full list of basic symbols on p. 132.)

The Motion Form

The Motation system employs a standardized form (see superimposed form on second page of this article, and Fig. 3), the purpose of which is twofold. First, standard sheets can be joined end-to-end to form a movement composition or record of any length; this is convenient to read, like a scroll. Secondly, movement notations on standard sheets are easier to compare with each other. Since a subjective element is unavoidable, a significant consensus of a given route demands the uniformity of standardized Motation forms.

On the lower right corner of the form, in which are noted: title, an indication of the means of movement, the units of time and distance, and the total time and distance. The basic symbols are listed above this title block, with space adjacent for additional symbols and special notes.

The basic unit of the Motation system is the “frame,” which is comparable to motion picture film.

The frames are read vertically from bottom to top. By convention, we read left- and right-hand observations along a straight centerline, and this vertical usage graphically conforms to the experience of moving through an environment. As we walk, ride, or drive, we carry the notion of looking “ahead.” Psychologically, we orient upward rather than downward.

The Horizontal Track

On the left side of the form is a row of large frames that compose the Horizontal Track (Fig. 4). This track is used to map the path of travel within an environment. It is on this track that all the horizontal turns, directions, and motion relative to other mobile elements are plotted. First, the basic outline of the voyage is drawn in the Key Frame at the bottom of the Horizontal Track. This outline is then segmented in succeeding frames on the track above. When the Motation is extensive, these frames are keyed to the Key Frame. These successive frames of the Horizontal Track repeat only the section of the trip that is being notated in the corresponding frames of the adjacent Vertical Track. In these segments, additional topographic features can be added.

The Vertical Track

On the right of the Horizontal Track is a stack of smaller frames that make up the Vertical Track (Fig. 5). This track is plotted
as a record of the "normal" visual horizon—what we see ahead of
us as we ride or walk. No turns are shown on the Vertical
Track; the motion is always plotted "dead ahead." To account
for side-to-side looking, the vertical frame from one side to
another (180°) is split by the centerline into two 90° quadrants.
The top of the frame is equal to an overhead horizon of 45°
(Fig. 6). This is the spatial context for relating the environ-
ment on paper. Frame position should be noted as nearly as
possible to real position.

FIG. 6
The Horizontal and Vertical Tracks are read together to
give, in toto, the qualities of three dimensions—that is, of
height as well as distance.

Speed and Distance Tracks
In order to indicate speed, two strips on either side of the
Vertical Track are used to mark off units of distance and time
(Fig. 7). The distance strip is also used to indicate the rise
and fall of the surface that is moved upon: a diagonal is
graduated to fit the degree of elevation or declination, thereby
showing ramps, steps, ladders, etc. In addition, special events
that need to be recorded, such as sound, smell, color, or rain,
are indicated in this strip. In the Time strip, the irregular
spacing of the dots indicates change of speed. For example,
one might visualize Hansel and Gretel dropping bread crumbs
as they fled from the witch: when they walked, the crumbs fell
close together; when they ran, the crumbs fell farther apart.

FIG. 7
If there is a change from walking to riding a train, it is
shown by a break in the track, a noting of a shift in motive
power and changes in units of distance and units of time. While
it is sensible to notate 10 yards as the unit of measure afoot,
it would be too small a unit at 60 mph to be practical, and
vice versa.

Finally, the combined tracks (Fig. 8), which indicate all
the elements of horizontal space, vertical space, time, and dis-
tance, can be read effectively to plot the movement of a person
or object through an environment at understandable speeds.
A completed section of the Motation form looks like this:

FIG. 8

Recommendations
In reading Motation, it is important, particularly for archi-
tects, to remember that these are not substitutes for plans and
elevations but rather abstract representations of three-dimen-
sional visual experience—a new symbology.

Furthermore, it should be pointed out that any new language
requires some effort and time before facility in its use is
acquired. Musicians, accustomed as they are to "reading" notes
in space, have found this new system simple, direct, and readily
understood. However, for those unaccustomed to such systems,
it requires patience and practice in the learning process.

On these pages are three examples of completed Motation
forms, which apply to actual journeys and events. One of these
—a stroll through the Berkeley campus of the University of
California—is shown in full; the two others, in abbreviated
versions. One of the abbreviated examples records a scene in
a dancer's workshop (facing page, top), and the other, a trip
along the San Francisco Freeway (facing page, bottom). In
all cases, verbal descriptions and photographs, which are keyed
to corresponding Vertical frames by number, have been pro-
vided to aid the reader in visualizing the graphic system.

A fourth Motation notation, called "Mysterious Journey," is
also included, and appears on the second page of this article.
It was described verbally to a member of my staff, who notated
it. Normally, the journey would take one half-hour. It will
serve as a fine exercise for those trying to learn the system to
see if they can decipher what happened. I will be interested
to see readers' descriptions of the Mysterious Journey. Send
them to me at 1620 Montgomery Street, San Francisco, Cali-
ifornia 94111.

Conclusion
This, then, is Motation. What can be done with it? The
system is a tool both for recording existing events involving
mobility and for designing for mobility. It can be used to
describe existing conditions or to create new conditions. It is
a scoring system for motion through space, just as musical
notation is a scoring system for sound. Its uses are the same.
As a musical score can describe a piece of music that then
can either be heard in the mind's ear or actually played, so
Motation can describe motion through spaces that can either
be seen through the mind's eye or moved through in actuality.
(It could, for instance, record our landscaped spaces at the
IBM Building in San José, which are shown further along in
this issue.)

Motation is a tool for choreography as much as description;
choreography in the broadest sense—meaning design for move-
ment. As the accompanying illustrations indicate, Motation
can be used for choreographing dances for stage and theatre,
for the design of movement through urban spaces at pedestrian
speeds, or for the qualities of motion through space at the
speed of freeways and rapid transit systems.

In the long run, our cities—our whole environment—are per-
ceived and experienced through movement. As I pointed out in
the prelogue to Cities, "The city comes alive [only] through
movement and its rhythmic structure. The elements are no
longer merely inanimate. They play a vital role, they become
modulators of activity and are seen in juxtaposition with other
moving objects. Within the space, movement flows; paving
and ramps become platforms for action; the street furniture
is used; the sculpture in the street is seen and enjoyed; and
the whole city landscape comes alive through movement as
a total environment for the creative process of living."

It is as a tool to help achieve these aims that the Motation
System has been developed.
The Motation (right) is a variant approach to the Notation System in that the dancer is in motion rather than the notator. Photographs record selected vertical frames. Numbers correlate frames, photos, and verbal description.

There are three dancers, labeled A, B, and C; their positions are noted on the Horizontal Track. The action begins with A and B at audience's left (1). A is standing downstage, B sitting down upstage. While B remains still, A moves audience right and to the rear. Then B rises as C enters from the right (2), crossing the stage with an exaggerated low stride, while A reaches a piece of stage furniture, a box, and picks it up. A then drops into a chair as B moves to center stage and mounts a pedestal (3).

In spite of the different way in which this kind of action is recorded, it could be conveniently keyed into a moving notator's record at any point. For instance, if a walking notator, who is recording a standard Motation of his changing environment, pauses in front of a puppet show, he merely stops and notates it. In so doing, however, he shifts into a different "key," and then he changes back to the former method when he moves on. Although the example here is of a stage experience, it could be a record of any action observed from a fixed point.

Clearly the system is also workable for designing a movement sequence. (See list of symbols overleaf.)

The Motation form (right) is an excerpted record of an automobile trip on a freeway in San Francisco. For this extended journey, the Horizontal Track is keyed to the Key Frame.

The roadbed used is elevated on a supporting structure for the entire length of the route; therefore, except for the high surrounding buildings, foregrounds are out of sight. Furthermore, this is a record of what is seen by a driver (rather than a passenger) of a car on the freeway. Since a driver properly keeps his eyes on the road, that is primarily what he sees, but there is always the horizon, which never escapes his peripheral awareness, like running a gauntlet of neonized super-billboards.

At the start, the car ascends a curving ramp amidst a scatter of low- and medium-sized buildings. A turn is made to the right as two striking landmarks make their appearance: the tower of the Ferry Building rises on the left ahead; and beyond that lie the silver spans of the San Francisco-Oakland Bay Bridge (1). Beyond that are overhead arches used for traffic signs (2). Nearing the Civic Center, what was once an upper roadbed becomes the lower one, as opposing traffic is routed overhead. The car enters a rather cabistic professional experience, in that the road below, at a point ahead, meets the concrete of the roof above (3).
What happens to a person notating a walk through the Student Union Plaza of the Berkeley campus is shown in the black Motation form, in which the symbology is executed in color (left), and in the photographs on these two pages. Vertical frames are keyed to photographs, both of which are to be read from bottom to top. A verbal description, also keyed to these graphic presentations, follows:

The notator is walking by herself, starting before the portals of Sather Gate (1). She notes the gate ahead and the trees on either side. Beyond the gate rises the form of the Student Union Building. After passing the gate, the view opens into a wide vista of the Student Union Plaza (2), flanked by buildings that delimit the space. The middle ground is broken by trees and other elements (notated according to whatever the notator wishes to emphasize). The notator has turned to her right and is walking toward the platform steps flanking the Cafeteria (3). Mounting the steps (4), she turns to the left (5) and walks toward the fountain (6, 7), which she watches for a moment (8). She then turns (9), walks down the steps (10, 11) toward the Dining Commons, and, while doing so, passes under a pedestrian bridge (12) that connects the Student Union to the Cafeteria. Along the right of the Dining Commons Plaza is a row of boxed trees with benches built into them (13). She walks toward these trees, and then turns counterclockwise (14) and walks diagonally across the Dining Commons Plaza (15) to the staircase at the side of the Student Union (16). She passes among a group of outdoor dining tables (17) and goes up the stairs (18). At the head of the stairs, her view is guided by the balcony line of the Student Union (19) toward the Cafeteria (20), which is ridged with a bank of trees against the sky in the background.
At a time when New England is polka-dotted itself with the universal A-frame and Techbuilt houses and assuming Tyrolean airs with Swiss chalets, it is encouraging to find an architect who is more responsive to the regionalism and the traditional architecture of the area.

The six country houses shown on the following pages skillfully keep within the familiar vocabulary of wood construction, plain siding, and simple but ingenious carpentry. They are reminiscent of rural New England: they fit it, and at the same time are modern, sophisticated, and surprisingly varied.

The houses were designed by a young Cambridge architect, John Rogers, whose approach to architecture is refreshingly undogmatic. Rogers takes the rather Proustian tac that a house should be an expression of a multitude of associations and images; a house is a chance to relate a man to his environment, to evoke a variety of moods and emotions produced by different kinds of shapes, spaces, structures, and qualities of light. It is an opportunity to interrelate the maximum number of elements: “Our civilization is too analytical,” Rogers maintains. “We separate things, put them into boxes, and we are continually dividing one thing from another and examining it as an isolated thing. We are always moving out into the ends of the tree branches instead of trying to pull things together and relate them. Eastern philosophies have more understanding of the synthesis between man and his surroundings.”

Rogers is thoroughly familiar with the New England environment. Born in Boston, he was brought up in Connecticut and on a farm in New Hampshire, and received his schooling at Putney, Vermont, “where everybody milked cows during the war.” He then studied physics at Reed College in Oregon, and received a degree in architecture from MIT. Rogers is a combination of Frostian intuition and Ivy League education—plus a healthy dose of skepticism.

He has a sound understanding of the New England countryside: He knows the lay of the land, the meaning of old hedgerows (or “handkerchief parcels of property”) and, like some sharp-nosed Cape Cod sailor—which he is—he is always aware which way is north and which is south. Rogers is attuned to the moodiness of New England—a brooding quality that has more to do with Robert Frost, Eugene O’Neill, and Andrew Wyeth than with Lederhosen, yodeling, or carved balconies.

One of Rogers’ first houses, a vacation cottage on his father’s property at Cape Cod, illustrates a Thoreauian philosophy. The house is a plain deck, caught up in the woods with trees poking through the floor and butting up against the sides. The bedrooms are open to the four winds—they have only screened openings, not windows with glass—and are the closest thing to living outdoors. The plain siding is left to weather in the wind without paint, and no part of the structure is hidden. Even Thoreau plastered over his boards—regretfully, but as if he had no choice.

From the formal point of view, Rogers is intrigued with the cubism of New England architecture: the strong sloping roofs, the volumes butting up against one another, and the slanting sheds and rooms added on to barn or house. His houses also express an exuberant sense of space; he remembers sleeping high up under the eaves in attics with low windows, the fun of cupolas, ladders, and hiding places.

The value of retaining such early impressions of space must have been confirmed by two years’ work with Robert Woods Kennedy, whose approach to architecture is equally intuitive. Kennedy’s
book, The House, is a polemic against "styles" of architecture, against preconceived patterns, and instead suggests a probing, searching type of architectural mind that recognizes the wealth of emotional or intellectual effects of space and shapes: from the cultural and historical associations down to the basic responses to bowers, caves, and chimney stacks.

As a result, the Rogers houses have more articulation of space and shapes than the traditional New England house. Here chimney stacks stand free, surrounded by space, and there are strong contrasts between small and open areas—a continual sense of compression and decompression. Rooms take on special meanings: there are high, small hiding places under the eaves for privacy, work, or study; living rooms with floor space just small enough to comfortably allow conversation, but with tall rafters and overhanging balconies—à la the Globe Theater—for kids to stage an exit on; and there are low rooms—caves for the cocktail crowd. Spaces are also carefully controlled to accentuate the dramatic scenery: they enclose and blind around an entryway, tease around a corner, and then propel the viewer's sight down through an open room, underneath a window, framed by a beautiful landscape. "Things start to "come out of boxes" in a Rogers house. "One client," says Rogers, "is particularly responsive to what has happened to him. He has begun to hang up his ties on an exposed rack in the bedroom, or a shaving mirror in the window, framed by a beautiful landscape."

Many of these design elements need not disappear in mass housing. The traditional New England architecture, with its varied geometric components and aggregate, growing structures, is particularly suited to standardization and variety. At the present moment, Rogers is working on a series of component designs—of building units that could be combined in a variety of ways according to a client's needs. "One of the difficulties with most prefabricated housing," says Rogers, "is that it confines people to one box, hems them in, and allows no growth or individual expression." In a scheme such as Rogers proposes, the client might have the best of both worlds—and gain a wealth of New England associations besides.
This ski and summer vacation house near Londonderry, Vermont, is one of a pair situated on a knoll looking out toward Stratton Mountain. The program called for the design of two houses for families that know each other and are friends, to create buildings that are similar while at the same time expressing the individuality of each family, and to fit both houses to the landscape—particularly to the small hamlet of farmhouses nearby.

The clients were thinking of Techbuilt— "an end gable with lots of glass." Rogers instead suggested a barn-type structure, and gave the buildings a strong wall surface with board and batten siding "pierced by win-
The houses have similar floor plans (below and overleaf): a tall central space clear up to the rafters, with a balcony spanning the second stories on either side.

But the houses are also quite different. For the more formal, conservative couple (who have fewer weekend guests but who do enjoy the cocktail après ski scene) the central space is occupied by a rather formal dining room (2) and a low side room is devoted to a comfortable, cozy drinking pit (5).

Upstairs, in the dormitory (1), the post and beam structure of Douglas fir is exposed, and a truss and hammer beam support under the roof permitted the architect to use a fewer number of beams in the roof and create a simpler design. Wall construction is unusual and economical—with an unorthodox placement of the insulation (see wall section). The aluminum roof—a jarring note to wood-shingle aesthetes (including the architect, at first)—actually follows the more recent construction customs of New England barns; and, surprisingly, it works. One piece of old-time craftsmanship (3), a morticed porch railing, was ignored by the carpenter, who simply “hammered the nubbins on top, instead of putting the post through.”
The second house (1, 2) on the same site (near Londonderry, Vermont)—a dark red barn—was designed for a more exuberant couple. It can hold approximately 22 people at a time (some sleep in lofts atop the bathroom) and is gregarious and informal in layout. The high central area is a living room (5) with a generous cave-like fireplace that also serves the dining room on the other side (4). The balcony overhangs the fireplace, in a somewhat Globe theater manner, and provides an excellent and exciting stage for children or an observation post. Other amusing spaces include a cupola at the top of the structure (3), reached by a ladder (6); and a laundry chute from top floor to basement, which provides an excellent slide for a certain stuffed teddy bear and is therefore labeled “Pearly’s Fall.”
The round summer house of West Stockbridge (1), Massachusetts, was designed to take in a spectacular 360° view surrounding a high knoll. The landscape is a curiously civilized one—the bumpy end-on view of the Berkshires to the south and the broad valley to the north are climaxed by the small old village of West Stockbridge, lying below the house, which surrounds a series of small reflective ponds. The foundations of an older farm house still remain on the hilltop. The client, who is manager of the Boston Symphony, frequented the spot with the orchestra for picnics during the summer months at Tanglewood. A house on the spot had to be hospitable enough for entertaining, yet be modest and simple.

It is a civilized, well-ordered structure. The geometrical center is an entrance court whose height and strength are deliberately emphasized to balance the powerful scale of the site. A backbone corridor (3) surrounds the court and is very private, since it curves and permits no long views. The corridor has windows on either side to pass light on from the court to the radiating pie-shaped rooms.

In all the rooms (2), the space moves from a tall, narrow shape to a low, wide one as the roof slants down close to the skyline to frame the view. The main entrance (4) leading onto a blind wall is carefully designed to tease the mind, to obstruct the view before turning into the panorama of the living room. In spite of the strong geometric pattern of the plan, the front view shows the extraordinary variety of doors, windows, and details—a variety within a dominant ordered theme. The informality and articulateness of the
structure (10) has been well understood by the client, who, with delightful casualness, places objects on the exposed beams (5, 8), and hangs brooms up on the wall (9), like the tools in an old New England home, and has in general adopted a comfortable, country style of living (6, 7).
A second round house, less formal and more romantic, occupies a more irregular site on a hillside overlooking the Stockbridge bowl and the Berkshires. It is a wilder, more wooded landscape and the clients are younger, more romantic and wanted a house built into the land—not up above it. The rooms fall and rise with the terrain and the confusion of the ground level is unscrambled and unified under a sweeping, continuously flowing roof that covers the entire house like a bird's wing.

The structure of the roof should have been articulated with ribs on the exterior, a detail unfortunately omitted by the owners. But,
more happily, the clients also insisted on the smooth redwood siding (3, 4 front and rear views); they did not want a rough, shaggy look. "And maybe they were right," says Rogers. "Many round shapes in nature have smooth surfaces. Think of a pine cone or a sea shell. Also, at a certain point, the client has to make changes in the house, to begin to live in it, to own it. These changes often break the regularity of the plan and make it breathe. If the over-all design is strong, minor changes cannot harm it.

Natural materials are used throughout the house: trees serve as posts in the bedroom (1), living room (2), and kitchen. Local fieldstones, complete with lichen and lichen-chains, form the fireplace. Windows (detail below) are kept simple—framed in wood and attached to a sliding track like a barn door, or hinged. They batten down with marine hardware.
The director's house for a school in northern Vermont was designed to fit along an old hedgerow (1-3) bordering a field in front and a hill in back. The site is more desolate, the climate harsher, and the local architecture is a bit meaner—"with more small sheds and shacks"—than in southern Vermont.

The design of the house was complicated by the fact that it was to be annexed to a dormitory to be built later on. It had to connect with a formal school reception room, a common room for boarders, and a row of dormitory rooms. A site was chosen that was away from the majority of school buildings, on the grounds that it was "between buildings," that the students come in contact with nature, and that, by locating activities far apart and in various settings, students would grow familiar with a variety of landscapes during their years at school.

In order to prevent the complex from turning into one long building and long corridor, the two sections—house and dormitory—
were separated and turned into an exercise in vertical overlapping. The geometric block architecture and slating eaves of the region are brilliantly exploited. The children's bedroom in the house is placed like a shed at right angles above the director's private living room (4), which in turn will overlook the school reception room. A small room perched under the highest part of eaves (5) will serve as an office.

The house is a frame structure with a smooth interior finish (gypsum wallboard), which creates a rather Scandinavian quality while still keeping the plain pine board and batten siding on the exterior. Heaters are fitted into the baseboards, and doorways (6) are boldly but carefully carpentered. The truss (4 and drawing) in the "office" above the kitchen permitted the architect to use a smaller beam to span the space.
The simplest house by Rogers is a summer cottage built on his father’s property in Cape Cod.

The program called for an inexpensive guest cottage ($8,000, including utilities), located in the woods below a protecting bluff. In terms of its design, it had to be as open to nature as possible—to be part of it. A minimum number of trees were cut, and several were left to butt up close to the sides and through the floor. The house, sitting on top of concrete posts, is like a compact ship with a simple wooden deck. An enclosed sitting room cabin occupies the front area, a mechanical core sits in the middle, and screened-in bedrooms are aft. It is a frame construction of Douglas fir and finished pine siding. The roof of matched spruce is given a high peak for aesthetic effect; it is covered with wood-fiber insulation and black asphalt shingles. The house won an award at the Boston Fine Arts Festival in 1964.
CHANGES IN THE OFFICE ENVIRONMENT

Research Facilities

IBM ADVANCED SYSTEMS DEVELOPMENT DIVISION LABORATORY, Los Gatos, California. ARCHITECTS: Hellmuth, Obata & Kassabaum, Inc.; Gyo Obata, Designer; William J. Harris, Project Manager; Lawrence Halprin & Associates, Landscape Architects. SITE: 80 acres in a suburban area near San Jose; golf course on one side of property; climate favorable for use of outdoors. PROGRAM: Offices and laboratories for more than 300 researchers.

STRUCTURAL SYSTEM: Standard wood beam and joist framing; 3/4-in. steel tubes for heavier loads; glu-lams for large spans.

MECHANICAL SYSTEM: Heating and air-conditioning equipment housed in individual roofs.

MAJOR MATERIALS: Redwood; dark glass.

COST: $2,408,231 for total construction; $25 per sq ft for architectural, heating, air conditioning, plumbing, and electrical work; $340 per sq ft for site work and required sprinkler system.

CONSULTANTS: Gilbert, Forsberg, Diekmann & Schmidt, Structural Engineers; Harold P. Brehm, Mechanical Engineer; Flambert & Flambert, Food Service; Swinerton & Walbert Company, General Contractor. PHOTOGRAPHY: Morley Baer.

It is not surprising to learn that this new building complex has had a strong morale-building effect on the 300 research scientists who moved into it in December 1963, for it is not merely a thoughtfully planned piece of architecture but one that has been skillfully tied into a setting of exceptional natural beauty.

The site is an 80-acre property, high on a plateau in the rolling foothills of the Santa Cruz Mountains near San Jose. "We wanted to make the natural environment as much a part of the building complex as possible," says Gyo Obata, "and planned the office spaces so that each person would have a view either of the valley, the mountains, or a carefully landscaped interior courtyard." To obtain the building perimeter required for this number of outside exposures, he used a series of cross-shaped structures, based on a 5-ft module. This grouping of 10 to 12 offices, according to the designer, helped "to retain human scale in the rather large project" and enabled the architects to put laboratories and shops in the interior, where they would be readily accessible to all. Paralleling the progress of ideas being developed in the offices, the architectural spaces flow from the individual "think spaces" to the larger laboratory and shop spaces, and on to the still larger outdoor courts. Carrying the humanizing process of the office building still further, the architects chose redwood as the major building material. This material, they felt, would best blend with the natural surroundings, provide the necessary tie-in with anticipated nearby residential developments, underlie the desired warm and friendly atmosphere inside and out, and would, above all, be economical and easily adaptable to possible future changes and additions.
The structural system, typical of residential rather than industrial construction, uses standard wood beams and joists. Where heavy loads occur, 3 1/2-in. steel tube columns are employed, and glu-lams span the larger laboratory and shop areas. Exterior walls are sheathed with rough-sawn board and batten redwood, pressure-treated with a preservative that gives the boards a natural golden-brown finish. Dark window glass aids color consistency and sun control. Interior partitions are of wood and gypsum board with redwood trim. Ceilings—8 ft high in office areas, 9 ft in lab/shop spaces—have 1' x 4' fluorescent fixtures in each 5' x 5' module. The heating and air-conditioning equipment is housed in the attic space above, from which air is conveyed through the lighting fixtures into the rooms. Vinyl asbestos surfaces all of the floors except the library, which is carpeted for sound control.
"We attempted to make a transition between building and background by a series of man-made elements that would extend out from the building into the man-made landscape. You surround yourself with a clearly defined man-made landscape, and then, at certain points, you walk on paths (1) out of it into the native landscape. This series of man-made landscape spaces—related in scale, size, and even form to the forms of the building—carries the quality of the building out a certain distance into the landscape and then becomes married with it.

"We made the entrance road lower than the building platform (2), and instead of coming straight up at the building in a formal axial relationship, we preferred to wander through the landscape. We were trying to emphasize the fact that it is the whole environment that is important, not only the building. The guest parking was dropped about 10 ft below the elevation of the building to avoid spoiling the magnificent view to the west. The path from the parking area to the building is not linear; instead, we started the process of moving through a series of related environmental spaces. The first is a courtyard surrounded by low walls (3, 4), approximately the same size and shape as one of the building's pavilions. You pause for a moment and then move on into the building. From here, you can go into the various parts of the interior or dead ahead into the main courtyard (5), completely enclosed by the building. This interior courtyard brings in some of the qualities of the landscape; at the same time, it is a contained and definitely designed interior space. It is an outdoor space with planting, birds, but mostly it is an interior environment that happens to be un-roofed. And, since this is a very hot and dry environment, it emphasizes the play of water (6, 7, 8). There is a cascade: water falls from bowls, over lips of steps, makes lots of sound, and cools the air. Another kind of exterior space is the outdoor dining space (9), which is the same size as the first arrival court, again related to the various pavilions that surround it in size and scale.

"From there, you can look out at the panorama of mountains. This is the final court of the three—each interpenetrated by the buildings and surrounded by them; each one an experience of its own; one progressing to the other.

"These are the architectural elements of the landscape. All are surrounded by a series of transitional plantings—from plantings quite domesticated, quite small in scale, to the broader scale, where the planting begins to merge, first through planted lawns and then unused-for plantings, to the hillside. Through these devices of very controlled courtyard spaces, lesser controlled plantings, and then more native plantings as you move out into the native landscape, we hoped to achieve a marriage of a very dominating kind of landscape with a man-made landscape, which, in its own way, is very dominating. It was hoped that each would enhance and add to the other through contrast, rather than through copying."

—Lawrence Halprin
Regional Headquarters


The promenade, which encircles this building and is its distinguishing feature, serves not only as a pleasant sheltered walkway but contributes in several other ways to a more gracious working environment. Most importantly, the 8-ft-wide promenade visually extends the interior space, framing exterior vistas and generally lending an air of quiet and dignity to the work areas. Seen from moving cars along the highway, the promenade and overhangs at the second floor and roof level furnish strong horizontal accents, achieving the visual effect desired by the client. The overhangs offer protection from sun and sky glare, and recall at the same time the sheltered porches of the earlier plantation homes of the area. And, an advantage not to be overlooked, the cantilevered elements serve as convenient platforms for window washing.

These strong, smoothly finished horizontal elements have been interestingly contrasted with aggregate-surfaced, load-bearing Mullions, whose rhythmic spacing (they are more closely spaced when they face columns) add further visual interest, as observed from the inside as well as the outside.

Landscaping of the site has been limited to rows of native water oaks along each property line, and groves of flowering crab-apple trees of a dwarf variety.
The building combines two structural systems: first, a precast concrete bearing wall at the glass-line of the building; and second, an interior slab and column system of cast-in-place concrete. Precast framing members of the exterior wall also serve as window mullions for fixed panels of tinted glass.
Within the building, a minimum of interior partitions have been erected to assure exterior views from all work stations. Where interior partitions do occur, they meet the interior columns at a 45° angle, making a more fluid transition between column and wall. A 3'2" x 8'8" module has been used throughout the building. Each module contains one 2' x 4' light fixture with air diffuser and an underfloor duct system for electrical and phone service.

The color scheme is off-white and gray, with accents of primary colors in the interior.
Rental Offices

OFFICE BUILDING, Waltham, Massachusetts. Architects: Anderson Beckwith & Haible; William E. Haible, Partner in Charge; E. Verner Johnson, Ted A. Niederman, Job Captains. Site: Heavily wooded and sloped; entry to building on two levels; view west toward lake. Program: 80,000 sq ft of office space; provisions for sun control; partitions, mechanical and lighting systems on 6-ft module; cafeteria to seat 160, with possibility of future enlargement or conversion to office space; parking for about 200 cars. Structural System: Reinforced concrete structural frame (30' x 30' bays): two-way waffle slab construction (30-in. pans, 3'-0" o.c.). Mechanical System: Forced warmed and filtered air with zone control for heating and ventilating; offered boilers (in adjacent building); cooling by central freon system integrated with ventilating system. Major Materials: Sandblasted concrete for columns, sills, spandrel beams; water-struck brick for panels under sills; 1-in. thick, double-layered, sealed window units (3/4-in. heat-absorbing glass on outside, 3/4-in. plate glass on inside): anodized aluminum window frames: redwood sunshade blades on east, west, and south exposures; bashhammered core walls; quarry tile for court floor and public areas; vinyl-asbestos tile for office areas; suspended acoustic tile. Cost: $2,143,577 for 105,201 sq ft building (not including alterations to boiler room in adjacent building, connecting tunnel, furnishings, or landscaping), $20.38 cost per sq ft. Consultants: LeMessurier Associates, Inc., Structural Engineers: Syska & Hennessy, Inc., Mechanical Engineers: William Lam, Lighting: Michio Ihara, wall mural. Photography: Mark Power of Fred Stone Reproductions.

The architects' original design objective—to provide a central area that would serve as entry space for the building as well as the various tenant areas; help unite the various levels within the building; bring natural light and a rich spatial quality to the interior—has been handsomely met by their design of a central court that serves in effect as living room for all of the tenants in the building. "We intended to bring an active, lively area to the building where the tenants could meet," say the architects, "particularly since the building is removed from the center of town." And because of severe weather conditions in New England and the desire to have this area directly accessible from the offices, they created an interior, rather than an exterior, space.

Office space surrounding this central well has been arranged in such a way that it can easily be subdivided for tenants requiring only 1,000 sq ft, or 5,000-10,000 sq ft, or entire floors of 25,000-30,000 sq ft. A modular grid of 6 ft in both directions, to which lighting, electrical and mechanical systems, and partitions correspond, make any number of interior arrangements possible—and all within easy range of the corridors around the central well.

Corridor walls have been painted dark blue to make them recede from the main central space, which is, in contrast, brightly bathed in natural or artificial light. Light serves to define the court spatially and to heighten the effect of several well-integrated embellishments—a pool, fountain, cluster of camelia trees, ground-cover planting, and a wall sculpture. The latter, a three-story high mural on the south wall, is composed of 1-ft-square copper plates, set into the wall at various angles. Viewed from different vantage points along the galleries and stairs, and exposed to the moving rays of the sun, the mural introduces ever-changing patterns that enliven the simple forms of the architecture.
Exterior columns were precast for speed of construction and control of finish. Placed 6 ft on centers, they serve as load-bearing members and provide the points of contact for interior partitions, which are also based on the 6-ft modular system. Movable metal partitions are used inside tenant areas; 6-in. concrete blocks divide tenant areas from each other; and 8-in. concrete blocks with 3/4-in. plaster on both sides separate tenant areas from public areas.
Natural light is brought into the court through acrylic skylight domes (top); artificial light by continuous cove lighting along corridor walls (right) and incandescent downlights. Office areas (above) have 2' x 4' fluorescent fixtures centered within each module. These also serve to supply and return conditioned air. Cooling and air circulation is supplemented by fan coil units mounted below windows along perimeter walls. Deeply recessed columns and redwood sunshades control natural light.
INTERIORS FOR THE FEDERAL GOVERNMENT


The Miesian dictum "Less is more" gained a new, practical dimension when the Federal Courts building opened in Chicago recently. First of all, the building was "on the budget," which the Government considers "average for this type of building." (Some buildings are more "average" than others, as the photographs prove.) And secondly, it was completed
months ahead of schedule (in contrast to Washington's notorious new House Office Building). A portion of the Federal Courts building was occupied a full six months prior to the original expected date of completion; three months before the scheduled opening, the entire building was occupied, thereby saving the Government a considerable sum in rent.

All of this is a forceful demonstration of the practicality of the Miesian rule. If one wonders fondly how the old master did it, the answer is—with a young and energetic team. And it is to be hoped that the four architectural firms engaged in this joint venture will be as successful in this practical respect with the other two projected buildings of the Federal Center complex as they have been with this first unit.

The Miesian principle, of course, is essentially an aesthetic one, and the architects adopted it consciously, not only in the detailing of the building but also in the "decision to limit the number of materials used." In the courtrooms, for instance, the visible materials are restricted to the aluminum of the ceiling grid, beige-brown wool of the carpet, and American walnut, which is used for wall surfacing, partitions, and for furniture. Black leather chair upholstery, much of it hidden behind the low walnut partitions, and touches of stainless steel are used sparingly as accents.

The tone of this disciplined palette is consistent throughout the building (except in private offices, which were largely furnished by their occupants)—from the exterior to the lobby, to the employee cafeteria, and to the courtrooms; the latter, being the primary reason for the structure's existence, therefore epitomize the building.

Fifteen two-story courtrooms (18 ft high) are located in the upper part of the building, on floors 17 through 28; provisions have been made for five addi-
tional two-story courtrooms "without necessitating revision of the structural or mechanical systems" (see section).

Each courtroom achieves the effect of being a focal center, and therefore of possessing a degree of autonomy. This is accomplished by several means: first, by the central location on the plan within the surrounding buffers of corridors and perimeter offices; and second, by the isolation of each room in terms of environmental control and circulation. Each courtroom is individually air conditioned. Since they are centrally located interior rooms, they are entirely free from outdoor sounds, and they are also free of visual distractions since they are windowless. Consequently, all attention is focused inward.

In terms of circulation, the floor plan not only provides each courtroom a central location but also a separate elevator system. There is a further separation of the participants in the courtroom ritual. Judges, for example, use private elevators that connect with the underground garage; so also do prisoners, who are thereby kept separated from the public while in custody. Similarly, judges and jurors use offices and corridors on one side of the structure that are partitioned off from the public corridors and spaces on the other side.

The effect, as the visitor passes through the buffer zone of offices that are ranged like an army of bureaucracy between the outside world and the courtrooms at the center, is as though he were approaching the ominous isolation at the eye of a storm.

Acoustically, the courtrooms are similarly isolated by the elevator banks between them and by double walls. They are individually sound-controlled by means of carpeting, which is spread over the entire floor (including the elevated areas at the bench and jury box), and by means of the ceiling above the open grid—a reflective, hard-plaster surface with a 6-ft perimeter of acoustical tile. In addition, the rear walls of the courtrooms are treated as acoustical baffles.

Acoustical treatment of the walls is provided by walnut baffles over bronze mesh and glass-fiber insulation (right, above). Horizontal panels of this treatment are used on the side walls of the courtrooms (facing page, top); the rear walls are entirely finished in this way (right). Side-wall panels have short baffles of solid walnut (see detail); rear-wall baffles are made up of white-pine cores with walnut veneered sides and half-round nosing. The baffles, incidentally, also provide a variation in the linear decoration of the wall paneling.
Cynics observe that the dovetailing of the apron and legs of the attorneys' tables goes in both directions (left), and, finding this a physical impossibility, they tauntingly say that it shows up "a phoney bit of Miesian veneer work." Yet the drawings reveal how the detail was honestly (if uneconomically) achieved with a complicated Chinese puzzle of joinery (below), and the believer rejoices to see the master vindicated.

This restrictive influence on mund also makes its effect on the restrained stylistic atmosphere of the courtrooms.

That atmosphere is awesomely appropriate to the judiciary. When one is alone in the courtrooms, the atmosphere is almost oppressively insistent: the stark discipline of the design is expressionistic, evoking the mechanistic regimentation of legal enforcement, and the awful power of the courts and of government. It is as though one were in the invisible glare of focused scrutiny. This may be the physical statement that, so far, most closely approaches the Orwellian picture of governmental power in 1984.

Everything in the design contributes to this air of all-pervasive control: the expanses of walnut, the uniform carpeting, the continuous luminous ceiling. Each reinforces the image of all-encompassing, ever more powerful, almost automatic control. It is a restrained, perhaps abstinent, discipline, which is exercised with meticulous elegance of the proportions and details. It is a "less" that says more about the potential of the law and of government than we might have wanted to have expressed. Yet, in the service of those agencies, it is patently efficacious. For, when court is in session, the rooms manage to preserve an aura of dignity and respect, even in the face of that often lively American courtroom behavior.

The ground-level lobby of the Federal Courts Building is a glass-enclosed area that serves both as a circulation area and an information center (note desk in right of top photo). Set back from the face of the building mass above, the lobby is visually continuous with the over-all site (plan, right), owing to the consistent use of the same gray granite from curb to curb across the property, through the central hall that the lobby provides. Chicago architects were abuzz recently with this success story of the team of architects being able to persuade the GSA to use the granite in such a way as to contribute not merely to the building itself but also to the entire three-building complex.

Since the core elements at the ends of the plan are also faced in the same granite, the calm, restricted palette of the scheme is consistent with the remainder of the building. Yet, unlike the courtrooms, the lobby is woodland; it is correspondingly chillier.

At each end of this great hall, Government seals executed in black outline on granite base-plates hang on the granite walls of the core. The columns of the four-bay plan bisect both the lobby and the great seals (photo, top).

Columns are faced in velvety, flat-black painted steel—the color of the building exterior. Unlike the distinguished, conservative exterior, however, the lobby interior is on the dour side in atmosphere. It is certainly a giant step beyond the tiled, dairy-like facilities of many previous Government buildings, however.

The space is huge—about 116-ft long, bays are 28'-square—and provides, according to the architects, “a public space in scale with the magnitude and functional character of the building.” Monumental granite benches at each end of the lobby measure approximately 35 ft in length.

At the lobby level, gray Rockville granite is used as the predominant material. Chicago architects were recently debating the fact that Miesian theory had been revised to permit the use of the same material on adjoining planes—here for both floors and walls (left). The texture of the granite varies, however, from a flame finish, which is used as the exterior flooring and on the walls of the elevator core (above), to a honed finish, which is used for the interior flooring and for the long granite benches (see detail) at each end of the lobby.
Both the in the conference rooms and in the lobby between the elevator banks, a cast aluminum open grille system is used as the ceiling (left and detail above). It is handsomely sculptured. The variety of the double grille effect was arrived at to provide a high level of illumination without glare, to produce visual cutoff for the exposed lighting above it, and to satisfy air supply and sound penetration requirements. It is also aesthetically strong, suggesting an army of behind-the-scenes machineries, as in a highly engineered recording studio.

Floor registers at the window wall in the ground-floor lobby (left), are raised up on 2-in. granite curbs with radius corners (detail above) so as to prevent water spilling into the ducts when floors are being cleaned. This not only makes sense functionally, but also is a straightforward aesthetic expression of the mechanical system.

PRECAST GRANITE PANELS

BUILT-IN ANCHOR BOLTS WITH EYE FOR GUING TREE (LOCATED OUT OF SIGHT)

EXISTING STRUCTURAL CONCRETE SLAB

3/4" SLOT WITH STAINLESS-STEEL TENSION RING

CROSS SECTION

3/4" SCALE

CIRCULAR GRANITE CURB BELOW

DRAIN

STAINLESS-STEEL DOWELS (2 PER PANEL)

PLAN VIEW

1/4" SCALE

PARTIAL VERTICAL SECTION

1" SCALE

SLIGHTLY ROUNDED EDGES TO PREVENT CHIPPING

ALL ACCESSIBLE JOINTS SEALANT FILLED

WATERTIGHT LEAD COATED 16 OZ COPPER LINING WITH ALL JOINTS SOLDERED

WATERTIGHT LINING 5 FLY WATERPROOF MEMBRANE CLAMPED IN DRAIN

3/4"

3/4"

3/4" 3/4" X 5" STAINLESS-STEEL DOWEL

WIRE

LIGHT-WEIGHT CONCRETE SLAB

RIGID INSULATION

1/8" ASPHALTIC FELT LAID WITH LAP JOINTS FILLED WITH POROUS FILL

3/4" PVC WATERPROOF MEMBRANE

ALL ACCESSIBLE JOINTS FLUSHED OUT TO A DEPTH OF 3/4" RAINED WITH SEALANT

U.S. COURTHOUSE AND FEDERAL OFFICE BUILDING: Chicago, Ill.

SCHMIDT, GARDEN & ERIKSON; LUDWIG MIHS VAN DER ROHE; C.F. MURPHY;
A. EPSTEIN & SONS, INC., Architects

SELECTED DETAIL

TREE POT

JULY 1965
CONCRETE WALL

CONCRETE WATERSPILL POURED IN PLACE - SANDBLAST FINISH

10'-0" 1'-3"

I" DIA. DRAIN & PLUG

WATER LEVEL OF POOL

ALL SURFACES BELOW WATER LEVEL PAINTED BLACK

EDGE DETAIL 1/2" SCALE

CONCRETE WALL

WATER LEVEL 2 1/2" NOZZLE

BRICK

SAND

LONGITUDINAL SECTION (POOL & WATERSPILL)

2#4 BARS

VERTICAL #4 BARS AT 5"C/C

HORIZONTAL #4 BARS AT 12"C/C

CROSS SECTION AT A

4" DRAIN & PLUG

3/8" SCALE TYPICAL

3#4 BARS

VERTICAL #4 BARS AT 5"C/C

HORIZONTAL #4 BARS 12"C/C

CROSS SECTION AT A

3/8" SCALE TYPICAL

VERTICAL #4 BARS AT 5"C/C

HORIZONTAL #4 BARS (BOTTOM)

PLAN OF WATERSPILL

REINFORCING SAME AS OPPOSITE

IBM ADVANCED SYSTEMS DEVELOPMENT DIVISION LABORATORY:
Los Gatos, Calif. LAWRENCE HALPRIN, Landscape Architect;
HELLMUTH, OBATA & KASSABAUM, Architects

SELECTED DETAIL

POOL
Structural design of new memorial tower having four joined concave sections is reviewed.

Design of Trinity University's 166-ft T. Frank Murdoch Memorial Tower, built to stand for hundreds of years, has "the flavor of the worker, of the vernacular, and of native artlessness rather than the sophistication of professionals." Such were the aims and achievements of its architects, O'Neill Ford & Associates, San Antonio.

Structurally, the tower is a brick-formed reinforced concrete building consisting of four concave sections joined for rigidity by a series of vertical Vierendeel trusses. Horizontal truss members form landings for stairs, observation platform, and bells.

Although its horizontal section contributes directly to the strength of the finished tower, its configuration is especially suitable for the application of the 4-in. brick wall as a concrete form. Use of masonry as both form and finish has an additional advantage. Two-material towers have long suffered from disintegration due to expansion differential as the sun's heat shifts from east to west during the day. The resulting marked changes in temperature cause racking and grinding as well as subsequent spalling and/or fracture of horizontal connecting members. Thus by making concrete and brick one homogeneous mass, it has been possible to avoid the separation of structure and veneer that is frequently encountered in tall structures. Since the expansion and contraction of the brick and veneer are almost the same, there is no tendency for the veneer to shear off or to break its ties with the structural framework.

Many tall towers have also suffered from water penetration into masonry joints at their tops where they are not readily accessible for inspection. Serious damage of this kind was avoided by placing a protective "lid" over the tower.

Total weight of the structure is such that a 140 mph wind will exert practically no measurable stresses on the reinforcing. "The reinforcing is there," say the architects, "because the engineers felt that no modern building or tower should be without it. Although the steel does guard against unforeseeable shocks that are highly unlikely, it is more of a luxurious precaution than a necessity."

Foundation requirements were greatly simplified by the existence of hard chalk rock located almost at existing grade. The 3-ft slab, 1-ft below plaza level, is doweled to the limestone through numerous 6-in test holes originally drilled in a search for caverns prevalent in the area. One such cavern was found during excavation for an adjacent building. Small fissures, found at the site, were filled with grout.

Construction sequence consisted of laying up a 4-ft section of cavity masonry wall, then filling this void with reinforced concrete. Subsequent 4-ft wall forms and pours to the full tower height complete the process. Two master masons were able to build at a rate of about 2½ ft per day.

Although the original plans called for the tower to be built without the aid of exterior scaffolding, the masons elected to use it. The architects would have preferred, however, to have seen the structure built without conventional forms or scaffolding.

Structural engineers were Feigenspan & Pinnell.
THE NEW WALL COATINGS

BY JOHN BROOKS

The following discussion will assist the architect in drawing meaningful comparisons between the various classes of new coatings. Author is President, Desco Chemical Company, Inc., Buffalo, N. Y.

As we all know, a technological explosion is underway in our Western civilization. Reverberations from that explosion have been sounding in the architectural arts and sciences, as well as elsewhere. In recent years, for instance, an increasingly large selection of specialty-coating materials has become available. These surface coatings have been developed to meet specific architectural needs. But their number and diversity has created some confusion within the profession.

The confusion arises, first, because the coatings are chemical formulations of different classes and families. Each has its specific attributes. It is sometimes difficult to draw meaningful comparisons between the various classes of coatings.

The architect has special problems in interpreting the data supplied by the manufacturer on life expectancy, performance, maintainability, and the like. Laboratory test results, however precisely derived and accurately stated, cannot always be directly translated to field use. Furthermore, misunderstandings exist as to the desirability of hardness, the difference between hardness and toughness, the difference between elasticity and flexibility, and other characteristics.

The result is that, while architects and other specifying authorities know generally that the new specialty coatings are good, they often find it difficult to answer for themselves such questions as how good, or good for what, or whether good enough for a particular application.

The significant differences that exist among specialty coatings makes the specifier's job complex, but it ultimately works to the architect's advantage. He can select coatings with just the right combination of attributes for his particular requirements. Armed with realistic data on the characteristics of the various coating types, he can make intelligent selections that will fulfill both the aesthetic and the functional requirements of his design in the once-problematical area of interior and exterior surfaces.

No Perfect Coating

Ideally, there should be a single coating material that would be easy to apply on vertical, near-vertical, and horizontal surfaces; infinitely flexible in color and texture possibilities; infinitely resistant to either interior or exterior environmental factors; and infinitely tough, durable, maintenance-free, fireproof, and inexpensive. There is no such single material, of course, or we would all be making and using it—and many chemists would find their occupation gone. All modern coating materials possess at least one of these valuable attributes to at least an acceptable degree; some possess several; a few have most; but none has them all.

The two broad classes of specialty coatings are the two divisions of the chemical technology: inorganic and organic. Inorganic coatings can be grouped into two general categories, cementitious and noncementitious, with the latter largely replacing the former in most recent applications. Organic coatings likewise fall into two general categories: thermosetting resins, such as polyesters and epoxies; and both rigid and elastic thermoplastics.

Either class can be employed in either interior or exterior applications. Interior applications should generally be able to withstand physical abuse, continual cleaning, and such environmental factors as the room may present (such as corrosive chemical fumes). Exterior applications must sometimes be able to "breathe" (permit the transpiration of water vapor to the outside air), must sometimes be an impervious waterproof film, and should be able to stand up under atmospheric and climatic conditions.

Functional Qualities

Functional attributes of especial interest to the architect are toughness, surface texture (which affects maintenance), adhesion, and durability. Toughness is a more valuable characteristic than hardness: a surface should be hard enough to withstand impact, but no harder than the backing material over which it is applied. Otherwise, it may shatter on impact. Architects frequently judge coating samples on the basis of hardness, without considering that this may involve brittleness—and brittleness is never desirable.

In weighing the question of toughness versus hardness, it is well to remember that a tough rubber tire takes thousands of miles of road wear, while the hard-steel wheel-rims would be badly damaged after only a mile.

Surface texturing may be aesthetically desirable, but it usually involves a loss of maintainability. A glossy surface is easy to keep clean. Dirt generally stays on the surface, and in some cases will not even adhere: a child's dirty, sweaty hand, for example, will hardly leave a mark on a glazed surface. And such dirt as does adhere can generally be wiped right off.

The ability to withstand environmental abuse—whether the fading caused by sunlight or the surface destruction of corrosive chemical fumes—is an attribute that may be significant; it is always an attribute inherent in the chemical formulation itself. Additionally, some installations may require a coating with the ability to bridge minor settlement cracks, to adhere to a variety of backing materials, to take a broad spectrum of colors, to hold texturing aggregates, or to form an impenetrable surface on which bacteria or fungi cannot grow. All these factors, functional or aesthetic, affect the architect's decision as to choice of coating materials, and his weighing of the various factors dictates the trade-offs which must be made in the specification.

Interior Finishes

Cold-glazed inorganic finishes are among the oldest of specialty coatings. The original cementitious coatings were introduced into North America in 1933; in recent years, these formulations have mostly given way to vastly improved non-cementitious formulations.

Inorganic coatings are often specified for interior use because they are fireproof, easily maintained, and totally unaffected by oxidation or moisture. They possess the same coefficient of expansion as masonry backing materials, and so are not susceptible to shearing due to temperature changes. They retain their appearance through a long, useful life.

The statement that inorganic coatings are durable, long-lived, resistant to weather and oxidation damage, incombustible, and essentially maintenance-free, must be understood with a proviso. No specialty coatings marketed today are completely inorganic; all are made up with organic resins added to increase tensile strength, impact resistance, adhesion characteristics, and the like. If resin content is held to about 10 per cent, the essential characteristics of the inorganic material predominate for the life.
of the coating. Organic content substantially greater than 10 per cent reduces the effectivenes of the inorganic components.

In interior applications, inorganic coatings are generally glazed: that is, a clear, nonyellowing glazing coat is applied over the final color coat. This procedure has distinct advantages. If a naturally glossy (unglazed) coating is scratched, the surface is marred and the scratch shows prominently. Scratching the clear glaze, on the other hand, does not show; a scratch must penetrate the glaze to and through the color coat in order to show.

The high gloss resulting after application of the glazing coat virtually eliminates the possibility of stain penetration, thus minimizing maintenance. To eliminate glare, these coatings can be cured to a slightly irregular texture, which diffuses incident light.

**Textures**

Variations in surface texture can be achieved through the addition of aggregates. Inorganic formulations can hold aggregates from the very fine to the very coarse. Aggregates as large as 1½ in. in diameter, including marble chips and stone, are used to provide a variety of interesting and decorative surface-texture effects. Exposed-aggregate coatings are effective for both interior and exterior surfaces, can be left either in their natural state or glazed to bring out aggregate colors. Sound-absorbent aggregates may also be used for acoustically treating ceilings.

The thermosetting resins (polyesters and epoxies) are most useful in industrial applications, to withstand corrosive environments. The films are hard and possess excellent chemical resistance. The coefficient of expansion of these organic materials is substantially higher than that of masonry backings; as a result, they are susceptible to shear stresses due to temperature changes, which may result in adhesion failures. In thick films, thermosetting resins are likely to be flammable.

The rigid thermoplastic formulations have largely become popular because of their decorative qualities and relatively low cost. The rigid thermoplastics are not particularly elastic; they are quite flexible, however (that is, they do not stretch but they do bend). A wide variety of textures and colors are available in formulations of this class; perhaps the best-known of these are the vinyls.

Solution vinyl formulations are made to be elastic by the addition of plasticizers. The gradual migration of the plasticizer with time, especially when subjected to ultraviolet exposure, reduces the elasticity of the film. Vinyl films are highly resistant to chemical damage, do not support fungus growth, adhere well over masonry backings, and are decorative.

The polyurethanes, besides offering a wide selection of color effects—varying from subtle pastels to bold mass tones—are noteworthy for their abrasion resistance. Polyurethanes have many uses; one of the most salient is in combination with fine silica aggregates. In this type of application, pigmented polyurethane resins and fine silica aggregates are blended within a special spray gun, to form a textured coating with excellent filling and hiding properties.

**Exterior Coatings**

In exterior use, the silica-polyurethane formulation has a special advantage in that its permeability rating can be controlled to three perms or better, permitting vapor transmission. Such a breathing coating is needed if a vapor barrier is not included in the basic wall construction. The breathing coating allows water vapor to pass freely, where otherwise it might build up, condense behind the coating, perhaps freeze, and certainly cause film failure. While permitting vapor to pass to the outside air, the breathing coatings restrict the penetration of exterior water.

Solution vinyl formulations are sometimes effectively employed on exterior surfaces, where their ability to bridge minor settlement cracks, to withstand chemical and weather damage, and to adhere to masonry backings are useful attributes. It is important to remember, however, that the ultraviolet component of sunlight hastens the migration of the plasticizer and the possible embrittlement of the film.

Inorganic coatings can be employed in exterior applications as readily as in interiors. A requirement for a breathing coating, however, requires the omission of the final glaze (since the glaze, of course, is impervious to moisture or water vapor). Unglazed inorganic surface coatings have actually proved to lengthen the useful life of concrete exteriors.

The elastomers, which are also thermoplastic resins, have a natural elasticity that makes them especially useful for problem surfaces. They have made possible the effective decoration and protection of the unusual exterior surfaces that characterize contemporary architecture: surfaces that are neither horizontal nor vertical, free-form curves and conic sections, pinnacles, ovoids, and the like.

**Synthetic Rubbers**

Among commonly used elastomers are the synthetic rubbers—neoprene and hypalon. The characteristics of neoprene-hypalon systems are too well known to require much repetition; excellent resistance to sunlight and heat, ozone, oxidation aging, abrasion, and oil and chemical damage; excellent adhesion to concrete, metals, and wood; usefulness over a range of temperatures from −60 F to +175 F, and nonflammability (both are self-extinguishing materials). Neoprene and hypalon are tougher and more resilient than natural rubber, and they possess valuable attributes that the natural material does not.

Neoprene and hypalon are usually used together; neoprene forming a tough, elastic foundation and hypalon providing a wide variety of light and dark hues as a finish. A neoprene-hypalon coating is a completely waterproof, seamless, weather barrier. Weather and fade tests indicate that such coatings will have a long life span. The coatings cure to a dense surface that is impervious to detergents or cleaning materials and is easy to maintain.

Neoprene-hypalon formulations can also be employed in conjunction with aggregates and reinforcing fabric to form an excellent waterproof walking deck.

The whole broad array of specialty coatings, most of which have evolved in the last 10 years, exists for a reason. They have been summoned into being by the requirements of our contemporary architecture. Since all the possible attributes architects require cannot be embodied in a single formulation, the chemical technology has produced families of materials, each of which has its specific advantages.

Architects cannot be expected to keep all the various coating characteristics at their fingertips, any more than they keep all the characteristics of all the special structural steels at their fingertips. But it is important that they realize that the significant differences in properties and characteristics do exist.

**Choice**

As always, the ultimate choice lies with the architect. He evolves his specifications in terms of his functional and aesthetic requirements—as answers to such questions as these:

- Is the surface in question to be an interior or exterior? If interior: What are the desirable aesthetic effects? What physical, chemical, or mechanical abuse is likely? Must the surface be fireproof to protect the occupants? What are probable maintenance factors; how often will the surface have to be cleaned? Must the surface remain unbroken even if the

*Continued on page 263*
A typical small-town hospital has found that a need for rehabilitation and additional beds has given it the opportunity for a fundamental reconstitution. Existing structures that are salvageable will be incorporated into a new, medically and economically efficient plant with a capacity for growth. Meshed into the architectural planning are developments in hospital air conditioning that, among other refinements, achieve the clean, low-bacteria-level environment of a 100-per-cent fresh-air system at reasonable cost.

The Griffin Hospital, in Derby, Connecticut, serves the growing Lower Naugatuck Valley area. Its medical-surgical beds are presently overcrowded and its physical plant is, to a considerable extent, not only inadequate but also obsolete. During its growth over the past 56 years, nursing units, administrative, supporting, and medical facilities have become scattered and intermixed, making the traffic pattern chaotic, hampering the physicians' work, and resulting in overly costly operation.

Being fully aware of its limitations, Griffin's administrators, with community participation, made a two-year study of the hospital's problems and the needs of the area. As a result, a broadly conceived program of service goals was already prepared when Isadore and Zachary Rosenfield, New York architects and hospital consultants, were selected.

The architects' primary assignment was a master plan for the hospital's future development as far as the limited 3.6-acre site and other conditions would permit. Consulting all levels of the hospital hierarchy, the Rosenfields reanalyzed the proposed program, studied departmental needs, the condition of the plant, and the hospital's external environment. Griffin already had a history of adding wings, and it was clear that a thorough replanning was as essential to its future as the required expansion.

The following were the immediate
Objectives on the part of the planners:

1. To increase the number of beds from 186 (77 of which were "not acceptable" by state standards) to about 250.
2. To reassemble the scattered and inadequate medical facilities in logical contiguity to each other and make them equally accessible to in-patients and out-patients.
3. To similarly reassemble the inadequate supporting services into a logical sequence for supply, processing, sterilizing, repair, and delivery to the point of use.
4. To remove or fireproof the flammable buildings.
5. To keep the hospital fully in operation during construction, not depriving the community of any existing services or beds, or the hospital of income. (Any reduction of income or increase in operating cost must be considered an addition to the real cost of construction).

Solution

To clear a site for the new work, the combustible buildings and the run-down boiler plant had to be removed, and their contents—laboratories, parts of administration, X-ray, emergency, the boilers, and 48 beds—had to be relocated. A structure that will later be the cafeteria will temporarily house laboratories and administration; emergency will have a temporary structure; a new power plant will be built; and a new one-story nursing unit will house the 48 beds (1).

In the space cleared, the main new structure will be erected: It will have a two-story horizontal base with all supporting services on the lower floor, administration and all medical services on the main entry floor. Mounted above will be the new nursing units. A new central elevator bank will serve new and existing nursing units (2, 3).

The new main floor is zoned into public and medical activity areas by a double spine of public and staff corridors, flanking the two sides of the central elevator bank. Access from the corridors to the elevators is via separate public and staff lobbies (4).

Planning for Improved Medical Practice

The medical facilities, off the staff corridor on the main floor, are grouped in overlapping chains of relationship to assist in the practice of medicine. This is a notable demonstration of current thinking in hospital design that the diagnostic and therapeutic facilities must be in close relationship to properly serve the increasingly "team" nature of medical practice.

1. Emergency is contiguous to the out-patients' suite, so that, routinely, and in a catastrophe, emergency service can overflow into the out-patient department and vice versa.

2. Emergency and out-patient departments are contiguous to X-ray and laboratories.

3. Surgery, laboratories, and X-ray are not only advantageously contiguous to one another for ease of consultation, but they can also be conveniently reached by patients from the upper-floor nursing units via the staff side of the elevators leading directly into the staff corridor. The only members of the public having reason to use the staff corridor would be private out-patients who enter via the main lobby for services such as laboratory,
X-ray, and physical medicine.

(4) A desirable relationship is provided between surgery and recovery, between recovery and intensive care, and between intensive care and emergency.

(5) Existing diagnostic nursing unit is served by the public corridor for admission and discharge, and by the staff corridor for access to the diagnostic services.

(6) Physical medicine can be reached easily by patients, who will come down by elevator, and by doctors' private patients and out-patients, who will arrive via the main lobby.

Administration likewise gets tied into the "pancake" of medical functions. It needs to be situated near emergency, since many patients are admitted there on weekends. Medical records are needed. Cafeteria is connected to administration to accommodate staff visitor feeding.

Though the Griffin project starts out with an existing hospital on a limited site, all these related facilities, out-patient and in-patient, have been brought into a logically contiguous relationship—all on one level.

The new nursing units are "T-shaped" and are actually pairs of 37-bed units that share common nursing services bracketed between two corridors in the stem of the "T." The nursing stations are at the crossing and face a single corridor. Advantages of this type of unit are: compact grouping of services and good control. The old nursing units, also "T's," are attached stem to stem to the new at the central elevator bank (5, 2).

Expansion
The hospital's components can expand independently: New nursing units can be stacked vertically up to six stories. Blanks are provided for additional elevators, and there are no rooftop mechanical equipment penthouses to relocate. In this manner, the 250 beds planned can grow to about 600. Each of the supporting services on the lowest floor and each of the medical and administrative departments on the main floor is designed to expand horizontally without internal disruption.

Environmental Control
The year-round, 100-per-cent fresh-air, air-conditioning system has been tailored to hospital needs. It is designed to contribute to patient recuperation and to eliminate the possibility of recirculating airborne infection. To keep costs reasonable and also meet the architects' objection to obtrusive ductwork or mechanical units, a single-duct, zone-controlled system was evolved, based on a high temperature differential, high-velocity air movement to keep ducts small, high humidity, and recovery of energy from exhaust air (6).

Even in New England, air conditioning had to be considered if only because the large interior areas, required for medical and operational efficiency, must be cooled much of the year.

In exterior rooms, the supply plenum built into the precast sill distributes air over the full length of the window (7). Sill and plenum are designed as radiant surfaces. Air is discharged upward through a slot, washing over the glass, and out the front at approximately 250 fpm velocity, but within 2 ft this goes down to a barely perceptible 50 fpm. Heat loss is offset directly at the source, and air leaving the immediate vicinity of the windows should be close to room design temperature, generating no drafts. The return at the corridor side drawing from the long plenum should achieve a comfortably uni-
form flow of air.

Sound attenuators trap noise from ducts and between rooms.

Since no air is recirculated, only one return duct is needed. It carries all exhaust air, including toilet, surgery, and other contaminated exhausts, to a rotary heat exchanger that recovers 80 per cent of the sensible heating and 72 per cent of the sensible cooling. Since so much of hospital return air must be thrown away in any case (averaging about 50 per cent for the hospital as a whole), this system recovers more energy than is saved by conventional recirculation.

Asepsis

It is generally recognized that exhausting all used air would contribute to asepsis, because bacterial contamination comes from people: from patients, personnel, visitors, and also from hospital procedures. But in the light of the cost of heating or cooling large quantities of outdoor air, varying percentages of fresh air are usually recommended. The spread of contamination is then controlled chiefly by filtering and by restricting recirculation to separately zoned air handling systems for the different departments.

In patient rooms, it is usually recommended that recirculation be kept to the same room and 25 per cent fresh air be introduced. Recirculation of the 75 per cent retained air sets up an uninterrupted circuit within the room (or the zone) carrying potential infection from occupants, present and past, from corridor leakage, and from the mechanical unit.

In Griffin, this potential cross-contamination is removed: There is no recirculation from one room to another, or from room to corridor, or within the room; and there is no closed heating/cooling unit to act as a reservoir of infection.

Positive bacteria-killing factors are brought to bear by the high relative humidity (50 per cent, except in extreme cold) and by the high temperature air supply (110°F in the ducts). These figures approach the 49 per cent relative humidity and 122°F, each of which is an optimum condition for bacteria die-off.

(At the National Planning Conference on Designing for Asepsis, New York, May 1964, Lawrence B. Hall, chief of planetary quarantine at NASA, envisioned a method of decontaminating operating rooms by maintaining temperature and humidity at these optima for four hrs.) Air supply and the ducts themselves are thus under constant decontamination action as a result of the high temperature, while the 50 per cent relative humidity promotes bacterial mortality in the occupied spaces.

There are thoughtful physicians who also feel that 50 per cent relative humidity contributes to a healing environment for a broad spectrum of diseases.

Comfort

Over and above the benefits of asepsis, 100-per-cent fresh-air smells and tastes better than vitiated, recirculated air. The radiant effect of the massive precast sill offsets radiant loss through the window and lessens the effect of the hot-cold cycle of supply air. This, plus insulating glass, permits comfortable seating at the window bays in each patient room. As there are no cold surfaces in the rooms, no condensation results if a window is opened during the cooling season. Each room has individual temperature control.

Easier Construction/Maintenance

Simplified supply and single return makes cost of ductwork comparable to that of the simplest systems. Room supply devices contain no fans, compressors, coils, filters, or nozzles to be cleaned, changed, or maintained—or not maintained. Proper maintenance being a problem in hospitals.

In a further exploitation of the energy in the return air, the cooling tower is placed in the exhaust stream. This makes possible an indoor tower, located in the machine room. The moving air stream, plus the percentage of cooling value not recovered by the heat exchanger, also make possible a smaller cooling tower. Indoors, it will not freeze or need winterization for the winter cooling of areas like surgery. It is also more likely to be maintained properly; and relocation will not be a problem when nursing units expand vertically.

Architectural Bonuses

Carrying supply ducts on the building perimeter contributes to flexibility for the internal alterations characteristic of hospitals. Slab sofit can be exposed, omitting the suspended ceiling, thus providing greater ceiling height.

Often an exerocene, the cooling tower is concealed and there is no spray drift.

The large horizontal ducts that bypass the pancake and the vertical ducts in the nursing stack have been integrated into the structure—and the disposition of these mechanical/structural elements is a major element in the architectural character of the building.

Project Associate was Herbert Beinstock of the Rosenfield office; Consulting Mechanical Engineers, Starr/Miller & Serot; Structural Engineers, Lev Zetlin Associates; Landscape Architects, Zion & Breen.
CBS: SOMBER POWER ON SIXTH AVENUE

BY BETHAMi PROBST

The writer was senior newswriter for the American Broadcasting Company in Hollywood, London correspondent for “Editor and Publisher,” and has covered the Geneva headquarters of the United Nations for the United Press.

Architects, designers, and workmen are putting the finishing touches to the interior of the new Columbia Broadcasting Company building in New York. When the interiors—designed by the Knoll Planning Unit and Carson, Lundin & Shaw—are completed, P/A will publish them.

Meanwhile, the work of the building’s designer—Eero Saarinen—is
finished and can be commented upon. Saarinen hoped to carry the entire project through and design the interiors, but the client decided otherwise, making the building's exterior and interior two separate design matters. This article, therefore, presents a view of the skyscraper Saarinen contributed to New York's cityscape.

The CB building's visual distinction comes mainly from its Canadian Black granite-clad triangular pillars, closely spaced on all four sides and running uninterrupted from ground to roof. At the corners, the triangles merge into doubled columns in the same broad plane. The granite imparts a somber darkling quality that recalls ancient monoliths. As one approaches or walks around it, the building's appearance changes: from a block away across the street, the glare-resistant gray glass between the pillars appears as narrow slits; at a more acute angle, the pillars blend into an opaque wall. Head-on, of course, the alternation of stone and glass is emphatic. Light and shadow cause further changes. At certain times, the granite is dappled by reflections from the glass curtain walls across Sixth Avenue. At other times, the stone seems to absorb all the light. Partner John Dinkeloo of Saarinen Associates cites a precedent for such "op architecture," as it is now called: the pillars of the Parthenon, with their faceted brilliance in the Attic light.

CBS and the architects set out to erect a distinctive, timeless, honest, simple, dignified building that would be, in the words Saarinen used, quoting Louis Sullivan, "a soaring thing." The structure also had to be economically competitive with space rented in an ordinary commercial building, which the company had considered doing. (Except for the ground floor and part of an upper floor occupied by local CBS radio studios, CBS is exclusively an office building. Broadcasting, news, and other facilities are housed in another building linked to headquarters by a station wagon shuttle-service.) "We wanted a building," President Frank Stanton says, "actively, insistently, inexorably on the cutting edge in the evolution of the skyscraper." Board chairman William Paley adds, "We had made up our minds not to have steel and glass."

The economics worked out. Dinkeloo says the structure is less expensive than any other major building in New York City, such as Seagram, Chase Manhattan, and Union Carbide. Paley comments, "The cost per square foot is well within the limits we set." No official figures have been released but the generally accepted cost is put at about $40,000,000. As specified, CBS is also a new departure in skyscrapers—a dignified, pertinent rebuke to its more strident high-rise neighbors. A striking confrontation of the understated and the flashy occurs in the neutral skies where the CBS tower rises one block away from the coruscating, studded-metal Tishman Building at 666 Fifth Avenue.

The inevitable comparison, however, must be with the Seagram Building by Mies van der Rohe and Philip Johnson three blocks distant on Park Avenue. Here CBS fares less well. If Seagram is the Rolls-Royce of recent skyscrapers, CBS must be content with being in the Bentley class (which is by no means bad). Partly it is a matter of economics, for every detail of the bronze, amber-glass and green marble Seagram structure is luxurious, and its site is more spacious. This is partly the result of an irrecusable contradiction: Saarinen's longing to soar is repeatedly sacrificed in order to communicate permanence, strength, and pride. Like Icarus yearning to fly higher and higher, Saarinen struggled consciously against being earthbound: "All the time one works," he said, "one concerns oneself with the fight against gravity. Everything tends to be top-heavy and downward-pressing unless one really works at it."

Seagram becomes airborne in its two-story lobby, all glowing travertine, elegant terrazo, and glass. The 18-ft-high CBS lobbies, one on each side of the central core, seem meager. A bank cuts off the west side, a projected restaurant for 220 persons cuts off the east. The architects have tried to lift these lobbies by placing

Photos: Louis I. Reens
closely spaced vertical bronze batten walls on each side of the entrances, but their beloved granite crushes the effort. The triangular pillars are repeated inside; the floor is of granite, except in the elevator area, where travertine flooring carries up the walls of the elevator shaft. Most crucially, the load-bearing core walls, separated from the shaft by narrow corridors, overwhelm the lobbies with granite monoliths. The lobbies become high-ceilinged caves.

Both buildings are 38 stories high, although Seagram rises 525 ft to CBS's 491 ft. Both buildings boast plazas. The raised Mies plaza is a public place with two formal pools, fountains, and trees; the Saarinen plaza is sunken and lacks even these amenities, existing exclusively to help articulate the tower. Moreover, the surrounding parapet (vented to provide air-intake grills for the basement) is too high in most places to be accessible as a resting place either to sidewalk pedestrians or CBS employees. Supremely confident, Mies used his plaza as a grand, monumental approach to his tower. The CBS plaza is a bravura declaration of apartness. Moreover, the tower settles itself so firmly into the depression that once again the possibility of lightness is sacrificed. Where Seagram is weightless, CBS is massive; where Seagram is expansive, CBS seems small—even though each CBS floor measures 20,000 sq ft to Seagram's 14,900. In one sense—the disparateness of Saarinen's and Mies's conceptions—the two buildings are no more comparable than a delicate ash and a sturdy oak or than the Verrazano and Brooklyn bridges. Generically, however, skyscrapers should soar, and CBS's failure to do so is its principal flaw.

This failure is all the more striking when one considers that verticality obviously had the highest precedence with the architects. Entrances were sacrificed. There is no ingress at all on Sixth Avenue despite the broad flight of five steps leading to the plaza. Each of the 14 doors, 7 to each side, is squeezed into the 5 ft between the pillars; they are identified by the black projecting slabs that incorporate the above-door 190

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lighting fixtures; no other exterior protrusion is permitted.

Although Saarinen died 10 months before excavation began, the design was substantially completed before his death. The structure, the piers, the sunken plaza, the use of dark granite had all been decided upon. Additions subsequent to his death were mostly interior refinements, such as the bronze batten walls in the lobbies. The actual granite used was also chosen later. From the beginning, Saarinen envisioned a dark building. His widow, Aline Saarinen, suggests that her husband had in mind the dark-gray flannel suits associated with communications executives. Dinkeloo compares the character and strength—recurring words—of its darkness with the "flimsiness" of transparent buildings. They went to extraordinary lengths to obtain the darkest possible granite. Since no one wanted polished stone, and since granite lightens when fractured, they worked out a completely new method to get the best of both worlds: thermal stipping under a 5000° flame provided the roughness, then a technique borrowed from the aircraft industry—liquid honing with a slurry of spherical glass beads and water—restored the stone's darkness.

The "rectangular doughnut," to borrow Saarinen's homey description of the building's plan, has a central vertical core joined by 35-ft-long clear spans to cast-in-place peripheral columns. The columns do not intrude on the interior to support the floor slabs. Instead, column and slab, meeting edge to edge, are anchored together by steel rods running through both. The central floor slabs have one-way ribs 17 in. deep; in the four corner areas, two-way ribs form waffle patterns. Core walls vary in thickness from 12 in. to 28 in.

Everything except for interior partitioning is on a 5-ft module: columns (16 on the long crosstown sides, 13 on the short north-south sides), the interior lighting fixtures and electric outlets. This, and the uniform cross-section, enable CBS to standardize different executive levels: a presidential suite is 20' x 20', a vice-president's office 15' x 15', a director's 10' x 15', a manager's 10' x 10'. The suites of President Stanton and Chairman Paley occupy the thirty-fifth floor, with the legal department on the floor above insulating them from vagrant vibrations from the cooling towers on the top mechanical floor. Another utilities floor in the high second story contains plumbing, heating, and ventilating equipment. Both mechanical floors are expressed on the façade by closely-spaced dark-anodized vertical grills. The square, recessed fluorescent lighting fixtures in the ceiling were custom-designed and integrated with air-conditioning ducts to serve interior areas. Perimeter areas are served by a high-velocity system using induction type units located in low window sills. Hot and cold air risers run through chases in the exterior pillars. A happy marriage of functions allows the pipes and chases to get larger going up, as the structural load decreases on the pillars and the mechanical load increases on the pipes. The return is in the core, as are the fire stairs, washrooms, and elevators.

Windows are 18 ft high on the ground floor, 9 ft on the other floors from ceiling to 6-in.-high sill. The windows are recessed 2 in. on the outside, 18 in. on the inside. Despite their height, the return of the outside granite and the recessing discourages vertigo. All windows are covered with metal, two-way vertical blinds. The two outer rows of interior lights remain on at all times to affirm the building's existence at night.

At the rear, an inconspicuous black brick 75-ft-high building takes care of CBS's mechanical needs. Two emergency tower systems are located in the cellar. Designed to harmonize with neighboring brownstones, the service building also provides truck docks for deliveries. The shipping and receiving department is located in the plot-line-to-plot-line basement of the tower.

Although a CBS committee has been collecting art for the office floors, no decoration is planned for the lobbies or plaza. Dinkeloo welcomes this. "A building is the greatest piece of art I know," he says. (Asked on another occasion what the finished structure means to him, Dinkeloo was more restrained: "A lot of sweat and tears."

Saarinen once said of CBS, "Its beauty, I believe, will be that it will be the simplest skyscraper statement in New York." Indeed, the building is so straightforward that it looks disconcertingly simple. One wonders why—despite intermittent comparison of CBS to several classic Chicago buildings—such a solution of forthright, uncompromising strength has not been used before. (One prescriptive reason: earlier zoning regulations did not make a free-standing, sheer building economically attractive.)

Superlatives about CBS/51W52, as CBS has dubbed it, are arguable. As with all individualistic works of art, the final answer lies with posterity, or, as Saarinen once cogently put it, "The practice of architecture has to be measured in elephant time." Today, in fleas time, even carping critics will agree that CBS is a building to be reckoned with, a powerful, brooding presence.

General Contractor: George A. Fuller Company; Interior Design: Knoll Planning Unit; Interior Architect: Carson, Lundin & Shaw; Mechanical Engineers: Cosentini Associates; Structural Engineer: Paul Weidlinger.
In August of 1962, New Haven (Connecticut) issued new educational specifications for its K-4 primary schools. Included in the generally admirable set of standards was the statement: "It seems reasonable to suggest that a concerted effort must be made to design primary schools that are sufficiently flexible as to space and facilities that a smooth transition can be made to a new pattern of organization [for teaching elementary students]."

Since many quarters are exploring advanced methods of teaching, the report pointed out, "it follows that the buildings to be constructed in the next few years must be so planned that they are adaptable to the developing educational program."

In conceiving the design for the North Quinnipiac K-4 Elementary School of New Haven, William Mileto of McMillan, Griffis & Mileto determined to follow the "ideal" New Haven program, extend it, and make the architecture part of the entire learning and teaching experience. He wanted to provide a building that would influence children instinctually and at the same time give the teacher a "physical program" that would bring him into relationship with the children. He feels that recent school planning, with its emphasis on flexibility and expansion, has been stressing horizontality; but verticality should also be important, so that the child can, in a sense, both grow up and expand out in the learning situation. "An explosive expansion," the architect calls it. "With Montessori, Bertrand Russell, the tentacles of space, the 'continuum,' pop and op art, and, of course, television, our new generations are being told of a multiplanal expansion, of Guillard de Chardin's 'noosphere.' " Only recently have the rooms in which they hear about these things begun to move, and so far only on the horizontal plane, making ready perception of these dimensional phenomena difficult for the small mind.

In the North Quinnipiac School, Mileto wants to expand this perception. Children will move from space to space horizontally and vertically,
from low, narrow, intimate space (entrances to classrooms) to "great" space (the common), to high, "privileged" space (the teacher's stations). School life, consequently, will have a physical and emotional meaning in addition to the subjects taught, and will, it is hoped, educate young minds to an easier apprehension of relationships of size, space, volume, etc. The kindergarten will repeat these experiences but on a "more primitive level."

The main common of the new school will be surrounded by the teaching spaces, which will, in turn, be surrounded by alcoves for small study groups. The classrooms will be expansible and interchangeable in the currently accepted sense (folding walls, rearrangeable furniture). They will be reached via a studentscale course of steps from the common. Teaching stations will overlook the classrooms, and be approachable from them by a few steps. This is the teacher's domain, where he meets his colleagues and prepares lessons, but students might come up to recite or talk over other matters, thus moving into another realm and experience than those experienced in the classroom. The balcony around the common, where the library is located, will bring the child into clear contact with the most "inaccessible" element of the school, the skylight over the common. In this way, he will be aware of the interrelation of all parts and spaces of this environment, from the "cave" he takes up to class to the canopy that soars over the assembly area.

Highest point of the school, marking the entrance and also the demarcation between the elementary school and the kindergarten, will be the stair tower. Towers of the separate heating and mechanical systems will also jut above the roof, providing a distinctive silhouette.

One of the proposals in the design, not actually covered by requirements or zoning in the area, is a footbridge connecting the school with the other side of the avenue. When Mayor Richard Lee saw the plans, he was so enthusiastic about them he promised Mileto he would get him the footbridge.
BY DONLYN LYDON

Author Lyndon is head of the Department of Architecture, School of Architecture and Allied Arts, University of Oregon, a partner in Moore, Lyndon, Turnbull & Whitaker, Berkeley, and a member of Lyndon Design Counsellors, Los Angeles.

"Think Clean—Think Underground Wiring." This pithy sentiment can be acquired on bumper stickers at the Seattle Center Northwest Crafts Center. It has a peculiar relevance to Seattle Center, where the architects responsible for transformation of the grounds of Century 21 into a Civic Center have been thinking clean (1). A short excursion beyond the Center's boundaries will suffice to indicate the extent of their accomplishment (2). With most of the Fair's temporary structures now removed, the permanent skeleton established for the long-range plan has become evident. The area seems to be perceived most easily as a series of quasi-independent zones (Plan A). The Arena, Opera House, Exhibition Center and Playhouse form one complex along the north border that is probably best visualized by Kirk, Wallace & McKinley's gracious loggias that surround it (3). The Coliseum and its attendant peripheral buildings (4) form a distinct place along the west edge of the Mall that runs from the rear of the Playhouse to an exhibition hall by Robert Billsborough Price that closes the space. One edge of the Mall continues as an avenue leading directly to Yamasaki's Science Center vaults (5) that, like the stamen of an exotic flower, beckon one into a compound of ghastly prettiness. To the east of the Science Center is a loosely defined area of park, fountains, games, rides and concessions dominated aloft by the Space Needle (6) and bisected by the present

Plan A: (1) Coliseum; (2) Exhibit Building; (3) Northwest Craft Center; (4) Skyride; (5) Playhouse; (6) Exhibit Hall; (7) Opera House; (8) Arena; (9) Parking Garage; (10) Stadium; (11) Armory; (12) Fun Forest; (13) Monorail Terminal; (14) Space Needle; (15) Fun Circus; (16) Pacific Science Center; (17) Horiuchi Mural; (18) Information Center; (19) Nile Temple; (20) Pavilion; (21) Seattle Art Museum Branch; (22) Restaurant; (23) Flag Plaza; (24) International Fountain.
monorail terminus. The symbolic focus of the Center is the Fuji-like International Fountain designed by Matsushita and Shimizu, a waterless crater that erupts jets in an electronically dictated variety of patterns. Sensing a challenge greater than that of the lawn sprinkler, children dash around its slopes in defiance of its unpredictability (1). The operational hub of the complex, however, is a cumbersome old Armory building which is leased as a Food Circus and International Bazaar for the snack shops, specialty foods, and marginal commercial establishments that are necessary to continued family participation in the Center: a fair turned outside-in with its glittering lights reflected in the elevator bubbling from level to level (7).

The framework of the Master Plan was developed within the context of an existing gridiron street pattern (8) and around the presence of four sizeable buildings: the Arena; the former Civic Auditorium (now Opera House); a Stadium belonging to the school board; and the Armory. City, county, state, Federal, and private funds were involved in the development, and planning and coordination were duly complicated. Primary Architect for the Fair Master Plan, and, in turn, for the development of plans for Seattle Center, was Paul Thiry. By planning from the beginning to retain the key structures of the Fair as basis for the continued development of a permanent Center, Seattle has extended the scope of an initially projected Civic Center into an impressive array of convention, assembly, and exhibition spaces that accommodate a variety of uses. (A mid-May weekend, for instance, included a junior chamber of commerce convention and parade, an armed forces spectacle, a high school musical, the Pacific Northwest Coin Dealers Show, three marching high school bands, a fashion show, a bathing suit show, a variety show, a military retreat ceremony at dusk, a roller derby march, the Lutheran Bible Institute Choir concert, Seattle drill team competitions, and a series of events culminating in a teen-age dance to raise money to fight muscular dystrophy.) In addition, there is a developing group of permanent institutions: the Federal Science Pavilion has become the Pacific Science Center; the building which housed Great Britain's exhibit has been transformed into an extension of the Seattle Art Museum; the Northwest Crafts Center, an outlet for craftsmen of the region, presently occupies a building scheduled for demolition, but will presumably be relocated; the Playhouse has had, through the winter, an active repertory theater; and the Space Needle Restaurant has become a central destination for tourists and affluent residents alike.

The popularity of the Needle seems to have diminished little; despite the $1 tariff on its elevator ride, the restaurant is thriving and
there are often lines waiting in its lower lobby. Its silhouette dominates the city from most points of view, and, not surprisingly, is often used as a symbol of Seattle in promotional literature. A late entry in the master planning, the Needle was necessarily but arbitrarily located by legal expediency, and although it dominates the site, it does little to organize it.

The Monorail, with its other end buried in the central business district, plunges merrily into a “Fun Forest” at the base of the Needle—or so it would seem from the plan. The expectant rider in reality disembarks onto a view which, despite the neon gaiety of the carnival, is singularly depressing (9): the Armory and Stadium buildings combine to block completely his view of the major spaces and buildings of the Center and a messy aggregate of tar, white gravel, and exhaust occupies the immediate foreground. (It is amusing to note that the Fun Forest Snack Shop’s sign-maker knew that his wares would be seen from above, but the building’s designer apparently did not.)

At present, arrival by car is similarly unclear; a change in grid direction at the south boundary of the site combines with the generally closed perimeter to rebuff any interest in the site from beyond its boundaries (10, 11). The one major parking facility now built is beyond the Center’s north boundary, connected to the Opera House colonnade by an alarmingly discreet pedestrian bridge (12). Its behind-the-bush location relative to the central spaces of the Center is partially compensated by a controlled and dignified entry court (13) leading from the colonnade to the International Fountain and its surrounding open space, a striking contrast to the barren street entry on the opposite side of the Playhouse (14).

A major obstacle to satisfactory resolution of many of the Center’s problems has been retention of the Stadium, which crowds absurdly close to the Arena, Opera House, and Armory, and cuts malignantly into the boundaries and spaces of the Center. Paul Thiry’s present
guide plan for future development (Plan B) visualizes transformation of this area into a plaza-topped parking terminal with above- and below-ground linkage to the Fountain Mall, Food Circus, Opera House, projected Natatorium and Theater buildings, and a grandiose Monorail station. The guide plan also proposes packaging many of the carnival activities in pavilions capped by the ubiquitous truncated pyramid and acquisition of a swath of land around the west border of the site for parking and entry. The privately owned Nile Temple, another "given" of the initial site, is scheduled for removal and will be replaced by a large pavilion to "terminate the vista stretching from the Space Needle" —a vista that, from the Needle's waiting area at least, seems doomed to obscurity (15).

Some skepticism has been voiced as to how this will be implemented: The school board seems to like its Stadium, and a new post office—shunted beyond the boundaries of the Center after making a bid for Yamasaki's elegant warehouse—has been built immediately adjacent to the Coliseum on land designated for
future parking; while just beyond, a new bank and office building stands on the corner of Queen Anne and Harrison, ready to service the throngs for whom Thiry had intended an approach plaza.

The most extensive internal revamping has taken place in Paul Thiry's Coliseum, a previously unobstructed hall that has been transformed into a multiuse Coliseum with a remarkably ingenious set of arrangement and partitioning possibilities. In any project executed in haste for a Fair deadline, then transformed over a period of years to suit new demands, there is of course ample opportunity for devaluation of the initial organizing idea. The internal requirements have been satisfied with great skill, but the observer will be hard put to discover why his attention has been attracted from all over the city of Seattle to the tops of four trusses whose interior existence has barely been noticed by whoever laid out the seating. Strong-armed aside by their butresses as he enters (16, 17), he might expect the architect to treat the trusses with greater respect than he has (18, 19).

Perhaps, though, consistency is not a major criterion for a building necessarily at odds with its neighbors. Conceived as a foil in scale to the Armory and Opera House, the mountainous shape of the Coliseum has a tendency to pull away from its surroundings. It is most profitably seen across the International Fountain, with which it has affinities in scale and imagery (1). It is less comfortable with its immediate neighbor, a group of peripheral buildings also designed by Thiry & Associates that seek to make a virtue of cheap, lightweight panel construction adorned with cut-out shapes inserted into the formwork in a pallid effort to recall Northwest Indian forms. The thinness of their construction, although direct and clear, is seriously at odds with undulating plaza levels and the aggressive scale of the Coliseum. A stair railing caught between the two seems plausible when related to the Coliseum but an unlikely adjunct to the adjoining building (20). Similarly uncomfortable is a
grotesque block of concrete in one of the plazas that spatters water in several places as perpetual evidence that fountains are difficult to design. The Coin Show flag festooned, against the management’s wishes, from the nearby colonnade is more important to a sense of the place and its activities than is still another set of water squirts (21). Although such a banner does little to reinforce the architect’s order, it is a cheerful and inviting indication that is badly needed. Similarly, a trash can (one of many littered about the site) nestled against the finial of a retaining wall (22) seems an apt diagram of needs and forms that have not yet recognized each other.

Such small evidences of disorder are, of course, trivial instances in a generally reassuring atmosphere of coordination and sympathy that is highly admirable. They seem, however, emblematic of the probability that a highly tenuous order will decay even under watchful vigilance. What is Seattle Center the center of? It clearly is not the center of Seattle; without a trip up the Space Needle, it is very difficult even to know where it is. Although the boundaries of the site are complex, the Master Plan carefully severed views out from the site by an almost continuous ring of peripheral buildings and walls that protect it from intrusion. The exception was at the south boundary where the Science Pavilion was to have taken advantage of a rise in the ground to look over existing buildings to the City and the Sound. Left with the task of viewing what Seattle had previously wrought, it seems that Yamasaki also quailed at the sight. He barricaded his site on all sides by buildings and walls, thrust a “theme structure” high in the air for all to see, splashed a lot of water, and in almost every respect repeated the part of the Master Plan (23).

Leaving the Center can seem like waking from a dream, one which, although generally pleasant, had neither the relevance of ordinary discourse nor the strength of a prophetic vision. The dream may have been of a campus, replete with athletic and cultural facilities, Collegiate Gothic and lawns—tolerant of some boisterous fun but free from aggressive mercantile interests. The architects have built an approximation of that dream that will be of continuing benefit and pleasure for Seattle, but perhaps not too instructive as a general example. They have demonstrated that investment in a fair can coincide with on-going civic investment, and that common space need not be a litter-can for heedless conflicting decisions. But someone still needs to learn how to forge into visions the dirty real stuff of which our cities are made.
Be original. Design a patio windsreen with our Stippled patterned glass. It shimmers with each passing shadow, each change in light. For more privacy, Stippled patterned glass is also available in neutral grey tint. It is one of 12 exciting patterned glass patterns, American-made by L·O·F. We also offer five wired-glass products. See them at your nearby L·O·F distributor or dealer (listed under "Glass" in the Yellow Pages). Or call him for samples.
MECHANICAL ENGINEERING CRITIQUE

Electric Draft Barriers

How electric draft barriers were success­fully employed to prevent large exterior glass areas from cooling interior air is explained by a practicing mechanical engineer.

It has long been generally acknowledged that large exterior glass areas cool interior air. The vertical layer of cool, denser air thus created then drops to the floor and blankets it like a chilly carpet. Unless one has witnessed tests using smoke and recording thermometers, the speed and the attending dis­comfort of this phenomenon is seldom fully com­prehended.

Under the worst conditions, it is necessary for this cold layer to cross the space and reach a thermostat on an interior wall before a below-the-glass heating element takes over. When it does, its problem is a dual one—to reverse the down-slip of air and to warm the space. It is seldom properly adapted to correctly meet both challenges.

Admittedly, the use of a modulated heating medium—water or air—provides a more continuous operation to maintain a warm upflow of air at glass, yet during even brief intervals between these heating periods, the cold air slides quickly past the nonoperative heaters.

A successful solution, and one of the first to provide glass with its own insur­ance against drafts, has been designed by J.A. Naman & Associates, Consulting Engineers of Houston, Texas. In this first of Naman's several similar applications, the electric draft barriers have been used in the new home office building of the Great Southern Life Insurance Company in Houston. Architects were Skidmore, Owings & Merrill, associated with Wilson, Morris, Crain & Anderson.

This supplementary system goes into action instantly when cool air descends to meet thermostats placed at 25-ft intervals along the electric heating strips below the glass. It permits no cool air to pass this barrier. The heaters provide 50- to 75-w/lin ft, just enough to stop the downflow of air. Temperature in the space is separately regulated.

The building is dramatically adapted to this new feature. North and south

walls are of glass; east and west walls are of concrete (see photo). In concept, the former unsteady performance of glass has been tamed to correspond to the more stable thermal qualities of masonry.

The electric draft barriers draw 100 kw of power. The maximum total building demand to date has been 1800 kw. It will be greatly increased during the summer and when full occupancy (now 80 per cent) has been achieved. Two 500-ton compressors serve the air conditioning.

Should it be thought that a heating problem is unusual in a “warm” Southern state, it can be said that the winter design temperature for Houston is commonly taken as plus 20 F. The region has 1276 degree days.

In this custom design, the architects wish to acknowledge the collaboration of the manufacturer, the Edwin J. Wiegand Company of Pittsburgh and of the Houston Lighting & Power Company.

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*One of Factory's Top Ten Plants

Arrangement of the "Section"

BY HAROLD J. ROSEN

A uniform system of presenting information in the technical section of the specifications is outlined by The Chief Specifications Writer of Skidmore, Owings & Merrill, New York.

In the September 1964 P/A, the technical section of the specifications was defined in this column as a unit of work that a contractor may let to a subcontractor; a unit of work that a materials supplier may furnish for someone else to install; a unit of work that combines several subcontractors so that a single responsibility is established for this portion of work; or a unit of work that may be performed by a single union jurisdiction.

The organization of specifications into technical sections on a nationally accepted, uniform basis has finally been achieved through the CSI Format for Construction Specifications. However, the arrangement of the subject matter within the technical section has not yet been formulated or promulgated by any professional body in an organized manner.

A technical section in a book of specifications may be considered as analogous to a chapter in a book; the chapter in turn consists of paragraphs. The material that comprises the section consists essentially of paragraphs and subparagraphs. Any other names to describe the breakdown of the material within the technical section—such as "articles," "clauses," "heading," "categories," or "units"—are redundant and lead to confusion.

A uniform system of presenting information in the technical section is important for several reasons. The specifier, in following a definite procedure, is less likely to overlook any item. The contractor, estimator, materials manufacturer, and inspector will find the information more readily.

The technical section contains basically two categories of paragraphs—namely, the technical and nontechnical—as follows:

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<thead>
<tr>
<th>Technical</th>
<th>Nontechnical</th>
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<tr>
<td>Materials</td>
<td>Scope of Work</td>
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<td>Fabrication</td>
<td>Delivery of Materials</td>
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<tr>
<td>Workmanship</td>
<td>Samples and Shop Drawings</td>
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<td>Installation</td>
<td>Permits</td>
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<td>Tests</td>
<td>Guarantees</td>
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<td>Schedules</td>
<td>Cleaning</td>
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In arranging for a logical order of paragraphs under a technical section, both the technical and the nontechnical should be presented as they occur chronologically—in the sequence in which the contractor would ordinarily do his work.

If the specifier follows this course, he is less likely to omit something and his reliance upon a checklist at his side diminishes.

The following arrangement is suggested in general (there are always exceptions to the rule) for the orderly, chronological make-up of the technical section. Each paragraph heading should be simple and self-explanatory.

1. **General.** Make reference to the contract documents as being part of the requirements for this section of the work.
2. **Scope of Work.** Describe briefly or in detail (whichever method the specifier elects) the scope of the work of the section.
3. **Work of Other Sections.** Describe those items normally part of this section that the specifier has for one reason or another specified elsewhere. Do not list items that are not normally the work of this section.
4. **Materials.** Specify the materials to be used. Reference standards can be noted briefly: Structural Steel-ASTM A-36.
5. **Samples.** Require submission of samples for approval. List item, size, and quantity.
6. **Shop Drawings.** State precisely what is required for approval and scale of drawings.
7. **Tests.** Tests of individual components such as cement, mortar, concrete, and brick. (Tests of completed systems and installed work are specified later.)
8. **General Requirements.** This paragraph may include subparagraphs as follows:
   a. Delivery and storage of materials
   b. Weather conditions
   c. Building codes, applicable industry standards
   d. Field measurements
   e. Construction methods
   f. Workmanship
9. **Fabrications and Manufacturing.** Describe shop fabrication of preassembled items.
10. **Installation, Application, and Erection.**
   a. Preparation of surfaces
   b. Reference to existing conditions
   c. Details of installation
   d. Construction methods
   e. Workmanship
11. **Tests of Completed Installation.** Include test of mechanical systems, piles, structural elements.
12. **Protection and Cleaning.**
13. **Guarantee.** Use only if standard one-year guarantee is extended for this section.
14. **Measurement and Payment.** Use only where unit prices are involved. Not required for lump-sum bids.
15. **Schedules.** Useful for hardware, lighting fixtures, painting, plumbing fixtures.

Do not use these paragraph headings when they do not apply. Introduce new paragraph headings when applicable. Deviations are proper when awkwardness would result from too close adherence to this rule.
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IT'S THE LAW

Owner/Contractor Arbitration

BY BERNARD TOMSON AND NORMAN COPLAN
P/A's legal team discusses a recent case in which an owner unsuccessfully sought arbitration against a contractor's defective work some eight years after final payment for the project was made.

The remedy of arbitration contained in a construction contract can be lost or waived if the provisions of the contract are not closely followed or the statutory law of the place of construction is ignored. This is illustrated by a recent decision of a New York court, which was required to interpret "The General Conditions of the Contract for the Construction of Buildings" issued by the AIA in a dispute between a contractor and an owner involving the right to arbitration (Thompson-Brinkworth, Inc. v. St. Luke's Evangelical Lutheran Church, N.Y.L.J., 4/9/65).

In this case, it was established that the general contractor and the owner entered into an agreement in September 1955 for the construction of a church building for the agreed price of $419,890. The work was to be commenced on October 3, 1955, and to be substantially completed by September 7, 1956. Upon substantial completion of the structure, a defect in the work involving a water-seepage condition was discovered and notice furnished to the general contractor of such defect. Upon completion of the project, certain monies were held in escrow by the owner to insure the correction of the claimed defective work. However, on May 27, 1957, the monies that had been held in escrow were paid to the contractor, although, at that time, the defective condition had not been corrected.

The owner alleged that this money had been paid because "he succumbed to the pleas of [the contractor's] principal officer, who persuaded him to make such payment on the assurance and implied promise by [the contractor's] president "that he was a man of honor and would correct any defective work." It was further alleged by the owner that, for a period of three years, "numerous letters were sent, telephone conversations had, personal inspections of the subject property and conferences were arranged between the parties, their representatives, and others interested in the performance of the contract." Despite these negotiations, however, the defective water-seepage condition continued, and, according to the owner, was never corrected.

In 1965, arbitration was demanded by the owner for the damages claimed to have been sustained, arising from the failure of the contractor to correct the defective condition. The contractor, although not denying the facts as alleged by the owner, contended that any arbitration was barred by the applicable statute of limitations of the State of New York and by Article 40 of the AIA General Conditions. The owner, on the other hand, relied on Article 20 of the General Conditions to support his demand for arbitration. The pertinent section of Article 40 of the AIA General Conditions provides as follows:

"Notice of the demand for arbitration of a dispute shall be filed in writing with the other party to the Contract, and a copy filed with the Architect. The demand for arbitration shall be made within a reasonable time after the dispute has arisen; in no case, however, shall the demand be made later than the time of final payment, except as otherwise expressly stipulated in the Contract."

"The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of Substantial Completion as defined in these General Conditions, and in accordance with the terms of any special guarantees provided in the Contract. The Owner shall give notice of observed defects with reasonable promptness. All questions arising under this Article shall be decided by the Architect subject to arbitration, notwithstanding final payment."

It was the owner's position that the obligation of the contractor to correct the defect in the work was not affected by final payment as provided in Article 20, and that consequently he was entitled to arbitrate the issue. The owner also contended that a new promise had been made by the contractor to correct the defective work upon the receipt of final payment and that this new promise was independent of the application of Article 40 of the General Conditions.

The applicable New York statute provides that, "If, at the time that a demand for arbitration was made or a notice of intention to arbitrate was served, the claim sought to be arbitrated would have been barred by limitation of time had it been asserted in a court of the State, a party may assert the limitation as a bar to the arbitration on an application to the court." The applicable statutory time within which an action must be brought in court involving a breach of contract in New York is six years from the time the cause of action accrued. Consequently, the Court vacated the demand for arbitration, stating:

"Since the final payment was concededly made in May 1957, and the demand for arbitration served almost eight years later, the court is constrained to find that the demand for arbitration was not timely made and that the statute of limitations has run against the matters sought to be arbitrated."
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Constancy and Change

By Paul Zucker


As a pupil of Heinrich Wölfflin, Giedion began as an art historian, and he naturally was strongly influenced by his master. For many decades afterwards, he became essentially a fighter for the new movement in architecture, centered around the Bauhaus and the work of his friend Walter Gropius. With this book, based on the Andrew Mellon Lectures, Giedion has returned to the less polemical attitude of the historian.

His earlier, somewhat one-sided glorification of functionalism, especially its right-angular version, which was so often ultradogmatic and intolerant toward all movements outside the Bauhaus and the sometimes ultraprimitive principles of the C.I.A.M., has given way to the historical approach—still strongly subjective and often surprising, yet entirely different from his earlier, more personal, and time-bound concepts.

We expect from all books by Sigfried Giedion that their reach extend much further than their title implies. This holds equally true for The Eternal Present: The Beginnings of Architecture, for it is not merely a new approach to the history of the first two great civilizations, the Egyptian and the Sumerian-Mesopotamian. The fundamental character of those two earliest civilizations and their relation to modern architecture and art is

Continued on page 218
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Continued from page 210

carefully elucidated—more than that, strongly emphasized.

I regret not being able to convey to the reader the copious amount of factual information that enriches this volume. But that is impossible within the framework of a brief review. Certainly, such information is not its main purpose. More important is understanding the principles that, in Giedion's opinion, determined the transition from prehistory to history and the flowering of the two first great civilizations of the West.

Giedion's vision dominates the entire book; it is so absolute and conclusive that the book emerges as a general philosophy rather than mere architectural history. As Giedion sees it, the nucleus of all architectural and sculptural problems, as well as their solution, is contained in the relationship between volume and space, both limited and unlimited space. In the present book, the contrast between horizontally and vertically directed volume reaching into space is more strongly accentuated than in the first volume, The Eternal Present, The Beginnings of Art. Thus, Egyptian architecture is conceived primarily as a continuation of passing and fleeting existence; horizontality is its visual expression. It is crystallized in the basic forms of Egyptian architecture, from mastabas and pyramids to tombs and temples. The individual great monuments of Egyptian architecture and sculpture are analyzed, and the meaning of their abstract shapes elucidated. On the other hand, Mesopotamian architecture has a predominantly vertical thrust, piercing space and expanding into cosmic infinity.

Giedion's discussion of space in prehistory formed the most challenging part of the first volume (see SEPTEMBER 1963 P/A); here it is the emphasis on "constancy and change" which for Giedion replaces the historical sequence of styles. His concept of intricate fluctuation opens much wider vistas than the traditional labeling of different historical styles in chronological order, bound more or less to the concepts of gradual evolution and the rhythmical dance of various Zeitgeists.

The combination of the author's almost religious enthusiasm and fervor with thorough scholarly research compels every reader to think through not only the historical panorama of these ancient civilizations but also their sequences and analogies in later developments. And that holds true even for those to whom this kind of approach appears at first alien. This book is a success that can

Continued on page 224
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Gardens make Mr. Rose laugh; but it is clear that he does not consider gardens a laughing matter. This justly famous landscape architect has written a humorous book that is not very laughingly directed at you—the collective you, including me and all of the non- and particularly the un-garden makers.

In a style faintly reminiscent of a disillusioned Saroyan, the author describes gardens and the creative process of garden making. "Gardens do have a language, but it is not made of words, in fact words get in the way of gardens." The consequence is a book to "get with," garden. If the author had chosen to be literally descriptive, the result would undoubtedly have been a one-word book, Garden, and, in Rose's terms, this would have been sufficient.

To sum up the "where" and the "why" of a book in a paragraph, we might quote from another book published by Rose in 1958. In Creative Gardens, he wrote: "In considering the plight of suburban houses, tacked to their landscapes with scotch broom and forsythia, it is too easy to blame the architect and builder for their "economies," the antiquated building code for its restrictions, and the enterprising developer for his dollar planning. These conditions can exist only in a culture that is suitable to their growth. The homeowner is not the victim of this culture; he is the culture, and aids the process of environmental decay." There you have the "you" the author is writing around, about, and to in Gardens Make Me Laugh.

Rose may take his place with those who are strongly convinced that the practice of architecture was devised to infringe upon their particular function. As a landscape architect, he sees the house as an extension of the garden, much as the architect sees the garden as an extension of the house. But the interior de-
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Consulting Structural Engineers: Severud-Perrone-Fischer-Sturm-Conlin-Bandel, New York, N. Y.

General Contractor: McDevitt & Street Company, Charlotte, N. C.


Eight tapered, thin-shell units make up each section of the roof. They range from a 4' span at center to a 27'10" span at roof edge. The edge units are shown in foreground. Peripheral ring is supported by 44' cast-in-place columns. More than 100 miles of wire was wrapped and post-tensioned around this outer ring.

The architectural effect of the dome interior is most attractive. Compression ring is 52' in diameter.

This new auditorium-gymnasium, to be known as University Hall, will provide seating for 9400 persons under the interesting fluted roof. The structure is 87' high at center; has a 282' clear span.
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Architects: Stotz, Hess and MacLachlan, Pittsburgh, Pa.

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On Readers’ Service Card, circle No. 390

Continued from page 224

The author considers the house a convenient device to keep the interior from spreading, and the plumber views the structure as a necessary covering to keep pigeons off the fixture branches. A house is, of course, all of these things—none of them singly, and all of them collectively.

The author is at war with the designed house, the developer’s house, or the just-happened house that forces him to “build a nest for birds that have forgotten how to think and feel.” It is a war waged on many fronts—all of them fronting on the garden.

We are all undoubtedly guilty of the lunacy of our landscape, as Rose describes it, and perhaps each man’s garden is the place to begin the healing therapy. However, it would seem that the social problem is more immediate in that misnomer, the “industrial park,” and in the commercial rending of the earth with psychopathic frenzy to create “God’s own junkyard.”

That gardens should adhere to the same design sensibilities that dimension other forms of architectural activity, that they are of a distinct time, and that they were created by individual people thinking in a particular way and therefore cannot be duplicated or transplanted without an intrinsic loss, is not a new thought, although it is amusingly presented by Rose in the chapter, “Where, Whose, What and When”—particularly in his reference to Japanese gardens. Rose’s view of the inscrutable Japanese in his own inscrutable terms is delightfully amusing.

When the author describes approaching a project involving sculpture, it is obvious that he refers to a condition where there exists nothing between the creator and the garden: no paper diagrams, no building inspectors, no bankers and no client interference. He prefers to let his gardens happen—with a bulldozer—which is akin, I suppose, to Michelangelo’s simply removing the excess stone from the statue.

The description of a teaching interlude at Princeton finds the author in the role of professor, one he is not particularly enamored of. Rose describes the students as bright individuals, but then goes on to say that “the director had not told me they were all the same individuals.”

In its simplest terms, design is an idea about people and the ability to see that idea realized. For people to realize themselves, as Rose advocates, involves an educational process, which, if it were to come into being, would make design...
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THE PATTERNS ILLUSTRATED... Left to Right: Walnut #1312, Walnut #1313, Walnut #1311.
Continued from page 230

schools, designers, and landscape architects unnecessary—which is of itself a commendable endeavor. Perhaps Rose is right in his premise that realizing and creating ourselves in time, space, and gardens is the best way to "go sane."

The illustrations for the book were done by Robert Osborn. While they are executed in his fine style, they fall short of the author's comment.

The Vastness Eluded a Myopic Englishman
BY EDWARD K. CARPENTER

The American Landscape, A Critical View. Ian Nairn. Random House, Inc., 457 Madison Ave., New York 22, N. Y. 1965. 152 pp., illus., $5.95. The reviewer is an Associate Editor of P/A.

What is best, and also what is worst, in Ian Nairn's book is the result of his English background. Because he is English, Nairn, who is an editor of the Architectural Review, brings to the American landscape a critical eye trained on the tight, tidy playing fields of Essex, Sussex, and Middlesex. Loosened on the vastness of America—its sprawling towns, its broad networks of superhighways, its deserts and mountains—that eye still sees microscopically, like an ant looking at an elephant. What he sees is accurate, and his perception true, but when he tries to suggest improvements, to take his microcosms and with them make beautiful "townscapes" using the twin tools of "relationship" and "identity," he trips over vastness he has not perceived.

"Townscape," he explains in his introduction, "depends on two things: relationship and identity. Relationship means making the parts of the environment fit together—the supermarket, the gas station, the car lots; identity is the recognition and enhancement of the specific needs and qualities that make one place different from another. And here, right at the start, a big warning: that no identity is better than a false one." He goes on to point out that "Identity, in this physical, townscape sense, is a unique configuration of all the objects that go to make up the town, natural and man-made." What he has in mind is the type of identity a cathedral gives a European town, and when he comes upon Wright's Price Tower in Bartlesville, Oklahoma, he sees immediately that here is identity without relationship. It is the European cathedral without the town clustered around it. This is true—the accurate microscopic view. What to do about it? How do we make it fit the picture? Well, we rearrange Bartlesville: "It could still be remedied, by drastic street realignment, rearranging of parking lots, pulling the center of Bartlesville over to one side. In this case it would undoubtedly be worth the effort, unless the net result of it would be to put the Price Tower bang at the end of a formal axis." What he wants is the sense of surprise offered by the convoluted streets of an English town. He misses the vastness—and other things.

In other towns, small towns, he finds everyday items that might provide identity if highlighted properly. Here again his English background betrays him, for his choices are too mundane to American eyes to work or to have the "elegance, vitality, or robustness" he sees in them. He chooses an A&P sign, a DX service-station sign, a railroad-crossing sign, a rough, frame storage building with black lettering at one end saying "Decatur Lumber & Coal Co." Both his prescription and his choices smack a little of the approach of the decorating hints in slick women's magazines. How are you going to highlight your dressing room? Why, you take your grandfather's hunting horn, hang it on the wall, and fill it with

Continued on page 246
This canopy was under flood water for 8 days, yet was completely undamaged!

The roofing is RUBEROID T/NA 200® (made with DuPont TEDLAR®)

In 1964, the Ohio River rose 6 feet above the entrance canopy of Cincinnati's Sunlite Pool. Eight days' immersion left the roofing completely intact, however. The Ruberoid T/NA 200 membrane kept its attractive whiteness after simple cleaning. It still adhered tightly to the plywood base—still was water-tight. A good indication of its long life under normal service!

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For complete facts on Ruberoid T/NA 200 for institutional, commercial and industrial designs, contact this address:

*Du Pont's registered trade-mark

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The whiteness of the surface of TEDLAR gives high reflectivity (it has less than
brilliantly and lastingly white—without maintenance

half the solar absorptance of crushed stone or marble), which lowers underroof temperatures and air-conditioning loads.
The whiteness stays white because TEDLAR is a tough, inert, flexible film that's too smooth to trap dirt. There is no loss of color with TEDLAR because the surface cannot erode as it can from liquid topcoats applied in the field. Re-coating maintenance is eliminated. The roofing stays tough and flexible from minus 50°F. to over 250°F.

More and more architects are specifying TEDLAR as the finish on roofing and siding for their new designs. For a detailed case history and a sample, write Du Pont Film Dept., Box 2372A, Wilmington, Delaware 19898; or, for more information, see Sweet's Catalog.

Kenilworth Hotel Cabana, Miami Beach, Florida
Architect: Stefan Zachar, A.I.A., Miami Beach, Florida
Contractor: John C. Woodruff Co., Miami Beach, Florida

*B.D. registered trademark
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34% of the 3,200 tons of structural members supplied by Bethlehem is V50 and V55 high-strength steels. Field connections were welded and high-strength-bolted; shop connections were welded (V Steels are readily weldable).

**Redesign in Bethlehem V Steels saved this bank $45,000**

A simple redesign of some columns and a switch from A441 to Bethlehem V50 and V55 steels saved $45,000 for the owners of the 22-story Exchange National Bank Building, Tampa, Fla. Bethlehem V Steels are high in strength (45,000 to 65,000 psi min yield), but truly low in cost. If you'd like to know more about these economical structural steels, just get in touch with our nearest sales office.

Model of 22-story Exchange National Bank Building shows ground floor for banking facilities, six-story parking garage, and office tower section with floors designed for composite action.

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at hurricane force
and still weather-tight!

Independent Laboratory Tests Prove Kawneer
Sealair Windows Solve Weathering Problems!

The new Sealair window is weather-tight even when subjected to winds and rains of 70 to 80 miles per hour according to recent tests by an independent laboratory.

In these tests, the Sealair was installed in a weather test chamber. The window was water drenched as inside pressure was lowered to represent severe weather conditions. Sealair did not leak even when the static load reached 25 p.s.f. Many conventional windows leaked at 3 to 7 p.s.f. The superior weathering performance is the result of a Triple Weather Guard including an exclusive Pressure Equalization Slot. This Kawneer innovation is the most important metal window design change in recent years.

In air infiltration tests, the new Sealair was again far superior, at less than .2 c.f.m., well above industry standards. Here is a window so vastly superior that building interiors remain dust and draft free . . . reducing loads on heating and air conditioning systems. Get all the facts about this remarkable window. Write for your copy of the Sealair Window File.

Commercial and Monumental—Projected, casement and top hinged Sealair windows are available in commercial or monumental (2") series. Finish: Alumilite is standard—or, non-fading, abrasive-resistant, Anodic hard colors (light bronze, medium bronze and black) are optional.

Pressure Equalization Slot—Keeps water out. Pressure within the window sections is equal to pressure outside the building. No pressure difference ... no partial vacuum ... no leakage.

Triple Weather Guard—1) Pressure equalization slot, 2) integral drip, and 3) neoprene weatherstrip. The Sealair window offers triple weather protection. Weathering where needed, scientifically designed.
Man has always expressed his deepest anxieties through art. This catalogue of an exhibition held at the University of St. Thomas in December 1964, entitled “An Exhibition of Mythological Animals, Demons, and Monsters, Phantasmal Creatures and Various Anatomical Assemblages,” provides a spine-tingling tour into the dark recesses of historical and contemporary faces of horror. In Phantasmal Creatures, the excellent introduction tells us, were powerful symbols; they warded off evil spirits. When man had the sense, or temerity—or both—to domesticate them, they then guarded man against his grotesque imaginings. The exhibit included the following gems from all over the world: “Dragon Swallowing a Goat,” “Two Lizards, One Biting Its Tail,” and “Human Body, with Walrus Head, and Aquatic Birds.”


First edition material has been updated and revised to include a section on moment-resisting footings, an appendix of up-to-date engineering data, and a chapter on the plastic analysis and design of statically indeterminate steel structures.

OTHER BOOKS TO BE NOTED


A study of the history and art of a 10th-Century Armenian church on the island of Agh'Amur in southeastern Turkey.

The Architectural Index For 1964. Ervin J. Bell. The Architectural Index, P.O. Box 945, Sausalito, Calif., 1965. 70 pp., $5.00 (paperbound)

Every architect, professor of architecture, and student should order a copy of this invaluable index. It catalogues articles on buildings and materials and methods of construction published in 1964 in all seven major architectural magazines and cross-indexes them under general building type, architect, and location. Back issues to 1950 are available.


The printing in this textbook is the size of newspaper print (we measured it) and the lines are three times longer and closer together than in newspapers. Page numbers begin anew in each section—and there are 29 of them. Though students will go broke buying it and blind reading it, the “Handbook” is a valuable book. This edition added material on CPM; the treatment of thin shells and folded plates has been expanded. There are many other additions and revisions—all done by experts. For students, engineers, foremen, and management interested in building economically.

Constant Companions. Art Department of the University of St. Thomas, Houston, Texas. Distributed by Withers Swan Public Relations, 4 East 89 St., New York 28, N. Y., 1964, 95 pp., illus., $1.00

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Continued from page 238

little colored powder puffs.

Good as Mr. Nairn's eye for small detail is, it sometimes goes blarey. In San Clement, California, a waterfront pier cut off from town by railroad tracks is approached by an underpass. Nairn rightly sees and painstakingly explains in photos and text why the underpass is exactly right because its approach takes you up to a view of the harbor across the tracks, then curves down into the underpass, which carries you onto the pier. But once on the pier, his view becomes dim, as if affected by salt spray. The pier has two rest stations, public toilets. Nairn sees them as unselfconscious design, which they may be. But why come 6,000 miles to point them out? Certainly there must be something else in America worth attention, even if it isn't the Saarinen ice hockey rink at Yale, which has a "silly Viking-out shape.

Continued on page 254
Insert tee... bend tab!
Make quick work of every ceiling with
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Die-formed to precision tolerances, Eastern's cross tees align perfectly... resist torsional movement... are locked in tension with slight finger pressure. Bridging and splicing, too, require no tools or clips. Complete interchangeability in three weights plus fire-rated design allows greater support where needed... lighter components wherever possible... maximum economy for all load and spanning conditions. See Sweet's 11c/Ea, or write today for complete specs. *Patent pending

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Utilizing Zonolite® Masonry Fill Insulation in walls reduces initial equipment costs, saves $700 per year on fuel, substantially raises indoor wall surface temperature.

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Consider this library designed by Marvin Hatami and engineered by Cator Ruma of Denver, Colorado. Its reinforced brick cavity walls feature Zonolite Masonry Fill Insulation. Installed cost: 10¢ per sq. ft. or $3245 total. As part of a 20-yr., 6% mortgage, it figures out to $279 annually.

For this investment, the client saves $700 per year on fuel. That's a direct 250% return on his yearly investment in Zonolite Masonry Fill Insulation.

There are indirect savings, too. (1) Smaller, less costly heating equipment can be used. (2) Indoor wall surface temperatures are raised from 50° to 62° F. This reduces body radiant heat exchange, minimizes wall surface downdrafts. (3) The interior surfaces of the walls can remain unfinished. And (4) the building is quieter because of Zonolite Masonry Fill Insulation's excellent sound absorption characteristics.
### DESIGN CONDITIONS

<table>
<thead>
<tr>
<th></th>
<th>Winter Heat Loss in BTU/hr. Assuming 70°F indoors</th>
<th>Summer Heat Gain in BTU/hr. Assuming 85°F, DB 78°F, WB 65°F, WB indoors</th>
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<tbody>
<tr>
<td><strong>Walls</strong></td>
<td>Without Masonry Fill</td>
<td>With Masonry Fill</td>
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<td></td>
<td>Without Masonry Fill</td>
<td>With Masonry Fill</td>
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<td>Without Masonry Fill</td>
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<tr>
<td></td>
<td>4&quot; Face Brick</td>
<td>4&quot; Face Brick</td>
</tr>
<tr>
<td></td>
<td>3½&quot; Air Space</td>
<td>2½&quot; Zonolite Fill</td>
</tr>
<tr>
<td></td>
<td>4&quot; Face Brick</td>
<td>4&quot; Face Brick</td>
</tr>
<tr>
<td><strong>Roof</strong></td>
<td>Roofing, 3½&quot; Concrete</td>
<td>225,000</td>
</tr>
<tr>
<td></td>
<td>4&quot; Concrete on Grade</td>
<td>225,000</td>
</tr>
<tr>
<td><strong>Floor</strong></td>
<td>4&quot; Concrete on Grade</td>
<td>56,000</td>
</tr>
<tr>
<td><strong>Glass: Solar &amp; Transmission</strong></td>
<td>5&quot; Heat Absorbing Plate</td>
<td>730,000</td>
</tr>
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<td></td>
<td>15,000 DFM</td>
<td>1,080,000</td>
</tr>
<tr>
<td><strong>Lights</strong></td>
<td>175 Kilowatt</td>
<td>596,000</td>
</tr>
<tr>
<td><strong>People</strong></td>
<td>500</td>
<td>200,000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>3,053,000</td>
<td>4,455,000</td>
</tr>
<tr>
<td>% Savings with Masonry Fill</td>
<td>3,053,000 - 2,455,000 x 100 = 19.6%</td>
<td>1,776,000 - 1,651,000 x 100 = 7%</td>
</tr>
</tbody>
</table>

Additional facts of significant interest are available in our Bulletin MF-113.
For your copy, please write Dept. A, Zonolite, 135 South LaSalle Street, Chicago, Illinois 60603

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William Bayley Company, one of the oldest and largest manufacturers of steel and aluminum windows, is on the move. We're looking for creative challenges, new architectural ideas, ways to be more helpful. May we discuss your newest job? The William Bayley Company, Springfield, Ohio.

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What’s so unusual about it? It's headless. No transom bar. No lintel. No protrusions (except the door knob). Transom panel rabbets into top of door. Jambs go floor to ceiling. Provides a vertical look. Saves installation costs. Furthermore, it bears up to an "A" fire label from U/L (45 min. to 3 hrs.). Ideal for corridor to stairwell or room entries and lobby to stairwells. Available in singles or pairs, in steel, up to 11'4" high, with frame trim thickness of only one inch; also in stainless steel with up to 1½ hr. label. It’s a new concept in metal: Overly Transom Panel Door and Frame System.

For more information, write to Manager of Product Development, Overly Manufacturing Company, Greensburg, Pennsylvania 15601.
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An analysis that compares the economics of using various glass types: Thermopane® insulating glass; one of L·O·F’s heat-absorbing plate glasses or regular plate.

It considers heat gain or loss through each type of glass: effect of heat gain on air-conditioning load; comparison of glass costs, taxes, insurance; all other factors affecting costs for the life of the building.

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Toledo, Ohio

*Example

An L·O·F Glass Cost Analysis for the Life of Georgia Tower compared the economics of Thermopane insulating glass (with an outer pane of \( \frac{3}{4} '' \) Parallel-O-Grey®) with single glazing of \( \frac{3}{4} '' \) Parallel-O-Grey. The uniform annual costs for the glass were based on an anticipated useful life of 40 years for the building. For the air-conditioning equipment, a 20-year life was used. Both costs are for borrowed money at 5% interest.

The $0.80 per sq. ft. for the Grey plate glass and the $2.30 for Grey Thermopane were contract glass prices and did not include installation, since installation costs for both would be the same according to the glazing contractor. The $1,100 per ton figure of the air-conditioning equipment was estimated by the mechanical engineers.

The initial cost of the Thermopane and the air-conditioning equipment it would require is slightly higher than for single grey plate and the air-conditioning equipment needed for it. But the total annual cost of owning and operating the building glazed with Thermopane will be substantially less.

<table>
<thead>
<tr>
<th></th>
<th>3/4'' Parallel-O-Grey</th>
<th>Grey Thermopane</th>
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</thead>
<tbody>
<tr>
<td>Initial glass cost (57,520 sq. ft.)</td>
<td>$40,010</td>
<td>$124,300</td>
</tr>
<tr>
<td>Initial cost of air-conditioning equipment to overcome heat gain through glass ($1,100/ton)</td>
<td>$301,400</td>
<td>$220,000</td>
</tr>
<tr>
<td>Initial cost of glass and air-conditioning</td>
<td>$341,410</td>
<td>$352,300</td>
</tr>
<tr>
<td>Uniform annual cost for glass</td>
<td>$2,670</td>
<td>$7,670</td>
</tr>
<tr>
<td>Uniform annual cost for air-conditioning equipment</td>
<td>$24,310</td>
<td>$17,600</td>
</tr>
<tr>
<td>Annual operating and maintenance costs</td>
<td>$27,490</td>
<td>$22,980</td>
</tr>
<tr>
<td>Total annual owning and operating cost for glass and necessary air-conditioning equipment</td>
<td>$54,270</td>
<td>$48,250</td>
</tr>
</tbody>
</table>
Continued from page 246
leader in the early 20th-Century Spanish Colonial style of southern California. His work is recorded from the Herberton house of 1916 to the Heimann house of 1928-29. Though little more than a catalog, this is a worthy little book.


Two large, lavishly illustrated volumes that celebrate the taste and opulence of by-gone, splendidious eras. Thirty palaces are described and illustrated in the former; all have been the residences of monarchs or princes, all are classics of their kind and period, and, best of all, all are in perfect condition, fully furnished, and some are even occupied. Included are Windsor Castle, Versailles, the Escorial, Caserta, Schoenbrunn, the Winter Palace, Huis Ten Bosch, Holyroodhouse, and Kronborg. Identical with the enormously popular first edition, Great Houses, second edition, illustrates and describes 40 of the finest houses from Leningrad to Portugal. Rich art collections and magnificent gardens are shown also. Each house is described by an author familiar with its history, builders, and owners.

NOTICES

New Partners, Associates

LIGHTING & ELECTRONICS, Inc., Brooklyn, N.Y., have named Richard D. Thompson manager of the theatre division.

ALBERT C. MARTIN & ASSOCIATES, Architects-Engineers, Los Angeles, Calif., have named Charles H. Grieco and Miles Perlis associates.

MAYER & KANNER, Architects, Los Angeles, Calif., announce that Daniel Kravet is an associate.

FREDERICK A. MUHLENBERG & ASSOCIATES, Architects, Reading, Pa., announce the admittance to partnership of Lawrence A. Greene, Jr., and Elmer Veres.

NARAMORE, BAIN, BRADY & JOHANSON, Architects-Engineers, Seattle, Wash., have made Donald A. Winkelmann a senior associate and Harry G. Widener a partner.

J. N. Pease ASSOCIATES, Architects-Engineers, Charlotte, N.C., announce that Joseph O. Raley, Jr., is now an associate.


JACOB ROBBINS, ARCHITECTS, Oakland, Calif., have named Ralph Garber Gray an associate.

ROBBINS, GREEN & BERETTA, Architects, Providence, R.I., have named George J. Jezierny and Raymond A. DeCesare as associates.

SCHAFER, FLYNN & ASSOCIATES, Architects, Cleveland, Ohio, announce that Peter Van Dijk has become an associate.

SCHAUER & MARTIN, Architects, Toledo, Ohio, have appointed Roland Y. Engler an associate.

SMITH, SMITH, HAINES, LUNDBERG & WAehler, Architects, New York, announce Charles L. Macchi as a senior associate and Bronislaus F. Winckowski as an associate.
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Church Center for the United Nations
New York City
William Lescaze, F.A.I.A.
Architect

**LCN CLOSERS, PRINCETON, ILLINOIS**

Construction Details on
Opposite Page
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