ARCHITECTURAL RECORD

MARCH 1964 • TWO DOLLARS PER COPY

BUILDING TYPES STUDY: OFFICE COMPLEXES

NEW SERIES: ARCHITECTURE AS TOTAL COMMUNITY

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FULL CONTENTS ON PAGES 4 & 5
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Architectural Engineering

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ARCHITECTURAL DETAILS III: PHILIP JOHNSON

In the third in its series featuring significant details of significant architecture, the RECORD presents the work of an architect whose architecture has always been distinguished for its elegant precision.

NURSING HOMES, HOSPITALS AND CLINICS

Next month's Building Types Study on medical facilities looks at new developments on several active building fronts. Research study of a proprietary nursing home population has been translated into architectural planning concepts for two new facilities. Two large hospitals are redesigned with clean-slate approaches. Clinics and rehabilitation centers are planned for specific community services.
GOOD THINGS TO KNOW ABOUT
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2. MORE ATTRACTIVE INSIDE AND OUTSIDE CORNERS. Because base and corner are one piece, there's no danger of shade variation when you use KenCove Vinyl.

3. CORNERS WON'T KICK OFF. KenCove corners are part of the base itself, not separate pieces. Ruggishly suited to stand up under accidental abuse.


KENTILE FLOORS
As usual there is something excitingly new in the use of concrete in architecture . . . precast white concrete structural members.

Here, for example, are giant precast concrete crosses made with Trinity White portland cement and white quartz aggregate. More than 250 of these crosses form the exterior structural frame on all four sides of this seven-story building. They are decorative in appearance and functional both as sun shades and structural support.

The crosses are temporarily braced in position and become integrated into the structure as the concrete floors are poured, which operation fills a groove in the spandrel beam of the cross.
Viable Vernacular

One of the more dismal aspects of our time in architectural history is its “vernacular” architecture. Gone is the stately street of a New England town, the linear unity of Park Avenue, or even that of a few blocks of railroad flats. Gone is the picturesque quality of an Italian hill town, a Portuguese fishing village, a group of native huts almost anywhere.

Now we have the beach hotel, the highway hotel, the hamburger drive-in, the used car lot, the shopping center, the bowling alley. Where we do get some unity, as in the small-house tract or the public housing project, we are conscious only of a sort of design poverty.

Perhaps I am stretching the word “vernacular” in that list, for most of those buildings are done by professional designers.

We have more means, more money, more communication, more exuberance—and more chaos.

No, I shall not blame it all on the architectural profession. Clearly no design group, however self-disciplined, could be equal to the task of digesting, distilling or disciplining such discordant influences as today beset us. But we can ask what influence the organized architectural profession does have.

I have asked several observant friends two questions lately. Would you agree that the architectural leadership of the West (U. S. West) has largely been dissipated? Answer: yes. Would you then agree that the architects of the West have had more influence on the townscape than those of the East? Answer, yes.

Sometimes the answers were not thus sharply stated, but there was substantial agreement on the general thesis: greatest architectural leadership in the East, greatest popular following in the West.

The trap is, of course, that there are two different viewpoints on leadership—architects leading architects or architects leading laymen. A few years ago the Western architects were stuffily rejecting the tag that was tossed to them—the Bay Region Style. They protested that they had no wish to create a style. A few of them in fact denied the style so vehemently as to import a style from the East.

A recent observer, William L. C. Wheaton, director of the Institute of Urban and Regional Development, University of California, was bold enough to bring it up again:

“. . . the best residential building in all generations has been a vernacular style, one which emerged from the economies of building, the local availability of material, the technology of the times. The older residential areas of Boston, Philadelphia, Litchfield, Conn., Concord, Mass., and Savannah, Ga., are now universally recognized as prize examples of a perfect, vernacular building, anonymous, harmonious and functional for their time. Contemporary vernacular building is afflicted with the disease of too many styles, too rapid change, too universal a market for materials and skills. As a result most vernacular non-architect designed home building is a hash of elements, unrelated by any common thread. You in the Bay Area are fortunate that you have had a vernacular for more than half a century—called the Bay Style—which draws upon the local climate for its inspiration.”

Well, style or no style, I think that architects of the Western states have influenced, favorably, the residential building of their areas. If the architect assumes any responsibility for his city and its buildings he must accept this sort of influence as his responsibility.

Roy Carroll, president of the American Institute of Architects, said recently: “Perhaps the problems of people and the questions of quality are, and should be, more important to us today than the daring structure or the new material. We are, quite obviously, pausing to get our esthetic breath: examining both the new and the old.”

The proliferation of architectural gimmicks in the vernacular of our day ought to give us pause to get “our esthetic breath,” and perhaps to give some thought to a better, viable vernacular.

—Emerson Goble
Pier Luigi Nervi has been named by the American Institute of Architects the recipient of its 1964 Gold Medal. Mr. Nervi is the first engineer, the first Italian and the 11th foreigner to receive the A.I.A.'s highest honor.

Before World War II, Mr. Nervi was known for his design of the Municipal Stadium in Florence, and for a series of concrete airplane hangars. He has since built the Turin Exhibition Hall (1950), two Sports Palaces and a stadium for the 1960 Olympic Games in Rome, and the Palace of Labor in Turin (1961). In this country, he designed the Port of New York Authority Bus Terminal at George Washington Bridge in New York City (1962).

The medal will be presented to Mr. Nervi at the Institute's convention in St. Louis this June.

Kemper Award

The Edward C. Kemper Award, given for significant service to the Institute and to the profession, will be presented this year to Daniel Schwartzman, F.A.I.A., of New York.

The Institute has also announced its awards for the allied arts. The English sculptor Henry Moore will receive the Fine Arts Medal. Landscape architect Lawrence Halprin will be presented with the Allied Professions Medal. The Industrial Arts Medal will go to George Nelson, F.A.I.A., industrial designer of New York. Jan de Swart, Los Angeles sculptor, will receive the Craftsmanship Medal, and the Architectural Photography Gold Medal will go to Baltazar Korab of Birmingham, Michigan.

The Citation for an Organization will be made to Educational Facilities Laboratories, Inc.

The Architectural Firm Award will be presented to The Architects Collaborative of Cambridge, Massachusetts.

A new award, for Collaborative Achievement in Architecture, will be made to the designers of the Seagram Building and Plaza and the Four Seasons Restaurant in New York City. Those to be honored include, for the Seagram Building: Mies van der Rohe and Philip Johnson, architects; Kahn & Jacobs, associate architects; Philip Johnson Associates, J. Gordon Carr and Knoll Associates, office layout and furnishings; Severud-Elstad-Krueger, structural engineers; Jaros, Baum and Bolles, mechanical engineers; Clifton E. Smith, electrical engineer; Richard Kelly, lighting consultant; Karl Linn and Charles Middeleeer, landscape architects; Bolt, Beranek and Newman, Inc., acoustical consultants; Elaine Lustig, typographical consultant; George A. Fuller Company, general contractor; and Mrs. Phyllis B. Lambert, director of planning.

Honorary membership in the Institute will be accorded to Henry Lee Willett, stained glass designer and fabricator; S. C. Hollister, dean emeritus of the School of Engineering at Cornell University, and chairman of the A.I.A.'s Ad Hoc Commission on Education; Dr. Anthony G. Adinolfi, director of Planning for the New York State University Construction Fund; John L. Cameron, chief, School Housing Section, U.S. Office of Education; and George McCue, art editor, St. Louis Dispatch.

Honorary fellowships will be conferred upon E. Maxwell Fry, London; Mario Pani, Mexico City; Max Bill, Zurich; Eugene Elie Beaudouin, Paris; Affonso Edouardo Reidy, Rio de Janeiro; Sir Arthur Stephenson, Melbourne; and Luigi Moretti, Rome.

KETCHUM NOMINATED FOR A.I.A. FIRST VICE PRESIDENT

The American Institute of Architects has received the nomination of Morris Ketchum Jr., F.A.I.A., of New York City, as First Vice President and President Designate. The elections will be held at the Institute's convention in June, at which time the Incumbent First Vice President, Arthur Gould Odell Jr., F.A.I.A., will become president.

Three vice presidents will be elected this year. The A.I.A. has so far received four nominations for this position: William Stephen Allen, F.A.I.A., San Francisco; Clinton Gamble, F.A.I.A., Fort Lauderdale, Florida; Julius Sandstedt, A.I.A., Oshkosh, Wisconsin; and Hugh A. Stubbins Jr., F.A.I.A., Cambridge, Massachusetts.

William J. Bachman, A.I.A., Hammond, Indiana, has been nominated for secretary.


The deadline for nominations is May 6, although nominations from the floor will be recognized.
You are looking through Borden’s Deca-Ring style Decor Panels out over Biscayne Bay, Miami, Florida. This is one of the views you would have if you parked your car in the multi-level parking facility in downtown Miami, where Borden Deca-Ring provides safety, ventilation and a touch of luxury with efficient use of materials.

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Buildings in the News

GREAT BRITAIN PLANS
NEW EMBASSY IN ROME

Sir Basil Spence, asked to design Her Britannic Majesty’s Embassy-Chancery Building in Rome, faced more than the ordinary problems of extending courtesy to existing buildings. He had to design a building which would express the dignity of his country without mocking the Renaissance splendor of Michelangelo’s Porta Pia nearby or the ancient Aurelian wall which borders the six-acre site.

In analyzing the circumstances, Sir Basil concluded: “Rhythmically, the building should be in harmony with the wall and the gate, in bulk it should not be too overpowering, in height it should conform, and the materials should not be out of sympathy.”

The resulting plan, accepted both by the Royal Fine Art Commission and Italian authorities, consists of 16 concrete units clustered around a large courtyard. It will be faced with travertine slabs, set forward so that the surface will be modeled. Projecting elements on the top floor echo the battlements of gate and wall.

The ground floor of the building will be open, while the first floor will contain large formal rooms, and the top room will house offices.

Ove Arup was consulting engineer for the project, and Pier Luigi Nervi is the Italian consultant.

Michelangelo’s design for the Porta Pia, with which the design of the British Embassy had to comport, is distinguished by its battlemented silhouette, forceful modeling and strong horizontals. It is built of brick and travertine.

The southwest side of the building will be seen by visitors using the everyday, rather than the ceremonial, entrance. The open ground floor is dominated by the grand staircase which leads to the formal entrance lobby on the first floor.

ARCHITECTURAL RECORD  March 1964
The working entrance of the building is on the side away from the Porta Pia.

Ceremonial visitors will enter the building by a walkway bridging a pool.
Kiyonori Kikutake of Tokyo is the recipient of the 1963 Pan Pacific Architecture Citation. The award is made annually by the Hawaii Chapter, American Institute of Architects, to an outstanding professional in architectural design who may live in any country bordering the Pacific Ocean.

Mr. Kikutake, 35, graduated in 1950 from the Waseda University School of Architecture. He has won a number of national architectural competitions, and currently serves as a member of the Japanese National Board of Licensing and as architectural consultant to the Shirokiya Department Stores. He accepted the honor at the chapter’s annual banquet, held January 18 in Honolulu. Three days later, he was guest at a reception held by the Honolulu Academy of Art, which opened an exhibit of drawings and photographs of the architect’s work.

Mr. Kikutake is the second Japanese to receive the citation. Kenzo Tange was honored in 1957, the year the citation was established. In the years between, architects from Australia, the Philippines, Mexico and Canada have been similarly honored.

The Selection Committee for the citation is composed of former chapter presidents. This year’s chairman is Harry G. Seckel, A.I.A.
Tatebayashi City Hall (1963)

International Conference Hall, Kyoto (1963)

Design for Marine City (1962)
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Your first step towards new ceiling beauty and modern lighting intensities is writing for our NC Gratelite Brochure. May we send it to you?

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CONSTRUCTION SETS ANOTHER RECORD

With the compiling of December's contract data, F. W. Dodge Company has finished tabulating another year's construction activity. The final figures certainly are impressive: construction contract value in 1963 topped $45.5 billion, 10 per cent above 1962's total. This was a new high, and it added one more record year to the string of consecutive ones that goes back to the end of World War II.

The value of new construction contracts, as measured by the seasonally adjusted Dodge Index (1957-59 = 100), started 1963 in a lackadaisical fashion. After the first quarter ended, however, the Index moved upward in April, and then spurted to 144 in May—a new monthly record. Contract activity eased back from May's peak, but remained at high levels until the fourth quarter, when it soared: the Dodge Index eclipsed May's record in both October (146), and December (148), and equaled it in November. For the whole year, the Index was 132.0, far above 1962's 119.7.

All three major construction categories contributed to 1963's record-setting contract activity. Apartment building, which continued its booming performance for another year, was the major force boosting residential construction up 14 per cent, to a level over $20 billion. Although apartment contracts didn't match 1962's 45 per cent rise, total value last year was up nearly 30 per cent, piercing the $5 billion mark for the first time. Because of multi-family construction's sparkling performance last year, it's easy to overlook the splendid year that one- and two-family homebuilding had. After recording a 4 per cent gain in 1962, single-family home contracts increased 10 per cent in 1963, to an amount slightly less than $14 billion; only 1959's total exceeded last year's.

Hotels, motels and dormitories, a small category in dollar terms, showed diverse trends. Hotels and motels fell 11 per cent, and dormitories climbed 26 per cent.

Total nonresidential construction contract value was more than $14 billion in 1963, up 11 per cent from the previous year. Among the nonresidential building types, there were two star performers: hospitals and public buildings. After four straight lethargic years, hospital building broke out of its torpor in 1961 when contract value rose 18 per cent. In 1962, contracts were up another 9 per cent, and last year they really soared, increasing a whopping 38 per cent. Public buildings, which only showed a 1 per cent gain in 1962, zoomed 42 per cent last year, spurred by funds from the Accelerated Public Works program. Bolstered by a 6 per cent rise in office construction, the total value of commercial building contracts was up 5 per cent. Continuing on the comeback trail from the sluggish years between 1956 and 1962, industrial buildings posted a 9 per cent gain in 1963. Educational buildings bounced back from a slow 1962, by registering an 8 per cent increase last year. Finally, religious buildings slumped 7 per cent, social and recreational contracts fell 8 per cent, and miscellaneous nonresidential construction contracts advanced 31 per cent.

Nonbuilding construction contract value rose 4 per cent in 1963, as public works construction edged up 3 per cent and utilities contracts increased 8 per cent.

Henry C. F. Arnold, Economist
F. W. Dodge Company
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Building Construction Costs

By Myron L. Matthews
Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service

The information presented here permits quick approximations of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). The tables and charts can be used independently, or in combination as a system of complementary cost indicators. Information is included on past and present costs, and future cost can be projected by analysis of cost trends.

A. CURRENT BUILDING COST INDEXES—FEBRUARY 1964
1941 Average for each city = 100.0

<table>
<thead>
<tr>
<th>Metropolitan Area</th>
<th>Cost Differential</th>
<th>Current Dow Index</th>
<th>Per Cent Change Year Ago</th>
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<tr>
<td></td>
<td>Residential</td>
<td>Nonresidential</td>
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<td>8.5</td>
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<td>7.1</td>
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<tr>
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<td>8.8</td>
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<td>241.6</td>
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B. HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES
1941 average for each city = 100.0

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<td>253.9</td>
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HOW TO USE TABLES AND CHARTS: Building costs may be directly compared to costs in the 1941 base year in tables A and B: an index of 256.3 for a given city for a certain period means that costs in that city for that period are 2.56 times those in 1941, costs an increase of 156.3% over 1941 costs.

TABLE A: Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second: if the cost differential of one city (18.0) divided by that of a second (8.0) equals 2.25, then costs in first city are 25% higher than costs in second. Also, costs in second city are 89% of those in first (8.0 ÷ 18.0 = 0.44 or 25% lower in the second city.

TABLE B: Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other: if index for a city for one period (200.0) divided by index for a second period (150.0) equals 0.75, the costs in the one period are 25% higher than those in the other. Also, second period costs are 75% of those of the other date (150.0 ÷ 200.0 = 0.75) or 25% lower in the second period.
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"You solved the Urban Center transportation problem perfectly, but, by the way, whatever became of the Urban Center?"

GORES OF E.F.L. NOTES CHANGING STANDARDS FOR SIZE AND LOCATION OF BIG CITY SCHOOLS

The rules-of-thumb which have determined the size and location of urban schools are undergoing some revision, Harold Gores of Educational Facilities Laboratories, Inc., said last month. He spoke to members of the Architectural League of New York at one of the League's series of meetings on "The Pursuit of Civil Excellence."

On the question of school size, Mr. Gores suggested that the old arbitrary minimums and maximums, e.g., 750-1,200 students for high schools, are meaningless in the context of urban logistics. With more and more people on less and less land, the question is simply how many students may safely be housed. Any feeling of massiveness, he said, should be counteracted by good design.

Improvements in transportation, he suggested, have made the need to locate schools in the pupil's neighborhood obsolete. Large tracts, where education parks can be built, and "where the physical environment is benign," are available outside the city.

If the schools are to be built in the city, Mr. Gores believes that the standards for site size, essentially suburban standards as they now stand, can be considerably reduced. And reduced, he went on, without sacrifice of play space. He cited particularly the use of "synthetic turf," a Neoprene sod which can be installed on rooftops.

Mr. Gores had also some specific suggestions for school planning: (1) joint occupancy, particularly with commercial buildings; (2) interior flexibility ("to design a school as though education will not change in the 50-year life of the building is cultural arrogance"); (3) schools that "reach out" to their neighborhoods ("A fortress put down in a slum . . . does nothing to rally the neighborhood to its own renewal"); (4) terraces and rooftops for play space; (5) new education specifications ("Given the School Board's standards and detailed requirements, about all [the architect] can do is to practice cosmetology . . ."); (6) "descriptive rather than prescriptive specifications" ("Tell the architect what will go on in the place and let him design an environment that will consent to it").

James Hult, director of the New York School Board's Office of Design, Construction and Physical Plant, spoke on the panel with Mr. Gores, and reported on New York's efforts to get more attractive and better working schools. Exciting design, the board thinks, will upgrade neighborhoods, attract good teachers, and thus perhaps provide one answer to the integration problem.

The city has also adopted the use of portable classrooms to accommodate its 100,000 yearly transfers. Mr. Hult reported that 250 units are in use and another 358 underway. As to their success, Mr. Hult was forthright: "They're crumby, but they do the job."

Current projects in New York are the investigation of air rights and the possibility of combining schools with income-producing buildings; the use of carpeting for sound reduction (first test: negative; reason: chewing gum); and the incorporation of movable walls in some schools in preparation for team teaching.
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For more data, circle 12 on Inquiry Card
NEW EXHIBIT OF CHURCHES AND TEMPLES TO TOUR

A major exhibit of religious architecture sponsored by the New York Chapter of the American Institute of Architects will soon be circulated by the American Federation of Arts. The exhibit, "Churches and Temples: Postwar Architecture," closed last month a month's premiere at the Pepsi-Cola Exhibition Gallery in New York City. It includes 21 examples shown in photographs, models and examples of religious art. An illustrated brochure describing the exhibit has been published.

Buildings were chosen by the board of selection consisting of architects Marcel Breuer, Lathrop Douglass, Percival Goodman and Jan C. Rowan, editor of Progressive Architecture; and Maurice Lavanoux, editor of Liturgical Arts.
Granco's new Cel-Way floor system uses
one fitting for power and telephone

Now for the first time, you can fully electrify thin, structural slabs over steel joists! Granco's new Cel-Way system gives you cellular-floor electrical capacity in a compact slab. Large-capacity single, wide or double cells, blended with a Granco permanent steel form (shown above with double cells and Corruform®), provide the form for wet concrete and raceways for telephone and power...all within a single thin slab!

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For more data, circle 15 on Inquiry Card
Unusual roof construction for NEW ALL CONCRETE GYM

- Huge, prestressed “Y” beams, resting on cast-in-place columns, form the basic structure of this interesting high school gym roof. Cast-in-place parabolic arches between these beams complete the effect. Prestressed double Tee beams, supported from the ends of the “Y” beams, provide a covered walkway. And, the walls are painted concrete masonry units.

LEHIGH EARLY STRENGTH CEMENT BENEFITS EVERY MEMBER OF THE TEAM

Dura-Stress, Inc. used Lehigh Early Strength Cement for the prestressed units in this building. Here, as in almost any concrete work, this cement provides important benefits for manufacturer, contractor and architect alike. Quicker re-use of forms. Earlier availability of units. Assured on-time delivery for smoother planning. Lehigh Portland Cement Company, Allentown, Pa.

Fessenden High School gymnasium in Marion County, Fla. is an interesting combination of prestressed concrete, poured concrete and concrete masonry. Tapered ends of the Lin Y roof beams cantilever to support double Tee Beams covering a walkway.

Owner: Marion County Board of Public Instruction, Ocala, Fla.
Structural Engineer: R. O. Newman, Leesburg, Fla.
Contractor: Thompson Brothers Construction Co., Leesburg, Fla.
Prestressed Manufacturer: Dura-Stress, Inc., Leesburg, Fla.
Concrete Block Manufacturer: Robinson-Scofield Lumber Co., Dunnellon, Fla.

Eight prestressed Y beams are set in place on 16' centers as the first step in roof construction. Each beam measures 105' long and 8' wide.

To complete the interesting form of the roof, 8' wide parabolic arches are poured-in-place between the beams.
Such a trim, beautiful drapery treatment with sleek, slim Silent Gliss track...so wonderfully easy to install...so unmistakably different...

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Installation? Our No. SG-1030, shown here, goes up in a breeze with standard fasteners, standard tools...with the pre-punched mounting flange invisible in normal use. Range of styles? Silent Gliss offers 14 to choose from, for recessed and surface mounted installation, cord or hand traversing, wall mounted and specialty applications. For details, write for personal illustrated catalog copy today. Address Dept. AR-3.

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HOUSING MESSAGE CALLS FOR AID TO SUBURBS

President asks Congress for new towns, other aid to suburban housing and development; also recommends establishment of new Department of Housing and Community Development.

President Johnson's housing message of last month indicated great Federal concern with the broad problems of the expanding suburbs. "The great expansion of our urban areas over the last two decades," the President told the Congress, "has too frequently been carried out in a sprawling, space-consuming, unplanned and uneconomic way. ... If the taxpayer's dollar is to be wisely used and our communities are to be desirable places in which to live, we must assure ourselves that further growth takes place in a more orderly fashion."

His most sweeping proposal assumed that a "significant portion" of future urban growth would be provided by new towns, "complete with all public services, all the industry and commerce needed to provide jobs, and sufficient housing and cultural and recreational facilities for moderate- and low-income families as well as for the well-to-do." To encourage activity in this field, the President requested a program of grants and loans to states and cities for the provision of public facilities. Since construction would mostly be in the hands of private investors, he also urged the establishment of a loan insurance program for developers building the new towns.

Recognizing the short-term efforts forced on most communities for lack of capital, he recommended a program of community loans, with deferred amortization, for planning and building public facilities ahead of need, and for advance acquisition of public land. A loan program for private developers, to be applied to the acquisition of land for subdivisions, was also requested.

Although the President did not specifically recommend Federal planning controls, he did point out that all of these programs should be based on efficient land use.

New Department
The Housing and Home Finance Agency, the President said, has acquired in the 17 years of its existence so many responsibilities not envisioned at its inception that it should be elevated to departmental status. The suggested title, Department of Housing and Community Development, reflects, as do the suburban recommendations, a broader scope of interest than did President Kennedy's similar request for a Department of Urban Affairs.

New Authorizations
Two of the major programs under the Housing Act of 1961—public housing and urban renewal—require new authorization if they are to continue.

The 100,000 units of public housing authorized by the act have all been committed. The President asked for an additional 50,000 units a year over the next four years. Not all of these units may be new housing, however; the President urged legislation enabling communities to acquire existing housing for rehabilitation to fill part of the requirements.

The 1961 urban renewal authorization is expected to be exhausted by the middle of this year. The President requested a new authorization of $1.4 billion to be approved for a two-year period.

Health Message
In his health message, also delivered last month, the President asked for some funds for construction. Most of these requests fell under his appeal for a five-year extension of the Hill-Burton Act, due to expire at the end of June. Among other things, he requested: (1) an increase in annual appropriations from $40 to $70 million for long-term care facilities (combining the categories of nursing homes and chronic disease hospitals); (2) an amendment permitting mortgage insurance with up to 40-years maturity for private nonprofit hospitals and nursing homes; and (3) a five-year program of Federal loans and mortgage insurance for group medical facilities.

1964 REYNOLDS PRIZE AWARDED TO NOTRE DAME STUDENT

John F. Torti, an architectural student at the University of Notre Dame, has been named the winner of the fourth annual Reynolds Aluminum Prize for Architectural Students. His "Dynamic Clear Span" design is a shallow dome of aluminum rings, joined by single bolts at the point of contact. The dome is closed by glass or plastic.

The prize, for $5,000, is divided between the winner and his school. Honorable Mentions were given to student designs by Eddy Bejar, Rice University; Sam Leonard Condit, University of Nebraska; Daniel Eugene Decker, University of Ohio; Jacob Joffe and Kyun Kim, Virginia Polytechnic Institute; Roger Marshall, California Polytechnic Institute; James Sarantitis, City College of the City University of New York; and Richard Lee Sullivan, University of California.
This interesting bedroom is even more comfortable and convenient with a Princess® phone. For help in telephone-planning your homes, call your Bell Telephone Company Architects' and Builders' Service. See Sweet's Light Construction File, 11c/Be, for other residential telephone installation ideas.

ADD PRESTIGE to the homes you design by providing for built-in telephone outlets and concealed wiring. It's the tidy, modern way to protect interior beauty, increase convenience and serve present and future telephone needs.

BELL TELEPHONE SYSTEM
Serving you
This handsome bowling center in Coos Bay, Oregon, built with the standard sizes and grades of West Coast Lumber, is full tournament size, containing 22 completely equipped bowling lanes.

Of particular interest in the construction of a building requiring large, uninterrupted floor space is the use of contoured glued laminated beams in a double curve which provides maximum roof support with a minimum of interior support. The 2"x8" White Fir tongue and groove decking is applied directly to the beams for a light, attractive covering. An important secondary benefit is the sound-absorptive quality of the irregular wood surface.

The entire construction, in a No. 2 fire zone, is of West Coast Lumber, even to the walls which are board and batten siding of Western Red Cedar with a resawn face. Exposed trim is vertical grain West Coast Douglas Fir.

The result is a hospitable, practical building completed, minus alleys and equipment, at the astonishing figure of $7.71 per sq. ft.—an excellent example of the economical use of the standard grades and sizes of West Coast Lumber.

The retail lumber dealer conveniently located in your community is your source of information and supply for dependable West Coast Lumber.

Architects: Kruse and Fitch, A.I.A.
Before you specify any snow removal system, insist on proof of results, such as shown here with electric Sno-Melter®

Entrance to stock brokerage firm's branch office is free of snow from curb to doorway, thanks to electric Sno-Melter system beneath walk.

Snow-free wheel tracks provide traction for trucks up incline to an industrial loading dock at a hillside factory site in the Middle West.

Safe snow removal and proper drainage from wide roof gutter of freight terminal in Iowa. 120 feet of Sno-Melter Gutter Mats did the trick!

Over 10,000 sq. ft. of electric Sno-Melter provide snow-free walks for The Indiana National Bank buildings in Indianapolis. Pictorial proof of results!

Melt snow at the flip of an electric switch with a pre-assembled, embedded mat system. Sounds great—but wait! Let's see actual photographs of results! Easy-Heat does have Sno-Melter result pictures to show you... plus operational cost data, installation procedures and engineering specifications. So, buy results. Send for latest free literature picturing successful Sno-Melter installations. Only the results show!

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DETECTS SNOWFALL, CONTROLS OPERATION, SAVES ELECTRICITY!

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ARCHITECTURAL RECORD March 1964
Why Mays Department Store installed Chrysler Airtemp

Mays Department Store in Massapequa, New York, needed an air conditioning system that would cool 290,000 sq. ft. of floor space efficiently and give trouble-free performance. Their selection, two Airtemp centrifugal water chillers, met these requirements. The units supply 970 tons of cooling capacity, enough to keep temperatures well within comfort levels, throughout the store. And reliability far exceeded Mays' expectations. Example: equipment operated from start-up through one of the most severe summers in New York history without any adjustment.

You, too, should consider Chrysler Airtemp for your next cooling problem. Its line has one of the broadest BTU ranges in the cooling field. And all equipment is Chrysler Engineered. Reliable. Chrysler Airtemp stands ready to help you. With fully qualified technical representatives. Detailed technical literature. For more information, write T. W. Kirby, Vice President-Marketing, Airtemp Division, Chrysler Corporation, 1600 Webster Street, Dayton 4, Ohio.

One of Mays' two Airtemp centrifugals which together deliver 970 tons cooling capacity, cool 290,000 square feet of floor space. Contractor: Samuel Messing, Nassau Mechanical Contractors. Consulting Engineer: Sidney W. Barbanel. Architect: Herbert Tannenbaum.

For more data, circle 33 on Inquiry Card

ARCHITECTURAL RECORD March 1964 47
NEW YORK STATE. "County Fair of the Future" is the theme for this unusual exhibit. Hollow slip-formed cylinders of concrete support the huge plastic tent roof as well as the three observation platforms. Reaching a height of 230 feet, these are served by high-speed exterior elevators. The modern circular theater, too, is of concrete, its walls graced with specially commissioned paintings and sculptures. Architect: Philip Johnson Associates, New York, New York. Engineer: Lev Zetlin & Associates, New York, New York.

PAKISTAN. Arches, gardens, a waterfall and pool will lead delighted visitors inside to a bazaar and Pakistani refreshments under a skylight dome. For the walls of this distinctive pavilion, two sizes and textures of concrete masonry were used to effect, in simple elegance, a modern interpretation of Eastern architecture. Architect: Oppenheimer, Brady & Lehrecke, New York, New York. Engineer: Robert Fraser, New York, New York.

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From precast wall panels, gracefully sculptured, to soaring columns and imaginatively contoured roofs, to inviting promenades and bright reflecting pools... concrete dramatically demonstrates its far-ranging talents.

Everywhere the Fair's most-talked-about structures express the versatility and beauty of this modern material. They embrace almost every exhibit category: education, religion, international, government, transportation, science and industry.
THE BEST IDEAS ARE MORE EXCITING IN CONCRETE

EASTMAN KODAK COMPANY. Covering 69,000 square feet and enclosing two theaters and 26 exhibits, this attraction is a camera fan’s delight. Concrete was used to shape the roof into an undulating “moonscape” where visitors can stroll and use the unusual sculptures as backgrounds for their own picture taking. A striking eight-story “Tower of Photography” is ringed with giant color photos. Architect: Kahn & Jacobs, New York, New York. Engineer: Lev Zettin & Associates, New York, New York.

MORMON CHURCH. For the pavilion of the Church of Jesus Christ of the Latter Day Saints, double exhibition halls and theaters were built with panels and structural members of white precast concrete. A 120-foot replica of the famed Mormon Tabernacle Towers provides dramatic focus. After the Fair, the permanent precast concrete sections of the halls and theaters will be reassembled into new Mormon chapels. Architect: Harold Burton, Fordyce & Hamby Associates, New York, New York. Engineer: Strobel & Rongved, New York, New York.

They carry the great names of American business: Ford, General Motors, I.B.M., Equitable Life Assurance Society, A.T.&T., Travelers Insurance and so many more. They include the official buildings of thirty states, the Vatican Pavilion, the House of Good Taste, the Protestant Center, the United States of America building.

In the magnificent showcase of the New York World’s Fair, the exciting new personality of modern concrete has stimulated a world of unusual beauty.
CIVIL DEFENSE OFFICIAL DESCRIBES ARCHITECT’S ROLE

At the Record’s request, Robert Berne, A.I.A., has outlined some of the contributions to civil defense which architects and engineers have made, and can make in the future. Mr. Berne is chief architect of the Architectural and Engineering Development Division, Office of Civil Defense, Department of Defense.

The role of architects and their consulting engineers in the civil defense of our country is little understood.

REDWOOD HELPS THE ARCHITECT put a school in a class of its own.

This handsome pattern is called Santa Rosa. One side is FactriSawn to provide an interesting texture, the other is smoothly surfaced. Either side may be exposed or they may be alternated for interesting variety. CRA Certified Kiln Dried Santa Rosa is economical because it employs standard 3/4-inch boards over 1/2-inch battens. For technical data write: Department 3-A, California Redwood Association, 617 Montgomery Street, San Francisco 11, California.

Nevertheless, it is an important factor and can be expanded to major proportions with little effort or expenditure. Here is a vast reservoir of talent that has been little used but which contains skills vital to our national defense. The mission of the Architectural and Engineering Development Division of the Office of Civil Defense, under the direction of James E. Roembke, is to recruit and utilize this talent.

About two years ago the National Shelter Survey Program was initiated to locate space in existing structures capable of shielding people from the deadly gamma radiation accompanying fallout from an attack on this country with nuclear warheads. Coincidentally, the former Office of Civil and Defense Mobilization was reconstituted as the Office of Civil Defense in the Department of Defense. The Honorable Steuart L. Pittman was appointed as Assistant Secretary of Defense (Civil Defense) to direct the new office. Thus, Civil Defense has taken its proper place in the total defense of the country. As Secretary of Defense Robert S. McNamara has said, “Any defense system of this country must include civil defense as an integral part.”

When confronted with the implementation of the National Shelter Survey, it became apparent, physicists, though expert in gamma radiation phenomena, knew little about construction methods and, conversely, architects and their consulting engineers knew little about gamma radiation and how to shield against it. It was necessary to combine the two to constitute the staff competent to carry out the National Shelter Survey quickly and efficiently and to use the country’s architects and engineers. To do this, however, it was first necessary to develop teachers to instruct them in the nuclear physics and shielding methods of this program.

During the summer of 1961, approximately 50 professors of architecture and engineering from schools about the country were assembled at Pennsylvania State University to learn how to teach fallout shelter analysis techniques, heretofore not a part of conventional architectural and engineering curricula. With this new knowledge they returned to their institutions and set up two-week

continued on page 54
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Are you considering perforated facades to enhance appearance, utilize daylight, provide sun control or ensure privacy? If so, you'll want to see the many smart grille designs available in Ceramic Veneer. Whether you choose one of our standard solar screen units or create your own special design. Federal Seaboard will custom-make it for you in any color you want. Illustrated here is how T. H. Locraft & Associates, architects, creatively utilized our FS-A grille design with lustrous ceramic finish for the Church Center of Saints Constantine and Helen Greek Orthodox Church, Washington, D.C. A. Myron Cowell, Inc., contractor. Many other grille applications are illustrated in the complete Ceramic Veneer reference file we'll send on request.

For more data, circle 35 on Inquiry Card
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(How an architect can give one...and get one.)

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GLASAL is an asbestos-cement facing sheet, with a ceramic-like finish in a wide range of colors—from basic black and white to pastels to intense shades. Used as paneling or as sheathing over an insulating core, Glasal enhances the beauty of any building and offers architects a new medium for creative design.

COLORLITH products are monolithic, integrally col-
ored, asbestos-cement panels created by water, pressure and heat... to be stronger and more durable than stone without being obvious about it. And, thanks to controlled-condition production, the color and design are consistent from panel to panel, which is something that can't be said for quarry stone.

For more information on Johns-Manville's Glasal and Colorlith, see your local J-M Man (he's pretty good in the warm reception department, too!)

Johns-Manville

Here's how Glasal and Colorlith help bring out the beauty of an entire room. Incidentally, the ceiling is also made of a J-M product... Acousti-Shell, the world's first truly 3-dimensional acoustical ceiling panel.

For more data, circle 36 on Inquiry Card
Fallout Shelter Analysis Courses (FSAC) for the practicing architects and engineers who were to conduct the National Shelter Survey. These were established at the universities of California, Washington, Colorado, Michigan, Illinois, Florida, Oklahoma, California, and the Army Engineer School at Fort Huene, California, and the Army Engineer School at Fort Belvoir, Va. Eighty-eight courses were completed by June 1, 1962. Because of demand, additional courses at George Washington University were conducted during the summer of 1962.

When the 1,200 architects and engineers required by the National Shelter Survey had been qualified as fallout shelter analysts, major effort was shifted to qualifying others in the professions. In the fall of 1962, semester-long courses were established in many centers throughout the country which allowed practicing architects and engineers to attend three hours a week, nightly or on Saturdays, without taking time from their practices. Currently, 3,800 architects and engineers have been qualified as fallout shelter analysts.

At the same time, the development of additional faculty capability to meet the demand for qualified instructors has been continued through the summer institutes on protective construction. The first series of these was conducted at the Universities of California, Colorado, and Illinois and Worcester Polytechnic Institute during the summer of 1962, attended by 100 university faculty members from all sections of the country. This more than proved its value during the Cuban crisis, when these professors conducted 192 fallout shelter workshops throughout the country, reaching 9,000 persons in the construction industry, giving them the technical knowledge to assist hard-pressed local civil defense offices. This program continued last summer at the Universities of California, Colorado, and Michigan and Worcester Polytechnic Institute. The planning of dual-use shelter space has been added to the curriculum. Two special summer institutes for practicing professionals were also initiated at the University of Arizona and George Washington University.

In addition, an institute on radiation shielding problems started in 1962 at Kansas State University was conducted again last year. By the use of a fallout simulator with a radioactive source, data on the shielding capability against gamma radiation of various building components and configurations are determined and compiled for use by architects and engineers.

The program of professional development is a continuing one. The short-term goal is 10,000 qualified architects and engineers by June 30, 1964.

For protective construction to become a general component of building design, it is expected that there will need to be one or more qualified fallout shelter analysts in every architect's office, in every consulting engineer's office, on the faculty of every school or department of architecture or engineering, in every industry employing architects or engineers, and in each government agency with staff architects or engineers.

continued on page 58

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Other architectural programs are being carried on as adjuncts to the professional development program. The first, recently completed, is the National School Fallout Shelter Design Competition (NSFSDC) conducted by the American Institute of Architects under contract to the Office of Civil Defense. (See Architectural Record, February 1964, page 26, et seq.)

Of particular interest to architects are research projects being conducted by two schools of architecture under contracts with the Office of Civil Defense. Rice University, Houston, Tex., under the direction of William Wayne Caudill, F.A.I.A., and Bill N. Lacy conducted Rice Design Fete Number Two on the subject of industrial plants with fallout shelters. (Architectural Record, December 1963, pages 115-116.)

The other research project, being conducted at Howard University under the direction of Professors Howard H. Mackey, F.A.I.A., and Jerome Lindsay, consists of the design and development of prototype models which can demonstrate the action of gamma radiation. If feasible, these will be built in quantity for distribution to schools of architecture and engineering for use as teaching aids.

In the professional development work of the Office of Civil Defense, it is realized that principals of architectural and engineering firms cannot, in many instances, take the necessary time to become familiar with all the detailed calculations involved in fallout shelter analysis. Many find it difficult to absorb new technologies after a number of years away from textbooks. Nevertheless, it is essential for these persons to understand the principles of protective construction since they wield the greatest amount of influence on clients in the promotional and programming stages of building projects. In view of this, a pilot program of one-day workshops and one-week shelter planning courses for principals of architectural and engineering firms are being conducted throughout Pennsylvania by the Pennsylvania State University under contract with OCD. Similar courses will be planned for other areas of the country. In this manner, executives can gain sufficient knowledge of protective construction to talk intelligently and convincingly to prospective clients.

Architects and consulting engineers are uniquely suited to carry the story of protective construction to building owners. Eventually, the inclusion of shelter in buildings will be a primary requirement as are fire stairs, exits, sprinkler systems, safety treads and many others. Shelter is not the complete answer to defense against nuclear weapons, but it is one which can save the most lives at the least expenditure and, as such, is an excellent, low-cost form of insurance.

With the steadily increasing capability among architectural and engineering faculties, inclusion of protective construction in curricula will increase, and eventually all graduates will enter their professions with knowledge of protective construction. The Office of Civil Defense anticipates that eventually it will be able to discontinue the qualifying of fallout shelter analysts as the state boards of examiners of architects and engineers will include this in their examinations.
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ARCHITECTURAL RECORD  March 1964  79
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NEW COMPUTERS MAY PROVIDE BIG-JOB PLANNING ASSISTANCE

Recent developments may warrant a new look at the computer's capacities for service to architects. New visual and verbal capabilities and new flexibility in man-machine interplay during trial and selection procedures provide a familiar working situation for certain of the architectural processes. No longer trapped in the role of gigantic clerk, computers can now make visible demonstrations of plan alternatives; and they can accept and report messages in understandable words. To this they add their well known and prodigious capacities in data processing. The implications for large jobs of preliminary planning, where any massive background of data must be applied to each of the architect's explored alternatives, are obvious.

Implications, however, are not applications, and it must be admitted that only the first few steps have yet been taken to engage computers in other than the strictly engineering aspects of architectural practice. One of those steps—perhaps an impressive one—is summarized on the pages which follow.

The role of computers in engineering practice has been amply documented, and their uses in CPM and PERT are well known. The article by Mathys P. Levy and Charles P. Lecht in the August 1963 issue of the RECORD is a particularly articulate statement of the engineering role. But the notion of computer activity in planning, programing and even in design phases of architectural practice raises grave misgivings, skepticism, indeed impassioned refutation in almost any discussion among architects.

The skeptics have a point, of course; in fact, they have two points. First, no conceivable machine can introduce those elements of imagination, intuition and artistry which are the breath of life to the architect's design approach. Second, as every schoolboy knows, computers cannot operate on any information that has not been punched into their mindless memories by man. They cannot of their own will, as architects can and do, tap the full wellspring of human knowledge, judgment, taste and talent.

But nobody proposes that they can.

It is, in fact, that very character of mindless memory, of total recall uncluttered by prejudice or inhibition, that makes of the computer a true servant of those who can find use for it. It is a servant with only two virtues: (1) superhuman speed in finding and collating those bits of its potentially vast storehouse of facts which are pertinent to a particular problem; (2) operation on those bits, automatically and also at fantastic speed, in a programmed series of manipulations previously ordered by its master.

Basic manipulations of which the unadorned "digital" computer is capable are simple addition, subtraction, multiplication and division. The "analog" computer deals with functional relationships, like the slide rule. The two types can be married and/or embellished with various appendages for translating their output verbally, visually or mechanically.

Recent refinements of computer appendages are making new, moderate-size computers more and more adaptable to the familiar conference techniques of the planning phases of architecture. One of these is a TV-like cathode ray tube which can record graphical materials, accept on-the-spot alterations, and recall stored images on command. It provides for console operation with opportunities for man-computer interchange during development and review of alternative concepts. Another console accessory is an on-line typewriter through which verbal instructions and inquiries can be relayed to the computer and from which written replies can be read. These two channels of communication, with new plotting and printing adjuncts, open up a vast store of background data which can be scanned and applied with lightning speed, but with controlled interruption for review, to any of its master's concepts, intuitive or otherwise.

In the example of the application of this technique to computer-aided hospital planning outlined in the summary of research by A.I.A. and A.H.A. on the following pages, it will be apparent that this research constitutes a massive demonstration of feasibility of the method rather than a compilation of the ultimate matrix of operable data. The summarized report, in fact, makes its plea for additions to the data through interim uses of the method. Two of the authors, James J. Souder and Welden E. Clark, have more recently described an extension of the technique to computerized simulation of patient flow through a hospital. Based on past records, a month's normal operation can be reviewed in a few minutes, and the effects of physical or policy modifications on that same month's operation can be reviewed in an equivalent period.

A second area of new development, described as especially adaptable to urban planning, combines land use and population simulation capability with improved capabilities for graphic input and output. It is now possible to trace plans or maps directly onto the oscilloscope, change them experimentally
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BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY
and print out desired results directly and at scale on paper from which prints can be made.

A similarly sophisticated graphics capability in an experimental computer at the Massachusetts Institute of Technology is described by Frederick Kirch in a recent issue of the “Newsletter” published by The Diebold Group, Inc. This system of units, called CADS (Computer-Assisted Design System), will allow a designer to start his work with freehand sketches made with a light-pen on the face of a cathode-ray tube. Using phases as far programmed into the computer, a hand-drawn circle can be made round. Several parts of a drawing can be done separately and then merged. Perspective can be changed at will, or any part can be magnified or reduced to study the effect. The system is in early stages of development, but seems to offer promise.

The problems of data compilation and computer programing are also in early stages of solution, but they are being resolved at an accelerating rate by many workers. As Mr. Souder told the New York Chapter of A.I.A. about a year ago, there is no need for an architect to know how computers work, but only how they can help him get where he wants to go faster and with fewer wrong turns than other means provide.

COMPUTER-AIDED HOSPITAL PLANNING

Summary of a report of research sponsored jointly by the American Institute of Architects and the American Hospital Association under a grant from the U. S. Public Health Service.

One of the better known demonstrations of the application of computers to basic architectural problems evolved out of a U. S. Public Health Service grant to a joint research effort of the American Hospital Association and the American Institute of Architects. This was an extensive investigation into problems of hospital planning and design. James J. Souder, AIA, then a partner in the architectural firm of Kliff Colean Voss and Souder, and Madison B. Brown, M.D., of AHA were the principal investigators. Their key research associates were Welden E. Clark, also an architect, and Dr. Jerome I. Elkind of Bolt Beranek and Newman Inc. (Souder has since joined Bolt Beranek and Newman’s planning research service.)

Results of the investigation are published in two reports by AHA. The first, “Estimating Space Needs and Costs in General Hospital Construction,” was written by Souder and offers guides to budgeting space needs and construction costs of general hospitals by projecting from a survey of U.S. experience.


Objective of the investigation was the determination of measurable factors which must influence or control planning and design. The very multiplicity of such factors is a special problem for architects in confronting hospital design and is the kind of problem for which the computer is an especially adept tool. Some of the architect’s problems are: understanding of hospital function, the kinds and quantities of space and of intercommunication which these functions require and the unpredictable growth of hospitals and parts of hospitals which occur with increasing population and changing techniques.

“Planning for Hospitals” attempts to shed light on the kinds, the volumes and the incidence of intra-hospital traffic and communications. It is, in short, an observation of all the simultaneous interdepartmental movements that occur in the hospital, trying to find principles which control these movements and trying with systems analysis and new computer technology to develop working models of hospital traffic which will let the architect predict and measure the results of his planning concepts.

Ultimate objective of the study is to provide stronger guides for planning. This objective was to be implemented on three fronts. First, to develop an understanding of organizational relationships with-
in the hospital as prerequisite of a clear statement of the architectural problem. Second, to explore the possibility of using objective measurements of hospital operations as guides to planning and design, identifying measurable factors so that intuition can be focused on those areas where objective measurements seem impossible or unrewarding. Third, the accumulation of hospital operational data which may serve as background for projecting and evaluating the demands of new operations.

Much of the material presented in the report is based upon detailed, recorded observations of daily activity in two acute general hospitals, one in Massachusetts and one in California. Factual observations were made, reporting the interplay of four departmental components of the over-all hospital system. These four components, described as subsystems, were: medical care, nursing care, supply and administration. The present study, in order to remain within the bounds of feasibility, limited itself arbitrarily to observations in depth of selected departments. These were: an in-patient nursing unit, a radiology department, a central supply department and a pharmacy. Detailed observations of all traffic entering and leaving these four units were made.

Observations covered seven items of information regarding each person entering or leaving the observed department: time, category of person, origin or destination, access route, item carried, means of carrying it and purpose of the trip. Some 250,000 entries were noted and punched on tape for computer sorting. This information matrix then was introduced into the electronic memory of a PDP-1, a binary digital machine with verbal core memory and supplemental magnetic tape storage. Input-output is accomplished by punched paper tape, console typewriter and cathode-ray tube with associated light-pen. The light-pen (center left) can draw or alter diagrams, or it can be used to operate on projected graphs (left) so that the machine can automatically accommodate the data to an adjusted distribution. Relationships of stored data, program commands and output in three problem situations are shown in the chart (below)

Console operation (far left) of the computer system provides constant interplay between man and computer. The machine used here is a PDP-1 made by Digital Equipment Corp. It is a so-called parallel binary machine with 4,096 words of core memory and supplemental magnetic tape storage. Input-output is accomplished by punched paper tape, console typewriter and cathode-ray tube with associated light-pen. The light-pen (center left) can draw or alter diagrams, or it can be used to operate on projected graphs (left) so that the machine can automatically accommodate the data to an adjusted distribution. Relationships of stored data, program commands and output in three problem situations are shown in the chart (below)

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The Architect in PRACTICE

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**ROLE ASSIGNMENT FOR COMPUTER-AIDED PLANNING**

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ARCHITECTURAL RECORD March 1964 91
The Home Federal Savings & Loan Association Building, Des Moines, Iowa, bears the unmistakable signature of Ludwig Mies van der Rohe. Bold, disciplined, meticulously detailed, it is as always, an articulate statement of structure—expressed in steel.

The building's exterior is an extension or expression of its steel frame. Columns and spandrel beams are sheathed in hot-rolled carbon steel plate, formed to pencil-line sharp arrises, and mullions are wide-flange sections. Exterior joints were field welded, and all exposed steel was sand blasted, prime coated, and painted.

The total effect is one of eloquent simplicity and utile space. Forty-foot bays provide column-free interiors that afford maximum flexibility for interior arrangement. The webs of floor beams were pierced and reinforced to permit the passage of ductwork and conserve interior space.

Again, Mies has used steel to demonstrate that "less is more."

The method is one in which a cooperating but subordinate role is played by the computer in the planning process. Employment of a digital computer equipped with an oscilloscope, which can both recall and record visual material including graphs and plans, permits a constant interchange between the computer and the designer for scanning background data and measuring the effectiveness of alternative plans. The system permits the drawing of proposed planning schemes on the oscilloscope and simulating performances within them, which are then measured against the computer's stored scales of value.

The operator can also store and recall on demand any set of data or any set of plans which have been developed. The system, in short, offers the difficulty of requiring new skills for its use but the compensating advantage of greater speed and greater thoroughness in solving complex problems.

It is acknowledged that the present background of stored data is incomplete. It is based on data taken on only two hospitals. To be more helpful, complete observations from other departments and other hospitals should be added to the data. The report urges further research and field tests of the method to build up the background data and to encourage practitioners to make use of the method. The strength of the tool lies in its capability of substituting observed factual experience for suppositions. With this means of factual implementation, pure intuition and creativity can be focused more and more in the areas where it is most effective.

The W-59 project concerned itself primarily with the traffic between elements of the physical arrangement. The magnitude of the data assembled on traffic alone, indicates that it should be a major determinant in the planning. Hence, in an attempt to develop a procedure for predicting the "commerce activity" in a future hospital, an analysis of the intensive observations of activity in two existing hospitals was made to show that an underlying consistency is present in their seemingly diverse traffic and communication patterns.

The traffic characteristics can be expressed quite easily in graphical form. It would be a tedious and time-consuming job to study by hand the effects of introducing changes in operational patterns. One of the fruitful applications for computer-aided planning is rapid manipulation of these many possibilities. Hence, the computer makes feasible the simulation of hypothetical traffic patterns for proposed hospitals.

The computer is able to evaluate travel time on the basis of distance and assumed rate of travel. It is also capable of determining the effect of introducing vertical travel. It can also determine whether a given route is feasible for the item being transported. For example, patients in wheelchairs can be transported in elevators but not in stairways. Further, the computer can determine the optimum route in terms of time and acceptability.

WHY COMPUTERS?
Hospital planning is a well-established field of endeavor for architects, administrators and consultants. Why, then, suggest "rocking the boat," the authors ask rhetorically, by introducing a new and foreign concept of computer-aided planning? They give several reasons. One is the increasing complexity of hospital planning and the increasing influence of technical decisions in the planning process. A second reason has to do with new capabilities and concepts for computer application.

Most computers in the past have been designed primarily for large-scale routine tasks such as accounting and information retrieval, or for scientific computation. However, computers are coming into use as partners of men in tasks such as traffic control, and as simulators for complicated analyses. Heretofore, most versatile and powerful computers were large, costly and difficult to maintain, but developments in solid-state circuitry and core memories have made medium size and small high speed computers a practical reality. Advances in input-output equipment and in programming techniques can now provide communication between man and computer for cooperation in solving problems.

It is true that computers are not yet developed far enough to count as "artificial intelligences" in many real life situations, but they are far enough developed to perform very efficiently and swiftly many functions that man performs only haltingly, such as quick retrieval of data, manipulation and display of simple patterns, and various calculations.

Assume that the hospital planning team includes architect, administrator and consultant, functioning in their accustomed roles. Assume further that these planners can convene in working conference sessions at the console of a computer rather than at a drafting board or conference table. This group of planners, or any one of their number, can now proceed with consideration of planning problems as before, but with an important difference. Immediate recourse is possible to background data and relationships; and various possible operational patterns (or policies) and physical arrangements can be formulated and evaluated or compared without tedious calculations and long delays.

New computer applications, implemented by the new planning adjuncts, are essentially the mechanization of only those parts of the planning task that are easily done by computer and not easily or willingly done by the human planners. The table on the preceding page suggests the roles to be filled by human planners and the computer. It should be obvious that this assignment of roles does not tend to reduce the freedom of the planners, but rather extends their capabilities and reinforces them.
Selecting seating for selective audiences?

The luxury you're looking for is here in American Seating's new Stellar Series. You can't make a better choice, or find a wider one.

It's luxuriously comfortable. It introduces crisp, contemporary lines to theatre and auditorium seating. It ends a 25-year stereotype in style. And it is as new as it looks.

American Seating's new Stellar theatre chair is the first one that can be styled for you alone without costly custom work—the only chair offering you a choice of every element of design.

Fabrics, aisle standards, seats, backs, widths, mountings—all can be chosen freely to fit the setting. Colors, textures, shapes, sizes—you can work with them all.

The idea? To make seating an integral part of your overall design. The key to it is choice—and the Stellar Series gives you virtually custom choice at far less than custom cost.

Want details? Write Department AR-164 for our brochure on the new Stellar Series.

The Stellar chair has a very long back to protect the seat from feet. There are three variations of the Amerflex® plastic back, two of the upholstered back.

Single or double armrests are available. You may choose either type.

Exclusive Soil-Guard (optional) of solid-molded plastic protects upholstery at top of the chair back.

For more data, circle 66 on Inquiry Card
LOOK WHAT'S NEW FROM JAMISON

... a variety of unusual doors designed to solve special problems in the Food Industry

New Manual Mark II Overhead Door for refrigerated loading docks and other installations with low ceilings. Same light weight, rugged construction as other Mark II doors. Vertical doors permit closer positioning of doorways in loading docks to provide service to more trucks. Available as an electric power door.

New Manual Mark II Vertical Sliding Doors for refrigerated loading docks and other installations with high ceilings. Extremely light weight door with foamed-in-place polyurethane insulation, #26 gauge galvanized steel front and back panels. Available as electric power door.

New Plyfoam Cooler and Freezer Doors are made with plywood front to which is bonded a galvanized back pan. Insulation is foamed-in-place polyurethane. Because of lighter weight, can be installed in panel walls or other construction where only minimum support is available.

New Electroglide® Mark II provides fast, safe automatic electric operation. Smooth, effortless opening and closing, requires less power to operate. Special personnel passage opening and electric eye operation available. Manual Mark II Horizontal Sliding door also available.

Write for complete data on these and other Jamison doors to Jamison Cold Storage Door Company, Hagerstown, Md.
Another sealing challenge mastered by

Six thousand gallons of STRUCSURESEAL, in specially formulated bronze color, were used to "seal in" these intricate story-high panels of the world's largest office building ... Pan American. Here is just one more example of the high regard architects and builders have for this proven polysulfide base sealant.

Other well-known buildings permanently weather-sealed by STRUCSURESEAL include Seagrams, Pepsi-Cola, Cobo Hall, Crown Zellerbach, First City National Bank (New York), First National Bank (Ft. Worth), St. Louis Municipal Airport, Tishman (Los Angeles), and St. Paul Fire and Marine Insurance.

Knowledge of this sealant's reliable performance through the years in such major constructions has vastly increased architect acceptance and preference for STRUCSURESEAL among all the polysulfides. Its wide range of colors complies fully with requirements of ASA Spec. A116.1, as tested by independent laboratories. Outstanding "gunability" makes it the contractors' choice, too.

Do you have our latest sealant data file? It contains full details on our complete line of polysulfides, butyl caulsks, rubber rod stock, and wide range of sealing tapes. Write or call Presstite, 39th and Chouteau, St. Louis 10, Mo., MOhawk 4-6000.
Aalto


By Frederick Gutheim

This is the publication of the collected works of Alvar Aalto, presented by the architect himself with the assistance of his wife and collaborator and some devoted friends. Without the Swiss publisher, Hans Girsberger, it is doubtful if this effort of 10 years would have been completed, so little interested is the architect in labors of the sort he found himself obliged to undertake. Yet we may all be in the debt of the many whose efforts resulted in the present volume, for it documents the work of one of the few architects of our time who is of international significance and has deeply influenced the course of American architecture, and whose importance to the future may be confidently said to be assured. The book itself constitutes the principal reference to the architect's career, and is uniform in format with Girsberger's one-volume presentation of Le Corbusier's work and, one hopes, other works on contemporary architects still to be published. It is chronologically arranged, with definitive notes, and while the works themselves are presented in an index there is neither a page index nor any division into periods of the work of 40 years.

This is a formal work, one lacking the intimacy one might have hoped from writing by the architect himself. While presented as "oeuvre complet," a number of buildings have been omitted, including some which Sigfried Giedion and other analysts of Aalto's career have found of significance. Although the volume contains new drawings and photographs, and of course many new insights, the projects themselves are for the most part familiar. The glimpse of Aalto, his office and his working procedures revealed by a now out-of-print Swiss book by Mr. and Mrs. Ed. Neuenchander, still provides almost the only insight of its kind. Aalto was offended by this intrusion and has done nothing in the present work to lift the veil in a more authoritative fashion.

The presentation of buildings and the emphasis given seems to follow Aalto's idea that certain utilitarian categories of his work are "merely building" and these are given only brief recognition. By contrast, his favorite seems to be the Villa Mairea, a judgment that will find wide acceptance. In the same manner, the introduction of plans and structural details follow some prior determination of their relevance, rather than any editorial uniformity. It seems clear that he has no disposition to view as of ultimate significance any critical estimate of his building. Aalto's work does not lack ideological content, and dicta in the present volume shows him firm in his opinion. Here is a sample: "In order to achieve practical goals and valid esthetic forms in connection with architecture, one cannot always start from a rational and technical standpoint—perhaps even never. Human imagination must have free room in which to unfold."

The concise descriptions of individual buildings are meaty and direct, as well as definitive. Considering how often many of the buildings have been described, they are surprisingly fresh. Here is the conclusion of Aalto's summary of the industrial complex at Sunila: "The center of the plant is built up into a terrace from which all phases of production can be observed. Here are located the administrative offices, laboratories, etc. This terrace also forms, at the same time, a garden, thereby creating a quiet atmosphere for the administrative center. Throughout the entire periphery of the various factory buildings, which are connected to each other by means of "open air corridors," the pine forest has been left untouched. Every worker in the various departments therefore has the possibility to go out of his building direct into nature. Instead of a uniform monolith, an attempt has been made here to endow, in a natural way for the administrative center. The result is a pyramidal building mass, rich in contrasts."

continued on page 112
slip...click...r-r-r-rip

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Also new this year from Curtis are: (1) the all-new (economical) Styletite Casement Window Unit with no quality sacrificed for "price"; (2) the Styletite Removable Sliding Windows with vinyl sill track for reduced condensation and for quieter, smoother operation; and (3) the all-new Divided Lite Screen to instantly colonialize the window treatment (removable storm panels optional).

For full information on these better building products for 1964 write Department 11:
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FOR A COPY of Republic's informative, 52-page booklet—"ELECTRUNITE Steel Tubing for Structural Use"—send the coupon. ELECTRUNITE Structural Steel Tubing is available in rounds to six inches O.D., squares and rectangles in peripheries to 20 inches, and wall thicknesses up to .250-inch.

You Can Take the Pulse of Progress at Republic Steel

Port of New York Authority Bus Terminal. Square tubing is employed to frame glass and porcelain enamel sandwich panels which protect waiting passengers from bus exhaust fumes. Tubular framework extends from floor to ceiling and full-length along each 200-ft. long platform. Final tube fabrication was by White Plains Iron Works, Peekskill, N.Y.

Extensive service plaza building program. Square and rectangular steel tubing was picked for columns, beams, and spandrels in stations like the one shown. Flat sides of the tubing simplified fitting of glass, masonry, and curtain wall sections. Tubing was fabricated by The Austin Company—Designers, Engineers, and Builders.
Ford Motor Company pavilion at the New York World's Fair. Welton Beckett & Associates, Architects, used over 50 tons of rectangular tubing in the design of this pavilion. Tubing serves as framework support for glass panels enclosing the 235-ft. diameter, 56-ft. high rotunda.

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Required Reading
continued from page 108

Some fresh observations are stimulated by this collection. In little-known projects like that for the Funeral Chapel at Helsinki or the Lyngby Cemetery we discover parts that in their earth-hugging asymmetrical forms would be at home in the work of Frank Lloyd Wright, and now that they have been realized in such later works as the master plan for the University of Jyväskylä deserve re-examination. Similarly, the rather unimpressive apartment house erected in Berlin in 1957, with its understated facade, can be appreciated for its embodiment of Aalto's characteristic philosophy of living.

Many of the later projects are illustrated with conceptual sketches. They also contribute to the understanding of plan details which had previously been ambiguous.

The book closes with a characteristic but hitherto unpublished project: the war memorial at Suomussalmi, a bronze abstract sculptural form, powerful in its suggestion of many associations with Finland's ski troops of the 1939 war with the Soviet Union.

In the end one asks whether new revelations or changed opinions about Aalto and his work come from a study of this volume. The answer is no. Instead there is a heightened appreciation of an already well understood and long respected figure in the architectural works. Some projects emerge with unexpected force (the 1939 New York World's Fair exhibition, previously underestimated perhaps because in a building Aalto did not design, but brilliantly showing his mastery of interior design), while others (like the sawmill at Varkaus, with its undulating form) because they embody characteristics we have only recently come to understand in the architect's work. Perhaps the best example is the contour model of the civic center at Säynätsalo, here reproduced for the first time, which throws an unexpected new light on this long-accepted masterpiece. Here, in sum, one browses as in a library of familiar books, accepting the guidance of one whose easy familiarity only the author could have.

continued on page 120
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IS ADJUSTABLE ON JOB TO FIT 4", 5½" OR 7" ROUGH OPENINGS

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ARCHITECTURAL RECORD March 1964 117
New Venetian Blind

EXCLUSIVE FEATURES

**Vertical pivot action.** Awkward, risky methods used to operate horizontally pivoted windows are unnecessary. Concealed pivot mechanism. Window can be reversed without raising venetian blind. Removable aluminum glazing beads. Window may be reglazed without taking frame members apart.

**Square windows.** All four corners are squared to lend approved architectural appearance. Initial glazing is faster, easier. Reglazing, too, if required.

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*Vertical Pivot point is the important difference!*
windows from Adlake

Make all four corners square. Make the window pivot vertically. Conceal the mechanism. Then, make it next to impossible for anyone except the window washer to disturb the uniformity of the venetian blinds. This is how Adlake designed the most thoughtful window in a decade! Thoughtful of the architect, thoughtful of the owner, thoughtful of the tenant—and even thoughtful of old customers. It’s basically the Series 1000 vertical pivot window, already proven in thousands of installations. How will it benefit you? Read on and see. Then contact your nearest Adlake representative.

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THE WINDOW THAT’S...

...thoughtful of the architect
With blinds raised only for cleaning, this new Adlake window offers effective control over a horizontal design motif. But that’s not all. The same four corners that give the Series 1400 an accepted architectural appearance, also cut glazing costs. And what a choice of finishes! Adlake satin etched, Anodized, Anoclad greys, Kalcolor or Duranodic.

cuts costs before and after

...and even remembers old customers
The new Adlake Series 1400 vent fills the same size opening as a Series 1000. Owners who need the special features of the venetian blind window can substitute one vent for the other. Replacement is economical, easily arranged. Inconvenience is held to a minimum. Your Adlake representative will gladly supply details.

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Adlake’s Series 1400 vertical pivot window really cuts maintenance and utility costs. The window is faster, easier to clean. Can be reversed a full 360° with no time out to raise the blind. And even when reversed, there’s the positive seal provided by the neoprene impregnated fabric weatherstrip. A 2 3/4 inch air space between the panes acts as insulation. Naturally, heating and air conditioning cost less.

See your nearest Adlake representative

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ARCHITECTURAL RECORD  March 1964  119
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Also available without ducts in 65,000 BTU size for large classrooms, small libraries, stores, etc.

Send for Free Color Folder
Temco Pre-Vent Heaters — 10,000 to 70,000 BTU

Required Reading

continued from page 112

Schuyler


The John Harvard Library's welcome edition of Montgomery Schuyler's writings was originally published in two volumes (reviewed in ARCHITECTURAL RECORD, December 1961, page 42). Mr. Jordy has abridged it for this paperback edition, but Schuyler's best known pieces remain. While clearly not sufficient to the scholar's purposes, students and practicing architects will still find plenty of meat in Schuyler's views on the skyscraper, on the Chicago Exposition, on Brooklyn Bridge, on Sullivan and Wright.

Mr. Jordy has also included a list of corrections and additions to the earlier volumes.

Man-Made Mess

GOD'S OWN JUNKYARD. The planned deterioration of America's landscape. By Peter Blake. Holt, Rinehart and Winston, Inc., 388 Madison Ave., New York 17. 144 pp., illus. $4.50, clothbound; $2.95, paperbound.

In this "muckraking book," Mr. Blake is not merely angry, but "furious" at the mess he sees around him. The rather brief text is a tirade, in which sweet reasonableness has no place, against the mindlessness of dumps, open parking lots, repetitive housing, overhead wires, and ugly advertising (especially ugly advertising). Laying about with mace-and-chain, he has at developers, politicians, merchants, householders and drivers, but particularly at artists. He makes it clear that, in his view, artists have ignored their responsibilities in solving the hard problems for the easier path of in-group panel discussions.

While Mr. Blake has discarded tact, no one looking at the numerous and scarifying illustrations is likely to argue that his indignation is not righteous.
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Architectural Record March 1964 131
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Remember Styrofoam for slabs and foundations. Then forget it.
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Then forget it.

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Then remember it (on your next job). See Sweet's Architectural File 10a/Do. The Dow Chemical Company, Midland, Michigan.

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Greater Heat Transfer per sq. ft. of face area

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ARCHITECTURE AS TOTAL COMMUNITY: THE CHALLENGE AHEAD

A series of seven articles on the challenge to architects of large-scale planning

By ALBERT MAYER
in consultation with CLARENCE STEIN

In his long and notable career as architect and planner, Albert Mayer has developed strong convictions on causes and solutions of the urban dilemma. The humanistic philosophy of Clarence Stein, revered as dean of U.S. community architects, has established new directions yet to be fully explored. Not all (including the editors of the RECORD) will agree with all the views expressed in these articles; but all who care about the future of architecture and planning will consider them to be required reading.

I. CRISIS AND OPPORTUNITY

The new and ever-advancing technology in industry and in agriculture, and the mastery of natural forces, could be giving us the new plenty, the new leisure, and jointly with social science, the unprecedented opportunity and the tools for the good life. We should now be able to create for all a life with diminished tensions and more drama; the life of expanded understanding and vision and the daily experiences reinforcing it; diminution of drudgery and its transformation into unforced creative activities; easy accessibility of market place and community, and of the counterpoint of nature and its healing.

But these new forces are also causing or contributing or permitting a series of galloping maladjustments and uneasinesses: massive unprepared in-migrations from rural into urban areas, and at the same time out-migrations within our ever-expanding urban complexes; massive involuntary and uncreative and even dangerous leisure. The ubiquitous automobile may be considered a symbol of the two-faced, or Jekyll-and-Hyde, character of modern man and modern development-or-deterioration. It enables us to do wonderful things, to visit distant places, to constitute a new family unity or mobile hearth. In actuality, it does something of this, but far more
Our architecture is typically single-building architecture, less concerned with community architecture than with the single glamorous building. . . . The ubiquitous automobile: the city’s intolerable congestion, the countryside’s despoilment by unbridled road-building . . .

does it result in the city’s intolerable congestion; in the countryside’s despoilment by unbridled road-building and by excessive anarchic scatter; in excessive distance between living, work and recreation; in family disorder and non-unity. We are not nearer nature, as we could be, but pushing farther away: not only in distance, but now in time as well, as the inexorably lengthening journey to work negates the extra leisure of the shorter work-day.

The purpose of this series is to explore what are the elements in the physical-social planning and development of our urban civilization, and how they must be deployed, to much more fully realize the promise of the new forces, and to minimize their wastes and menaces.

Decay: Development: Destruction

As an observer and a hopeful re-former of the urban scene for many years, one has gone through as many years of alarm and elation: continuing and recurring alarm at the intensifying deterioration of our cities and the accelerating expansion of the area of urban decay and disorder; very occasional elation at some fine development, or prospect of fine development, or vision of what could be accomplished, or was actually being accomplished in other countries. Paradoxically, a major element that has kept buoying invincible expectations is the continuing acceleration of deterioration, and the conviction that things were reaching such a critical point that a sensible democracy must finally be awakened to the need for drastic, far-reaching action. Such a juncture is, pointedly, now.

Both the rate and scale of deterioration have been constantly accelerating, in the cities and their centers, on the fringes, and now far out into the hither-to-countryside.

Two factors have of late years hastened and accentuated these tendencies into real crisis: the population explosion, and the internal-combustion-engine explosion. The phenomenal spread of automobile ownership, unbridled promotion of its use, and accelerating development of road programs-to-everywhere, give full range to anarchic development-and-destruction at all points. These factors have served to accentuate and to deepen the effects of inherent social, political and economic weaknesses in our urban-suburban-exurban—in short, urbanoid—system, into the present condition of crisis.

A hopeful factor is that there is a great deal of discontent, worry, self-searching, painful recognition of painful symptoms. But unfortunately, many of the deep-seated factors and influences are not recognized: we are in large measure shooting at the wrong targets or with guns of too-short range; our painfully wrought remedies are obsolete or obsoles-
cent or quite inadequate to the newer and most dam­
ing diseases.

We are using up new land at the rate of 1,000,000
acres a year; our population is increasing at the rate
of some 30,000,000 or 15 per cent per decade, and
much faster in the metropolitan areas. Dr. Jerome
Pickard states that between 1962 and 1980 the na­
tion’s population will have increased 36 per cent, but
21 metropolitan regions by 73 per cent: i.e., twice as
fast. It is declining in the farm areas, also in the
central cities, and increasing at tremendous rates
farther out, in the metropolitan countryside. Note,
as an example, Syracuse: by no means a spectacular
area. From 1950 to 1957 the city’s population de­
clined from 220,000 to 214,000. But in the county
there was a 50 per cent increase: from 121,000 to
181,000. Yet practically the only available govern­
ment tools of any creative strength are shaped to
deal with the central cities’ situation, while the out­
lying region gallops into the inevitable day when it
too must be rescued, at vast expense and heartbreak,
by future urban renewal.

The Alternatives to Trend

Another troubling factor is that the whole tend­
ency of urban development and highway planning-
development in this country is to follow TREND, to
study TREND, to ride with TREND as smoothly as
possible (so as not to get bumped too badly). But
TREND can be desperately undesirable, however
carefully we adjust to it. There is almost no creative
recognition that we could be and must be IN CREA­
TIVE CONTROL, that TREND is not DESTINY.

Imagination and statesmanship can take trend
into account and in their stride, can distinguish be­
tween the inevitable and the alterable-controllable,
can bend trend to human and moral purpose. In con­
trast to ineluctable trend, there is a greater than
ever wealth of opportunit y and choice. But we have to
muster the imaginative self-discipline not to get lost
among them.

The rage for statistics is one index of the enthron­
ment of trend. Yet statistics can often be nothing but
a record of reaction and adjustment to unsatisfactory
conditions. They can be accurate, yet in a high de­
gree misleading, literally and actively misleading:
i.e., leading in the wrong direction.

“Megalopolis” and similar coined expressions give
some sort of sloganistic comforting sanction by a
fancy name to an ultimate extrapolation of undesir­
able trends. These fancy expressions describe a mani­
fest troubling trend: the oozing together of already
amorphous cities into a sort of lava flow hundreds of
miles in dimension, from Boston to Washington,
from San Francisco to San Diego. The “sophisti­
cated” go for this as the equivalent of the dernier
Replacing endless and shapeless expansion of cities, and anarchic destruction of rural areas, with creative alternative goals—limitation to endless city sprawl and to rural-urban rash, in favor of consciously-planned city and city limits, New Towns for nuclei of growth to pre-planned size, reasonably self-contained in character with less need for more and more super-roads, ever-longer journeys to work; on the positive side preserving and enhancing adjacency and accessibility to nature . . .

Ineluctably this involves reorganization of cities internally into significant local community entities, and must deal with population growth and industrial dispersion by reaching out into the region in terms of defined, finite, functional and organic entities to bring an end to ooze and sprawl and anarchic spotting.

Within the city we may think of these as active and alert sub-cities or groups built up of related smaller communities and neighborhoods, with less friction of space within; and because more self-contained, dispersing the peaks of traffic to the other parts. These can be the more readily created or re-created, and with more open green space, because the continuing out-migration from the city proper means we can find play-room for leavening their physical quality and relationships.

At and beyond the periphery we can create New Towns or New Outlying Districts. And beyond this, we will propose quite different partially existing and partially potential alternative centers to the increasingly Gargantuan Metropolis. In all of these, we must introduce the concept of CREATIVE CONTROL, in place of haphazard and unlimited growth. When an industry’s operations exceed the capacity of a factory, it doesn’t keep adding appendages in all directions. It opens a new branch of pre-determined size in a carefully selected location. We will have to absorb this kind of thinking in our cities.
Existing Tools for Change

The presentation of these creative concepts, their underlying reasons and implications, constitute the climax of this series. The next two articles are given over to description and analysis of government's presently most important and powerful tools, both in-city. These two articles will discuss and dissect public housing and urban renewal in terms of their past and present limitations and prospects, to see to what extent they meet or fail to meet purposes for which they were set up and how they can be structurally modified to do this better; and to see what is required beyond their stated purposes so that they may to the maximum serve the new creative and humane environment which we visualize and will propose.

We lead off by close consideration of these present tools, for several reasons. They do constitute the major current developmental efforts of Federal-State-City governments. They are the most vital conscious immediate government tools for change. They can be vastly improved and given new directions. Analysis of their characteristics and limitations and untried potentials sharpens the later discussion of goals and how to reach them, and the question of what these efforts and forms can contribute.

There is another potent reason for the early and extended consideration of these "action" programs. An essential thesis in our presentation is the spiritual, social, psychological, visual importance of design, of creation of space and of the third dimension, in the whole final impact of our urban ensembles on people. Our final article is devoted to this subject. However, we can much more closely explore that, and build up to it, on the community-to-region scale, by considering the quality of what has been and is being actually done: where there have been fine things, where drab and depressing, and why and how; and in particular, whether in either case we are creating ambient environment, or only buildings, and why.

The Federal Housing Administration is, of course, the third powerful government tool, which operates in, though chiefly beyond, the city. However, its powers and activities have been largely in non-creative terms. At worst, they have characteristically manifested themselves mainly in accentuation and limited rationalization of unhealthy development trends: toward outward scatter, toward increased and rigid single-class settlement, toward economic and racial stratification. At best, FHA has lately started to facilitate some aspects of urban renewal. We will, therefore, take account of its work not in any concentrated treatment, but at various points where it seems to have exercised serious influence on activities essentially of others.
Dynamics of Development: Underlying Social Factors

The fourth article will deal with underlying dynamics of social-physical development. This is the pivot chapter. It is pivotal because much of its content flows from the conclusions reached in the earlier articles as to weaknesses in the development tools, stemming from inherent underlying conditions which the present development measures and the current attitudes toward development do not recognize or cope with. And partly because we here identify these and other factors which must be recognized and dealt with, if the creative policies and measures to be described in the later articles are to become realities.

Typical among the factors to be explored are:

1. Population and automobile explosion—Well known, of course; but the effects of the one ignored in terms of active planning and development tools; the effects of the other actively multiplied negatively by the twin trends of expanded road systems and the ever more unrelated use of land and living that this permits and encourages.

The question of land—Can we continue to consider land merely as a private tradeable commodity; or is it essentially also a resource to be rationed? What inevitable results from each? Can the land resource be safely left entirely in private hands any more than the water resource? Does zoning help, as it is presently conceived and practiced?—or does it promote at the same time both sterile uniformity on the one hand, and scattered mix-up on the other?

Urban taxation and system of capital assessment—As active promoter of land speculation, quick turnover, price rises, premature developments: i.e., intensification of the long-existing driving forces and tendencies of private enterprise. Analysis of the destructive concept of “highest use”; and in road-building, of the “cost-benefit ratio” as applied over the short run.

Also to be considered are the experiences of Stockholm, of Rotterdam, of Britain, in solving these problems by acquisition and public ownership of land on a large scale for all development, and the implications for us. We will consider the relevance of our own tentative moves in acquisition and permanent preservation of land for future public recreational use.

Another of the underlying factors is the continuous relentless rise in sales prices of houses, thus more and more accentuating suburban segregation and stratification and separation of places of living and work for lower-income workers, forcing them to stay in obsolete inferior housing in the city, while industry and their jobs decentralize. And, simultaneously, the middle classes continue to move outward, while their office jobs increasingly concentrate in the centers.

Mastering the Trend

We face also the alternatives of unlimited city and metropolitan expansion and mélange, or conscious limitations and nucleations in favor of livability, amenity, accessibility to the green world. Trend, or mastery? The relevance of European policy and experience will be discussed.

In the following two articles the positive concepts of in-city communities, new towns, and districts and regionalism will be considered: approaches to taking account of trend but mastering it in favor of creative control. Articulating the existing amorphous city into organic cells of communities reasonably self-contained and socially confident and capable. Transforming the amorphous agglomerate city, with its remote city hall power, into active and alert foci of allegiance and participation.

Correspondingly, replacing endless and shapeless expansion of cities, and anarchic destruction of rural areas, with creative alternative goals—limitation to endless city sprawl and to rural-urban rash, in favor of consciously planned city and city limits, New Towns for nuclei of growth to pre-planned size, reasonably self-contained in character with less need for more and more super-roads, ever-longer journeys to work: on the positive side preserving and enhancing adjacency and accessibility to nature. The countryside preserved as an accessible resource and as a barrier (the green wall); the highway deflated to its reasonable functions.

The New Towns: concept and brief history beginning with Ebenezer Howard. New Towns defined: a national policy of planned and simultaneous locating of people and employment in contemporary cities of planned size, where they may live convenient to work and to open spaces and to cultural elements, with highways scaled essentially to the needs of inter-contact but not to the uneconomical and absurd peak load severity and scale necessitated by excessively concentrated employment and excessively concentrated recreation. Balance of jobs and workers in varied occupations; balance of open space and development; balance of economic, social and occupational groups. The next significant step in this environmental analysis and clarification is the Radburn idea, the traffic-free super-block, the residential cluster and the quiet internal park.

As a planner, I always come back to the idea of
Zadkine's sculpture in the square at Rotterdam sublimates Rotterdam's ordeal and destruction to its undying strength and will to live. It might symbolize, too, the total life-and-death struggle of the 20th-century city: the forces of destruction less obvious and less poignant but fully as lethal; the life-giving forces of creative re-conception and construction fully as powerful if there is a will to unleash them.

public ownership of land not only in the town but in surrounding areas of verdant land to avert the honky-tonk fringes and the slums beyond, which have poisoned all our existing cities. These would be reserved for agriculture, forests, recreation, nature-mingling. Also, by public ownership, land value increments will inure to the benefit of the community. I note, too, the inexorable pressure on the private owner against holding land undeveloped, in the form of accumulating taxes and interest. I note the exhilarating illustrations of this freedom from land-tension, from inexorable fringe land spoilation: e.g., Vallingby, Tapiola.

Finally, the regional constellation or galaxy, satisfying the physical, social, economic, ecological and spiritual requirements. Involved are these aspects:

The rational articulated development of all metropolitan regions as we have just outlined it.

The conscious and energetic promotion and development of alternatives to the geometrically increasing size of the very large metropolitan areas. Examples of such alternatives: the Albany-Troy-Schenectady triangle in New York State; the Durham-Raleigh-Chapel Hill area in North Carolina. All the advantages of Metropolis can be made available, without the uneconomical, unecological giantism of the New York region, the Chicago region, etc. On another plane of alternative are the area development programs, and particularly such as that of the region of Apalachia, which may be just at the beginning of some massive planning-development attention; or, may be just a piddling pretense.

In all these elements, there are national and state policy implications, as well as desperately intimate and painful local decisions and facings up. A drastic and searching policy debate will be required, and tough policy decisions will need to be made, to create an adequate and farsighted program, and to convert it into action.

The Human Need for Beauty

The last article in the series will deal with the role of design in infusing beauty and fitness at each scale. Planning-development, however well and boldly and thoroughly conceived intellectually, sociologically and economically, can reach its full flowering in spiritual, psychological and social effect on people only if it finds expression in harmonious and inspiring design and space creation and inter-relations. Experience shows that high goals and good planning by no means automatically result in stimulating and satisfying design. Equally, fully satisfying design and space creation can flow only from a harmonious, thorough-going and humane plan that meets human and ecological needs in living, in working, in recreation and relaxation.
In the end, too, architecture or created physical environment cannot lie. Whatever our verbal proclamations or self-assurances, the highest creative skills are still devoted to those elements which really represent the power and intent of the time. We must be sure that if democracy is visceral and not just verbal, those skills actively embrace daily life and the institutions of the people, as well as monuments to the powerful, whether they are kings or business men or art patrons.

**Toward Excellence Decentralized**

In our cities we are used to centralization of "architecture"; on our Fifth Avenues, in our civic or cultural centers, in monumental skyscrapers. But we must produce uplifting architecture in people's daily lives. We must have a "decentralization of excellence"—in daily installments, with neighborhood foci. Cities, and civilization, cannot afford to conjure ugliness or dullness, whether by neglect, or by intent, or in support of moral Puritanism and the economic "minimum standard."

Our architecture as of now is typically project architecture, or single-building architecture, more concerned with facades and masses than with the quality of space defined and surrounded, and of the ambient space; less concerned with community architecture and community creation than with the single glamorous building or building-group; less concerned with daily life and reaction than with the "public image" or monument of huge concerns. What we must create runs all the way from the daily environment, the daily incident, close at hand, to the noblest regional complex. This does not mean that we want a great-scaled Washington Monument in the backyard or even in the community center, for the architectural expression must be hierarchical, as it were, in scale and proportion. (Nor does it mean that toilet paper must be styled by industrial designers.)

What it does mean is that each level of community must not only meet the functional requirements of open green and developed space, but must find its expression in living design, that it must be deemed worthy of care and attention and talent, that it must result from the same absorption or understanding of the social and physical factors as the largest complex of the regional scale. Thus, the "interstitial areas" between projects or centers or major foci have no longer to be left-overs, or just areas where clean-up, paint-up drives flourish and wane. These worthy moral impulses and exhortations are not enough. More inspiring elements are needed. We require, let us repeat, the decentralization of excellence, day-to-day contact with excellence, first-rateness, to be inspired by and rally 'round. This must be the theater of serenity and stimulation, of drama and repose, of community life and of private life, the locus of subfoci and self-identification, and each citizen must identify with it, must be involved in its creation and support. In short, the TEXTURE of the city-region has got to rise to the quality of the plan: from the small playground to the great dam.

While by no means general enough, there are already some fine things to show at many levels: from the small exciting playgrounds of Philadelphia and elsewhere to the TVA dams and power houses. In contrast to this we have also: boredom, seas of parking in housing developments and around shopping centers, etc. Also to be noted as typical and alarming: the degeneration of regional architecture in the highway system, from the original handsome and elegant clover leaves to the present spaghetti and mix-masters; corresponding to the actuality of original purity and brilliant simplification-systematization of traffic flow separation and clarification, and now to the present serpentine absurdity of unbridled complication. We have got to retrace and gain the grand simplicity of the regional scale. We must explore newly. We can actually transcend what has gone before. But we cannot do it on either the small scale or the large scale if we are trying to give architectural shape to what is essentially anarchy and undiscipline.

These problems of great depth and immensity face us in attempting to create conditions for the good life at this juncture in the 20th century:

First, can we, in the welter of international and national problems and urgencies, convince and enlist enough people with enough fire to place the question of the character of our life environment high enough in their thinking-and-action priorities?

Second, if this is accomplished, can there be injected the moral element to the extent that the vision of personal-civic-over-all excellence can overcome inertia, the habitual comfort of the fairly second-rate?

And finally, having, we hope, attained these intellectual and moral transformations, we must further make a supreme effort to put these creative forces effectively into the field in time, before accelerating current trends and galloping disruptions have excessively or irrevocably changed the dimensions and nature of the multiple problems.
EPISCOPAL CHURCH BY BELLUSCHI

Notable addition to a rural Gothic church in New England demonstrates the importance of simplicity rather than pretension in emphasizing the quality of space.
This church successfully meets the challenge of adding a new and larger church to an existing one without overwhelming it. It further demonstrates in convincing fashion that elegant simplicity emphasizes the quality of interior space more effectively than architectural pretension.

The old church was rural Gothic in style, of stone with a slate roof, and located on a restricted plot. The new church would be built on higher ground, a complicating factor. Belluschi's design left the old church undisturbed, called for the new one as a separated element; joined the two with a link containing stairs connecting the two levels. The nave of the old church was preserved for use as a chapel.

The new church is of the same stone as the old, has a sloped roof of the same slate, and is in all its parts skillfully brought into scale with the old. As the plan explains, the chancel and seating are arranged in a modified "in the round" pattern, the transepts furnishing lateral spread. Such a scheme gives the congregation a strong sense of participation and follows the newer Episcopal liturgical thinking.

The stained glass window above and to the rear of the chancel assumes added drama in the moving simplicity of the interior (refer to cover photograph). Pietro Belluschi says: "The solution, as forced by thought and circumstances, is extremely simple, which pleases us very much. We find the idea of 'holy emptiness' a satisfying one; it is a statement of the importance of humility and of emphasizing the qualities of space over the pretensions of form. It acknowledges the poetry of simple things when they are conceived in love rather than in arrogance."
These photographs testify to the care and skill with which stone, wood, glass, and slate were combined and detailed. The transept windows were designed by Pietro Belluschi; the window above the chancel and white Carrara altar by Gyorgy Kepes. The Kepes window is protected from the weather by a box skylight high in the roof (bottom photo, page 147), which provides also a space in which nighttime illumination for the window is placed. The building foundation and the floor under the carpeting are of concrete; the walls are stone inside and out; the doors and sash are of wood. The 400-seat church is heated by forced warm air, and sprinkled for fire safety. The metal spire (see rendering, page 146) will be built in the future, when funds for it are available.
HANGING GARDENS ON THE ROCKS IN HAWAII

Luxury hotel by George Wimberly grows out of the black rocks of Maui at unspoiled Kaanapali Beach

This exotic hotel at Kaanapali Beach—gay and playful—makes the most of a magnificent site by becoming a part of it. The escalloped terraces of concrete that lie outside the eight levels of guest rooms climb dramatically up the sheer face of the black lava rock, and follow also its horizontal configuration. The design brings together the soft, rounded forms of the Maui Mountains and the jagged lines of the cliff. Guest rooms are reached by elevators that descend from the principal public rooms on top of the rock. The hotel is approached by a newly-made road that climbs the gentle slope from the mainland to the summit. At beach level, a group of 13 cottages and a swimming pool complete the development.

Here is resort architecture of distinction: spectacular and romantic, yet carried out with taste and a proper degree of restraint. The romantic tropical setting seems to ask for romantic architecture—harsh rectilinearity could hardly provide the carefree atmosphere the architects have achieved.

The hotel lies south and east of Honolulu—30 min-
utes away by air—and is on Maui, considered the most beautiful of the Hawaiian Islands. Its wide Kaanapali Beach is three miles long and split in the middle by a large outcropping of black lava rock, upon which the hotel is built. The entrance road leads to the summit and to the lobby, dining room, bar and hilltop terrace, which offers views of the nearby islands of Molokai and Lanai. The elevators down to the guest rooms and beach are located in a cut in the rock; the balcony corridors at each level are built free of the cliff face with tropical planting set between. Each of the 72 rooms in the eight-story tower is set back sufficiently so that tropical planting can terminate its terrace and provide hanging greenery to soften the transition from building to cliff at each side. The concrete fire tower (bottom right), is 50 feet high and is built between the cliff and the hotel structure proper. It is decorated by incised Polynesian motifs as adapted by Edward Brownlee.

The 13 Polynesian cottages are air conditioned; contain four units at ground level and two on the upper floor. They are constructed of wood; the outer walls finished with rough redwood boards and battens, the inside with gypsum board. The circular roofs are surfaced with off-white coral chips. A “parasol rib” pattern of redwood members is placed over the roof surface. A dining pavilion and cocktail bar are located in the cottage area, which is flanked by the tiled crescent of the swimming pool on one side, and by the handsome golf course designed by Robert Trent Jones on the other.

Air conditioning is provided by a central chilled water system which is piped to cottages as well as the main building. Fan coil units for each guest room are located in the hung ceiling space over the bath-dressing room. Hot water is provided by an oil-fired central plant for the main building and by gas-fired heaters in each cottage.

A second unit, providing 60 additional guest units, was recently finished. This unit—called the Crescent—is located on the other side of the rock, but uses the same entrance and lobby.
The main building is an eight-story reinforced concrete bearing wall structure. The terrace railings were given texture and a vertical pattern by means of rough form boarding with slight V-joints. Interior walls are of concrete, 6 inches thick, with a plaster finish. The floors are concrete slabs, with a thin cost of acoustical plaster sprayed on the soffit. The roof is finished as a Japanese garden by using three types of roofing gravel in an arranged pattern. These consist of off-white coral chips, red volcanic cinders and blue-gray crushed volcanic basalt. The ventilating exhaust fans on the roof are concealed by masses of volcanic rock and tropical plants in redwood tubs. The guest rooms have carpeted floors, and painted or papered walls. Bathrooms are finished in ceramic tile and vinyl wallcoverings, and have a glass shower enclosure.
The decorative highlight of the upper level lobby is a pool and fountain in cast stone by sculptor Edward Malcolm Brownlee, depicting a legendary Hawaiian war canoe rising from the water.

The circular lobby centers on the pool and is open to the sky; the reception desk, shops, and transportation counter are lined around its solid portion. The roof is of heavy timber construction, the columns are of lava rock, the floor is of unpolished gold and white terrazzo.

The bar in the cocktail lounge features a replica of a figurehead from an old whaling vessel—appropriate enough since Lahaina, on Maui, was the winter base of the New England whaling fleet in the 19th century.
SADDLE SHELL ROOF FOR THEATER

Perkins & Will combine natural and colored concrete, topped by a soaring roof, for a suburban movie house north of Chicago.
A soaring concrete roof with the characteristic warped surfaces of a saddle type hyperbolic paraboloid makes a peculiarly appropriate enclosure for this theater near Chicago. The plan (left) and the section (right) show how the areas and volumes work. The roof is the largest of its type in this country—160 by 220 feet in area—and is supported by two massive buttresses which are shaped to handle lateral thrust as well as vertical forces.

Color adds interest to the building: the precast vertical panels that enclose the stage and screen portion are painted a soft tan; the recessed areas back of the buttresses are charcoal brown. These tones contrast effectively with the light tone of the natural concrete roof, the fascia of which varies in height from 22 to 58 inches.

The air-conditioned building is served by parking arranged in a series of concentric rings; an interesting departure from the more familiar rectilinearity.
The interiors, designed by the interior space design division of Perkins & Will, echo the simplicity of the exterior. Interior color is predominantly gold, enlivened by small areas of charcoal brown and off-white. The wood paneling is natural teak; the ceiling natural concrete.
The members and participants in the Young Women's Christian Association are not all young, do not have to be women, and are not necessarily Christian. The YWCA has for many years been a complex organization which offers diverse facilities to an increasing segment of the community and in which members of the community play many roles. The new central services building for the Pittsburgh YWCA has been skillfully designed to accommodate typically extensive "Y" requirements and should be studied by those architects who must program and solve community centers of all kinds.

The Pittsburgh "Y" provides office space for the executive staff which administers eight centers, two local campus branches, and programs in schools, churches and community centers throughout Allegheny County. As a downtown facility, easily accessible to the surrounding area, it was considered a good location for a gymnasium, swimming pool, auditorium and public cafeteria; and classroom space has been provided to accommodate a schedule of approximately 48 adult education classes. Because there is less demand for permanent housing for young women than in an earlier period, residence facilities were not provided.

The gym and pool are below ground, the auditorium and cafeteria are on the ground floor and visible from the street, and all other functions are concealed behind windowless walls. The architects felt that the surrounding views were not good and that the absence of windows would decrease air-conditioning and maintenance costs. The total cost of the structure including furnishings and fees, but not land, was $3,400,000.
Lounge is separated from auditorium by folding doors

Removable seating makes auditorium adaptable for dances and exhibitions

Young Women's Christian Association, Pittsburgh, Pennsylvania
ARCHITECTS: Belluschi—Skidmore, Owings & Merrill
William S. Brown, partner in charge
Harold J. Olson, project manager
Patricia W. Swan, project designer
Paul H. Baren, job captain
Allan N. Denenberg, interior designer
STRUCTURAL ENGINEERS: Weiskopf & Pickworth
MECHANICAL ENGINEERS: Syska & Hennessy, Inc.
GENERAL CONTRACTOR: Dick Corporation
Health education level and mezzanine are below ground. Here are necessary locker and toilet facilities for a physical recreation program which enrolls approximately 430 people in 45 different classes for an eight week term. Offices for the physical education staff, a lounge, and spectator seating have been included on these floors. The ground floor cafeteria, located at the busiest street corner, is open to nonmembers and has become a popular lunch spot for workers in nearby office buildings. Exhibitions within the glass enclosed auditorium interest passers-by. The openness of the ground floor area attracts the public; the enclosed floors (above) afford quiet and privacy to staff and members attending meetings or classes. The third floor (not shown) is similar to the second. On the fourth floor the private dining room, the board room, the employees' lounge, and the president's and executive director's offices overlook enclosed terraces open to the sky. The steel frame building utilizes the entire site and is surrounded by streets on three sides.
The decision of the board of the Pittsburgh YWCA to permit SOM to design all the interiors was made after the firm had been commissioned to design the building. The architects worked hard to sell the board on their concept of total design, and the executive director and several of the board members made a pilgrimage to Connecticut General Life Insurance Company near Hartford, and to other SOM buildings as well to see for themselves. In authorizing SOM to control the interiors, the YWCA spared itself the fruits of well-meant volunteer interior decoration, but more than this, it achieved simple, handsome, inexpensive spaces which achieve their fine effect mainly through the use of color. The executive secretary’s office (above) has white walls, a golden carpet and a bright red desk chair. The court beyond the window has white walls to reflect the light from the sky, a white gravel floor, and plants which are watered daily by board members. The nursery (top opposite) follows a Mondrian palette with entire walls in brilliant, almost primary colors set off by white. Selection of china, glass and silverware in the cafeteria and dining room was relinquished to the architects (bottom opposite).
Administrative Offices and Recreation Center

- The gymnasium is junior high school regulation size.

- The swimming pool is 75 by 35 feet.

ARCHITECTURAL RECORD  March 1964
MODERN HISTORY FOR MODERN ARCHITECTS


By Jonathan Barnett

The establishment of modern architecture has already attained the status of an historical event, and the inevitable reaction has begun. Recent buildings have demonstrated the changing relationship between the architecture of today and its architectural past, and this changing relationship has in turn affected the latest writings of architectural historians. It is unlikely that a book such as "World Architecture" could have appeared even so short a time as 10 years ago. It may not look like a new departure, being simply a collection of extensively illustrated histories of architecture by a group of scholars each writing on his own specialty, but its publication is symptomatic of two important developments. One

is the growth of an inclusive view of architecture that does not confine itself only to its modern or European aspects. The second is a tendency to redefine what is meant by modern architecture itself. John Jacobus, in his discussion of the subject, shows that he, in common with other historians like Vincent Scully, has come to distrust the generally accepted and familiar theories.

The public owes its understanding of modern architecture mainly to books that were, at the time they were written, radical and revolutionary statements. They asserted that the modern period had begun with the industrial revolution, and that it was no longer possible to treat the Orders, or the Gothic arch, as if they were a part of a living historical tradition. In order to make their point, these historians of modern architecture tended to concentrate on buildings that seemed to them to embody progressive tendencies; and to ignore, or even disparage, other buildings which they deemed retrograde. It was implied that architecture had begun to sicken at the end of the 18th century, and that only a few buildings re-
1. Model showing a restoration of the city of Ur, c. 2125-2025 B.C.

2. Matsumoto Castle, begun in the early 16th century

3. Detail (c. 1600) of polychrome ceramic ornament from the Masjid-i-Jami, Isfahan

4. Abbey Church at Conques in Perigord, 1045-1119

5. The Pantheon, Paris, begun 1759 by Soufflot

6. St. George's Hall, Liverpool, 1841-1854 by Elmes

7. Oriel Chambers, Liverpool, 1864-1865; the architect was Peter Ellis
remained uncontaminated; only a few architects, often rather obscure, merited close attention.

The theoretical basis for this kind of history was the assumption that modern architecture represented a return to the type of consistent architectural development held to exist up to the middle of the 18th century. When modern architecture proved to be more complex and varied than had first been predicted, the historians began to revise their views. Instead of concentrating exclusively upon a “progressive current” in 19th- and 20th-century architecture, they began to see all architectural developments as inter-related, just as they had been in other historical periods. A great neoclassic theorist like Durand came to seem as important as the unlettered rural mechanic who had unconsciously contributed to the “functional tradition.”

This reappraisal of modern architecture has helped give architectural history a new significance. When architects believed that they were still designing within the Renaissance or Gothic tradition, historical concern centered around matters of detail. The Modern Movement brought freedom from precedent, but it generated distrust of historical investigations not pursued for their own sake. Today the architect is used to thinking of himself as a modernist, and, as the historians no longer view him as a rebel, he can regard history with detachment. Adopting the principles put forward by Le Corbusier in “Towards a New Architecture,” he looks to the past for examples of certain abstract architectural principles.

Thus young architects in New York City startled their “progressive” elders by picketing for the preservation of Pennsylvania Station. To those in the picket lines, Penn Station was not a false and decadent evocation of Roman architecture, but one of the city’s few great architectural spaces. Similar reasons explain the current widespread interest in Italian hill towns, Greek island villages and cathedral squares like the Piazza San Marco. They are valued for their qualities of space, mass and surface, rather than for their particular periods or styles.

The pages of “World Architecture” offer an excellent opportunity to contemplate the past from this
detached and objective point of view. They present Assyrian, Islamic, Chinese, Japanese and Indian architecture on equal terms with the more familiar Egyptian, Classic, Medieval, Renaissance and Modern; and there are so many illustrations that the visual presentation becomes almost as important as the text.

Of course, no single volume can hope to cover all the complex and subtle ramifications of architectural history; and “World Architecture,” with its relaxed format that omits bibliographies, extensive notes, tables of dates and so on, makes no pretense of being comprehensive in the textbook or handbook sense. It is rather a volume to be dipped into or browsed through, with authoritative commentary available whenever the reader wishes to know more about an interesting photograph, or refresh his memory about a particular architect or period.

This method of looking at architectural history has many possibilities for architects, but it contains a pitfall for the historian, who may be tempted to favor those elements of the past which jibe with current architectural beliefs and practices. For example, Seton Lloyd, the author of the Ancient and Classical chapters of “World Architecture,” faults ancient buildings for being relatively undifferentiated and not expressing their function; and David Talbot Rice seems to equate the progression of developments in Medieval architecture with progress in an absolute sense.

In general, however, the text of “World Architecture” is uncompromisingly scholarly; the only major defect lies in the captions. It may seem pedantic to mention them when text and illustrations maintain such a high standard; but the captions are one of the most prominent aspects of the book and they are a good deal worse than useless. The same unsympathetic individual seems to have written them all, and he has managed to introduce so many inaccuracies and mis-statements that the whole effect of the book is cheapened. It remains an impressive volume nevertheless, and its comprehensive nature makes it a unique contribution to the new architectural history.
A SUNNY HOUSE FOR A WOODED SITE

Bold clerestories focus above foliage for light and air
This comfortable house includes some interesting uses of site and clerestories to solve some problems typical of many suburban locations. The lot slopes down from the circle of a cul-de-sac, and overlooks a dense development of houses. There is no particular view, but the land is heavily wooded.

It was decided to exploit the trees to screen off the neighboring houses, and gain light and ventilation in the upper level by the use of big clerestories. The latter act as a sort of chimney, with hot air rising against the slope of the roof, for ventilation on days that are not hot enough to use the air conditioning. As can be noted in the section on the preceding page, the slope at the front of the house was left unfilled to permit high windows on this side of the lower level. A bridge-like deck spans over this area to connect house and entrance drive.

The owners have three children—two teenage boys and an adult girl. All the members of the family needed separation for their studies. The mother and daughter are both teachers, and the husband works for a U.N. specialized agency. In addition, it was desired to provide space for large adult parties, a separate playroom for the boys, with TV and a piano, and a couple of guest rooms.

For the individual study areas, each bedroom on the lower level was designed for privacy and paperwork; in addition, a study area was provided off the living area. The study can be closed to double as guest room, as can the playroom. The dining area also closes off from the living area, to give big or more intimate spaces as desired.

The entire second floor can be used together for really big gatherings—with the playroom below providing a family retreat.
The structure of the Friedman house has heavy timber posts and beams, set on 14-foot modules in both directions. On the lower level, brick is used to fill in between posts as a screen, or as a bearing-retaining wall on the uphill side. Siding and exterior trim are redwood, treated with creosote bleaching oil. The roof is of red cedar shakes.

Interior wall finishes on both levels, and the ceiling of the lower level, are white sand-finished plaster left unpainted. Cypress boarding forms the ceilings of the upper level. Floors are carpeted in the living areas, hardwood in the entry and lower floor, and vinyl-asbestos tile in the kitchen. Heating and cooling use a gas-fired, forced air system.
AN OPEN PLAN FOR A FAMILY HOME

Anderson Todd designs a classic courtyard house to meet his own family's needs: privacy, safety and servantless operation.
Philip Johnson has reportedly remarked that this house was "more Mies than Mies." However, for all its elegant design and construction, the scheme has proved a very serviceable and comfortable family home. Architect Todd states that, "the design of this house was the outgrowth of an intensive investigation of what constituted a family house. Out of this concept grew the recognition of the opposing problems of a desire for privacy and, yet, the desire for openness and freedom, and a balance between formality and informality. Next came the need for servantless operation and low maintenance, and the needs for the safety of a young family. A fire-resistant structure was set as a goal."

These objectives have been met in a handsomely simple and restrained manner. The living areas, augmented by an enclosed court, surround a mechanical core with the fireplace on one side, kitchen on the other. Within the core are air conditioners, washer, dryer, icemaker and storage. The four bedrooms, which also open off a walled garden, are divided into two apartments. One is occupied by the children, one by the parents. Floors throughout are gray-green terrazzo. The year-round air-conditioning has supply and return ducts in the floor slab. The house has 3,800 square feet of interior space, not including the carport.

On the cost of the house, which is put together with unusual care, Todd comments, "the cooperation, interest, and sheer competence of the general contractor (one of the principals was educated through the master's level as an architect) enabled us to build the house for $19.90 per square foot. This included terrazzo terraces and driveway, brick garden walls and sodding of the lot." The house was constructed two years ago.
The structure of the Anderson Todd house is entirely of steel: framing, columns and deck—topped by a built-up roof. Exterior walls are either gray brick or floor-to-ceiling plate glass. Interiors are plaster painted flat white, except for the mechanical core, whose walls are covered with walnut-veneered plywood panels. The veneer is carefully matched and cut from one log. The long wall-hung counter in the kitchen (below) is black marble. The carport flanking the house can accommodate four cars, but the extra bays are planned for (and used by) the children for bicycles, toys and a paved play area. The paving is the same washed terrazzo as the drive.
PLANNING

THE DOWNTOWN CENTER

Architects designing office buildings for downtown locations will be planning them as part of large business centers on land cleared by urban renewal. There will be more wide open spaces in the heart of downtown than anywhere else: open areas of cleared land waiting for a master plan, and open plazas after the planning and building are done. Urban renewal has shifted in emphasis from residential projects to the rebuilding of outdated downtown business areas in cities. Municipal officials and businessmen see in urban renewal the chance to save their cities from decline, to restore them to economic prominence in their region, and to reserve the trend toward decentralization and the flight to outlying areas.

This means that the architect is less likely to be designing a hotel or office building on a single plot. If he is lucky he will be designing a complex of downtown business buildings, self-contained little cities on their own plazas perched on top of garages. These welcome islands of safety for pedestrians will be surrounded by elaborate traffic arteries. The master planning is tougher than for campuses or shopping centers, and the architect must collaborate like never before, since other architectural firms will be working on some of the buildings in a center and nowhere will uncoordinated design expression be more visually chaotic.

He will have to learn how to handle the scale of the new plazas and he cannot copy the ones in Europe. He will have to develop sufficient judgment to know when to restrain the landscape architects from inordinate creativity in the planting and furnishing of these spaces.

The examples which follow include a finished business center in Hartford, built, owned and managed by a large insurance firm; a world trade center which is a masterpiece of concentration and decentralization proposed by a quasi-governmental agency with vast powers to shape the environment; a large complex designed for another insurance company by a single architectural firm; and Government Center in Boston, sponsored by the Boston Redevelopment Authority and notable for the quality of its architecture.

—Mildred F. Schmertz

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Hartford's central business district as seen looking west faces the Connecticut River on the east. Constitution Plaza, Inc., owned by The Travelers Insurance Company, is on the north side of the street and Phoenix Mutual Life Insurance Company is on the south. Beyond the foot bridge which interconnects the two raised plazas is the Old State House by Charles Bulfinch.

Insuring the Growth of Hartford

Several great insurance firms have their home offices in Hartford and two of them have spurred the urban renewal process to reverse the city's trend toward economic stagnation and population decline. The Travelers Insurance Company developed the recently finished $40,000,000 Constitution Plaza, and across the street Phoenix Mutual has just completed its home office building in a plaza of its own.

The merits of Constitution Plaza are a measure of the generosity of a client willing to pay for plazas, elaborate landscaping and expensive building materials, the excellence of the master plan, the quality of individual buildings and that degree of over-all control permitted the coordinating architect. Its defects stem from lack of successful precedents in design and coordinating procedure for the construction of this kind of office complex. Now that this project is complete some do's and don'ts have been established and are there for architects to examine in the context of how the center came about.

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Plot plans at garage and plaza level
View to the north from Phoenix Mutual Tower

Sections

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Constitution Plaza looking south (above) and north (below). The funnel shaped office building, while not a part of Constitution Plaza, Inc., and not controlled by DuBose's site plan, has been carefully positioned as a visual termination.
The Office Building Complex in Hartford has continued to be a significant development in the city's downtown commercial district. Constituted by Constitution Plaza, Inc., a subsidiary of the Travelers Insurance Company, on a slum site cleared by urban renewal, the new business center is considered an important generator of growth for the downtown commercial district and the entire region. Major businesses which were planning to move away from Hartford, including Phoenix Mutual, are safely back in town, and six new redevelopment projects are being considered for the immediate vicinity. See map on page 179. Travelers was not seeking new quarters and does not now occupy any part of Constitution Plaza. Those in charge of real estate investment for the company had been eyeing the nearby site since it was first designated for renewal. When F. H. McGraw & Co., Inc., a Hartford-based construction company selected as the original developer by the city, failed to get financing, Travelers bought that company's interest in the job. McGraw retained approximately one sixth of the equity and won the construction contract for all buildings except the broadcasting station.

The McGraw company already had a master plan which had been prepared by architect Charles DuBose. Travelers decided to go along with the plan in its essentials and DuBose remained in charge of the site planning and basic design of the over-all projects and acted as general design coordinator. He was architect for the landscaped plaza done with Sasaki, Walker and Associates, the landscape architects. His firm had sole responsibility for the design of the garages and all buildings except 100 Constitution Plaza, a 17-story office building on which he collaborated with the Roths, the Hotel America done in association with Curtis and Davis, Broadcast House by Fulmer and Bowers, and the Connecticut Bank and Trust Company building (designated on the plot plan as One Constitution Plaza), an 18-story structure by Kahn and Jacobs and Carson, Lundin and Shaw.

Obviously, a single architectural firm, commissioned to master plan a large renewal complex, doesn't necessarily get to design all the parts, since major tenants or investors usually prefer to use architects who have built for them in the past, and who are "specialists" in skyscrapers, hotels, etc. If the elements of a complex are to be coordinated, however, some one must not only set up the ground rules but insist that the various architects collaborate. The alternative is to have one big architectural firm, experienced in all kinds of buildings, do the entire project. In Hartford, after Travelers entered the picture and began to line up real tenants, the final master plan was developed by DuBose. The "architectural specialists" called in to design the buildings for which they have acknowledged expertise worked on fixed sites within bulk and massing limitations set by the plan. The separate architectural firms, however, each went their own way in.
Above: View to the north from the terrace of Phoenix Mutual. To the left are the project's two large office towers, the brokerage office is in the center and the broadcasting station appears in the right foreground with the hotel behind it. Vertical slots and holes in the base of the plaza light and ventilate the top two floors of the garage. Six separate architectural firms including that of DuBose designed the buildings shown in this view. Massing and placement follow the master plan, architectural expression and details escaped control. Below: Hotel bridges street and is readily accessible to motorists who drive in to the garage underneath from the belt roads which lie between the plaza and the river to the east. Foot bridge visible.
matters of architectural expression, to the detri-
ment of the over-all visual unity of the plaza.

The development of Constitution Plaza by Travel-
ers inspired Phoenix Mutual to purchase a site
across the street. As a separate developer Phoenix
was free to do as it pleased with its plot, but it
chose to tie in with Constitution Plaza by building
a podium at the plaza level and a foot bridge to
connect the two sites. The architects, Harrison and
Abramowitz, took pains to relate the Phoenix tower
correctly to the complex across the street.

In the project notes which follow DuBose gives the
reasons for the location of each element in the mas-
ter plan.

"One Constitution Plaza (Office Building)
The new home of The Connecticut Bank and Trust
Company occupies more than half of the building.
This dictated its location on the corner closest to the
existing heart of the city's financial community and
justified its use of the most valuable portion of the
Constitution Plaza property.

"100 Constitution Plaza (Office Building)
Basement and first two floors are occupied as a ma-
jor branch office of The Hartford National Bank
and Trust Company. The building occupies the sec-
ond most valuable portion of the over-all property
and a street corner position also convenient to exist-
ing business and financial institutions.

"Broadcast House (Radio and TV Station and
Executive Offices)
Because of the nature of the tenant, a visually
prominent location is required, but not physical
proximity to buildings in the surrounding neigh-
borhood. The site provided is not as expensive as that
occupied by the office buildings, but is adequately
visible from four directions and is directly seen upon
entering Hartford via Founders' Bridge from the
east. The location also gives clear alignment for
transmission beams from the roof of the building
to the top of Travelers tower, and thence to the
broadcast towers several miles to the west.

"Brokerage House
A small building, glass enclosed, at an important
central position in the project. The brokers' office is
conveniently related to banks, hotel, and the main
plaza promenade, and surrounded by features of the
plaza landscaping. It is served by elevators directly
from the parking garage below.

"Hotel America
Building is oriented so that all guest rooms have a
view either of the landscaped plaza to the west or
of the Connecticut River valley to the east. Its loca-
tion spans Kinsley Street at the plaza level. It is
served by the north-south and east-west highway
system. Private parking is provided within the ad-
joining parking garage with separate entry for
hotel guests.

"East and West Commercial Buildings
Located at the north end of the project and ar-
ranged around a shopping mall at the plaza level, these two buildings relate closely to Hartford's existing retail area one block to the west. It is planned that a pedestrian bridge will be constructed across Market Street to give a more intimate and convenient pedestrian connection from the Plaza to the retail buildings now existing and to those being planned for construction in the near future.

"North and South Garages"
The four-level South Garage and the five-level North Garage are centrally located within the project so as to give maximum convenience of circulation to all buildings. Entrances and exits are provided at seven different locations and five different levels to insure maximum speed for traffic movement. Two additional access ways serve the large areas within the parking structures which are allocated to drive-in tellers and private customer parking for the two main banks.

"The Landscaped Plaza"
The plaza is the central focus of the project plan. It is for pedestrian use only and is designed as an area of relaxation and enjoyment within the congestion of the city. It serves as a circulation way between the buildings of the project and as a community promenade.

"Its elevation above the street level provides a separation of pedestrian and vehicular traffic which is an important aspect of the basic project concept. Pedestrian bridges extend across Kinsley Street and State Street, and other bridges planned for future construction will further extend this pattern of traffic separation to adjacent areas of the city. The plaza stands directly on top of the North and South Garages.

"Research Center"
At an axial position at the north end of the project, it is primarily occupied by an environmental research organization. It is directly connected by elevator to the five level parking garage upon which it stands and is accessible from entrance lobbies at the street and plaza levels."
Arrangement of furniture in main floor lounge fills prow nicely. On office floors this space is filled by the secretarial and clerical pools. The supervisor sits in the apex. Executive offices are in the center section at the widest point of the plan and are directly accessible from the elevators, thus reducing corridor space and circulation past clerical personnel.
A Great Port City Planned for New York's Lower West Side

The Port Authority's projected World Trade Center designed by Minoru Yamasaki and Emery Roth & Sons proclaims a new era for the skyscraper and a new scale for the city. It will bring all the functions of world trade together in a great concentration where routing, financing and administrative processing can be transacted more swiftly and economically than ever before. Federal government customs operations will be consolidated there where the freight forwarders, custom house brokers, marine insurance firms and international banks will all be. The Port Authority as landlord has sent its real estate experts out to canvass the market and they have estimated that enough foreign consulates and commercial attachés, foreign government purchasing missions, trade associations, exporters and importers, and other agencies and businesses related to foreign trade can be attracted to the project to warrant the erection of ten million square feet of rentable space. This is seven million, six hundred thousand more square feet than Pan Am offers. It is expected that 50,000 persons will work in the World Trade Center and 80,000 will be expected to visit it daily. So far there has been no outcry against the Center's mammoth size or the concentration of people and services in its 16-acre site. It has exceptionally convenient access to transportation facilities. In 1962 the Port Authority acquired title to the properties of the Hudson & Manhattan, an antiquated 56-year-old rapid transit system linking Manhattan and Jersey City. Now known as the Port Authority Trans-Hudson (PATH) System, it is in the process of improvement and will become the principal means by which New Jersey commuters reach their jobs at the Center. They will proceed from the PATH terminal directly to express and local elevators which will take them to their office floors. Three separate subway lines will be directly accessible on the site and three other subways are located within close proximity to the Center. Vehicular and pedestrian circulation will be completely separated. Large areas below grade including building services, parking and United States Customs examination areas will be served by vehicular tunnels from the peripheral streets, which will be widened. The street bordering the West Side Highway will become the main vehicular entrance and exit area. All trucks serving the project will be handled in off-street loading berths.
Until the World Trade Center concept, all office building elevators, whether express or local, started at the first floor lobby. The taller the building the more elevators were required and their bulk limited the height to which a skyscraper might go. The diagrams (above left) show how many elevators one of the World Trade Center towers would require if elevators were allocated according to present methods. The top diagram shows the complexity of circulation, the lower shows net rentable space to gross as it would be computed in the lower floors before the first banks drop off. The diagrams (above right) show the maximum number of elevators required in the World Trade Center’s “sky lobby” scheme and the corresponding simplicity of circulation. Eleven express elevators going non-stop from the ground floor will bring passengers to the 41st floor sky lobby where they will transfer to locals. Twelve express elevators go directly to the 74th floor. Seventy-two locals will make stops in the lower, middle and upper zones. The Port Authority claims that transportation time to any point in the building including transfer at the sky lobby will not exceed two minutes. The wait for an elevator will never be more than 30 seconds. The elevators will be large and adequate for freight at off-peak times. Machinery has yet to be developed to get the 10,000-pound cars moving at the required speed
The Prudential Master Plan

In the beginning the Prudential Insurance Company did not know what belonged on the 31-acre site it planned to develop in Boston's Back Bay area. They did not come up with a definitive program for Charles Luckman to solve, they came for architectural help in starting from scratch. The site had an easement problem, for the new Massachusetts Turnpike was to cut right through it alongside the tracks of the New York Central Railroad. See area plan on opposite page. This condition called for a raised plaza. After some work which involved considerable groping for a proper scale in relating building masses to the plaza, and investigation of the feasibility of certain kinds of rentable area, the architects came to the following preliminary conclusions: (1) Prudential's office tower should be centrally located to create high land values at the center of the site; (2) the project should be developed to take advantage of equal access from Boylston Street and Huntington Avenue with excellent frontage thereby available on both streets; (3) the axes of the development should coincide with the patterns of surrounding streets; (4) proper zoning within the development should be maintained by creating “buffer strips” (landscaping) between the various functions; (5) visual access and continuity from surrounding streets should be maintained by developing street level plazas leading onto the upper plaza.

The center section of the plan developed into a nearly symmetrical balanced solution focussing attention on the tower and drawing people into the center by means of the formal approaches from the north and south. The tower alternated from rectangular slab to square. Prudential needs large central clerical spaces and it was decided that for this the square was the optimum shape. In addition, a square tower resists wind loads better.
This site will have a ring road in addition to the city streets which surround it because of the number of people expected to arrive at the center by car, cab and bus. Passengers will be discharged at the lower plazas to the north and south from which they will ascend to the main plaza. Cars will not enter garages from the new turnpike underneath the plaza because ramp turning requirements left not enough room for adequate garage space. The architects studied the feasibility of including a railroad station within the site but found the following negative factors: (1) a station facility requires approximately 5,000 square feet of premium plaza level commercial space; (2) additional easement width required would displace parking space for 103 cars; (3) the Boston & Albany Railroad was reluctant to sign a long term lease because not enough people use the line to justify a new station and they expect railroad traffic to decline further on this line. The railroad was also put off by the cost of a new platform and station which was expected to be between one and two million dollars. Bus lines also found it impracticable to build a station. Since ramps from the new turnpike are close to Prudential Center, the major means of access will be by car as well as by rapid transit. Had the rail and bus companies not been negative much could have been done to reduce automobile congestion in the area.

Prudential Center, Boston, Massachusetts

Charles Luckman, Associates, Planning and Architecture

ASSOCIATE ARCHITECTS ON TOWER BUILDING:
Hoyle, Doran & Berry

FOUNDATION ENGINEERS: Metcalf & Eddy

STRUCTURAL ENGINEERS—TOWER & COMMERCIAL:
Edwards and Hjorth

MECHANICAL ENGINEERS—TOWER & COMMERCIAL:
Syska & Hennessy

CONTRACTORS: Perini Corporation & Walsh Construction Co.

STRUCTURAL ENGINEERS—HOTEL:
Seyller, Stevenson, Value and Kuechtk

MECHANICAL ENGINEERS—HOTEL & APARTMENTS: Krey & Hunt

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A Great Plaza for Boston's Government Center

In this now cleared urban renewal tract in Boston's Scollay Square area, foundation work has begun on two major buildings, the Boston City Hall by competition winners Kallmann, McKinnell and Knowles, who have formed an association called City Hall Architects and Engineers with Campbell and Aldrich and William J. LeMessurier and Associates; and the Federal Office Building by The Architects Collaborative and Samuel Glaser Associates.

Both buildings face a huge plaza comparable in size to St. Mark's Square in Venice or St. Peter's Square in Rome. The plaza is essentially a trapezoid with two curved sides formed by the existing curve of Cambridge Street and by Sears Crescent, the remaining half of another curved street at one time lined on both sides with 19th-century buildings. Kallmann, McKinnell and Knowles have handled the plaza as a great plane on which people move, into and through the public spaces of the city hall, across to the raised podium of the Federal Office Building or down by means of broad steps to Faneuil Hall and the old Quincy Market and beyond to the waterfront area. The subway kiosk was placed in such a way as to hold the street motion along the face of Sears Crescent.
The plaza will be hard and paved in Boston red brick with special landscaping effects avoided. Said McKinnell: “Boston has a magnificent system of parks so we didn't need another park ... we wanted the plaza to have an urban aspect. It will not be barren of incident ... life in a plaza does not occur in the center but around the edges, people cluster around the periphery and look toward the center ... but a plaza is essentially a place of passage.”
Perspective sketch of Federal Office Building was made before new plaza was developed. This building had been designed before the City Hall competition was held and was therefore a fixed element in the program for the competition. The winning architects collaborated with Gropius in further refinement of plaza relationships adjacent to this building.
Coordinated Architecture for Government Center
The long low part of the structure is divided into two parts: the $9.7 million Division of Employment Security to the left of the major gateways and the $7.1 million Mental Health headquarters to the right. Steps from the garages below radiate from the base of the $12.3 million Health Welfare and Education tower and nobly ascend to the plaza level.
The portion of Boston's Government Center which has been allocated to the Boston Government Service Center is the only site in the entire complex in which the work of several firms has been totally coordinated. This pie shaped piece of I. M. Pei's master plan was designated for three state service buildings to be done by three separate firms. Because of the odd site the participating architects began to devise over-all schemes as a basis of possible cooperation, but none satisfied all of them or the design review panel of the Boston Redevelopment Authority. Shortly after the winning design of the Boston City Hall competition was unveiled, Paul Rudolph came up with a scheme which had the strong backing of Jean Carlhian of the Shepley firm and which won the approval of the B.R.A. The participating firms agreed to execute their buildings within the terms of this scheme and Rudolph became coordinating architect.

The scheme assembles the spatial requirements of three distinct state services into a system of terraced buildings which snake around a fan shaped plaza, and culminate in a 23-story tower building to house the state departments of Health, Welfare and Education. The height of the street facade was controlled by the scale of the surrounding buildings. The elements of the Center are stepped down toward the plaza to reduce its size. Each of the three corners is squared off to create three small exterior street plazas.

Paul Rudolph—Coordinating Architect

Division of Employment Security Building—
Shepley, Bulfinch, Richardson & Abbott, Architects

Mental Health Building—Desmond & Lord, Architects
Paul Rudolph, Architectural Design

Health, Welfare & Education Building—
H. A. Dyer and Pedersen & Tüney, Architects
Paul Rudolph, Architectural Design

Drawings by Paul Rudolph
Architectural Engineering

New Glasses Acquire, Shed "Suntan"

Architects have had their imaginations aroused by reports of glasses which darken on exposure to light and clear again when the light source is removed. Dr. S. Donald Stookey, director of fundamental chemical research at Corning Glass Works, described a series of new light-sensitive materials at the annual meeting of the American Physical Society on January 24th. These glasses, which can be made transparent or opaque, are still in the laboratory stage and are not yet commercially available. But Corning is engaged in a research and development program to adapt the materials to practical products such as automobile windshields, sunglasses and building glasses. Called photochromic glasses, these glasses retain definitely their ability to darken quickly (to a neutral gray, a brown or purple) and then clear. The darkening-clearing cycle can take from three minutes to hours, depending upon the glass composition, previous heat treatment and temperature of the material. Wave lengths that produce the darkening are typically near the ultraviolet; some samples have become so dark that only one per cent of the light comes through. Responsible for the light-sensitive characteristics of these glasses are dispersed submicroscopic crystals of silver halide which act as permanently reversible darkening-clearing agents. Another manufacturer, Pittsburgh Plate Glass Company, has also been conducting research on photochromic glasses. They report that they have found a number of substances which react photochromically and have said, "We are continuing our research to produce the most satisfactory variable transmission product that can be manufactured economically."

"Direct" Disposal System Eliminates Garbage Cans

Garbage cans may be on their way out as the result of a new, completely automatic apartment house garbage disposal technique. The system uses an advanced burning and conveyor system instead of the traditional incinerator to transfer ash directly from building to truck. At no time is the ash exposed to the air or human hands during the transfer from the destructor storage bin through the completely enclosed conveyor to the sanitation truck. In this system, the refuse chutes are only arteries which lead to destructor rooms where refuse and combustion products are processed. When a certain amount of refuse has descended the chute, a photocell mechanism releases the waste into the destructor room. Once inside, the rubbish is automatically and continuously “rammed” into the primary burner. The combustible material, odors and smoke cannot escape past this ramming device and move up the depository chute being installed at the Pavilion, which will be New York City’s largest apartment house, the new disposal system has dispelled the designers’ nightmare of some 200 garbage cans lined along the 35-story tower. Howard Bodan, was the industrial consultant in designing the system.

Room-size Fire Tests

New types of fire tests using room-size structures have been proposed by Professor Franz Kollmann, director of the Institute for Wood Research and Technology at Munich, Germany. Kollmann has pointed out that in conventional small-scale tests, certain vital conditions of large fires are lacking—turbulence created by heat and gases produced in a room-size fire does not develop in small tests designed to measure flame spread, ignition time, temperature rise and other characteristics of burning. Professor Kollmann’s recommendations were adopted by the Fifth Conference on Wood Technology of the United Nations Food and Agriculture Organization, held at the U.S. Department of Agriculture’s Forest Products Laboratory in Madison, Wisconsin.

This Month’s AE Section

WALLS BECOME COLUMNS, AND VICE VERSA

Consulting engineer Wayman C. Wing shows structural elements that enclose and subdivide space

Interest has steadily grown among architects and engineers in exploiting the multi-functional capabilities of bearing walls and wall-columns in multi-story buildings. Not only can these structural elements support floors and resist lateral loads due to wind and earthquake, but they can work architecturally in enclosing and subdividing space, particularly in apartment buildings and hotels. For structures in these building types, architects have welcomed the replacement of awkward square or round columns with bearing walls or wall-columns as thin as 6 in. or less. With these elements working as exterior walls or partitions, this approach avoids undesirable protrusions into rooms and provides much more usable space.

Six buildings shown here, constructed during the period from 1955 up to the present, illustrate the use of concrete structural elements as: (1) end shear walls or wall-columns serving as the major wind-resisting elements (Dallas and Puerto Rico); (2) load-bearing walls doubling as room partitions (Dublin and Bermuda); (3) thin columns around the building periphery which match interior partitions in thickness (Karachi); and (4) exposed concrete bearing walls acting as seismic-resisting elements (San Francisco). Wayman C. Wing was associate engineer-in-charge for the first two buildings mentioned while with Seelye, Stevenson, Value & Knecht, Consulting Engineers. His office was designing consulting engineer on the remaining buildings. Architect for all buildings shown was William B. Tabler.

While both the dimensional and reinforcement requirements for bearing walls and rectangular columns are specifically spelled out in the American Concrete Institute building code, the structural designer must perform individual engineering analyses for various hybrid wall-columns in order to realize the economies and architectural advantages of thin elements, as will be demonstrated below. And since wall-column design is covered only briefly in the A.C.I. code, the designer will have to make sure that his engineering analysis for a particular design will be acceptable to the local building department involved.

The A.C.I. building code requires that reinforced concrete bearing walls be a minimum of 6 in. thick for the first 15 ft, with thickness being increased 1 in. for each additional 25 ft of height. Principal columns in a reinforced concrete frame must be a minimum of 8 in. wide, have a gross area of not less than 96 in., and use tied reinforcement. The A.C.I. provision which permits the structural engineer to waive these items, if his analysis indicates that they are not necessary, could in some cases lead to a problem for the engineer in convincing building authorities that his analysis should be accepted.

Engineering analysis for the Intercontinental Hotel in Dublin indicated that all cross walls in the eight-story structure could be as thin as 6 in. Strict adherence to the A.C.I. code would have required these walls to be 10 in. thick when considered as bearing walls and reinforced with the minimum amount of steel bars called for in bearing walls. If considered as columns, the walls would have had to be a minimum of 8 in. thick.

It is obvious that the progressive designer will discover many cases in which the design does not belong in the governing criteria of the wall or column formulas of the A.C.I. code. In many cases he will find that the actual stresses are small, and increasing the wall thickness or providing tied reinforcement will be uneconomical and unnecessary.
Intercontinental Hotel, Ponce, Puerto Rico (right). End bearing walls in upper floors and V-shaped columns at ground floor contribute to rigidity of the structure in resisting wind loads. Wind forces in other portions of the building were taken by transverse bents.

Intercontinental Hotel, Dublin, Ireland (right). Load-bearing partitions only 6 in. thick carry eight floors. Local code does not require an arbitrary increase in thickness. Actual stresses were well within safe limits allowed for concrete bearing walls in accordance with American Concrete Institute code. Stability at right angles to bearing walls was provided by longitudinal concrete shear walls and block corridor walls.

Statler-Hilton Hotel, Dallas, Texas (across page). End bearing walls were designed to carry gravity loads and to resist wind stresses. Even though the thickness was increased 1 in. for every 25 ft of height after the first 15 ft, as required by code for bearing walls, the walls were designed as column-beam frames.

Carlton Beach Hotel, Bermuda (below). Eight-inch unreinforced concrete block bearing walls carry five stories with actual stresses well within safe limits. Stability at right angles was achieved by corridor walls acting as stiffening diaphragms.
Intercontinental Hotel, Karachi, Pakistan (left). Long, thin exterior columns serve as space dividers along the balconies. Transition in shape takes place at the second floor with columns becoming shallower and fatter, and columns on the ground floor being square-shaped. This eliminates the need for a heavy transition girder in the lobby ceiling.

Hilton Hotel, San Francisco, California (left and above). Exposed exterior concrete frame walls are load bearing and serve as seismic-resisting elements. Even though the walls were increased 1 in. for every 25 ft of height after the first 15 ft, the wall analysis was based upon beam-column theories. The staggering of windows allowed straight-line placement of reinforcing bars along primary stress lines.
AIR CONDITIONING OF AUDITORIUM-TYPE BUILDINGS

By Alfred Greenberg, Consulting Engineer

The general air-conditioning design for larger places of assembly is basically similar despite the varied functions and architectural expressions of these buildings. The building types include: houses of worship, theaters, opera houses, concert halls, auditoriums, fully-enclosed stadiums, community centers and sports arenas. Several common characteristics make their air-conditioning problems similar:

High ceilings. In large places of assembly, ceiling heights may range from 15 to 100 ft or more. Ceiling heights in other types of buildings, however, range from about 8 to 12 ft, except for special areas such as lobbies.

High population density. These buildings can hold from several hundred to tens of thousands of people in seating areas that allow about 5 sq ft of seating space per person.

High heat load. The congregation of a large number of people produces a big heat load which must be dissipated in order to produce a comfortable atmosphere.

Occupation time. As a rule, most of these buildings are occupied by a given group of people for only about one to four hours. If the building is continuously used by different groups of people at all hours of the day, it presents a different problem from one which is occupied for only one performance an evening.

Although buildings of assembly all have similar design criteria, the variations that may result are numerous and each situation must be analyzed in the light of its own characteristics. The distinguishing features of each type of building will be reviewed and analyzed to ascertain its relationship to the air-conditioning problems involved. Air-conditioning systems for all buildings of assembly must be very carefully designed because attention to details, more so than in many other types of buildings, can make the difference between a good and a poor job.

Ventilation Requirements
The primary problem is to furnish sufficient air at the proper temperature and humidity conditions and distribute it in a satisfactory manner. Seating area ventilation requirements are usually set by codes which typically call for 30 cfm of total air flow per person with 15 cfm of outside air. For air conditioning, the total cfm per person may be lowered to 12-24 cfm with 5-10 cfm of outside air per person. The lower limits apply where no smoking is allowed and the building is used infrequently. In most places of assembly this will give from five to eight air changes per hour, which will usually provide good air circulation.

Noise Level
One of the prerequisites for air conditioning in places of assembly is that the systems not be heard. This is difficult to achieve if the supply air is expected to travel 30 or more ft to provide proper air conditions for those people in the center of the seating area. The large size of most houses of worship, theaters and halls would require high air discharge velocities from the air outlets which would create noise objectionable to those sitting near the outlets. Therefore, the concept of "putting the return air system to work" has to be adopted. It is illustrated in Figure 1, and, stated simply, means that the return air system to work has to be so high as to cause noise problems. Drawings (a), (b) and (c) show supply and return air locations for various sizes of rooms. In high-ceilinged religious buildings having large areas of glass (left), heating elements should be located on the walls to counteract drafts.

Figure 1. In auditoriums with high ceilings, air returns are located at the floor level to draw conditioned air across the audience (above). Otherwise supply air velocity would have to be so high as to cause noise problems. Drawings (a), (b) and (c) show supply and return air locations for various sizes of rooms. In high-ceilinged religious buildings having large areas of glass (left), heating elements should be located on the walls to counteract drafts.
Air Conditioning of Auditorium-Type Buildings

Air-Conditioning Requirements
Where large groups of people congregate, it is seldom necessary to provide much heating. In fact, the usual need is for sufficient cooling to offset the heat given off by people and by lights.

Because of the relatively high latent heat load produced by the audience, the seating area system should be designed for proper dehumidification as well as humidification control. The latter may be required if the outside air has a low relative humidity and the seating area is relatively empty.

To reduce the recirculation of body odors, stale air, smoke, etc., outside air quantities should not be reduced below acceptable levels. The use of activated charcoal filters to reduce odors and thus cut down on the outside air needed may be desirable if economically practical. But it must be borne in mind that the use of activated charcoal will not eliminate the need for outside air altogether.

The air-conditioning requirements for places of assembly are reasonably fixed with regard to people and lights, once the capacity of the room is established. This will also determine the outside air requirements. The two major considerations left are the outside load and the method of air distribution.

Where the place of assembly is completely within an outer shell consisting of rooms, lobbies, etc., it will not be affected by outside air temperatures except for the load of ventilation air. This spatial arrangement has been used extensively for cultural and civic centers, partially to isolate the seating areas from outside noises. The “bubble-within-a-bubble” arrangement allows for reduced refrigeration requirements and also minimum air stratification. The latter makes it practicable to supply conditioned air from the ceiling and cool a “lot of empty space.”

In houses of worship, which often have high, vaulted ceilings and large expanses of glass on the exterior walls, it is impractical to supply air from the ceiling, as this air would have to cool or heat all the space above the 12-15-ft level and still have enough capacity to provide comfort conditions at the occupants’ level. It can be seen that this would substantially increase the size of heating and cooling plants. In buildings of such design it is desirable to supply the air from the side walls at about the 15-ft level and not heat or cool the upper areas of the main room.

In the summer, the hot air will rise and collect at the ceiling. This will produce a radiant effect which will increase the roof load by about 20-40 per cent. If the hot air is vented to the atmosphere, then the radiant load will be considerably reduced. It must be borne in mind that although the transmission load above the 15-ft level may be neglected, the solar load that reaches the occupants’ level must be included in the air-conditioning load.

In cold weather the air supply blanketing the occupied area cannot be counted upon to prevent cold downdrafts from large glass areas from breaking through. Therefore, it is recommended that strips of radiation be placed at various glass levels to break up the downdraft currents into smaller components at higher temperatures which will diminish their intensity and effect.

Air Cleanliness
The areas of most houses of worship, theaters, opera houses, concert halls and all other buildings with elaborate decorations and accommodations should have high-efficiency filters because of the difficulty of cleaning such areas and to prolong the life of their interiors. Filters selected should have 80 per cent efficiency based on the National Bureau of Standards atmospheric air discoloration test. Other places of assembly can probably operate economically with a minimum of cleaning by using filters in the 20-35 per cent NBS range.

In addition it will be desirable to provide means for sterilizing the air to prevent the spread of infection and contamination.

Air Conditioning the Stage
Most building codes distinguish between a stage and a platform, with the former having much more stringent and complex construction and ventilation requirements. Thus it is essential that the legal definition of what is being furnished for a given building be determined early, since relatively minor changes in design or concept could legally change a platform into a stage or vice versa.

When a place of assembly has a permanent stage, it usually becomes necessary to furnish the stage area with a different air-handling system from that which serves the audience. The air flows and balances can be better controlled through a separate system, and there is greater protection from smoke and fire. Even where a stage is not present, but the functions performed are markedly different from those of the audience, such as when an orchestra performs on a platform, it is desirable to have the platform served by a separate air-conditioning system.

Air-conditioning design to provide comfort for actors can be complex because of the large mobile lighting load and intricate or delicate stage scenery that varies from scene to scene. Approximately 40-60 per cent of the lighting heat load can be negated by exhausting air around the lights (see Figure 2). This is practical for lights around the prosenium, but it is more difficult to locate ducts directly over the light strips over the stage because of the closely spaced scenery and light drops. Careful coordination is required to achieve an effective and flexible design layout (see Figure 2).

The conditioned air should be introduced from the side and back stages (perforated ceilings or outlets preferable) and be returned or exhausted around the lights. Some exhaust air will have to be taken from the top of the main stage tower. The air distribution is somewhat complicated by the fact that some pieces of scenery consist of light materials that flutter in the slightest air current. This occurs even with air motion due only to the stack effect created by the heat from lights. To achieve the necessary low air movement velocities, the air must be distributed over a wide area with many supply and return registers. Due to the scenery changes, low supply or return registers from the floor of the stage are almost impossible to provide. However, some return air at the footlights and for the prompter should be considered. Air conditioning should also be provided for the stage manager and the control board area.

Very little research has been performed on the proper air conditioning of stages. Much valuable information could probably be gained by establishing a mock-up and running smoke tests and taking air temperatures for various stage operating conditions.

One phenomenon encountered in many theaters is the billowing of the
lowered stage curtain. This is due to the stack effect created by the height of the main stage tower, the heat from the lights, and the temperature difference between the stage and seating areas. Proper air distribution and balancing can minimize this phenomenon.

On the stage, cognizance must be taken of any local code requirements for emergency exhaust ductwork or skylight requirements which are often sizeable. These requirements should be incorporated in the earliest designs. Skylights may not be architecturally desirable but the emergency exhaust fans often require as much space and are usually taller. Where it is not possible to use a skylight, a duct flue connected to exhaust registers at the top of the stage tower must run to the top of the building and be connected to an exhaust fan.

**Audience Seating Areas**

The supply air must be furnished from the ceiling, the side walls or in some cases from the edges of balconies. Air may conceivably be supplied from the seats but air distribution and noise problems make this difficult and costly to do properly.

With small balconies, side wall supply distribution emptying into the central seating area is satisfactory, but deeper balconies will require some ceiling supply air and possibly under-the-seat returns.

A certain amount of exhaust air should be taken from the ceiling of the seating area in order to prevent formation of pockets of hot air which can produce a radiant effect with resulting discomfort and increase in the cost of air conditioning.

Location of thermostats and humidistats in the seating areas is impractical, so they should be placed in return air ducts. Several schemes for returning the air near the seating areas are shown in Figure 3.

**Auxiliary Areas**

Theater lobbies and lounges and even corridors sometimes contain works of art to be viewed by the patrons during intermissions. In such cases, the lighting intensity is often increased from an average of 3-6 watts per sq ft to 12-15 watts per sq ft. This creates a large increase in the air-conditioning load for areas having such a relatively short period of occupancy. It may be desirable in the main lob-
Air Conditioning of Auditorium-Type Buildings

bodies to keep the lights on fully at all times, but in the lounges and corridors, dimming or shutting off part of the lights except during the intermissions may be practical to cut down on the air and refrigeration requirements.

During the intermissions, the population density in the lobbies, lounges and corridors may reach about one person per 5 sq ft. Roughly about one quarter or one third of the people leave their seats. However, since intermissions seldom last longer than 15 minutes, the heat build-up can usually be tolerated without increasing the air quantity. If it is desired to maintain peak comfort during intermissions, auxiliary air-handling units can be installed which will operate only during the intermissions, or two-speed fan motors may be used.

Since smoking is usually allowed in lobbies, lounges and corridors, the exhaust fans serving these areas should eliminate all the air directly to the atmosphere, and the supply air system should furnish 100 per cent outside air during intermissions. This can be done by means of proper damper and control arrangement. If it is desired to minimize the use of outside air, and it is shown to be economically feasible, activated charcoal filters may be utilized to purify the air.

The air-handling systems in fire corridors must be properly designed with fire dampers and smoke control devices in order to prevent the spread of fire and smoke between separated areas.

Houses of worship may also have auxiliary rooms which should be air conditioned. The manner in which this is done will be dependent upon the relationship of the architectural layout and the systems selected to furnish the air conditioning. Privacy between adjacent areas is an important factor in the air-distribution scheme.

In houses of worship and auditoriums it will usually be desirable to provide some degree of individual control in the air conditioning for the platform, sacristy, bema or choir area.

Sports Arena-Civic Auditorium

One of the most flexible of all building types is the combination sports arena-civic auditorium. In many respects it must follow the principles set up above for the seating areas in houses of worship and theaters. However, with the stage actually in the center of the arena for most events and with no possibility of having vertical ductwork, flexibility must be obtained through versatility in the design. Multi-speed motors or auxiliary air systems are two common means of providing variation in air quantity for different events.

Since all air generally originates from the ceiling or side walls (unless the arena has a balcony) the air must come down at velocities sufficient to reach the arena floor area. Return or exhaust is generally from the lower seating areas, either at the side of the aisles or under the seats. Vomitories are an excellent place for collecting the return or exhaust air from the sides of the aisles or under the seats.

Civic auditoriums may have separate seating and convention rooms, offices and other types of functional areas. Because of the diversity of uses and concomitant variation in loads, individual air-conditioning systems may be desirable at times for these rooms.

Due to varying degrees of usage, flexibility in the control of the environment system is essential for proper operation. Also, the possibility of odors and smoking is greater than in other buildings of mass occupancy. Therefore, positive measures such as activated charcoal filters or electronic ionizers should be used to dissipate odors, whether gaseous or particulate.

When an ice-skating rink is designed into the structure, the problems of ground water conditions, site drainage, structural foundations, insulation, and waterproofing enter into the picture. The rink floor may have to be strong enough to support heavy trucks. The floor insulation will also have to be strong enough to take this load. Ice melting pits of sufficient size, with steam pipes, must be furnished also. If the arena is to be air conditioned, the possibility of combining the air-conditioning system with the ice rink system should be analyzed. The radiant effect of the ice on the people and the roof heat on the ice must be considered in the design and operation of the system.

Enclosed Stadiums

A relatively new type of construction used for places of assembly is the open stadium with an operable roof which can be moved to completely enclose the stadium. When the roof is open, mechanical ventilation is not required. However, when it is closed, ventilation will be needed as in any auditorium. Ductwork must be run in the permanent sections of the stadium with the supply air high and the exhaust air taken in near or under the occupants' seats.

Some open stadiums install radiant heating coils in the floor slabs of the seating areas for use during cold weather in an effort to increase patronage attendance and comfort. Another means of providing warmth is the use of gas-fired or electric radiant heating located above the occupants.

Mechanical Equipment Rooms

In theaters, auditoriums of all types, and houses of worship, the location of the mechanical and electrical equipment rooms can greatly affect the degree of sound attenuation treatment required to isolate the sound from the seating areas. Mechanical equipment rooms located near the rear of the seating area are more critical than those around the stage area because of the normal attenuation of sound through space. If possible, mechanical equipment rooms should be located in an area which is separated from the main seating or stage area by a buffer such as lobbies, service areas, etc. Of course, the economics of the structure and site will be determining factors in this evaluation.

Generally, at least one mechanical equipment room should be furnished somewhere near the roof level to house the toilet, general exhaust, kitchen and emergency stage exhaust fans, if any.

REFERENCES

Two fans inflate and hold erect Forman School’s unique gym in Litchfield, Conn.

**TWO AIR-SUPPORTED STRUCTURES FOR ATHLETICS**

Forman School in Litchfield, Connecticut, couldn't afford to spend $260,000, the minimum cost for a conventional gymnasium. Nor could they afford another $250,000 for a 75- by 42-ft indoor swimming pool. So they resorted to blowing bubbles.

The first bubble pioneered the use of air structures for school athletic spaces, at a cost of $10,000. Pitched on top of a tennis court, it was used for various indoor sports including tennis and basketball. Forman's second bubble, attached on one side to a low-lying conventional building, provides winter shelter for an outdoor swimming pool, making it a pool for all seasons. The Architects Collaborative of Cambridge, Massachusetts, who were engaged by Forman to investigate the feasibility of air-supported structures, estimated that the combined cost of pool and air shelter was only one-fourth that of a similar-sized pool housed in a conventional building. This study was financed by the Educational Facilities Laboratories which also supported later studies on the lighting and heating of the bubbles, and contributed to the development of a plastic-flooried bubble. This third bubble, a permanent replacement for the first, was "launched" over 7,200 sq ft of plastic grass. This novel playing surface comes in 12-in. squares which were cemented to the asphalt court.

Besides low cost, the second main characteristic which attracted Forman was the easy erection and demountability of bubbles—Forman students prefer to play outdoors most of the year. In addition, these domes have proven to be durable, safe and comfortable.

The bubble is held erect by a slight internal pressure produced by centrifugal type blower fans. It can be inflated in one day or less and deflated even more quickly. When down, it can be folded into a compact parcel for storage or transport. Its shape must consist of circular elements for load balance. The most elementary anchorage system is equivalent to pitching a tent to the ground.

Still an infant in the building field, the limitations and potential source of trouble of air-supported structures are still not common knowledge; and many of the solutions to problems encountered by Forman's Director of Development Stowell Mears with the first bubble were incorporated into Forman's subsequent bubbles.

To begin with, Bubble No. 1 was completely unsheltered from the wind, which wracked the jamb of the single door so it did not close securely. Once a sudden gust managed to suck its single-door open and deflate it. Double doors are used in Forman's later bubbles, and revolving doors are another possibility. The bubble collapsed a second time when the two unprotected blower fans were buried under snow. The remedy involved building a housing over each fan with protected air inlets 6 ft above ground.

After some experimentation, Director Mears found that a high volume, low velocity hot air furnace would heat the bubble quietly and cleanly, bringing the bubble up to 40°F over outside temperature in 15 minutes.

About the toughest problem the tennis bubble presented was lighting. Adequate diffused sunlight streamed through the bubble's translucent vinyl-coated nylon skin on sunny days. But at night, in bad weather and on dark winter afternoons, when indoor recreation facilities were most...
The pool bubble is 108 ft long, 68 ft wide and 31 ft high. A concrete ledge for anchoring the bubble runs along three sides of the deck and atop a concrete canopy extending from the building's side (above). Green plastic at the end walls of the athletic tent (below) provides contrast so that tennis players can see the small white ball needed, artificial lighting is essential. Due to the nature of the game, a tremendous amount of light is needed to play tennis in a bubble. The problem was further complicated because lights could not be hung safely from the ceiling. Lighting consultant William C. Lam's solution was to place three 20-ft collapsible poles, curved to follow the roof contour, on each side. Attached to the poles were six 1,500-watt quartz lamps.

A different solution was evolved by Mr. Lam for the pool bubble. Light is provided by a strip of fluorescent tubes 46 ft long which lie inside a light-reflecting aluminum trough. Set on top of the concrete canopy which juts out from the adjacent commons building, the trough can be tilted to throw the light upward to bounce light off the ceiling, or canted downward when the dome is removed in summer.
monolithic reinforced concrete sets new height record in world's tallest hotel

The new 50-story, 2000-room, Americana of New York is said to be the world's tallest and finest luxury hotel. It also establishes a new height record of 501 feet for monolithic reinforced concrete frame hotels in the United States. Through the versatility of monolithic reinforced concrete, the architects for this outstanding structure were able to incorporate many new concepts in hotel design and services. Among its unique features are a 30,000 sq. ft. convention center with heavy-duty elevators, a truck-trailer lift, and a 26,000 sq. ft. pillar-less ballroom. Monolithic reinforced concrete is the modern construction material for high-rise and low-level buildings. Its design advantages are unlimited as it offers many cost and timesaving features. On your next project, investigate all of the advantages of this superior construction method.
The recently completed Hardin-Jefferson High School of Sour Lake, Texas, designed and engineered by the Houston architectural firm, Wyatt C. Hedrick & Associates. A 7½-in. deep cell MAHONAIRE System section was used practically throughout the 88,000 sq. ft. project. The result: "a squeeze down of 180,000 cubic feet in over-all requirements . . . quiet, uniform, balanced air distribution and diffusion—no pockets, no build-up, no drafts—and a project cost, built and basically equipped, of $10.06 per square foot." Additionally, an attractive and functional educational plant to meet the needs of the community—and well within budget limitations. Chief Architect: T. L. Dawsey, Jr. Chief Engineer: L. F. Coburn. General Contractor: Thad Dederick Construction Company. Mechanical Contractor: The Ellington Company.
The MAHONAIRE Ceiling System is versatile to provide varying design treatments. The auditorium of Hardin-Jefferson High School is a prime example, considerably different in outward appearance from other school areas but still using the MAHONAIRE System—structural decking, finish ceiling, lighting, conduit chases plus heating, ventilating and air conditioning—in one inexpensive application that was installed without trouble. The MAHONAIRE package "saved $1.25 per square foot" according to the architects.

*Patent applied for MAHONAIRE is a trademark of The R. C. Mahon Company

A ceiling concept becomes practical

The new MAHONAIRE Ceiling System is a low-profile cellular package integrating: (1) heating and/or cooling air distribution; (2) air diffusing channels; (3) structural support; (4) lighting; (5) sound control; (6) electrical facilities; (7) and utility raceways.

The inherent architectural benefits of such a system have long been recognized; some half-way answers have even been offered. The total answer had to wait until now for MAHONAIRE—sophisticated, precise, versatile, functional and, above all, practical.

Proof of its practicality are the probable cost savings on everything from purchase thru erection to maintenance. There are even cost savings in the building-height reductions made possible by using cell modules as little as six-inches deep.

Years in development, months in test, MAHONAIRE Ceilings have already been completely proven in diverse architectural projects. Sooner or later, MAHONAIRE Ceiling, or the companion design, MAHONAIRE Floor, Systems will have to be a part of your building plans. Both developments are prime examples of Mahon capability in the architectural field. Obtain your copy of detailed informative literature from The R. C. Mahon Company, 6565 E. Eight Mile Road, Detroit, Michigan 48234.
The fabrication know-how of a veteran door manufacturer has been combined with the metallurgical experience of a leading stainless producer to give architects and designers of commercial and institutional buildings custom quality stainless steel doors and frames at mass production prices.

Manufactured and marketed by The Alumiline Corporation, Pawtucket, R.I., all doors and framing are constructed of 18 gauge, 300 series J&L stainless steel, roll-formed with a lock-seam tubular design and with all-welded corner construction for maximum strength and durability. This new line of narrow-stile entrances is stocked in all basic sizes for immediate shipment.

Efficient production processes, developed over the years by Alumiline, plus standardization of basic roll-formed shapes, are responsible for the breakthrough that now brings the well-known qualities of stainless steel within the construction budgets allowed for most commercial and institutional buildings. These qualities include high corrosion resistance, greater strength/weight ratio, and a surface that is attractive in appearance, easy to clean and virtually maintenance free.

The new Alumiline stainless steel entrances are another example of how J&L is working with manufacturers in the development of quality stainless products to meet the high standards of American architecture.

For more information on Alumiline's stainless steel entrances, contact The Alumiline Corporation, Pawtucket, R.I. For details on the superior metal from which they are made, let us refer you to our Architectural Services.

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For more data, circle 92 on Inquiry Card
FLUID ROOFING SYSTEMS OF SYNTHETIC RUBBER

Part 3 (conclusion): Typical fluid systems; flashing details

Typical Systems
Described here are five typical Neoprene/Hypalon roofing systems. The first three are "general purpose" systems, while the last two were developed to satisfy specific roofing requirements.

1. General-Purpose System for Monolithic Roof Decks. This roofing system is the one most frequently specified. It can be applied to any suitable hard, dry substrate and consists of a primer, two applications of neoprene and two applications of Hypalon. Thickness of the finished membrane is generally 15 to 20 miles.

Membrane thickness may be reduced below 20 by eliminating one of the neoprene applications when the following conditions prevail: (1) the roof deck is composed of dense poured or pneumatically applied concrete; (2) surface of the deck is always in compression, so that cracking due to negative forces is eliminated; and (3) slope of all areas is steep enough to rapidly drain off water. However, such a reduction in membrane thickness should be attempted only upon the advice of the roofing manufacturer.

2. General-Purpose Mat-Reinforced System. This system produces a heavy-duty membrane. It consists of a primer followed by an application of neoprene into which reinforcing mat is laid. Enough neoprene is then applied to fill all interstices and completely embed the mat. Two applications of Hypalon follow to complete the membrane. The introduction of a reinforcing medium increases overall thickness of the system to about 30-35 mils.

A membrane of this type is extremely tough and resistant to foot traffic.

3. General-Purpose Fiber-Reinforced System. This system is similar to the one above. In place of the reinforcing mat, however, chopped glass fibers are dispersed into the first coat of wet neoprene to act as reinforcing medium. The fibers are then embedded into the base coat with a roller dipped in solvent. When the fiber-filled base coat is dry, additional coats of neoprene are applied until the fibers are completely embedded. The usual two coats of Hypalon complete the membrane. Over-all thickness is again about 30-35 mils.

4. Special-Purpose All-Hypalon System. This special-purpose system has been developed for thin-shell concrete roofs with substantial slopes. This system consists of a neoprene primer and two or more applications of Hypalon. Total membrane thickness varies between 6 and 12 mils and is based on specific design considerations.

 Drain flashing

This article is based on technical information developed by the Elastomer Chemicals Department, E.I. du Pont de Nemours & Company.
allowed to dry thoroughly before tapes are laid. This base coat will prevent moisture in the roof deck from penetrating to the tape. Pressure-sensitive cotton tapes should not be used on soft or porous roof decks, nor should they be laid into roofing that has not thoroughly dried.

**Nylon Tape.** Like glass tapes, nylon tapes must be applied into wet coatings. Nylon tapes are highly moisture resistant, but are subject to minor swelling when exposed to solvents in the roofing solution. However, they prove satisfactory if base and overlying coatings are allowed to become thoroughly dry before the roofing membrane is applied. Use of nylon tapes over cracks, contraction or construction joints has a special advantage: tape elongation will, to some extent, accommodate future increases in crack or joint width.

**Miscellaneous Tapes.** Tapes of phenolic-treated, random-mesh glass mat or glass scrim are compatible with the neoprene/Hypalon system, but they do not possess the strength of woven tapes. These non-woven glass tapes contribute most to a successful job when used over a surface curved in two or more directions, such as a dressed drain. This is because these tapes can be stretched in any direction during application. Like glass and nylon tapes, they must be applied into wet roofing.

**Over-all Glass Fiber Reinforcement Mat.** Non-woven glass fiber is a satisfactory material for providing over-all reinforcement to a neoprene/Hypalon membrane (system 2). For membranes of normal thickness, a phenolic-bonded non-woven glass matting is suitable if approved by the roofing manufacturer.

**Loose Fibers.** The neoprene/Hypalon roofing system incorporating loose glass fibers as the reinforcing medium shows much promise on complicated decks or where considerable flashing is required (system 3). The fibers are cut from glass roving by a special air-operated chopping and blowing device. This device blows the fibers into the wet neoprene roofing. If desired, bulk fibers can be dispensed by hand. After dispersing, the fibers are embedded, or laid flat, with a solvent-dampened roller. Additionally neoprene and Hypalon coatings are then applied as specified. The completed membrane will have the same characteristics as one reinforced with glass mat as described earlier.

**Expansion Joint Seals.** Sealing expansion joints with calendered neoprene or Hypalon sheeting is a common practice with many advantages. The cured sheeting should have a hardness of 50 to 70 durometer A, should be no less than ¾ in. thick and wide enough to span the joint with at least 2½-in. overlap on each side. Calendered sheets used for this purpose must be compounded for maximum weather and ozone resistance and non-staining characteristics.

Color of neoprene sheets is usually black or dark gray; if color is desired, it can be obtained by tinting with a suitable colorant.
NEW MOVABLE "ZIPPERED" WALL SYSTEM FEATURES NO EXPOSED JOINTS OR SEAMS

The Penn Metal Company has announced the first movable wall system with no exposed joints, seams or cracks which can be "unzipped" in minutes. The cost of the new gypsum-faced wall system, called Penwall Kwik-Zip, compares favorably with fixed-wall installations, making these walls practical for apartment and residential construction as well as for customary commercial and industrial applications, the company reports.

The process of installing the system is shown at right. The workman (1) sets a panel of 114- or 3/8-in. thickness in place in the steel stud framing; (2) taps the snap-in batten strip into place to hold the panels together at the joint (no other fastenings are required); (3) applies the special, high tensile strength tape over the batten strip; (4) applies a single coat of topping compound over the tape (note tongue of tape sticking out at bottom of panel); (5) sands lightly to obtain an absolutely smooth, flush surface; and (6) paints completed wall. To remove the wall, the workman simply grabs the tongue or tape (visible in No. 4), pulls it sharply upward to uncover batten strip, removes the strip and the wall panels.

Penn Metal Company, Inc., P.O. Box 1468, Parkersburg, W. Va.
CIRCLE 300 ON INQUIRY CARD

CENTRALIZED PNEUMATIC CONTROL SYSTEM FEATURES SEPARATE SENSORS AND CONTROLLER

Honeywell's new centralized pneumatic control system for heating and air conditioning, has a separate sensor and controller so that sensors can be located at remote points throughout the building, and the controller installed up to 1,000 ft away at any location where it's easy to set. The only link between the two is a single pneumatic line of either copper or plastic tubing. Whatever adjustments are needed can be made at the controller; and, by installing gages near the controller, the operator has remote indication and control at one central location. With this new system, Honeywell estimates that centralized control will cost as little as 10 per cent more than a conventional pneumatic system without centralization, making centralized control economically feasible for small and medium size buildings.

Key components of the system shown in the photo are: a controller (here a dual-input model with gages showing branchline air pressure, water temperature, outside air temperature and remote control point adjustment); temperature indicator (also available in vertical, horizontal and rectangular models); a rod-and-tube sensor and a room sensor. Other components engineered for the new system include alarm and indicating lights, target indicators to show off-normal and on-off-conditions, recorders and programmers. Honeywell, 2755 Fourth Ave. South, Minneapolis, Minn., 55408
CIRCLE 301 ON INQUIRY CARD

more products on page 232
INSULATING GLASS
In addition to specifications for Therm-O-Proof insulating glass, an eight-page booklet gives details on standard sizes, specialty configurations and information on the reduction of heating and air-conditioning costs when Therm-O-Proof is used. Thermoproof Glass Company, Sales Promotion Dept., 4815 Cabot Ave., Detroit, Mich., 48210.

PARTITIONING SYSTEMS
The six basic AetnaWall partitioning types for commercial, industrial and institutional interiors, are described in a revised 32-page catalog by means of installation photographs, detailed specifications and engineering detail drawings. General information pertaining to special components, doors, sound control and electrical wiring is also included. Aetna Steel Products Corporation, 730 Fifth Ave., New York, N.Y.

POST-TENSIONING CONCRETE SLABS, BEAMS AND COLUMNS
A new brochure tells the techniques and hardware required for post-tensioning concrete slabs, columns and beams in such structures as flat slab apartment buildings and multi-level parking structures, and post-tensioning of decks for watertightness, using a seven-wire strand system. Details of anchorage size, type of tendons, maximum eccentricity of tendons, wall to slab connections, corrosion protection, cable lengths, light-weight tensioning jacks, fire resistances and pocket elimination are covered. Atlas Steel Service Corp., 14809 Calumet Ave., Detroit, Mich., 48210.

SPIRES AND CROSSES
The 1964 edition of the Overly catalog “Spires and Crosses” contains specifications for steeples, crosses and five basic types of spires. Installation photos of 19 different spire and cross designs illustrate the catalog. Overly Manufacturing Company, 754 W. Otterman St., Greenburg, Pa., 15602.

INDUSTRIAL INSULATIONS
A new 24-page catalog on industrial insulations for operating temperatures from -450 F to +1,200 F has been published by Pittsburgh Corning. The booklet deals with the installation of asbestos pipe insulation for temperatures from +100 F to +1,200 F; cellular glass insulation for -450 F to +800 F; and rigid polyurethane foam insulation for -530 F to +200 F. Physical properties of the three insulations are included, along with installation photographs, application specifications, line drawings and accessory items. Request Booklet FI-109, Pittsburgh Corning Corporation, One Gateway Center, Pittsburgh 22, Pa.

HEATING AND AIR-CONDITIONING UNITS
An eight-page condensed catalog on Mueller Climatrol’s entire product line of climate control equipment for the residential and light commercial field gives a brief description, capacities and dimensions of electric, oil and gas heating equipment and air-conditioning units. Mueller Climatrol Division, PO. Box 401, Milwaukee, Wis., 53201.

INTERIOR DECORATING

FIBER GLASS
A four-page fiber glass “Fact Sheet” and “Material Check List,” regarding the application of glass-fiber reinforced plastics in roof-mounted fans, ventilation, equipment housings, penthouses and screens, covers such points as durability, appearance, strength, material properties and fire resistance. Williams-Bermuda Corporation, P.O. Box 2053, Pasadena, Calif.

ELECTRICAL FLOOR BOXES
Electrical floor boxes for locating wiring outlets in the floor are the subject of the new 12-page “Bulletin FB-1.” Steel City’s new line is fully illustrated together with detailed specifications for both concrete-tight and water-tight designs. Steel City Division, Midland-Ross Corp., Pittsburgh, Pa., 15223.

FILM AND DIGITAL DATA REDUCTION
Gerber’s line of digital data reduction, film reduction, and plotting equipment is described in a catalog of eight pages. Fully illustrated, the catalog contains concise descriptions and prices of the equipment, ranging from the Gerber variable scales to their X-Y plotter. Gerber Scientific Instrument Company, P.O. Box 305, Hartford, Conn.

PERIMETER RADIATION
The design advantages of Architrend Sil Fun enclosures for hot water or steam heating systems are discussed in a color brochure (Form 4200). The booklet contains an enclosure diagram, dimensional information and Btu capacity ratings. Schemenauer Manufacturing Company, Holland, Ohio.

CERAMIC TILE INSTALLATION
The Tile Council of America has revised its handbook on installation of ceramic tile. Accompanying installation instructions are detailed sketches for ceramic tile floors, walls, countertops and shower receptors which include information on control joints. New in this edition are installation details on tile swimming pools, all-tile tubs, refrigerator rooms and steam rooms. Also discussed are materials for setting and grouting ceramic tile. Price 10 cents. Tile Council of America, 800 Second Ave., New York N.Y., 10017.

Office Literature
For more information circle selected item numbers on Readers Service Inquiry Card, pages 271-272

INSULATING GLASS
CIRCLE 400 ON INQUIRY CARD

PARTITIONING SYSTEMS
CIRCLE 401 ON INQUIRY CARD

POST-TENSIONING CONCRETE SLABS, BEAMS AND COLUMNS
CIRCLE 402 ON INQUIRY CARD

SPIRES AND CROSSES
CIRCLE 403 ON INQUIRY CARD

INDUSTRIAL INSULATIONS
CIRCLE 404 ON INQUIRY CARD

HEATING AND AIR-CONDITIONING UNITS
CIRCLE 405 ON INQUIRY CARD

INTERIOR DECORATING
CIRCLE 406 ON INQUIRY CARD

FIBER GLASS
CIRCLE 407 ON INQUIRY CARD

ELECTRICAL FLOOR BOXES
CIRCLE 408 ON INQUIRY CARD

FILM AND DIGITAL DATA REDUCTION
CIRCLE 409 ON INQUIRY CARD

PERIMETER RADIATION
CIRCLE 410 ON INQUIRY CARD

CERAMIC TILE INSTALLATION
CIRCLE 411 ON INQUIRY CARD
Everett Associates, Architect-Engineer, investigated both reinforced concrete and structural steel for the framing material . . . then chose steel, when steel proved more adaptable, more economical.

To be completed late in 1963, the Allentown City Hall and Police Building will be one of the nation's most flexible and complete administrative facilities. The structure launches the first phase of an extensive redevelopment campaign in Allentown, Pa.—an "All-America City."

Main portion of the $3 million Allentown City Hall and Police Building is a 5-story city hall; it's joined to a 2-story police building. Floor space: 120,000 sq ft above ground (underground parking covers nearly the whole site). Main tower is cantilevered at 2nd floor on three sides—6 ft on the east and west, 10 ft on the south. Curtain walls are precast, prestressed concrete channel slabs, 39 ft long, with a pebble finish; they're hung from 5th floor level. Window pattern is staggered.
The architect wanted two-way steel made them easy...

In the unique design of the Allentown City Hall and Police Building, the main tower is cantilevered at the second floor on three sides—6 feet on the east and west, and 10 feet on the south.

At first, these cantilevers looked like a natural for reinforced concrete in a waffle-slab system. But thorough study of both concrete and structural steel proved exactly the opposite.

6-ft cantilevers on east and west . . . solved by steel
In the concrete design, columns were located in the set-back exterior wall at the first floor, and carried up through the four floors above. This resulted in columns occurring in the middle of certain rooms—an undesirable feature of the concrete design.

The steel solution is shown on the key plan and Section A-A. Two parallel 30-in. wide-flange steel beams cantilever 6 ft beyond the first floor columns, and carry the exterior columns for the upper floors. This feature allows the exterior line of columns to be moved into the wall, where a line of columns rightfully belongs. In addition, to allow passage of utilities near the interior support of the cantilevered beam, the beam depth was reduced by coping the lower flange and welding on a tapered flange to replace it.
cantilevers.
and saved money, too!

10-ft cantilevers on south . . . solved by steel
The 10-ft cantilever on the south side, and the two-way cantilevers required at the corners (see key plan) were solved by dropping the girders in the southernmost frame, thereby allowing the filler beams to pass over the girders and develop the cantilevers rather simply at each floor. (See Section B-B.)

North wall problem . . . solved by steel
The architectural concept dictated that the north wall be carried from the second to the fifth floors on a column-free support over the center of the council chamber located on the first floor at the north end of the building. Since the north wall was windowless, this problem was solved by a story-height truss, which carries the columns above, and provides a column-free council chamber at the ground floor.

Steel frame cost less than concrete
Steel framing not only proved more adaptable to this unusual architectural concept, but also cost considerably less than the proposed concrete frame, according to the architect.

We'd like to prove to you that structural steel, with very few exceptions, can do anything any other structural material can do—and do it better. If you are planning to build or design a new structure, the Bethlehem sales office nearest you will be pleased to discuss the project with you.
Hartford, Connecticut...
first utility plant to market chilled water
for air conditioning uses Carrier refrigeration

In operation since early June, 1962, the Hartford Gas Company's new steam and refrigeration plant sets a precedent in the utility field.

Although steam has long been distributed and sold by utilities in major cities, this is the first time chilled water for cooling has ever been sold on the same basis in a downtown area.

The new plant serves twelve buildings. Its four-pipe distribution network weaves 5200 feet through a highly developed commercial area. It provides a peak capacity of 10,500 tons of cooling and 225,000 pounds per hour of steam. The amount of cooling contracted for among the buildings varies widely—75 to 3250 tons.

Steam-turbine-driven Carrier Centrifugal Refrigeration Machines provide the chilled water for air conditioning. There are four in the plant—one with a cooling capacity of 4500 tons, the largest ever built... one of 3000 tons... two of 1500 tons.

The success of the Hartford project indicates that utility-operated plants supplying chilled water are practical for other cities—particularly those planning urban renewal. However, this can only be determined by exhaustive economic and engineering analysis—as fuel sources, means of distribution, climate and costs will vary from one project to another.

An experienced firm of consulting engineers can best conduct such a study.

Carrier, with its full line of large refrigeration equipment and far-flung sales force, is best equipped to advise on equipment performance and selection. Carrier equipment serves such diverse complexes as Kennedy International Airport (absorption equipment), O'Hare Field in Chicago (electric hermetic refrigeration machines), the Lincoln Center for Performing Arts in N. Y. (steam-turbine-driven centrifugals), Texas A.&M. campus (absorption), Notre Dame University (steam-driven centrifugals), NASA Manned Spacecraft Center, Houston (steam-turbine-driven centrifugals).

Carrier has prepared a 22-page booklet entitled "Chilled Water as a Utility" examining the advantages of the central plant and outlining cost and design factors in matching it to cooling usage. Whatever your interest in a central refrigeration plant—for urban renewal, government center, campus, industrial park, airport or hospital complex—we believe you will find it helpful. For your copy, without obligation, call your local Carrier representative. Or write Carrier Air Conditioning Company, Syracuse 1, New York. In Canada: Carrier Air Conditioning (Canada) Ltd., Toronto 18.

The largest refrigeration machine ever built projects at the far end of the plant beyond three smaller machines. This Carrier 4500-ton capacity Centrifugal was put "on stream" early in July, 1963. At right are turbine-driven pumps which send chilled water 10,400 feet on its round trip to twelve major downtown buildings.

**Key:**
- Hartford Gas Central Plant
- Buildings served by plant
- Buildings planned or under construction
- Lines in operation
- Future lines

For more data, circle 93 on Inquiry Card
Fluid Roofing Systems
of Synthetic Rubber
Part 3: Typical fluid systems:
flashings, continued from page 216

sired, they may be top coated with
colored Hypalon roofing solution.
Hypalon sheets are obtainable in a
variety of colors. However, field-coating
with Hypalon roofing solution is
a more economical method of achieving
continuous roof color.

Neoprene Contact Adhesive. This
type of adhesive is very effective for
applying expansion-joint seals. Sub-
strate surfaces should first be primed
and the primer allowed to dry thor-
oughly. The adhesive is then applied
to both contact surfaces and allowed
to achieve the necessary tack. When
the joint strip is laid into place, ad-
hesion to the substrate is almost in-
stantaneous. End laps are sealed in a
similar manner.

Caulks. One-part Hypalon-based
caulking compounds have proven
serviceable for filling major cracks in
deck surfaces. Like Hypalon roofing
solutions, these caulks cure into per-
manently flexible materials that ex-
pand and contract with the deck sur-
face, resist weather and moisture.

Flashing
Flashing tapes should be installed
where called for on the drawings
and/or in the following locations:
(1) vent pipes and stacks; (2)
drains; (3) corners where roof inter-
sects walls, cants, parapets, non-
monolithic curbs and pads, and at any
location where differential movement
of collateral members can be fore-
cast.

Reinforcing tapes should be ap-
plied wherever called for on the drawings
to all cracks and joints
wider than \( \frac{1}{8} \) in. and to contraction
and construction joints including
grouted joints of precast sections,
joints between dissimilar deck mate-
rinals (i.e., at tops of hips and ridges,
plywood eaves, gable edges) and met-
al edges of flashing, fascias, eave
trims, etc.

All surfaces to which tapes are to
be applied should first be primed.

John Hancock Mutual Life Ins. Co., Boston
Cram and Ferguson (Hoyle, Donan & Berry),
Architects & Engineers
Turner Construction Company, Builders

Thirty-five years ago Sandell introduced the
S Wire Flashing, the first permanent, con-
formable thru-wall flashing with a coefficient
of expansion close to that of masonry. It set
a new standard in the industry and was
specified and used in such buildings as the
John Hancock Mutual Life Insurance Co.,
Boston, Mass.; Willow Run Plant, Ford
Motor Co.; Architectural Building, M.I.T.;
Southern Bell Telephone Co., Gastonia,
N.C. A proven performer, the S Wire Flash-
ing is increasingly in demand for today's
waterproofing needs.

The newest Sandell flashing first is DUO-
WELD, the one flashing where inorganic
copper is ingeniously combined with inor-
ganic fiberglass to meet the special need for
unusually tough flashings that cannot rot or
delaminate in service. Architects and engi-
neers continue to look to Sandell for the
best product answers to waterproofing
problems, and for reduced installation and
maintenance costs. Write Dept. B for com-
plete information, including specifications,
test results and samples.

For instance: at spandrel beams, Sandell
Type S Wire Reinforced Flashings protect
the steel and prevent seepage over heads of
windows or at the ceiling.

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SANDELL
POLY-TITE

THE ONE, ONE-STEP JOINT SEALANT
THAT HAS UNIVERSAL APPLICATIONS

Water and weather tight, whether below or above grade, Poly-Tite can be directly applied to any expansion joint of any construction material. Poly-Tite forms an impenetrable seal that responds but does not bow to nature. Permanently flexible and resilient from -20°F to +190°F, Poly-Tite's built-in expansion force guarantees a constant bond even against moving joints. In industrial construction Poly-Tite provides shock absorption and thermal insulation as well as water, dust and vapor seals. It has proven the ideal sealant for expansion joints in foundation walls and for vertical and horizontal joints in curtain walls. It has been used for all types of concrete form and expansion joints, and for tilt-up and lift-slab constructions. Where any joint has to be permanently sealed against the elements, Poly-Tite offers a better joint seal a better way... more economically.

POLY-TITE ONE-STEP SEALANT provides a completely impenetrable, water-proof joint seal that holds 72" of water hydrostatically at 50% compression.

Architectural Record
March 1964

Tape should be laid as soon as the primer is dry and before the over-all roofing membrane is applied. Tapes must not be stretched as they are applied.

Glass Tapes. Liquid roofing solution should first be applied to an area 1 in. wider than the tape or flashing involved. This can be done with a brush or narrow roller. Enough roofing solution should be applied to the deck so that it will penetrate the tape as it is laid. While the coating is wet, tapes should be laid in the desired position and smoothed into place with a fairly stiff brush, eliminating wrinkles, dry laps and fishmouths. If a second strip of tape is required (e.g., against vertical surfaces), it should be applied immediately after the first.

All end and side laps should be at least 2 in. wide. Reinforcing tapes should be wide enough to extend at least 1 1/2 in. beyond the crack or joint on both sides. Width of flashing tape should conform to architectural drawings. As soon as tapes are in place, a top coat of neoprene solution thick enough to fill and cover the tape should be applied. The coated tape should be allowed to dry thoroughly before applying the over-all membrane.

Nylon Tapes. Nylon tapes should be applied in a similar manner. After the tape is embedded in the base coat, however, an hour or so should elapse before applying the top coating of neoprene. This time lapse permits solvent vapors to escape.

Pressure-Sensitive Cotton Tapes. These should be applied directly to the dried, primed roof deck. The tape should be smoothed by hand as it is laid into place, applying sufficient pressure to insure complete adhesion. It must be applied without forming wrinkles, blisters or fishmouths, but must not be stretched. When tape is in place, a coating of neoprene should be applied over the tape to at least 1 in. beyond its edges. Thickness of this coat should be adequate to completely fill and cover the tape.

Because of their tendency to shrink, pressure-sensitive cotton tapes should not be used around drains or in internal corners where sub-surface voids might result. Nor should they be used over soft or easily damaged deck materials, such as fiberboard insulation, vermiculite or foamed concrete fills.
Famous residence of Mr. E. P. Taylor, Lyford Cay, Bahamas.

Architect: Eldredge Snyder, New York, N. Y.

The Ludowici-Celadon roof crowning this beautiful home is Designer gray...
Many patterns and colors to enrich the architect's most talented expressiveness are available.

The truly fine home... characterized by the permanent elegance of a LUDOWICI ROOF

FOR FULL PARTICULARS CONTACT ARCHITECTURAL DEPT. AR

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

For more data, circle 95 on Inquiry Card
Foresight

Foresight was the byword in the late Eero Saarinen’s planning of the Dulles International Airport.

Plush mobile lounges whisk passengers effortlessly to the huge silver birds perched on the runways. A veritable forest of millions of trees were strategically planted to cushion the roaring of the jets from the ears of people who will someday populate the area around Dulles but who now don’t even exist.

Foresight was used too, in the locksets chosen for this monumental terminal. Lockwood Mortise Locksets—structurally strong and mechanically perfect enough to give faithful service far into the future.

LOCKWOOD

LOCKWOOD HARDWARE MFG. CO.
FITCHBURG, MASSACHUSETTS
"OUR 640-TON ELECTRIC HEAT PUMP will keep our entire 220,000-square-foot plant and offices at 70° year-round, regardless of outside temperatures," says Frank Flick.

"TOTAL ELECTRIC SPACE CONDITIONING FOR OUR PLANT WAS THE BEST RECOMMENDATION OUR ARCHITECT MADE"

Frank Flick, President of Flick-Reedy Corp., Bensenville, Illinois, reports on the advantages of using flameless electricity as a single source of energy for all plant heating, cooling and lighting.

"Without any doubt, one of the most important new design elements in our new Flick-Reedy plant is total electric space conditioning," reports President Frank Flick. "By following our architect's recommendation and using electricity as our only source of power, we have obtained a markedly more efficient operation.

"Greater plant cleanliness, for example, has enabled us to improve the quality of the hydraulic cylinders and sealing fittings manufactured by our two divisions. And automatic year-round air conditioning—with heating and cooling both provided by our electric heat pump—has resulted in a sharp drop in absenteeism and a consequent increase in production.

"On the basis of our own experience here at Flick-Reedy, I would strongly recommend that anyone involved in industrial design look into the advantages of total electric space conditioning as soon as possible."

For architects and consulting engineers, total electric space conditioning offers the modern method for combining heating, cooling and lighting into one efficient operation using a single source of energy. In many cases, recommended lighting levels can provide a substantial part of the heat as well, thereby reducing the size, space requirements, and cost of heating equipment.

If you are interested in finding out ways in which total electric space conditioning can help you in the design of industrial and commercial buildings, contact your local electric utility company. They will welcome the opportunity to work with you.

BUILD BETTER ELECTRICALLY

Edison Electric Institute, 750 Third Avenue, New York 17

CITED FOR "IMAGINATIVE BOLDNESS," the award-winning Flick-Reedy plant features total electric design. Architect-engineering firm was Zay Smith & Associates, La Grange, Illinois.
Why moving walkways? Call it what you will... power sidewalk... passenger conveyor... moving walkway... moving sidewalk... the basic idea of a Turnbull Elevator Pedesta-Ride is to move people (large numbers of people) and their luggage or their shopping carts from one place to another, either surface is a real "magic carpet"—free from sway, sag or weave. of linkage breakdown because its heart is a band of cold rolled, tempered carbon steel of high tensile and stability. the core for a designed rubber that gives a safe, comfortable platform under all conditions. Turnbull Elevator Pedesta-Ride is the ultimate in continuous transportation—regardless of traffic peaks—for shopping centres, parking facilities, exhibitions, transportation terminals and countless other uses. Why economical accepted Canada, there's a Building at this year's World's Fair. In fact, whenever you want to move people from one place to another, investigate the advantage of Pedesta-Ride. For information write to...

Passenger Elevators
Parking Garage Elevators
Dumbwaiters
Freight Elevators
Moving Walkways
Power Scaffolds

For more data, circle 98 on Inquiry Card

ARCHITECTURAL RECORD March 1964 229
ANDERSEN PROVIDES THE WINDOW SOLUTION FOR ANY TYPE OF LIGHT CONSTRUCTION
How finely detailed STOCK WINDOWS enhance the crisp design of a Minnesota school

Hammel and Green's elegant design of the new Stillwater, Minnesota High School is a study in attention to detail. Here are simple, uncluttered lines boldly presented to form an interesting, integrated design.

It's the successful realization of an architect's all-out striving to create functional beauty. It involved carefully weighing and considering the tiniest details of design and material.

That stock Andersen Casement Windows could become an integral part of such a design is a tribute to their finely detailed lines and the craftsmanship that goes into their manufacture. Andersen Casements contribute to the over-all architectural scheme ... become an important design element without being obtrusive.

And all this window beauty comes with the assurance that Andersen Casements will operate smoothly, silently, almost effortlessly for the life of the school. They will save on heating costs. They will keep students in draft-free comfort during the most bitter winter weather. What more could be said ... or expected ... of any window than this?

Check Sweet's File. Or, contact your Andersen distributor for a Tracing Detail File. All Andersen Windows are readily available throughout the United States and Canada.
Over one hundred Rust-Oleum Factory Engineers work closely with architects all over the country. But, they don't stop there. They follow the job down the line. They work with the fabricator, the contractor, the painter. They see that the right Rust-Oleum system is used and that it is applied correctly. The Rust-Oleum man who was working with you on coating specifications yesterday may well be working with a painter on the job-site the next day. The Rust-Oleum man knows his business. He follows through at all levels. We call this DEPTH SERVICE . . . a service that very few companies are qualified to render.

Rust-Oleum is available in many specialized systems and in many attractive colors. It beautifies as it protects tanks, structural steel, towers, bridges, steel sash, machinery, equipment, etc., throughout industry and municipality. Your nearby Rust-Oleum distributor maintains complete stocks for immediate delivery.

Write for brand new Rust-Oleum Specifications Guide. Request Form No. 6408 at no cost or obligation.

RUST-OLEUM

There is only one Rust-Oleum. Distinctive as your own fingerprint. Proved throughout industry for over 40 years.

RUST-OLEUM CORPORATION • 2464 Gorton St., Everston, Illinois and in Haarlem, Holland

Product Reports
continued from page 217

CHAIR, OTTOMAN DESIGNED FOR COMFORT

Architect Eric Defty has designed two chairs, an ottoman and a glass-topped coffee table. The bases for the furniture are of nickel-plated steel, all utilizing the same opposing curves. The chair can also have a stainless steel base, and its cushion is of leather. Phoenix Development Corp., 401 N. Euclid, St. Louis 8, Mo.

Circle 302 on Inquiry Card

HEAT PUMP

Both heating and cooling capability are combined in a new Comfort Pac series of reverse cycle heat pumps. Designed primarily for garden apartment and other multi-unit applications, the packages come in 1½ and 2 ton capacities. The 14-in. depth of the condensing unit allows it to be mounted flush with the outside wall. The 12½-in. depth of the blower package permits it to be concealed in a closet ceiling or mounted in a false ceiling with plenum and discharge grill. Peerless Corporation, 1853 Ludlow Ave., Indianapolis, Ind.

Circle 303 on Inquiry Card

QUIET OPERATING FILTER BLOWER

A new filter blower air system, offered in two models of G. E.'s 1964 Superline series of room air conditioners, has a lower operating noise level, the company reported. Basically, the filter blower consists of a one-piece drawn aluminum wheel with over 1,000 tiny blades cut into the wheel. A heavy duty filter is fitted in the inside perimeter of the wheel and spins with it. The filter doubles as a

For more data, circle 99 on Inquiry Card

For more data, circle 64 on Inquiry Card
The PELLA Wood Double Hung Window is designed as a practical answer to the need for a double hung window where quality and convenience are primary. Some of the features of this window are apparent... some are hidden. Among the obvious ones are superior workmanship and finish. Less apparent is the ease of washing the outside of PELLA Double Hung Windows from the inside! Here's how: (1) Just lift the bottom sash a few inches. Pull in on the top and the sash pivots! (2) Now, you can wash the outside of the bottom sash from the inside! (3) To wash the outside of the top sash, pull it down part way, pivot it and the outside comes inside! (4) Just reverse the procedure and the sash slip back into place.

The New PELLA Wood Double Hung Window...

Two all-aluminum screen options are available. First, there's a full screen that swings outward when you pivot the sash for washing.

Then, for those who prefer, there's a lower half screen. Both of these screens are removable from inside, making outside ladder climbing obsolete.

Storm panel fits into the inside of the sash, making outside storms unnecessary. Welded insulating glass or single glazing is optional.

For traditional styling, snap-in, snap-out mun-lin bars of wood are available. They come in horizontal, rectangular and diamond arrangements. They make window cleaning and painting easier and faster.

Additional design features and benefits:

- Rigid steel frame at the head protects flat overhead clock-spring-type sash balances during trimming. Stainless steel weatherstrip at head and check rail plus woven pile weatherstrip at the jambs seal out the weather. Woven pile weatherstrip also seals over an aluminum interlock at the sill.

For the latest in quality, convenience and traditional styling, PELLA Wood Double Hung Windows offer a new standard for comparison and value. Full range of ventilating and fixed sizes.

Rush the attached card today for information about PELLA Wood Double Hung Windows.

PELLA MAKES QUALITY WOOD WINDOWS, WOOD FOLDING DOORS AND PARTITIONS, WOOD SLIDING GLASS DOORS AND ROLSCREENS

For more data, circle 109 on Inquiry Card
THOUGHTS FROM A MAINTENANCE ENGINEER

"Used to be a tough job keeping kids and teachers comfortable... rooms always too hot or too cold. The Valedictorian changed all that. Temperature stays just right in here... whatever the weather's doing."

"Another great thing about the Valedictorian... filters slide in and out just like a drawer. I don't even have to carry a screw driver."

Modine Valedictorian unit ventilators are constantly alert, instantly responsive to students' comfort needs. A unique "weather control center" dictates total heating, cooling, ventilating and dehumidifying. Everything Modine Valedictorian does, it does quietly. And it's equipped to perform the full air conditioning function.

One-piece, cleanable urethane filters slide in and out fast and easy. Everything about Valedictorian is designed to make maintenance easy... right down to the feature that prevents small objects, such as paper clips, from falling into the fans to cause noise and fan damage. No danger either of injury from objects projected by fans.

A full line of attractive, functional accessories.

WRITE TODAY FOR UNIT VENTILATOR BULLETIN 1264
Never thought I could throw away my oil can. But look at me now... just pushing a button to lubricate a whole unit. "Sure easy to take care of. And tough as they come... take a lot of punishment from the kids and still look just as good as new."

Valedictorian has a single-station, pushbutton metered system that distributes lubricant under pressure to all oiling points. The entire unit is oiled in seconds. No need to remove front panel! And no tools needed! Quick-access, hinged control panels open with key-lock latches.

Valedictorians are virtually student-proof: scuff-resistant, vinyl-covered front panels; chip-resistant chrome trim; heavily-reinforced, sturdy-steel construction; long-wearing, baked-enamel finishes (7 colors). Same durability in Modine custom-styled storage cabinets and accessories.

The Valedictorian is more sensitive to classroom comfort than the student body!

For more data, circle 110 on Inquiry Card
more and more
great American architects
are using

MARMET

here are a few of the reasons:

SERIES 5212 CURTAIN WALL

With its unusual tower, this impressive motor inn offers weary travelers big city, luxury hotel living in Owensboro. Designed in the round, it permits a full windowed view for every room. Just below the swimming pool deck at the top, a sophisticated cocktail lounge has a spectacular 360° view of the country-side.

Glistening exterior sheath, from ground to top, is MARMET's Series 5212 curtain wall. An ideal system for high rise structures, it erects rapidly at lower costs. After vertical mulls are anchored to the building, wall panels and sash are stacked one atop the other and horizontally secured by a clip method that fits any condition. This stacking assembly is done from inside the building and often saves the time and cost of erecting scaffolding.

High rise cabins in Kentucky

GABE'S MOTOR INN • OWENSBORO

Guest room fenestration
Each room offers its own panorama through three large lites that contain a projecting window in the center section. This projecting AP is integrally fabricated into the 5212 sash unit at the factory. No separate installation at the job site is necessary.

Full circle fenestration "at the top"
Another example of the flexibility in the 5212 series is the floor to ceiling vista guests enjoy from the cocktail lounge. Each large lite is framed between exterior mulls. Dominant vertical accents on the exterior were obtained from the choice of large dominant mull extrusions MARMET offers in either the 5212 or 5142 series.
ARCHITECT:
R. BEN JOHNSON
Owensboro, Ky.

Curtain Wall
by
MARMET CORPORATION
BATTEN SEAM ROOF on Miss Porter's School, Farmington, Connecticut, was fabricated from 30,000 lbs. of Revere Sheet Copper. Architect: MOORE & SALSBCY, West Hartford, Conn. General Contractor: FELIX BUZZI & SON, INC., Torrington, Conn. Sheet Metal Contractor: EARNEST PETERSON, INC., Hartford, Conn.

YOU CAN DO ALL THREE, AND MORE, WITH

VERSATILE REVERE COPPER
"Man's oldest metal," is also his newest when it comes to design possibilities. The flexibility of copper in building construction is virtually unlimited.

It is because of this versatility of copper that architects are incorporating it in their work more and more. Scan the plans now taking shape on your boards . . . consider the ones you are planning for the future. There undoubtedly are excellent opportunities to take advantage of the tremendous design flexibility of copper . . . just the advantage you've been looking for to make your buildings outstanding works of achievement. You'll find copper doubly effective when you wish to combine utility with beauty.

Particularly significant in the use of copper, today, is the fact that its price is the lowest it has been in years. We believe it will pay you to "Have copper in mind when you design."

Revere's Technical Advisory Service will be glad to help you in creating the unusual with copper and its alloys. Get in touch with the Revere Office nearest you today.

SEND TODAY for free copy of "Copper and Common Sense," Revere's 140-Page Brochure illustrating the design principals and techniques of sheet copper construction. Also free companion piece, "The Revere System of Copper Flashing," for the complete weatherproofing of masonry buildings. Address Dept. "A.3" at address below.

REVERE
COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
Executive Offices: 230 Park Ave., New York 17, N. Y.
Sales Offices in Principal Cities . . . Distributors Everywhere

For more data, circle 112 on Inquiry Card
REPORT TO ARCHITECTS:

2 NEW TYPES OF DUCTING FOR FASTER, BETTER INSTALLATIONS

1. DAYVENT® plastic ducting provides extreme flexibility for duct and vent applications. It is quick and easy to install, yet permanent, corrosion-resistant and dependable.

The reinforcing wire is bronze coated steel, which is completely insulated with P.V.C. for rust and corrosion resistance. Dayvent is used for air conditioning, heating and venting systems—especially for lead-in ducts and elbows (see photo above).

Diameters from 3 to 8 inches, lengths up to 20 feet are available from stock. Larger sizes can be ordered in production quantities.

2. PLIADUCT* is an all plastic duct formed from a continuous extruded strip, so shaped that when it is coiled the edges interlock. The result is a plastic duct which is hand bendable and rebendable; available in any length and in diameters from 3/4 to 20 inches. Pliaduct can be increased or decreased in diameter, up to 25%, simply by twisting it. Length extends or compresses up to 35%. It can be compounded from P.V.C. or other materials to specific temperature ranges, chemical and physical requirements.

Easily fastened to other plastic or metal fittings, Pliaduct can be cut at any point or coupled at any point... all in a matter of seconds. The flexibility, easy workability, and efficient air flow of Pliaduct offer important advantages for many ducting and venting jobs. Samples are available upon request.

FOR COMPLETE DETAILS MAIL THIS COUPON TO DAYCO TODAY!

Please send me further information about:

☐ DAYVENT  ☐ PLIADUCT

Name ____________________________

Firm ____________________________

Nature of Business ____________________________

Address ____________________________

City ____________________________ Zone ______ State ______

For more data, circle 113 on Inquiry Card
PROBLEM:
Efficiently insulate, in limited time, a prefab steel building during construction.

SOLUTION:
Spray apply one-shot PAPI-based, self-extinguishing rigid urethane foam.
Average thickness: 0.9 inch.
Coverage: 10,000 sq. ft.
Time: three men, two days.

The new Carwin applications laboratory building, 7000 square feet with a 20 foot center height, presented an extreme heat loss potential. Insulation could only be applied during the relatively short interval after channeled steel panels had been placed, and before special wiring and piping began. Enjoying a unique opportunity of spraying PAPI one-shot rigid foam insulation on the very building they were to occupy, Carwin's own laboratory personnel laid it on lightly — it didn't take much — to produce the most efficient insulation at minimum cost. Come and see for yourself, or write us for the whole story on PAPI polymethylene polyphenylisocyanate.
YORK SUNLINE
Rooftop Air Conditioners
give these stores
a better climate for business!

These leading retail stores are air conditioned by compact York units that cool in summer, heat in winter, provide tempered, filtered air the year around. York SUNLINE Air Conditioners are roof-mounted, take no floor space for equipment or fuel storage.

Complete application flexibility. The York SUNLINE is a single unit that may be mounted anywhere on the building roof—not necessarily over the conditioned space. If a roof installation is not desired, it may be located on the ground, outside the building. Units may be installed with or without ductwork, to meet any application requirement.

"Zoned cooling." In a larger building, several units may be installed, each individually controlled. Then, one or more units may be operated independently—to meet changing occupancy conditions... and to effect operating economies.

Low ambient cooling. York SUNLINE Air Conditioners provide cooling even when outdoor temperatures are below freezing. York's highly efficient compressor, and exclusive "flooded condenser" assure full capacity cooling in any season.

When you plan air conditioning for any single-story building, get specification data on the York SUNLINE Rooftop Air Conditioners. Call your York Representative, or write directly to York Corporation, York, Pennsylvania. In Canada, call or write Shipley Company of Canada, Ltd., Rexdale Boulevard, Toronto, Ontario.
Neisner's Store, Batavia, New York, is heated and cooled by 6 York SUNLINE Air Conditioners. Conditioned air is distributed through ceiling diffusers.

Top Save Store, located in Westgate Shopping Center, Streator, Illinois. 6 York SUNLINE units provide year-round comfort conditioning for this modern retail store.

First National Store, Acton, Mass. Roof-mounted York SUNLINE units heat and cool entire store... take no floor space.

York SUNLINE units may be mounted anywhere on the roof, not necessarily over the area to be conditioned. Low silhouette design blends with the building roof line.
ENGINEERED BEAUTY and PERMANENCE

This Ellison stainless steel entrance with 4 Ellison Balanced Doors was recently installed in the New York Clearing House. Ellison, ONE SOURCE RESPONSIBILITY for entrances, provides complete custom design and engineering service that has proven a boon to many of the country's leading architects. Ellison engineers, backed by 48 years company experience, are ready to help architects with any entrance problems.

Ellison ENTRANCES

the BALANCED DOOR—the VARI-STILE door
in BRONZE
STAINLESS STEEL
TEMPERED GLASS
STEEL
ALUMINUM
WOOD

ELLISON BRONZE CO., Inc., Jamestown, N. Y.

For more data, circle 118 on Inquiry Card
24 Meters AND 400 amp Main Switch —yet only 62 inches wide!

This typical 3-wire S/N installation shows the compactness and versatility of SQUARE D's VERTICAL EZ STACK MULTI-METERING DEVICES

If you want to make the most of available wall space, Vertical E-Z STACK is for you! But saving space is only a part of the story. Drastically reduced on-site assembly cuts labor costs, too.

Vertical E-Z STACK is available either as components or as custom factory assemblies. Underwriters' Laboratories listed.

Write for your free copy of 20-page illustrated bulletin which describes Vertical E-Z STACK devices and installations in detail

SQUARE D COMPANY, Dept. SA Mercer Road, Lexington, Kentucky
I'd like a copy of Bulletin SL-32

NAME
COMPANY
ADDRESS
CITY ZONE STATE

SQUARE D COMPANY wherever electricity is distributed and controlled

For more data, circle 119 on Inquiry Card
Beautiful 5 million dollar San Francisco high-rise apartment building equipped with MUELLER BRASS CO. plumbing and heating products throughout.

Laguna Eichler Apartments developed and built by Eichler Homes • Architects: A. Quincy Jones, Frederick E. Emmons & Associates, A.I.A. • Mechanical Contractor: Currie Heating and Plumbing Co. • Landscape Design: Royston, Hanamoto, Mayes & Beck

MUELLER BRASS CO. 1945 LAPEER AVE. PORT HURON, MICHIGAN 48061

For more data, circle 120 on Inquiry Card
Everything about the new and exciting Laguna Eichler apartment project in San Francisco is crisp and modern... including the all-copper radiant heating installation, and the supply and drainage plumbing systems. Streamline copper tube and fittings, manufactured by the Mueller Brass Co., were used exclusively for all above-ground installations. Copper fits perfectly into this scheme of gracious living because of its dependability and long service life without troublesome repairs caused by rusting, leaking or clogging.

Streamline copper tube and fittings offer many other advantages, too. They are easy to handle, require fewer connections because of the convenient 20 foot lengths of tube, and a compact copper system actually adds available space because no furring out to accommodate bulky fittings and cumbersome pipe is needed.

Compare materials and you'll find that copper offers more on every count... for high-rise apartments or single story structures, Streamline copper tube and fittings are best for fabricating modern plumbing and heating systems.

Write today for our latest Catalog.
INDUSTRIAL COOLERS
Complete information on the construction, performance and application of Marlo industrial coolers for product and process cooling, freezing and heating, is contained in a new 28-page Bulletin 25.

Mario Coil Co., 7100 S. Grand Blvd., St. Louis, Mo., 63111

CIRCLE 416 ON INQUIRY CARD

ROOM AIR CONDITIONERS
The 1963-4 "Directory of Certified Room Air-Conditioner Models" contains a total of 1,321 models and 15 revisions in ratings. Cooling capacity, current, and power ratings of the models are independently tested and certified accurate under terms of a program sponsored by the N.E.M.A. National Electrical Manufacturers Association, 155 E. 44 St., New York 17, N.Y.

CIRCLE 417 ON INQUIRY CARD

SPACE FRAMES
A new 12-page brochure describes the Unistrut space-frame system, made up of five simple standardized parts. The catalog includes typical details, specifications and tabulated data for roof loads and spans up to 100 ft.


CIRCLE 418 ON INQUIRY CARD

MOVABLE WALLS
The Aco line of operable walls used for the division of rooms or floor space in schools, churches, hotels, restaurants, or any place where sound isolation is desired, is described and illustrated in an eight-page bulletin. Three basic models with various noise reduction properties are considered. Detail drawings illustrate the features of the fully automatic and manual operating system. The bulletin includes application illustrations, diagrams and performance data charts. Engineered Products, Inc., Sound Control Division, 998 Farmington Ave., West Hartford, Conn.

CIRCLE 419 ON INQUIRY CARD

POWER EXHAUSTERS
In its eight-page brochure on power exhausters, Airmaster rates the three materials used in their construction — fiber glass, aluminum and steel. The booklet also describes and rates the three series of Air-Van units. Typical specification outlines, and photos and descriptions of accessories are included. Airmaster, Division of Hayes Industries, 1623, Wildwood Ave., Jackson, Mich.

CIRCLE 420 ON INQUIRY CARD

HOSPITAL COMMUNICATIONS
A new hospital communications guide has sections on departmental intercom systems, administrative communications, program distribution and paging, audio-visual nurses' call systems, nurse-resident communications, and doctor's register systems for hospital installation. Each category includes complete specifications, wiring information, functional data on each product, planning, layout and survey forms and suggestions. Communications Systems Division, DeKane Corporation, St. Charles, Ill.

CIRCLE 421 ON INQUIRY CARD

*Additional product information in Sweet's Architectural File
more literature on page 280

PEMCO
Keeps company with the finest

Pemco Steel Rod Racks are:

- Manufactured to meet your specifications
- Of steel strength with modern styling
- Easy to install, no maintenance
- Cost saving — labor saving — space saving
- Available in Color-Fuse vinyl, satin-zinc or copper-nickel-zinc finishes
- A pre-finished building product ... you get what you specify

Pemco Steel Rod Racks are distributed nationwide. For the name of your nearest distributor or for further information, please contact us. Attention will be immediate.

PEMCO-KALAMAZOO

For more data, circle 121 on Inquiry Card

For more data, circle 122 on Inquiry Card
Ageless
Limitless
Dentless
Cost Less

Only genuine extruded Ceramic Quarry Tile offers so many centuries of carefree wear. Only Textured Quarry Tile offers an almost limitless choice of colors and patterns. Only Ceramic Tile resists dents caused by furniture, cleats and spikes. When you consider that Quarry Tile is frostproof, fireproof, scratch-proof, fade-proof, waterproof and never needs waxing...it really is most economical.

Write for the new, full-color story about...

QUARRY TILE BY
Summitville
TILES, INC.
Summitville, Ohio
MEMBER: TILE COUNCIL OF AMERICA, INC.
Stay seated... everything's under control

The RoWay motor-operated door does the job... perfectly... conveniently

Get set for a front-row performance every time the RoWay motor-operated door goes into action. Just a light touch on the button of the palm-size remote control transmitter and the garage door raises automatically, quickly, easily. No one has to leave the comfort of the car during this performance. Rain, snow or cold weather swirls around outside the car as the door opens. The entire driving area is flooded by the automatically-turned-on security garage light as the car is driven inside, assuring complete protection at all times against vandals or prowlers.

Conversely, when preparing to leave home, a single button control station, located wherever desired, opens the garage door automatically. Once outside, the magic of the push button transmitter orders the door lowered and latched. The handy little transmitter can then be stored anywhere within the car by means of an easily-mounted bracket.

Convenience... control... protection... all of these advantages, and more, at a cost that makes the RoWay motor-operated door sell for a surprisingly low price!

A complete selection of RoWay doors and operators await the most discriminating buyer. RoWay's residential line includes AlumaLux fiber glass doors, wood paneled or flush doors. Commercial and industrial buyers can select their motor-operated door from among AlumaLux fiber glass, wood paneled, flush, steel or aluminum doors.

There's nothing like the RoWay touch for motor-operated doors. Your RoWay man has all the facts and figures. Find out for yourself... now.

there's a RoWay for every Doorway!

RESIDENTIAL • INDUSTRIAL • COMMERCIAL

RoWay
OVERHEAD DOORS

ROWE MANUFACTURING COMPANY
Dept. AR34, Galesburg, Illinois

For more data, circle 123 on Inquiry Card

For more data, circle 124 on Inquiry Card
Every inch an air mixing diffuser

A Foot...

A Yard...

A Mile...

2¾" Actual Width of 4 Row Type "EF" Stripline

STRIPLINE...has no equal

When STRIPLINE is installed you can be sure that every inch, foot or mile of these air mixing diffusers, will deliver uniform, homogenized air with control movement in every cubic foot of space served.

Unlike slot type grilles, STRIPLINE has built-in air mixing elements incorporated for functional perfection...induce greater quantity of room air toward the diffuser...rapidly mix primary and room air...providing equalized velocities and temperatures in the zone of occupancy.

More than 250,000 feet of STRIPLINE is now in use. Not one foot has ever malfunctioned, your guarantee that the design of STRIPLINE and the authentic performance data available for the application of these air mixing diffusers, will assure noiseless, draftless air distribution.

Slot type grilles without air mixing elements are not diffusers and are incapable of performing these functions.

For complete performance data, types and sizing ask for catalog ES-105.

FEATURES . . .

- No visible attaching screws.
- Removable core simplifies installation.
- Design eliminates complicated and expensive duct connections while assuring equalized discharge.
Unlimited designs for outdoor living facilities are yours with versatile Q BLOCK. Popular 4’ high Q BLOCK was used here to create an imaginative curved backdrop for outdoor entertaining at beautiful Swan Lake, Mira Loma, Calif.

Architect: James R. Wilde, AIA

Q BLOCK builds the natural addition to the world of Outdoor Living. You now find this stylish mark of quality creating patios, fences, partitions, walks, barbecue pits, pools and planters. Countless varieties of Q BLOCK give you wider design and pattern latitude than any other outdoor building material. Q BLOCK cannot rot or rust and requires little maintenance over the years. Only NCMA members can make Q BLOCK. Write for your nearest Q BLOCK producer.

Q BLOCK is the new national standard of excellence for the highest quality concrete block in modern day design.

Q BLOCK Quality walls of fashion

NATIONAL CONCRETE MASONRY ASSOCIATION • 2009 14th STREET NORTH, ARLINGTON, VIRGINIA
HOW LONG SHOULD IT TAKE TO ENCLOSE A BUILDING?

The five men putting up these panels weren’t out to set a record.
They worked at normal pace. Yet, in just under four working days they erected the 50 sturdy panels needed to completely enclose three open sides of this building addition.
The 24’x4’ panels go up fast. Big and strong as they are, they are also lightweight and easy to handle.
They’re made of Hetrofoam®-based polyurethane foam 2½” thick poured in place between steel skins by American Bridge Division, United States Steel Corporation.

The Hetrofoam-based foam adds rigidity and dimensional stability to the panel and has an insulation value double that of ordinary insulating materials. Its k factor, initially as low as .11 at 75°F, stays remarkably stable. **Won’t support combustion.** Fire retardance is inherent in the chemistry of Hetrofoam systems. It adds nothing to the cost.

For more information on Hetrofoam and its architectural applications, please write Durez® Plastics Division, Hooker Chemical Corporation, 8003 Walck Road, North Tonawanda, N. Y., 14121.
HOSPITAL
☐ “All-In-One” Automatic Hospital Communications Systems
☐ Audio-Visual Nurses’ Call Systems
☐ Program/Paging Systems
☐ Entertainment/Nurses’ Call Control Systems
☐ “Planned Hospital Communications” Manual
☐ Filmstrip—“Rx for Communications-itis”
☐ (Shortcuts to improving patient care and increasing staff efficiency.)
☐ Demonstrate system(s) checked above

COMMERCIAL/INDUSTRIAL
☐ Communications Systems For Industry
☐ Private Automatic Telephone Systems
☐ Paging Telephone Systems
☐ DecoratorStyled Intercom Systems
☐ Intercom Systems (All-Types)
☐ Hi-Power Intercom/Program Systems
☐ Demonstrate system(s) checked above

AUDIO LEARNING LABS
☐ Medallion II Audio Learning Laboratory
☐ Triumph Audio Learning Laboratories
☐ “5 Peas In a Pod”—a complete manual on Audio Learning Laboratories
☐ Demonstrate system(s) checked above.
call DUKANE for communications systems assistance before you design that building

Feel free to call the local DuKane Franchised Distributor... he's in the yellow pages... or call us direct for thorough and qualified communications systems planning assistance. We'll help you personally or provide planning aids and tools to cut your costly communications design time from days to hours. Here are just a few of the areas of service where we can provide our full measure of assistance.

HOSPITALS—DuKane Hospital Communications Systems are specifically engineered to hospital needs. Nurses' Call, paging, programming, patient entertainment control, doctors' registers, pocket pagers, nurses' home multi-resident and security communications, etc., are some of the many communications services afforded by DuKane Systems. "Planned Communications Guide," with complete specifications, available upon request.

COMMERCIAL/INDUSTRIAL—DuKane offers a complete line of intercom, private automatic telephone and paging telephone systems for business. In addition, DuKane provides a complete line of rugged, heavy duty, dependable industrial "Hi-Power" communications systems. Literature and specification data are available on all systems for normal and high noise level applications.

SCHOOLS—DuKane provides a complete line of Centralized Communications Control Systems. All systems feature two-way communications between console and any classroom or area, monitoring of unattended areas, ALL-CALL emergency facilities, fire detection, vandalism detection, private administrative communications, and many more. Two or three channel models available.

Full specification details, layout, and descriptive data available.

AUDIO LEARNING LABORATORIES—DuKane MEDALION and TRIUMPH Audio Learning Laboratories provide long-sought-after flexibility with simplified control. Instructor's console can accommodate from 25 to 60 positions or more. Two, three, and five programs can be originated from built-in equipment. All power supplies are centrally located in console. All electronic assemblies in console or student position provide plug-in convenience. Handsomely styled, sturdy-steel student booth permits more booths per row—more per classroom. Audio-Active or Audio-Active-Compare positions are available. Desk control units also available. Many additional DuKane "plus" features. Complete specifications and planning manual entitled, "5 Peas In A Pod," available.

CHURCHES—Voice reinforcement and church communications systems are available in depth from DuKane. Two and three channel systems provide communications facilities for nursery or children's rooms, tower sound/music, Sunday School programming and social hall activities. Church Speaker layouts, specification details, and literature are available.

MARK THE COUPON BELOW WITH THE APPROPRIATE MATERIAL DESIRED, ATTACH TO YOUR LETTERHEAD AND MAIL TO US.

PROMPT COMMUNICATIONS SYSTEMS ASSISTANCE AND SERVICE IS OUR OBLIGATION... NO OBLIGATION TO YOU.

PROJECT EVALUATION...

for your business

DuKane has developed a new approach to putting the squeeze on rising business overhead costs. A new filmstrip, "Project Evaluation," provides full details for analyzing communications systems to reduce overhead with thorough, foolproof survey procedures. In 9 minutes you can have full details.

"Project Evaluation" Filmstrip
"Help Yourself" Communications survey forms and kit.

MARK THE COUPON BELOW WITH THE APPROPRIATE MATERIAL DESIRED, ATTACH TO YOUR LETTERHEAD AND MAIL TO US.

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MARK THE COUPON BELOW WITH THE APPROPRIATE MATERIAL DESIRED, ATTACH TO YOUR LETTERHEAD AND MAIL TO US.

PROMPT COMMUNICATIONS SYSTEMS ASSISTANCE AND SERVICE IS OUR OBLIGATION... NO OBLIGATION TO YOU.

For more data, circle 129 on Inquiry Card
METAL BATTEN ROOFING
Metal batten roofing, coping and skylights available from Overly are described in an eight-page catalog. The brochure is illustrated with construction details and installation photos. Overly Manufacturing Company, 847 W. Ottermann St., Greensburg, Pa.

CIRCLE 422 ON INQUIRY CARD

VINYL WALLCOVERINGS
A "Guide to Better Hospital Walls" describes the company's line of vinyl wallcoverings available in numerous colors and patterns. The new guide gives detailed information on the results of U.L. and other fire-resistance tests. Actual samples of wall covering patterns and colors that have proved most popular for hospital installations are included. L. E. Carpenter & Co., Inc., Empire State Bldg., New York 1, N.Y.*

CIRCLE 423 ON INQUIRY CARD

PRE-ENGINEERED METAL BUILDINGS
A "Recommended Guide Specification for Metal Buildings" has been published by the Technical Committee of the Metal Building Manufacturers Association. This specification provides a standard which will qualify pre-engineered metal buildings for commercial, industrial, agricultural, and military installations if requirements are applicable. Metal Building Manufacturers Association, 2130 Keith Bldg., Cleveland 15, Ohio

CIRCLE 424 ON INQUIRY CARD

UNGLAZED FLOOR TILE
Literature on unglazed Flint Paver Tile illustrates this vitreous natural clay product in a wide variety of shapes, sizes and surface designs. Amsterdam Corporation, 286 Madison Ave., New York 17, N.Y.

CIRCLE 425 ON INQUIRY CARD

BACKWARD CURVE FANS
Forty-eight page bulletin L-6 provides ratings and dimensional data on 15 sizes of backward curve fans. Lehigh Fan & Blower Division, Fuller Company, Catasauqua, Pa.

CIRCLE 426 ON INQUIRY CARD

PLYWOOD FINISHES
A new 24-page color booklet, "Finishing Douglas Fir & Other Softwood Plywoods," details various methods of finishing structural plywood. The booklet contains six pages of charts that provide references for any type of finishing for interior or exterior plywood. Included are the various paint types and recommendations about which paint or finish will work best for a desired effect on different types of plywood. Methods of application and life expectancy of the finishes and paints are also included. Douglas Fir Plywood Association, Tacoma, Wash., 98401*

CIRCLE 427 ON INQUIRY CARD

LITERATURE REQUESTED
The offices of Kesnow & Thompson, Architects, 116 Main St., Towanda, Pa. 18848, were completely destroyed by fire on January 1, 1964. The architects are anxious to rebuild their A.I.A., literature and manufacturers' catalog file and would appreciate receiving such material.

*Additional product information in Sweet's Architectural File

Most practical classroom unit you can specify
vandal-proof push-button valve

This is Haws Model 2284 in stainless steel—featuring the new Haws push-button valves that send vandalism worries down the drain! Slow-closing valves work smoothly under slight pressure: can't be jammed or pried. And the gooseneck is extra-heavy ¾” brass pipe: even you can't bend it! Same valves available on all Haws receptors, including enameled iron. Ask for the specs: write for details on Haws push-button valve.

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280 ARCHITECTURAL RECORD March 1964
...tough and resilient as natural rubber
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Here is an architectural roofing system that provides all the toughness and
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to weathering.

Not a paint but a combination of two well-known DuPont elastomers—
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of conventional roofing systems. Self extinguishing—will not support flame.

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So quiet you have to get

Trane research puts new materials and ideas to work in a new fan design... sets a new standard for quiet fan-coil operation!

Only the air-conditioned comfort tells you it's on. For at low speed you can't hear it. And at high speed there's just a whisper of sound.

At either speed, the new Quiet-Zone UniTrane provides exceptionally quiet air conditioning for office, apartment, motel, hotel and hospital room air conditioning applications.

Why? Because a new design... made possible with the use of new materials... has been developed exclusively for the fan-coil UniTrane.

For example, the new sculptured fan housing features an exclusive molded design that increases efficiency while eliminating noise. Rugged, fiber-reinforced material makes the design possible.

Air flow into the fan is exceptionally smooth. And two major sources of noise are eliminated... turbulence at the fan air inlet and buffeting between outlet and coil.

Within the unique snail-shaped fan housing (see illustration below), air is permitted to expand in two dimensions instead of the one dimension common to conventional fan housing designs. Air moves smoothly, greatly minimizing noise-creating turbulence.

And, the wider discharge opening offers unusually even air distribution at low velocity across the coil, assuring high unit efficiency and contributing further to low sound level.

A new aerodynamically designed fan wheel works to eliminate noise, too. Made from a new high-strength
new fan-coil UniTrane

glass-fiber material, it all but eliminates high frequency sounds... the sounds most irritating to the ear!

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In many applications, smaller, lower-cost units can be used to meet requirements... because new UniTrane is capable of delivering more capacity per cfm. And in other cases you can cut piping, insulation and pump costs in half... selection flexibility makes it possible!

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4 basic heating-cooling coils. Standard capacity; high capacity; internal face and bypass for excellent humidity control and economical unit control; and high water temperature rise coils which allow system cost savings up to 5% of the total mechanical contract.

4 auxiliary coils. For steam and hot water, high capacity hot water, and electric operation.

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You've never seen, never heard a fan-coil room unit like this before. See it... try to hear it. This beauty is the quiet solution to your air conditioning needs. Contact your nearby Trane Sales Office. The Trane Company, La Crosse, Wisconsin.
PEACE CORPS NEEDS
MORE ARCHITECTS

The Peace Corps has found considerable employment for architects and architectural graduates. The corps currently has volunteer groups working on architectural projects in Asia, Africa and Latin America. Its Tunisian project, in fact, has been so successful that the Tunisian government has asked for nearly three times the number of architectural volunteers now stationed there.

A recent report from the Peace Corps indicates some of the challenges offered the volunteers not only in design but by local customs and personalities as well.

The King Approved
Take, for instance, Ralph Goetz, an architectural graduate of Harvard assigned by the corps to Pokhara, Nepal, where he was to assist the town in the expansion of its community college. The townspeople, apparently rather vague on questions of structure and cost, presented Mr. Goetz with their vision of a multi-storied building. Not even the King, who had to be persuaded to support the project, could afford it. Besides, Peace Corps policy is that the role of volunteer architects is to provide the necessary facilities with the materials at hand. Mr. Goetz redesigned the project, suggesting a one-floor building of local fieldstone and slate which greatly pleased the townspeople. It remained to persuade King Mahendra. The King, when he arrived, was, according to the corps' report, polite but uninspired by the drawings shown him. Nor was he much taken by the foundations, already laid. But a model with movable parts, made by Mr. Goetz, "fascinated" him. The college is now under construction, and the King has promised to return to Pokhara for its dedication.

Then there is Sumner Sharpe, a graduate of Cornell, who teaches architecture at the University of Bangkok. The corps calls him "a man with a mission." An admirer of traditional Siamese architecture, Mr. Sharpe was distressed to find local architects ignoring it in favor of the more obvious modern Western design. His mission is to convince the Thais that theirs is a design of continuing vitality.

Current Needs
The Peace Corps has issued an urgent request for 40 architect volunteers for Tunisia, to replace the 15 whose enlistments will shortly expire. Tunisia's public building program is extensive, particularly in the housing field. The government expects to construct about 11,000 low-cost units, to increase its public housing inventory by a quarter within the next 10 years. The volunteers will be working under the supervision of the Secretary of State for Public Works and Housing in the Tunisian government. Volunteers for this project will begin training in June.

The requirements established by the corps for architectural volunteers are: (1) an architectural degree; (2) a two-year enlistment; and (3) a three-months training period at an architectural school selected by the corps for this purpose.

Information about enlistment is available from the Office of Public Affairs, Peace Corps, Washington, D.C., 20525, and from campus corps liaison officers.
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Robert Ellis Burton, Architect

LCN CLOSERS, PRINCETON, ILLINOIS
Application Details on Opposite Page
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Site Conditions: Latitude subject to extremely low temperatures, severe winters with high winds, hot summers. Heating season: approximately 6300 degree days. Air conditioning season: 120 days of which 90 would have an average of 80F for a 12-hour air conditioning period. Indoor temperature to be maintained at 70F. *Service Mark
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For more complete information on Glass Conditioning, consult the PPG Architectural Representative nearest you. Pittsburgh Plate Glass Company, Pittsburgh, Pennsylvania 15222.

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SCIENCE BUILDING
AT PENNSYLVANIA

An addition of 65,000 square feet designed by Carroll, Grisdale & Van-Alen, Architects, will approximately double the original space of a physical science building completed in 1956 at the University of Pennsylvania.

The program includes new lecture room facilities, teaching labs, research labs, library, shops and offices. Adequate classroom facilities are available in the present building, creating a requirement that floor levels be maintained and corridor systems continuous through both units.

The proposed building is a four-story reinforced concrete structure, 357 feet long by 50 feet wide, with a one-story lecture hall wing 90 feet square.

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MIAI U. STARTS
COMPUTER CENTER

A computing center which will be used for teaching as well as research is under way at Miami (Florida) University, scheduled for completion by the end of this year at an estimated cost of “more than $1.15 million.” Architects are Watson, Duetschman and Krusé; M. R. Harrison Construction Corporation is the general contractor.

A modern, high-speed computer to be used by faculty, graduate students and personnel of four Federal agencies engaged in weather studies will be housed in a glass-enclosed room on the ground floor. The room will have an “access floor” with removable floor sections covering the intricate electrical cables and wiring used by the computer.
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"Life of the building" GJ Overhead Door Holders are made of
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A $1.7 million Special Pharmacolog­
ical Animal Laboratory for the U.S.
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Key to the design of the dog-care,
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used by technicians for testing dogs
and taking samples, is provided in
each kennel unit. Pens, one for each
dog, are angled at 45 degrees to
avoid obstructing corridors.

FOR YEAR-ROUND
FUN ON A SUMMIT

Another step in New Hampshire’s
drive to improve recreational facili­
ties is this design for a new “sum­
mit” building for Mt. Sunapee. Ar­
chitects are Carter and Woodruﬀ.
The building, intended for use by
summer visitors as well as winter
skiers, is designed to withstand
winds of 100 miles per hour and
gusts to 130 miles per hour; the
problem of holding the roof down is
more critical than the snow load it
must carry. Walls are made of wood
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No longer is a concrete foundation
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It is the most meaningful breakthrough in curtain wall construction since glass and metal.

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But more than that, Spraywall’s design possibilities are endless, because of its plasticity. Using Keystone Spraywall, you can sculpt the walls; curve them, create hyperbolic paraboloids, shape them in any way you can imagine. Then finish them to meet your design requirement in any color, any texture, with or without embedding stones.

Keystone’s new Keymesh Paperbacked Lath is the product that makes Spraywall possible.

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SIX-IN-ONE FOR COLLEGE DINING

Architect Vincent Kling's design for a 600-seat dining hall for Swarthmore College groups three large dining areas around a central high-ceilinged lounge area and also includes three small interior dining rooms, two seating 16 persons each and the third 32. To one side of the lounge area are the serving area and kitchen, which are located beneath entrance lobby and adjacent patio.

Native stone will be used for exterior walls and clay tile for the roof. Stone walls and wooden ceilings with exposed beams will be used inside. Glass will be used at the entrance in perimeter windows which will carry light into the three large dining rooms and in clerestory windows to bring natural light into the lounge.

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An inexpensive way to add a room, upstairs or down. Just install a Sunbrella fabric roof . . . 22% cooler underneath than with others, wonderful air porosity. And none of our 25 gay colors can fade. Will not be affected by rot or mildew. Crack and scuff resistant, too. (Woven of 100% Acrilan® acrylic fiber—that's why it's a miracle fabric.) Matching awnings are smart, too. Marvelous for new homes. Sensational for perking up remodeling jobs. And think what a non-glare, beautiful exterior fabric like this can add to a hotel, motel, shopping center or office building. Shouldn't you investigate? Write for information and design idea booklet.

COLLEGE LIBRARY: DESIGN FOR STUDY

A 46,000-square-foot library in which study carrels constitute 80 per cent of the building and a special area is provided for all-night study is under construction at Lake Forest, Ill., College for completion this fall. Perkins & Will are the architects, Toneyan Construction Company the general contractor.

The three levels of the library will ultimately house 250,000 volumes and seat 600. Initially, the lower level will be used as temporary classroom and office space. The combined capacity of the two upper floors is 120,000 volumes, seating for 323.

The central portion of the building, with floor-to-ceiling windows, will contain most of the study facilities. Each study alcove will have four carrels, with stacks operating each grouping.
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CONSULTING ENGINEERS EXPAND COUNCIL ACTIVITIES

A change in its name, a major internal reorganization and the establishment of six new committees to explore areas of developing interest to its membership have been announced for 1964 by the Consulting Engineers Council, which also expects to expand its activities in the international engineering field. All of the changes will be effective with the first full-scale annual convention of C.E.C., scheduled for May 26-28 in Denver.

C.E.C. will change its name to “Consulting Engineers Council of the United States of America” with the purpose of “clarification of C.E.C.’s role as a national federation of consulting engineers and its significance to the International Federation of Consulting Engineers.”

Internal organizational changes will give C.E.C. a seven-man Executive Committee composed of the president, a president-elect (a new office), four vice presidents (compared with the present two) and a secretary-treasurer (at present the offices of secretary and treasurer are separate). New terms of the secretary-treasurer and the vice presidents will be two years, with vice presidents’ terms staggered so that two of the four continue in office and two replacements are elected each year.

New Committees

The new committees will tackle a wide range of subjects selected for their wide interest among the more than 1,500 member firms of C.E.C.

One committee will study the advisability of establishing a mechanism within C.E.C. for certifying member firms which have demonstrated certain proficiencies and achievements in consulting engineering. Another will consider the publication of a new specialty listing of member firms with indexing of the various specialties.

A third new committee, assigned to relations with the Department of Defense, will have as one of its first objectives the re-evaluation of the present policy of the Department of Defense which limits to $25,000 the amount any consulting firm can obtain by Defense contract in a calendar year.

Additional committees will be formed to advise and carry out C.E.C.’s growing public relations activities and to act as liaison with the Construction Specifications Institute.

International Activities

High on the list of C.E.C. goals in international promotion in 1964 is the preparation of a special directory listing those U.S. consulting engineer firms interested in and seeking overseas work. The directory is expected to be ready by midyear.

Plans are also under way for the Second International Engineering Institute to be held at the University of Colorado at Boulder September 23-25, with the co-sponsorship of C.E.C. The Institute will explore the nature of international competition, how it is being met and the role of the U.S. government.
Typical of the engineering and quality advantages of any ADVANCE Fluorescent Lamp Ballast is the protection provided by ADVAN-guard ballasts. Unlike other protective devices which permit premature ballast destruction, ADVAN-guard with an automatic resetting thermal protector provides protection with preservation. Protection that is made to last.

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erection. To you, the architect or engineer, the steel fabricator can bring up-to-the-minute steel information, helpful suggestions, practical ideas. Working regularly with regional engineers of the American Institute of Steel Construction, your steel fabricator can answer your every question—often offer surprising, new, construction methods. Use him! That steel fabricator and his highly skilled staff, are the technologists who help turn creative dreams into reality. Talk to him early in the game. You'll find it pays.

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For more data, circle 150 on Inquiry Card

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plug in the hose . . . dirt is whisked through tubes to power unit in garage or utility area; dirt collects in receptacle . . . "blue-air" is exhausted outside

For more data, circle 152 on Inquiry Card
Muzak® at The First National Bank of Memphis

One of the growing South's largest prestige office structures, the gleaming new First National Bank Building, is in the financial hub of Memphis.

Like other progressive financial and industrial institutions throughout the world, First National has selected Music by Muzak to help create a pleasant and efficient atmosphere in its public and work areas. Even the finest architecture takes on added warmth and charm with Music by Muzak.

Muzak is scientifically planned to ease tension caused by monotony, fatigue, noise or cold silence. People feel the difference — business transactions become more congenial, employees more alert and efficient. Muzak sound systems may serve for civil defense and emergency warnings, paging and signalling, as well as Muzak distribution. A.I.A., File 31-I-7, Sweet's Catalog 33a Mu. Specify Muzak in early planning stages.

For more data, circle 153 on Inquiry Card
New Perlite base product from CELOTEX
UL tested and approved

Celo-Therm Incombustible Roof Insulation was selected for the roof of this giant new Montgomery Ward warehouse. Made with Perlite base, it won't decay or deteriorate. It is highly moisture-resistant, has excellent thermal insulating value, and is dimensionally stable.

Roofing crews like to handle Celo-Therm panels! They're lightweight, easily cut with a knife, can be nailed in place on wood decks or set in hot bitumen on concrete or steel decks. Panels are 2' x 4'.

Celo-Therm Roof Insulation has a UL flame spread classification of 25, and is listed and labeled by Underwriters' Laboratories under their inspection and label service. It qualifies for steel deck assemblies UL Construction No. 1 and Construction No. 2. Permits a reduction generally equivalent to 40% of the basis insurance rate. Send coupon today for samples, application instructions.

*In accordance with the definition of non-combustibility in NFDA No. 220

Distributed East of Rocky Mountains

Aerial view of new Montgomery Ward warehouse in Franklin Park, Ill., Roorfer: E. W. Olson Co. Engineer and Builder: The Austin Co.

THE CELOTEX CORPORATION, DEPT. AR-34
120 S. LA SALLE STREET, CHICAGO 3, ILLINOIS

Please send me specifications for Celo-Therm Incombustible Roof Insulation.

[ ] Show me samples.

My Name ___________________________
Firm Name ___________________________
Address ___________________________
City ______________ Zone ___________ State ______

For more data, circle 154 on Inquiry Card
NEW! MOLDED PLASTIC COMBINATION PLATE

BY BROOKLINE
1. Displays room number
2. Identifies the occupants
3. Holds mail or messages

A distinctive and attractive combination plate in beautiful white, high-impact, colorfast molded plastic. Available in any number of slots. Engraved numbers may be had in red, blue, yellow or green fill. Stainless steel hardware. Excellent identification on doors in dormitories, schools, clinics, apartment buildings, nursing homes, public buildings. Another excellent product of Brookline research.

PHOENIX PROJECT COMBINES HOTEL AND OFFICE SPACE


The Phoenix Towne House, scheduled to be completed early in 1965 at an estimated cost of $10 million, will have 14 stories of office space as well as 269 hotel rooms and convention facilities to accommodate 3,000 for meetings or 2,400 for banquets.

NEW CENTER FOR MISSION SOCIETY

A new Minisink Town House and service center will be built in central Harlem to house an expanded program of resources and training by the New York City Mission Society's Harlem branch. The building has been designed by architect Edgar Tafel in steel frame over poured concrete basement walls and floor slab. Exteriors are brick.

VERMONT MARBLE CO.

We have a large variety of 1/2" marbles suitable for panel-wall and curtain-wall installations. Any thickness over 1/2" can be supplied on order. For information, contact our nearest branch office or write: Vermont Marble Company, Proctor, Vermont.
Put the man from BARCOL in your starting lineup!

HE WILL PREVENT COSTLY DOOR PROBLEMS FOR YOU . . . SAVE MONEY FOR YOUR CLIENT!

As a door specialist, your Barcol dealer will work directly with you, or as your representative to your client — to help analyze and establish the performance requirements of overhead-type door equipment at the preliminary planning stage.

Consider him a member of your staging team.

Using the exclusive Door System Analysis Planning Guide, the man from Barcol will analyze client requirements; identify the penalties of inadequate, inferior-quality doors; justify initial cost of door equipment and determine a firm, accurate budget figure (with alternate choices, if required).

Remember, too, the performance of Barcol Overdoors and electric operators is certified to support your specifications.

Get to know the man from Barcol, he'll help you solve client door problems BEFORE THEY HAPPEN!

BARCOL OVERDOOR COMPANY
SHEFFIELD, ILLINOIS
Subsidiary Barber-Colman Company, Rockford, Illinois

See Barcol insert, Sweet's Architectural File

For more data, circle 166 on Inquiry Card
interior elegance

HINGES ON ... SOSS

Soss Hinges are called "invisible" because when doors are closed, the hinges tuck themselves neatly out of sight. Where doors meet walls, space gaps and doorjams are eliminated. Flowing, unbroken lines are created that please the eye and add custom richness to the room. Leading architects have been recommending Soss Invisible Hinges for over fifty years because the touch of elegance they add makes buildings and homes so much more "livable".
We'd be happy to do your laundry.

Because helping architects plan laundries is a specialized activity at American. We provide you with a complete service that includes survey engineering, detailed plans and specifications, supervision of equipment installation, plus nationwide service facilities to guarantee your clients continuous fine performance of all laundry equipment.

When your building project includes a laundry department... it's a job for American. Call one of our nearby offices or representatives (see the yellow pages), or write for complete information.

You get more from American Laundry Machinery Industries, Cincinnati 12, Ohio

See our catalog in Sweet's
Paper handling has become an added building function that modern architects must consider in designing all new structures. Many have found an ideal solution in the slender LAMSON SELECTIVE VERTICAL CONVEYOR with integrated horizontals where needed.

Enormous amounts of business paper and small packages can move up and down this slim, vertical lift ... flowing automatically into and out from any number of floor locations.

Simple to operate and easy to maintain, this combination of LAMSON conveyors meets any distribution demand yet is flexible enough to fit any structure form.

Check LAMSON before specifying any other method. Write 102 Lamson Street, Syracuse, New York.

Office Notes

Offices Opened

Willard C. Parrish, Jr., A.I.A., Architect, has announced the opening of his office for the practice of architecture at 1162 West First National Bank Bldg., Saint Paul 1, Minn.

Bernard Schulak, Architect, formerly with W. B. Ford Design As... continued on page 326
New, powerful, 300-watt Multi-Groove Baffle Calculators—for efficient downlighting in rooms with higher ceilings, or higher lighting levels in areas with average ceiling height. Each luminaire has 42 concentric ring baffles to minimize the internal brightness visible through the aperture. The baffles are supported in a die-cast bezel within a die-cast, reversible, minimum-width trimming. Whether you want to illuminate a wall, emphasize an area, or light an entire room, see your local Lightolier distributor. He's got the 75/150, and new 300-watt Multi-Groove Baffles plus the full line of over 100 Calculators.

For more information write to

LIGHTOLIER®

JERSEY CITY, N.J. SHOWROOMS: 11 EAST 36TH STREET, NEW YORK; 1267 MERCHANDISE MART, CHICAGO; 215 S. BROADWAY, LOS ANGELES; 1718 HILLCRESE DRIVE, DALLAS

For more data, circle 173 on Inquiry Card
**The Cramer Draftsman’s Chair** lets a busy man totter on the brink of a big idea without fear of an ignominious fall. Only Cramer gives you a forward tilt seat that relieves under-leg pressure, is adjustable to your comfort. It also rocks back comfortably to give you a long look at your work. The thick, generous seat that adjusts easily and quickly to any height drafting table, is available in a wide choice of cover materials and colors. Only Cramer has an adjustable foot ring that slips up and down in a twinkling. Casters or glides have a sure-footed 22-inch spread. There’s also a fingertip adjustment on the back rest so you can set the inch-thick cushion exactly where you want it. For a free descriptive brochure, write: Cramer Posture Chair Company, 625 Adams St., Kansas City, Kansas 66005.

**MATERIAL PROPERTIES**

- **SEAT OF INSPIRATION**
- **MARBLE INSTITUTE OF AMERICA, INC.**
- **MERCEP VINYL COVE BASE**
- **MERCER VINYL COVE BASE**
- **PLAIN or TEXTURED**
- **STARLIGHT**
- **COVE BASE IN 18 COLORS**

Mercer flexible Cove Base protects walls... closes gaps while adding a distinctive effect to floors... yet is popular priced. Choose from Mercer's selection of colors and designs. Sizes from 1 1/2" to 6", with or without toe.

Mfrs. of: Artcove, Stair Nosing, Custom Edge Carpet Bar, Carpet Reducer, Tile Reducer, Feature Strip, Corners, Mouldings of all types. Write for Product Sheets and Samples!

For more data, circle 176 on Inquiry Card.

For more data, circle 175 on Inquiry Card.
For Class I Metal Roof Deck Construction

PYRO-KURE® 600 — TWICE THE VAPOR RESISTANCE, FAR BETTER ABRASION-PROOF THAN VINYL

New Pyro-Kure® 600 provides a better vapor barrier system. It has twice the vapor resistance of vinyl film, and, unlike vinyl, this tough lamination has high abrasive resistance which results in a vapor barrier that will retain its integrity. As a result the owner gets a better roof, protected against condensation damage.

Factory Mutual Approved for use with metal decks and Fiberglas® insulation, Pyro-Kure 600 is rated as non-combustible and has an Underwriter's Laboratory flame spread of 25. This non-combustible property is permanent.

Pyro-Kure 600 is applied to the metal deck with conventional felt-laying equipment using regular asphalt, 12 to 15 lbs. per 100 sq. ft., or it can be strip mopped. The use of asphalt rather than special cold adhesives results in substantial savings in material cost. Write for suggested specifications and additional information on this new vapor barrier system. American Sisalkraft, 73-R Starkey Avenue, Attleboro, Mass. Branch offices and plants at Cary, Illinois and Tracy, California.

AMERICAN SISALKRAFT DIVISION

For more data, circle 177 on Inquiry Card
Office Notes
continued from page 322

associates, has announced the opening of his office for the general practice of architecture at 6889 West Maple Rd., Walled Lake, Mich.

Arthur L. Spaet, Consulting Engineer, formerly with Slocum and Fuller, has announced the opening of his office for engineering design at 101 Park Ave., New York 17, N.Y.

New Firms, Firm Changes

Bovay Engineers, Inc., has announced the following promotions: George C. Love, assistant manager, projects division; M. J. Green, assistant chief engineer, design division; C. R. Thomas, manager, electrical department; R. E. Schulman, acting manager, air conditioning and petrochemical plant design; Charles E. Brown, senior project engineer, projects division. The work of the office at 5009 Caroline St., Houston 4, Tex., has been considerably expanded.

Buchart-Horn Consulting Engineers, 55 South Richland Ave., York, Pa., have appointed Harry O. Wagner as vice president of the firm with responsibility for operation of the York office's highway, civil engineering, mechanical engineering, municipal and city planning divisions.

Fred S. Dubin Associates, Consulting Engineers, have appointed Jasper Merendino to the position of vice president. He will continue as manager of the Puerto Rico office. Robert Dukes has been promoted to assist manager in the Puerto Rico office and Lewis Mutch and Robert Bettinger of the Hartford office have both been raised to associate position.

Emery Roth & Sons, 350 Third Ave., New York, have promoted three of their staff members to associate position. They are: Gelal Kent, A.I.A., Bernard Kessler, A.I.A., and Joseph Solomon, A.I.A.

The Engineers Collaborative have appointed Edwin A. Lampitt as associate in charge of their new office in St. Louis, Mo.

Marvin L. Mass and J. Stewart Stein, project engineers, have been named associates of A. Epstein and Sons, Inc., Engineers and Architects, 2011 West Pershing Rd., Chicago, Ill.

continued on page 330

For more data, circle 179 on Inquiry Card
Positive control of compressor cylinder unloading in both units is achieved by using external solenoid operators activated by temperature signals instead of suction pressure. This assures stable operation at each capacity step...prevents "hunting" between steps with attendant problems of excessive wear and breakage of the mechanisms. The necessity to service intricate and sensitive small parts inside the machine is eliminated. The control solenoid valves and temperature controller are located outside of the compressor crankcase and can be serviced without opening the refrigeration compressor.

Equipped with "open" compressors B&G builds "open" compressors because in actual operation they offer many exclusive advantages. Motor burn-out in a closed system leads to system contamination, with an exceedingly involved cleanup procedure. An open compressor can be serviced by the average contractor—no special tools needed.

Gas powered units show remarkable economy in areas with favorable gas rates B&G gas powered units are equipped with heavy duty gas engines developed for minimum oil and fuel consumption. The engine operates considerably below its maximum rated horsepower, for longer life and minimum maintenance.

Additional operating features include automatic and adjustable engine warm-up...100% no-load start...capacity control effected by automatically varying engine speed in addition to varying the compressor unloading.

An exclusive advantage of these packages is that they are the only units on the market in which all major components, except the motor or gas engine are designed, built and guaranteed by one manufacturer—a single source of responsibility!

For further information write ITT Bell & Gossett Inc., Morton Grove, Illinois, Dept. HY-32.

ITT BELL & GOSSETT INC.
A SUBSIDIARY OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

For more data, circle 180 on Inquiry Card
This steel frame, including joists and solid centering, weighs only 7 lb per sq ft

The steel frame (Bethlehem A36 structurals) plus Bethlehem open-web steel joists, with Bethlehem Slabform (our solid steel centering) weighs only 7 lb per sq ft in this nine-story Colorado Springs apartment.

What's more, steel for the 81-unit building was erected in only 45 working days. The owners are so satisfied, they plan two more identical structures at some time in the near future.

Besides fast erection, a steel frame provides strength to spare; and a non-warp, non-sag construction that holds down maintenance costs. Fire-safety is up, with a resistance of up to four hours. Steel joists permit easy passage of pipe, wire, and conduit through the open webs—in any direction. Slabform saves both time and money, compared to flexible-type centerings. It's a safe working platform, too.

We'll be glad to discuss your next building with you. Perhaps we can show you ways you can save time and money with today's steels for construction.

Steel for Strength

Steel joists allow pipe, conduit, and ductwork to be run in any direction.

BETHELHEM STEEL COMPANY, BETHELHEM, PA., Export Sales: Bethlehem Steel Export Corporation

BETHELHEM STEEL
To complement academic life with the atmosphere and warmth of home—such was the concept of the new Noyer Residence Hall at Ball State Teachers College. This theme is expressed throughout this student home-away-from-home by outstandingly imaginative use of color schemes.

The Man from Devoe played a large part in this achievement. With the assistance of Devoe's vast Library of Colors system—over 1,000 shades—he supplied not only colors such as white, ivory, pink and blue... but he matched the architect's requirements for accent colors such as mustard, tangerine, lilac, and flax.

This expert color-planning assistance is just one of the big services to designers that the Man from Devoe performs. He's useful in many ways—because he's a paint technician as well as a color specialist. This means that he can provide information on paint performance and costs, maintenance, weather resistance, light reflectivity—even on special formulations for industrial conditions.

You can call on the Man from Devoe on your next project, whatever its size. You'll find that his help can save you time and money. Naturally, there's no charge or obligation for his services. Just write or phone the nearest Devoe office to reach him.
How to design, install, and maintain heating systems

—quickly
—safely
—efficiently

Here in one comprehensive source are today's best methods and accepted standards for designing and installing any type of heating system—steam, hot water, warm air, or electric. You find helpful materials on such aspects as converting existing gravity systems to forced circulation, as well as on such specialized topics as incinerators, district steam heating, and electric and infrared systems. Included are detailed maintenance suggestions such as how to properly service heating systems that undergo annual shutdown and reactivation. Case histories, charts, tables, and illustrations aid in making this a valuable working tool in all phases of space heating.

Partial Contents

Nature of Codes, Standards, and Procedures

Handling and Storage of Solid Fuels

Handling and Storage of Gas Fuels

Heating Boilers

Warm Air Furnaces

Fuel-Burning Equipment

Chimneys, Stacks and Brecheings

Safety for Boiler and Furnace Rooms

Pipes, Valves and Fittings

Radiation

Unit Heaters

Steam and Hot Water Heating Systems

Domestic Water Heaters

Warm Air Ducts

Radiation

Unit Heaters

Steam and Hot Water Heating Systems

Domestic Water Heaters

Warm Air Ducts

Radiation

Unit Heaters

Steam and Hot Water Heating Systems

950 pp., 101 Illus., $14.00

Easy terms: Pay $7 in 10 days, and $7 in one month.

A complete treatment of codes, standards, and methods of accepted practice are yours in this Handbook. It gives facts on handling solid, oil, and gas fuels...on the forms, types, and sizes of chimneys, smoke stacks, and vent flues...safety requirements by codes and standards...and much more. Working pressures, temperatures for valves, piping, and fillings are given along with data on hardware and components for furnaces, burners, heaters, and boilers. In addition to helpful information on unit and system controls, extensive material is given on rating systems, contracts, and means of establishing codes and standards.

How to design, install, and maintain heating systems

—quickly
—safely
—efficiently

Office Notes

continued from page 326

Mac DuBois has become a partner in the firm to be known as Fairfield and DuBois, Architects, 120 Eglinton Ave, East, Toronto, Canada.

John Graham and Company announced the appointment of David M. Checkley, A.I.A., as director of the office at 1426 Fifth Ave, Seattle, Washington.

Harland Bartholomew and Associates have announced the appointment of five new associate partners. They are: Robert R. Way, Joseph W. Guyton, James W. Yarbrough, Alan R. Siff, and Charles A. Franzman.

A Calvin Hoiland and William R. Zucchini have announced the establishment of the architectural firm Hoiland-Zucchini, Architects. The architectural firm of Hoiland & Lund and Associated Architects has been purchased and the new firm will practice at the present firm location, 606 Strain Bldg., Great Falls, Mont.

Kelly & Gruzen, Architects-Engineers, 10 Columbus Circle, New York, have made two appointments. They are: George G. Shimamoto, A.I.A., F.A.S.C.E., general manager, and Jordan Gruzen, A.I.A., associate and director of design.


Charles Luedtke & Associates, Architects, have announced the organization of a new firm to replace the former practice of Dombek Luedtke. Dale Wiars and Tom DeBuhr have been appointed associates in the firm which will continue to practice at 3575 N. Oakland Ave, Milwaukee.

McCall & Associate, Inc., Architect, is the designation of a new firm for the practice of architecture located at 88 West Southern Blvd., Montgomery, Ala.

Newcomb & Boyd, Consulting Engineers, of 1205 Spring Street, N.W., Atlanta, Ga., 30309, announced the reorganization of the firm as a partnership consisting of Spencer W. Boyd, I. Ben Kagey, continued on page 334

Give Thought

...to the advantages of using "Nelex"

Mineral Insulated Cable-Type Heater Systems...

...for SPACE HEATING
...for SNOW MELTING
...for PIPE HEATING

"Nelex" M.I. heater units are made entirely from materials that won't deteriorate: Copper sheath; magnesium oxide insulation; silver solder.

Will operate up to 500 degrees F. continuously. Output is up to 50 watts per foot. Uniform heating throughout.

Are flexible — easily formed around irregular surfaces. Minimum installation cost, and no maintenance.

Are welded, assembled and tested at the Nelson factory, thus preventing burn-outs.

"Nelex" is field-proved by hundreds of successful installations. Was introduced by Nelson Electric Mfg. Company nine years ago — in 1954.

WRITE FOR BULLETIN #300-G

NELSON Electric MFG. CO.
TULSA, OKLA.
New Milcor Partition Tracks

speed and improve installation of non-bearing plaster walls!

Strong, fire-resistant, metal reinforced plaster walls can be installed faster than by previous methods, because erection is simplified. These new Milcor floor tracks: 1. Eliminate ties, stud shoes or other supplemental fastening of studs at the floor; 2. Save installation of separate plastering grounds; 3. Provide desired stud spacing without premeasuring.

- Straight, level walls with full plaster thickness are assured. Retaining slots automatically align the studs. The sides of the track provide strong, true, uniform plastering grounds — protected against damage from on-site traffic by the strength of the inverted channel design. 

For further information, see Sweet's section 12a/In or write for Cat. 202.

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For more data, circle 184 on Inquiry Card
**Thermocore**

**DEPENDABILITY...** top performance... with over 75 years of gas heat specialization for the building industry. Designed for either inside or outside installation. That's THERMOCORE! REZNOR'S new concept! A basic, automatic heat core to which matching components—from the simplest to the most complex—are added. THERMOCORE'S new razor edge styling in tawny color harmonizes with all modern interiors. Write today for latest THERMOCORE Catalog.

**Caram-Miracle Liquid Applied System**

**...THE ANSWER TO MODERN ROOFING**

Check These Products—Sold Through Approved Applicators

- **KolorPrene**—for roofs
- **KolorGrit**—for traffic decks
- **Pronenade**—for balconies and foot traffic

For roofs of normal or unusual shape—curved, warped, folded plate, etc.—the Caram-Miracle Roofing System gives architects complete freedom in choice of color. Now being used extensively on monolithic reinforced concrete, lightweight aggregate concrete and exterior plywood.

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New techniques and innovations in the Retailing Industry demand new concepts in store equipment—style with efficiency to serve more customers during peak sales hours.

**This American Team** never stops searching for improved design... economical production... rapid assembly features that hold store equipment costs to a minimum.

The nation's largest and most successful Department Stores, Chain Stores, Discount Stores and small shops select American for...

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NOW! A COMPLETE, MODERN ARCHITECTURAL TROFFER LINE by WHEELER

Now Wheeler offers you one of the smartest, most versatile architectural troffer lines in the industry: flange or lay-in type fixtures in a broad spectrum of shieldings to provide the maximum in functional design for any ceiling. Designed for clean, modern, row or modular pattern installations, Wheeler troffers are extremely graceful yet rugged fixtures that compliment any architectural style while keeping your lighting budget well within bounds. Limitless variety of shieldings for optimum brightness controls: plastic cube louvers (illustrated), acrylic drop dish, SL-23 clear QUIET TONE® polystyrene lens type . . . K-11†, Fiberglass Polarized Panels††, aluminum louvers and many others available on special order. Lay-in troffers and flange type troffers are available in all popular sizes in 2-, 3- and 4-light fixtures for use in all nationally recognized ceiling systems. For additional data, talk with your Wheeler representative or write directly to E. Quintiliani, General Sales Manager.

WHEELER REFLECTOR CO., INC., HANSON, MASSACHUSETTS

For more data, circle 187 on Inquiry Card
NEW, WEINMAN
Water Seal Units
PREVENT
CONTAMINATION
Compact — Versatile
— Easy to Install

Where city ordinances prohibit connecting water lines to sewage pumps, Weinman dependable Type WS Water Seal Units furnish the inexpensive solution. With this unit, there is no direct connection of city water lines to pump stuffing box. Pump is mounted directly on side of tank — no interconnecting piping or valves are required. Abrasives from sewage, cooling towers and similar sources are kept out of stuffing box by outside water seal.

For detailed information on WEINMAN Type WS Water Seal Units, contact your local Weinman Centrifugal Pump Specialist, or write for Bulletin No. 1620.

Office Notes
continued from page 300


Nolen, Swinburne and Associates, Architects and Planners, of 1601 Locust St., Philadelphia, Pa., 19103, announced the appointment of John D. Sackster as an associate.

Gordon E. Iversen, A.I.A., has been appointed as associate in the office of Robert C. Taylor, Architect. The firm has been re-designated as Robert C. Taylor Associates and is located at 212 South Marion St., Oak Park, Ill., 60302.

New Addresses

Chloethiel Woodard Smith & Associates, Architects, 1056 Thomas Jefferson St., N.W., Washington D.C., 20007

Slotz, Hess and MacLachlan, Architects, 1814 Investment Bldg., Pittsburgh, Pa., 15222.

Addendum

The RECORD, through inadvertence, omitted one of the Awards of Merit in its story on the winners in the Federal Housing Administration's competition in residential design (Building Types Study, January 1964). A sixth award was given to the Brickell Town House, Miami, Florida (below). The architects were Steward-Skinner Associates, Carl M. Apuzzo, designer. Emert B. Neal was the landscape architect, and the builder was Brickell Mansions, Incorporated.

Cancer of the colon and rectum ... one of the major causes of cancer deaths today ... can be cured in 3 out of 4 patients if detected in time.

It can be detected when it is most curable by a simple examination that your doctor can perform as part of your regular health checkup.

This is one of many vital reasons why every adult man and woman should have a health checkup once a year... every year. Don't delay... call your doctor today!

AMERICAN CANCER SOCIETY

This space contributed by the publisher
DEETER & RITCHEY specified precast white concrete for the 70,000 square feet of curtain wall on these three circular dormitory towers at the University of Pittsburgh. Made with ATLAS WHITE portland cement, the floor-to-floor panels are just 5" thick. This includes a 1\(\frac{1}{2}\)" insulating core of foam plastic, sandwiched between screens of steel-wire reinforcing. They are held by one load-bearing steel angle at the bottom and two securing angles at top and bottom. The panels cost only $4.50 a square foot in place; they save 7,300 square feet of interior space that would have been lost with the conventional stone-and-masonry wall system. Today, more architects are using precast concrete to gain usable space while achieving construction economy and esthetic distinction. For specific information about white, tinted or exposed aggregate units, see your local precast concrete manufacturer. For information about special properties of new ATLAS WHITE high-early strength portland cement for use in precast concrete units, write to Universal Atlas, 100 Park Avenue, New York, N.Y. 10017.
OFFICE BUILDING MAINTENANCE COSTS REDUCED APPRECIABLY BY USE OF SUPERIOR SURFACING DEVELOPMENT FOR WOOD AND CONCRETE FLOORS.

Floor areas, even where heavy traffic is a factor, remain remarkably immune to abrasion, water, and strong cleaning and sanitizing agents ... and retain their gloss up to three times longer than conventional floor varnishes. A product of M.A. Bruder & Sons Research Department, M.A.B. Ply-Tile (540-C-21 Urethane Coating) is a one-package, easy-to-apply, quicker drying floor finish. Minimized maintenance, (soap and water washing restores original lustre) and long-term durability make it a must ... for offices, hallways, steps, etc.

For further information, contact

M.A. BRUDER & SONS, INC.
Architectural & Industrial Finishes Division
52nd & Grays Avenue, Philadelphia, Penna.
High-strength Sheffield Steel Joists for high-rise motor hotel

Floor structure for the multi-story Doric Motor Hotel, Los Angeles, demonstrates the use of modern, high-strength steel joists to achieve economical design. Use of Sheffield H-Series Joists, made with steels having 50,000 minimum yield point, contributed to high strength-to-weight ratio. This structure was designed with columns on 28'-0" centers in both directions. 4'-0" spacing of the Sheffield H-Series Joists met all loading requirements.

This is another example of the acceptance of Sheffield Joists in today's structural designs. All Sheffield Joists meet the specifications of the Steel Joist Institute. See our catalog in Sweet's Architectural File or write for complete data. Sheffield Division, Armco Steel Corporation, Department S-514, 7000 Roberts Street, Kansas City, Missouri 64125.

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Almost as important as the window itself!

... because Elkirt Verticals provide controlled light—controlled appearance from inside and out. They stay clean longer—are "people proof", keeping maintenance costs to an absolute minimum. Elkirt Verticals operate silently with finger tip control and cannot billow or bang about. Literally hundreds of designs from choice of color and fabric textures. Also available in metal louvres.

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ELKIRT VERTICALS

Bally pre-fab walk-ins
all-metal coolers and freezers

World's most advanced design. New materials and construction techniques offer architects an opportunity to provide tremendous refrigeration advantages to their clients.

Urethane 4" thick (foamed-in-place) has insulating value equal to 8½" fibreglass. Standard models can be used as freezers with temperatures as low as minus 40° F. Urethane has 97% closed cells ... cannot absorb moisture ... ideal for outdoor use.

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New foamed door, so light in weight it ends forever the "hard pull" ... the "big push". Door is equipped with new type hand lock (with inside safety release) and convenient foot treadle for easy opening. Also has special hinges that close door automatically. Magnetic gasket guarantees tight seal.

Self-contained refrigeration systems combine balanced capacity condensing units and refrigeration coils. Mounted and hermetically sealed with necessary controls on small wall panel. Simplifies installation. Four-hour factory test assures quiet, efficient, trouble-free operation.

Write for Free Architect's Fact File which includes 12-page brochure ... Specification Guide ... and sample of urethane wall construction.

See Sweet's File, Section 25a/Ba

Bally Case and Cooler, Inc.
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