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1

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#### News

#### Housing bill would spur moderate-income apartments; Cabinet and distressed-area bills also advanced

The Kennedy Administration was pushing hard last month for early enactment of three major measures to boost the scope of federal aid for urban renewal and redevelopment: 1) an omnibus housing bill containing several important innovations to benefit cities; 2) a bill to create a new Cabinet-Rank Department of Urban Affairs and Housing which, among other things, might supervise a new federal program to aid local mass-transit systems; and 3) a "depressed areas" assistance bill providing federal loans and grants for building or modernizing public works and private industrial plants in "labor surplus" cities.

One of the most significant provisions in the administration's housing bill would allow the resale of Title I urban redevelopment sites to public agencies. nonprofit or cooperative groups at prices calculated to keep the rents or cooperative charges of new housing within the reach of "moderateincome" families, instead of requiring its sale for its ordinary "fair re-use value." Until now, resale on the latter basis has usually resulted in the construction of housing only for upperincome families. Two other sections of the pending legislation would authorize special FHA-insured mortgage loans, at interest rates as low as 3 per cent, to build such housing, and would provide \$500 million of "special assistance program" funds to the Federal National Mortgage Assn. (Fanny May) to purchase these loans from the original lenders, who ordinarily would not make loans at such low rates. In many cities projects that were able to benefit with both reduced land costs and reduced mortgage costs, if these proposals are adopted, might be able to erect twobedroom apartments to rent for as low as \$90 per month, according to proponents of this double-barreled attack on the high cost of new central city housing.

The administration housing bill also contains two major provisions to help cities of any size acquire and preserve open land for either public use or for future private development. One provision would establish a \$100 million fund from which the federal government could make grants to localities covering up to 20 per cent of the cost of acquiring space for parks, conservation areas, flood control, or "to avoid the wasteful extension of public services." The other provision would earmark another \$100 million for loans to localities to acquire open space for future public or private development, after resale, subject to an acceptable plan that would prevent "undue speculation" and would enable local agencies "to control the rate and character of community development."

A third major element incorporated in the administration's housing bill would greatly liberalize FHA programs for stimulating urban residential rebuilding (see page 136).

Most reaction to the administration's bill was favorable. Testifying before the Senate housing subcommittee, AIA President Philip Will Jr. wholeheartedly urged the adoption of measures for preserving open spaces in and around urban areas. He also called the bill's four-year \$2.5 billion authorization for urban renewal grants "a significant step forward." This should eliminate waste, red tape, and administrative delays, said Will. "The year-to-year authorization policies of the past have wasted time, money, and opportunity in restoring our cities." Endorsing the proposed FHA-Fanny May programs to spur moderate-income urban housing. Will declared: "Past mortgage insurance programs have not advanced the value of urban renewal but rather have served to consign middle-income residents to suburbia for lack of decent. moderate-priced housing in the city. This mass exodus of middle-income families from the city has encouraged urban sprawl and accelerated the disorderly growth of the suburbs, simultaneously increasing the high cost of suburban services and depriving the city of the vitality and tax base it must have to survive" (See Editorial, page 79).

Opposition to some provisions in the bill came from the National Association of Real Estate Boards and the life insurance industry's two trade associations. Their representatives objected to the proposed FHA-Fanny May programs for low-interest insured loans for moderate-income housing. The realtors' association also decried the *continued on page 7* 



U.S. EMBASSY IN BRASILIA OF CONCRETE AND MATTE TILE IS COMPLETED

In accordance with orders of Brazilian President Janio Quadros that all embassies move as soon as possible from Rio de Janeiro to Brasilia, the new U.S. Embassy there was opened last month. Brazil's own Foreign Minlstry Building in Brasilia is not yet beyond the corneratone stage; Italian and Iranian embassies are finished; but the British and French occupy only temporary buildings, and most of the new Capital's Embassy Row is still a series of naked lots. The long rectangular U.S. Embassy, reinforced concrete and matte ceramic tile on a pile foundation, was designed by McLeod & Ferrara, of Washington, and cost about \$600,000. Around its large inner court and pool are offices for 60 people, a suite for the ambassador, and residential quarters for 30 persons.



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bill's public housing provisions and urged that aid be withheld from any cities failing to enforce housing codes.

The administration's proposed Department of Urban Affairs and Housing would take over all present activities of the Housing and Home Finance Agency and eventually might direct the programs enacted for federal aid for mass transit and the acquisition of urban open spaces. The Department of Commerce also is seeking jurisdiction over any urban transportation assistance program, however, and the Department of the Interior would like to supervise any park or open-space program.

Testifying on the housing bill before the Senate subcommittee, which also is considering a separate bill for mass transit aid, Mayor Richardson Dilworth of Philadelphia commented that "renewal may prove valueless unless cities get some real help in solving their mass transportation problems." In Philadelphia, he said, officials of the John Wanamaker store have told him that 80 per cent of its customers come to the city by mass transit, and, if the city proceeds with a proposed transit improvement program, the store will spend \$10 million to improve its property. Other businesses also would spend millions of dollars for urban rebuilding, said Dilworth, but so far the city can only afford about half of the estimated cost of a proposed program that would link its two main commuter railroads into a rapid transit "loop" system.

The Kennedy administration's program for aid to economically "depressed areas" (those where unemployment is at least 6 per cent and has been more than twice the national average for the past four years) was adopted by both houses of Congress early last month, and was only awaiting reconciliation of minor differences between the Senate and House versions before final enactment. One of its main provisions will establish a \$100 million revolving loan fund from which local agencies will be able to obtain low-interest loans for up to 65 per cent of the cost of building and equipping new industrial plants, establishing industrial parks, or rebuilding existing plants. Another \$100 million will be made available for low-interest loans for new public facilities to attract industry. and \$75 million for federal grants covering up to 65 per cent of the cost of such facilities for communities that cannot afford the loans. In urban renewal areas, depressed-area cities will receive special priority on waivers of the "predominantly residential" requirements that apply to Title I projects, so they can benefit from greater industrial redevelopment.

## Ired Hawaiians upset a redevelopment award

Ire seized many usually amiable Hawaiians in mid-January after the Honolulu Redevelopment Agency announced its selection of a developer for its \$10.5 million Queen Emma downtown area apartment project. After two weeks of stormy controversy the agency decided it should reconsider all six proposals it had received and should allow all contenders to make new offers. Last month it awarded the project to Queen Emma Gardens, Ltd., a syndicate that was eliminated the first time but offered the highest price for the land. \$1,446,000, the second time around. This combine is composed of E. E. Black, a Honolulu construction firm; Castle & Cooke, Inc., a Honolulu factoring and commercial company, and Almin, Inc., a Birmingham, Mich., company. Its architect: Minoru Yamasaki.

Proposals for the 8.4 acre site for high-rise buildings to contain from 521 to 621 apartments were received by the agency last August. To help evaluate them three consultants were employed: M. Justin Herman, executive director of the San Francisco Redevelopment Agency: Honolulu Architect George V. Whisenand, and Honolulu Realty Appraiser John J. Hulten. After narrowing its choice to two contenders, the redevelopment agency in January announced its tentative selection of Queen Emma Associates, and, as it turned out later, returned the deposits of the other four bidders.

The storm broke January 13, when consulting Architect Whisenand issued a statement saying the agency had made a mistake in its selection, because "at least four of the six proposals were architecturally superior to the selected proposal." Subsequently agency Chairman Clarence Chun-Hoon, a Honolulu supermarket executive, insisted that the selection was not final, and that the agency had merely voted to send a copy of the statement of qualifications and resources of Queen Emma Associates to HHFA regional headquarters in San Francisco for approval. Nevertheless, the City Council next summoned the agency's commissioners, and at this session Chun-Hoon conceded that the agency had shown preference by its action. During the furor the Hawaii chapter of the American Institute of Architects and the Honolulu Chamber of Commerce also expressed concern about the selection procedure the agency had followed.

While the storm raged, the runner-up

redevelopment group retained an attorney to fight the agency's award but never went to court.

Eventually federal Housing and Home Finance Agency officials ordered the local redevelopment agency to hold up the entire project, and an attorney and one of the agency commissioners journeyed to the San Francisco HHFA office for further instructions and clarification on procedures. On their return, the local agency announced its decision to reconsider all bids and call for revised offers. The agency also hurriedly engaged two additional architectural consultants, John Lyon Reid and Mario J. Ciampi. Their evaluation of Yamasaki's design for the Queen Emma Gardens syndicate said it was characterized by "restraint, delicacy, good judgment; a most excellent solution to all parts of the problem." Having also become the highest bidder, by increasing its offer from \$3.25 to \$4 per square foot for the land, this syndicate was then awarded the project. On recommendation of the consultants, however, a number of town-house units in the Yamasaki plan (see photo) will be eliminated, but additional units included in its two 21-story and one 12story towers.

#### AIA raps New York firm; Walker resigns

Late in 1959 the AIA suspended from membership Ralph Walker, its 1949-51 president, Stephen Francis Voorhees, its 1935-37 president, Perry Coke Smith, Benjamin Lane Smith, and Charles S. Haines 2nd, the five principals of the office of Voorhees, Walker, Smith, Smith & Haines of New York. Last May, however, the group won a New York state court order that held *continued on page 9* 



YAMASAKI TOWERS FOR HONOLULU



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that their suspension had not been made in accordance with AIA bylaws or any other legal proceedings, and the AIA restored their names to its roster (FORUM, Aug. '60).

In a subsequent hearing last January by the AIA board of directors, on complaints by New York Architects John C. B. Moore and Robert S. Hutchins charging violations of the Institute Standards of Professional Practice, the board again acted in favor of Moore & Hutchins. In disciplinary actions it voted to "censure" Walker, Voorhees, and Benjamin Lane Smith, and to suspend for one and two years, respectively, the memberships of Haines and Perry Coke Smith. Moore & Hutchins claimed that VWSS&H had solicited a commission from the New York State University for which Moore & Hutchins were already engaged. VWSS&H claimed it had only dealt with the state after being informed that the Moore & Hutchins contract was being terminated.

An official summary of the hearing and action by the AIA board, without any reference to last year's New York court decision, appears in the April issue of the Institute's *Journal*. According to Executive Director William Scheick, however, suggestions about procedures by the New York court were followed very carefully in the latest AIA proceedings, and the case was heard in January "as if it was a first hearing, not as a rehearing."

Since his censure in January, Walker has resigned from the AIA and last month was sending each member of the Institute a personal statement about the case. No other resignations were anticipated, and Haines said the matter was now "closed" as far as VWSS&H is concerned. On behalf of his office, Moore declined to comment on the case.

#### Colbert revises Columbia architecture courses

During the past month the School of Architecture at Columbia University won wide attention and acclaim for conducting an impressive program of public seminars honoring the Four Great Makers of contemporary architecture—Wright, Mies, Gropius, and Le Corbusier. At special convocations it also awarded honorary degrees or named student scholarships for the living members of the famous foursome.

Just as important as Columbia's public activities exalting architecture



LARGE DOWNTOWN STAMFORD RENEWAL PLAN BY VICTOR GRUEN

Officials of Stamford, Conn. proposed last month a 118-acre redevelopment in the heart of the city under a plan by Victor Gruen bearing considerable resemblance to his famous Fort Worth, Tex. plan (FORUM, May '59). Altogether, the Gruen plan would close 15 downtown Stamford streets and turn five blocks of Main Street (which also is U.S. Route 1 and the Boston Post Road) into a pedestrian shoppers' mall (see sketch). Three large parking garages and two big parking lots would be created on the periphery of the main redevolopment area (see plan). Between the new Connecticut Turnpike and the core district there would be relocation housing and landscaped office and light-industry buildings with additional parking areas (foreground in plan). Local and federal costs would total \$25 million; private outlays by redevelopment sponsors Seon Pierre Bonan and the F. D. Rich Co., another \$40 million. City tax revenue from the area would double.



has been a quiet major reshaping of its teaching program during the past year under the direction of its new dean, Architect Charles R. Colbert. The curriculum being introduced by Colbert next September will offer identical programs for both planning and architecture students for their first two years of study, and then separate programs that will offer bachelor degrees in one more year, or master of science degrees in architecture or planning in two additional years.

One of Colbert's main objectives for the Columbia school is a small but selective student body-an optimum of perhaps 100 undergraduates and 60 to 75 graduate students. He is gradually eliminating evening sessions which have been attended mainly by part-time students. For the smaller but more earnest student body, the college will maintain and even increase its relatively immense faculty and staff (it now numbers 66 full- and part-time members) and offer a comprehensive range of subjects. Last fall, for instance, Dean Colbert introduced a pioneering course, Design and the Entrepreneur, conducted by FORUM Editor Douglas Haskell. By giving future architects an insight into the operation of the real estate market and the interests and attitudes of lenders and operative builders, this course is intended to help them later in getting better design accepted and built in the hard reality of the construction marketplace. Another new course that will be introduced next fall will be Environmental Design, by Henry Wright.

Specialized building-type courses that will be introduced next fall will include a joint venture with Columbia's School of Public Health and Administrative Medicine. This will cover designing for hospitals and public health facilities. and will require architecture students to spend part of their time in the public health school, and vice versa. Similarly, a new program in educational facilities design, conducted in cooperation with Columbia Teachers College will provide for an interchange of students. Colbert also expects to make arrangements with the Columbia School of Journalism to have one or more of its students take some of his school's architecture and planning courses to qualify them for architectural and renewal reporting.

For students who can qualify for Columbia's new architectural and planning courses, Dean Colbert will offer an unusual number of prospective rewards. Beginning in June 1962, the school expects to award William Kinne Fellows traveling fellowships to ten Master of Science graduates in architecture, each carrying a stipend of about \$3,000 for *continued on page 11* 

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one year of independent travel and study abroad, plus 10 to 15 other foreign travel and research fellowships for Master of Planning and Bachelor of Architecture graduates—i.e., one foreign fellowship for almost every third or fourth graduate each year.

#### Building volume up, except for houses; costs steady

The dollar volume of new construction in the first three months of 1961 showed a healthy increase over comparable expenditures in the first quarter of 1960except for the continued substantial lag in new house building. New buildingconstruction outlays registered an impressive advance of \$482 million or 11.1 per cent over 1960 first quarter spending (see table). The largest dollar increase took place in the educational building category, up \$112 million, or 15.7 per cent; the largest percentage increase, in hotels, motels, and dormitories, up \$66 million, or 27.5 per cent. Only two categories registered declines: religious buildings, down 0.9 per cent, and recreational buildings, down 3.6 per cent.

The steady advance in building construction has been favored by relative stability in building costs in recent months. In February, for instance, the cost index for new apartments, hotels, and office buildings compiled by E. H. Boeckh & Associates stood at 151.8, the same as in December and only 0.2 per cent above the February 1960 mark. The Boeckh index for new commercial and factory buildings stood at 154.1, down 0.1 point from December and 0.3 per cent under the figure for February 1960. Through the rest of this year, however, costs will show much steeper increases than the mild increases of 1960, according to the latest quarterly forecast of *Engineering News-Record*. Over the next nine months, building costs will probably advance about 3.4 per cent, *EN-R* predicts—mainly because of higher labor costs and higher prices for structural steel and lumber.

Through 1960, labor costs continued their relentless uptrend but were largely offset by a steady drop in building materials prices. In February, for instance, the index of average wholesale prices for all construction materials, as compiled by the Bureau of Labor Statistics, registered its 13th consecutive decline and fell to its lowest point in five years. Standing at 129.7 (on a base of 1947-49 equals 100), the February composite index for all building materials was 3.9 per cent below the February 1960 level.

The effect of the 2 per cent decline in total construction expenditures in 1960, compared with 1959, was reflected in reduced profits for 1960 reported by producers of various building materials. As computed by the First National City Bank of New York last month, the 1960 net earnings of 26 lumber manufacturers were down 26 per cent from 1959; profits of 21 paint and varnish manufacturers averaged 7 per cent lower: 22 cement producers 23 per cent lower; 19 glass products manufacturers 11 per cent lower; 53 other stone and clay products producers 8 per cent lower; 90 building, heating, and plumbing equipment corporations 13 per cent lower, and 48 hardware and tool manufacturers 7 per cent lower. The bank calculated that the profits of 31 construction firms declined 6 per cent, and the earnings of 58 real estate companies dipped 17 per cent.

#### NEW CONSTRUCTION EXPENDITURES, FIRST QUARTER 1961 (in millions)

	1st	quarter,	1961	1st quarter 1960	% Change
	Private	Public	Total	Total	in totals
BUILDING CONSTRUCTION	-				
Industrial	\$ 774	\$ 106	\$ 880	\$ 783	12.4
Offices and warehouses	530		530	486	9.1
Stores, restaurants, and garages	460		460	438	5.0
Religious	233		233	235	-0.9
Educational	142	683	825	713	15.7
Hospitals and institutions	159	83	242	233	3.9
Social and recreational	136	26	162	168	-3.6
Public administrative and service		129	129	105	22.9
Apartments	549	80	629	575	9.4
Hotels, motels, and dormitories	270	36	306	240	27.5
All other building construction	148	266	414	352	17.6
TOTAL BUILDING CONSTRUCTION	\$3,401	\$1,409	\$ 4,810	\$ 4,328	11.1
TOTAL HOUSE CONSTRUCTION	3,300	62	3,362	4,055	-17.1
TOTAL OTHER CONSTRUCTION	1,354	1,748	3,102	2,917	6.3
TOTAL CONSTRUCTION	\$8,055	\$3,219	\$11,274	\$11,300	-0.2

Source: Miles L. Colean estimates based on Bureau of Census data. For componpage 105. ents of each category see FORUM, Apr. '61,

Architectural Forum / May 1961

People

To fill the nation's top urban renewal post, President Kennedy selected a young executive with long experience in almost all phases of urban planning and redevelopment. The new Commissioner of the Urban Renewal Administration is William L. Slayton, 44, a planning and urban renewal consultant and until recently a vice president of Webb & Knapp, Inc., in charge of its large Southwest Area redevelopment project in Washington, D.C. (FORUM, Aug. '60).

HARRIS & EWING



A native of Topeka, Kan., Slayton received degrees in municipal government and public administration from the University of Chicago. In 1944 he became a planning analyst with the Milwaukee Planning Commission, and later the mayor's special assistant for redevelopment. After service with the Navy, he worked with Coleman Woodbury for two years on the preparation of a comprehensive Urban Redevelopment Study, and then, as field representative for the Housing and Home Finance Agency, established procedures for the redevelopment program. Before joining Webb & Knapp he was the executive director for the redevelopment section of the National Association of Housing and Redevelopment Officials. He is a member of the American Society of Planning Officials, and last summer was engaged by the American Municipal Assn. to study the scope and effectiveness of all federal, state, and local urban-renewal efforts. In Washington last year he moved into his own new house designed by Ieoh Ming Pei, with whom he also has been affiliated as a planner.

Two other recent shifts have moved new men into key building and design positions in Washington:

▶ James R. Johnstone, 50, has been appointed deputy assistant secretary of state for foreign building, a new title for the assignment that was formerly handled by William P. Hughes, as director of the office of foreign buildings. The new director for the State Department's overseas construction program is not an architect, but a government careerist who joined the Department of Agriculture in 1935 and transferred to State in 1942. He was counsellor for administration in the Tokyo Embassy for four years, and in continued on page 16



Nurses' residence and School of Nursing, Sibley Memorial Hospital, Washington, D. C.

## **STYROFOAM**<sup>®</sup> saves on new hospital insulating costs

... reduces heat loss through wall by 35%

In specifying Styrofoam insulation board for the 350-bed Sibley Memorial Hospital, the Architects provided a three-fold advantage. First, Styrofoam insulation acts as its own vapor barrier, an important factor in areas where high humidity levels must be maintained, such as nurseries and operating rooms. Second, its permanently high insulating efficiency assures keeping even temperatures throughout hospital rooms, thus helping to assure maximum patient comfort.

The third reason was economic. Styrofoam permits savings in construction costs. For example, Styrofoam insulation was used as a "plasterbase," eliminating furring and lathing. In this method, Styrofoam insulation is bonded to the masonry walls using portland cement mortar; plaster is then applied directly to the Styrofoam. This technique often results in a wall insulated at a lower cost than conventionally insulated masonry walls and in some cases at a cost equal to or lower than uninsulated masonry walls.

Construction costs were drastically reduced in building air intake plenums. Because Styrofoam insulation board provides its own horizontal support, external supporting members were done away with. In this application, Styrofoam reduced construction costs by almost half.

At Sibley Memorial Hospital, Styrofoam insulates all external walls of the main structure and of an adjacent dormitory-classroom building. In addition, multiple layers of Styrofoam insulate the hospital's meat freezer and many coolers and refrigerators.

Styrofoam insulation board contains millions of tiny non-interconnecting air cells. It provides a low "K" factor that stays low, permanently, because Styrofoam doesn't absorb water. Nor does this chemically engineered insulation rot or mildew. It has no

food value to attract vermin. And lightweight Styrofoam is so easy to handle and install-forbothcavity wall construction and solid masonrythat installation costs are reduced to a minimum. For



more information write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1500LH5.

Styrofoam is a registered trademark of The Dow Chemical Company. It is applied only to the homogeneous expanded polystyrene made according to an exclusive Dow process. Styrofoam brand insulation board is available only from Dow and its authorized representatives.

#### **Other Dow Building Products**

ROOFMATE\* lightweight insulation for built-up roofs that serves as its own vapor barrier. It provides permanent high resistance to water vapor. Light weight and ease of handling reduce installation time. \*TRADEMARK

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SCORBORD® (Patent applied for) permanent insulation for foundations and perimeters. Pre-scored for easy use. Excellent moisture barrier.



Below: a modest sampling of Lightolier's 1,000-plus array of lighting devices...so varied that it includes functional fluorescents, glittering chandeliers, and all that lies between. Virtually every Lightolier expresses that more-than-common sense of design and imaginative engineering that makes even a standard fixture seem exceptional. Look at the recessed fixture at left. Tiny, champagne-tinted glass beads fused to the lens risers filter out glare components. Or the optically

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precise fluorescent, bottom right. Interlocking ends permit arrow straight continuous runs...no dark joiner straps required. Or, in another vein, the quiet riot of gaily colored acrylic ribs accented with wrought iron and polished brass for a boldly decorative effect. Practically every Lightolier product is special in some significant way. For variety, for fresh ideas, for craftsmanship, and for design, look first to Lightolier. You'll seldom have to look further.

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Washington has been Chief of State's central services department.

The appointment of Sidney H. Woolner, 49, of Lansing, Michigan as Commissioner of the Community Facilities Administration in the Housing and Home Finance Agency, which administers the federal college housing loan program and HHFA's loan and grant programs for community planning and public works.

#### HONORS AND AWARDS

Winners of the two \$500 first prizes in the magazine and newspaper divisions of the AIA's eighth annual Journalism Awards Competition: FORUM Associate Editor Allan Temko, of Berkeley, Calif., for an article on the decay and renewal of American cities in the Apr. 1960 issue of Harper's, and Shirley A. Wiitanen, of the South Bend, Ind. Tribune, for an article on new church architecture.

The 1961 Arnold W. Brunner Scholarship of the New York chapter of the American Institute of Architects, this year a joint grant of \$3,000, has been awarded to FORUM Associate Editor Richard A. Miller, presently on leave as visiting lecturer in architecture at Ohio State University, and Arnall T. Connell, assistant professor there. Their scholarship project will be the completion of a study relating the psychologial and physiological concepts and principles of visual perception to environmental design.

The Building Research Institute at its spring conference in Washington this month will present its second annual F. Stuart Fitzpatrick Memorial Award for "individual contribution to the unification of various elements of the building industry" to Edmund Purves, recently retired executive director of the AIA. END

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Latest available figures—publisher's statements to the Audit Bureau of Circulations—show the following paid circulation averages for the last six months of 1960:



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Twenty-six years of continuous leadership is no accident





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The "880-980" Series is based upon the unique design of a fullface snap-together section, plus extruded screw holes. Working together they allow the unmarked surfaces and the assembly ease and speed of this aluminum. To install this Series a vertical tube, minus its face component, is positioned and anchored at one end of the opening. The open design of the tubing and a specially

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Blue Cross-Blue Shield Building, Boston

IBM Corporate Headquarters, New York



Union Carbide Building, New York

## Which of these buildings is 35 years old ?

Beneath the shiny new facade of one of these three buildings lurks a cornerstone that reads: "1925."

#### Which one?

The fact that you can't tell which one at a glance—or even on closer study—speaks volumes for the strides that are being made in the relatively new art of rebuilding.

And the fact that *one out of every three* building dollars goes into updating obsolete structures speaks volumes for the sheer size of the rebuilding market...and of the great opportunities it offers.

Forum, which now publishes a monthly editorial section devoted exclusively to the special interests and problems of rebuilding, is the only magazine which covers this important market.

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The rebuilt building is IBM Corporate Headquarters, 590 Madison Ave., New York City.



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## How Armstrong Acoustical Fire Guard can save you up to two months' construction time

The large ceiling of the airline terminal on the left features the new Armstrong Acoustical Fire Guard *lay-in* system. This revolutionary ceiling system combines, for the first time, the economy and fast installation advantages of an exposed grid system with the protection of a time-design-rated ceiling.

The smaller lounge ceiling which you see just below the mezzanine is of Acoustical Fire Guard *tile*. Millions of feet of this tile have been installed since it was first introduced two years ago.

In either form, Armstrong Acoustical Fire Guard can save up to *two months*' construction time. Here's why.

Since Armstrong Acoustical Fire Guard is fully approved by the Underwriters' Laboratories, Inc., there's no need to install intermediate protection between the acoustical ceiling and the steel structural members.

Installation is a completely dry operation that does not require an extensive cleanup.

There are none of the other inconveniences and delays of a wet operation. Carpenters, painters, and flooring contractors can be on the job at the same time as the acoustical contractor. This alone can save weeks.

The Armstrong Acoustical Fire Guard lay-in units are available in both the Classic and Fissured designs. There are two nominal sizes: 24" x 24" x 5%" and 24" x 48" x 5%".

For information about either Acoustical Fire Guard tile or lay-in units, call your Armstrong Acoustical Contractor (he's in the Yellow Pages under "Acoustical Ceilings") or your nearest Armstrong District Office. Or write to Armstrong Cork Company, 4205 Rooney Street, Lancaster, Pennsylvania.

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Architectural design and rendering by Helmut Jacoby



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PORTLAND CEMENT ASSOCIATION A national organization to improve and extend the uses of concrete



### and beauty to new medical center!



Buff-toned concrete of Medical Center harmonizes with older Stanford University buildings. The grille motif is repeated in columns, spandrels, mullions and plant boxes. Grilles shield east and west façades, corridors and patients' private gardens.



Stanford University Medical Center, Palo Alto, California. Architect: Edward Durell Stone, New York, N.Y. Structural Engineers: Pregnoff & Matheu, San Francisco, California



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See Us In Sweet's. Complete details on The Electric Traverse Rod may be found in the 1961 Sweet's Architectural File, Section 19f Ke . . . or write direct for your individual copy.

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Installation is fast, simple and economical. Expensive ductwork is eliminated, since the unit installs with a single supply and return air duct, thereby requiring only one duct passage to be cut through the roof. Installation is further simplified with only three service connections.

Besides the 48B for heating and cooling, there are two other on-the-roof Weathermakers—the 50AA for cooling only and the 64AA Heat Pump. For information, call your Carrier dealer, listed in the Yellow Pages. Or write Carrier Air Conditioning Company, Syracuse 1, New York. \*Reg. U.S. Pat. Off.



**Carrier 48B Air-Cooled On-the-Roof Weathermaker** consists of a gas-fired heating section, a fan section and an air-cooled refrigeration section for cooling—all enclosed in a weatherproof casing and mounted on rails. The refrigerant piping is installed and the unit is dehydrated, charged with refrigerant and tested at the factory. Unit is also completely factory wired.



One supply and return air grille fits flush to ceiling-leaves ceiling, floor and walls clear and uncluttered.



A single unit will both heat and cool a small store or plant.



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Thermopane® insulating glass in sliding doors keeps guest rooms quiet and comfortable year 'round.

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How can a new motel successfully compete with established motels in the same area? How can its guests enjoy the "open world" around them in comfort and quiet, despite the screaming of jet airliners overhead and the roar of highway traffic beside it?

We went to the Howard Johnson Motor Lodge in Memphis, Tennessee, to find out. Lewie Webb, managing director, and Austin K. Hall, AIA, gave us the answers. (see next page).





Question: How long has your Motor Lodge been in operation, Mr. Webb?

**Mr. Webb:** Approximately six months. We opened the first building with 22 guest units in June, 1960. All three wings with a total of 50 rooms were in operation by the middle of July. So far, we've served over 16,000 guests. And we have broken ground for two more buildings, which will raise our total to 100 rooms.

Question: To what do you attribute this success?

Mr. Webb: Well, the Howard Johnson franchise is a big asset, of course. But the inviting appearance of our establishment, as you approach it, is what stops them. You've noticed we've used lots of glass in the restaurant, office and guest units. This is a principle laid down by the Howard Johnson chain that really works: Let people see what to expect before they enter.

Our location on U.S. 51 is and will become an increasingly important factor. And we're the motel nearest to the airport. When completed, the N-S Interstate Highway interchange will be only 900 feet from our entrance.

#### Question: Do you get much repeat business?

Mr. Webb: Indeed we do. About 40% of our guests come back for return visits. We already have several reservations for rooms during next year's football season. And many of our guests find it so pleasant here, they extend their stay for several days.

You see, our rooms are luxuriously furnished, air conditioned, sound deadened and truly relaxing. Would you like to see a typical room?

We entered the unit from the rear, where cars are parked. It was impressively spacious and handsomely

Each guest unit has room-width wall of *Thermopane* insulating glass including sliding door.  $\frac{1}{4}$  '' thick *Parallel-O-Plate* is used in both panes to minimize waviness which could cause distortion.

Typical of Howard Johnson Motor Lodges across the nation, registration offices have glass fronts and sides. L·O·F Parallel-O-Plate® was used here, for crisp, attractive appearance.

decorated. One wall was surfaced with beautifully mellowed brick, salvaged from an old building of Civil War days. The other wall was paneled with walnut. And the front wall, overlooking a landscaped terrace with swimming pool, was glass from wall to wall, from floor to ceiling, and included a sliding glass door.



Austin K. Hall, AIA, and Lewie Webb, Managing Director, discuss 100-room addition to Motor Lodge in Memphis.

Mr. Hall: You can see we've tried to provide all the comforts. You can turn on or turn off the lights, television or music without stirring from bed.

There are *two* lavatories, each with a large mirror and a full-length door mirror. All made of L·O·F *Parallel-O-Plate*<sup>®</sup>, I understand.

I hope you've noticed how quiet the room is. The inside walls, the ceiling and that exterior glass wall are all designed to muffle distracting noise.

Question: What kind of glass is it?





Mr. Hall: Insulating glass. Two panes of  $\frac{1}{4}$ " plate glass with a  $\frac{1}{2}$ " air space between them.

Mr. Webb: That's a feature I insisted on having. We're very sound-conscious here in Memphis. It has won the "Quietest City" award 14 times. An unnecessary toot of your horn can cost you a \$5.00 fine. But right here is about the noisiest place around town.

We're on a direct line with the Municipal Airport east-west runway. Those noisy jets pass 500 feet overhead. And 26,000 vehicles pass our doors per hour. Construction machinery on Interstate Highway 55 would be heard in the rooms if we hadn't used *Thermopane* insulating glass. It's a very effective sound muffler. (1" thick *Thermopane* cuts out about 44% of sounds of a frequency range of 125 to 2000 cycles per second, compared to ¼" plate glass.)

Question: Was noise reduction the only reason why you used *Thermopane*?

Dining room in restaurant has mirror wall made of *Parallel-O-Plate*, twin ground for truest reflection.

Mr. Hall: No, we used it to effect heating and air-conditioning economies. Each room has an individual thermostat. Insulating glass helps keep room temperatures constant without excessive demand on the system.

Question: What is the temperature spread in Memphis?

Mr. Hall: About 100 degrees. Sometimes the temperature drops 60 degrees in 5 to 6 hours.

**Question:** With that drastic a drop, don't you get frost or condensation on those window walls?

Mr. Webb: Only once, and that was due to a leaky heater discharging too much moisture into one of the rooms.

**Question:** That window wall affords a wonderful view of the terrace and swimming pool, but don't the guests feel a lack of privacy?

Mr. Webb: On the contrary, guests enjoy the "open world" feeling we've created. They hardly ever draw the drapes until they're ready to retire. Instead they relax, watch a sunset from their room, stroll out and enjoy the fun around poolside.

Question: How do you control sun heat and glare?

Mr. Hall: We've used roof overhangs, and have extended the walls of each unit beyond the window wall. That not only helps shade the rooms, but forms a private patio for each unit.







Insulating glass, of course, helps keep rooms cooler in summer.

Mr. Webb: *Thermopane* has worked out so well, we're considering using it to replace the single glazing in our office.

We spent the night at this Howard Johnson Motor Lodge and enjoyed a relaxing sleep, undisturbed by inside or outside noise. Why not try it yourself, next time you are in Memphis?

Guest units have two lavatories with generous *Parallel-O-Plate* mirrors, plus full-length door mirror on adjacent door.





for motels



**TUF-FLEX® DOORS** – These frameless, clear-glass doors can withstand, with virtually no maintenance, all the traffic they help create. Made of  $\frac{3}{4}$ " and  $\frac{1}{2}$ " thick tempered plate glass, they are 3 to 5 times tougher than regular glass of the same thickness. Sixteen types in finished sizes up to 48" in width and 108" in height.



**THREE KINDS OF PLATE GLASS** – Parallel-O-Plate<sup>®</sup> is clear plate glass, twin ground for clearest vision. Parallel-O-Grey<sup>®</sup> is tinted neutral grey. Heat Absorbing Plate is pale bluish-green. Both Parallel-O-Grey and Heat Absorbing Plate reduce transmission of sun heat to keep interiors cooler. Parallel-O-Grey reduces glare more effectively.

For complete information on these and other L·O·F products, refer to Sweet's Architectural File 26-A, or call your L·O·F Distributor or Dealer (listed under "Glass" in the Yellow Pages). Or write to Libbey Owens Ford Glass Company, 811 Madison Ave., Toledo 1, Ohio.



**THERMOPANE®**— For maximum comfort and for heating and air-conditioning economy, use *Thermopane* insulating glass in windows and sliding doors. Heat loss is cut almost in half, compared to single glazing. Drafts near windows are reduced. Frost and fogging are minimized. Outside noise is muffled. Choice of plate glass (see left below) for outer pane.



**VITROLUX®**— Rich color, fused to the back of this clear, heat-strengthened 1/4" plate glass, adds youthful beauty and cheerful character to any structure when used as a facing material. It is resistant to weathering, crazing and checking. Also ideal for interior partitions. Sixteen standard colors, plus black and white. Standard-size panels up to 48" x 84".





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## STORE SALES SHOW INCREASE! ... Ohio Dept. Store Relights with **Miller RICHMOND for Power Groove**



Before Relighting-15 footcandles



After Relighting-125 footcandles

As a first step in a storewide renovation program, The Carlisle-Allen Company, Ashtabula, Ohio relighted their entire home furnishings floor with Power Groove fluorescent using Miller Richmond fixtures.

After Only Six Months of Operation With The New Lighting-The Only Change Made —a Significant Sales Increase Was Recorded for Departments in The Relighted Area.

Here's what Mr. Ted Carlisle, one of the owners, says of their new lighting: "Even in an unfavorable economic condition, which normally has a more severe effect on the sales of Home Furnishing Depts.—we showed a 4% greater gain in sales from the newly lighted area than in the balance of the store as compared to the same period a year ago... "After analyzing and comparing sales figures for the newly lighted areas with those floors not yet relighted—we're con-vinced that our new lighting is a contributing factor to increased sales... that good lighting will pay for itself in a short time".

For further information about Miller Richmond for Power Groove, or for help with a specific lighting job or fixture write Dept. 461 R, or contact your Miller Representative. THE miller COMPANY, MERIDEN, CONN. . UTICA, OHIO

\*New fixtures utilize DeLuxe CW lamps to bring out true colors . . . show merchandise at its colorful best.



Whether for relighting or new construction, there's a Miller fluorescent fixture to meet your needs



Shown: (above) Partition extended, gym seating and stage sections (far right) folded back to create three separate activity areas; later (below) stage and seating extended, backstops folded up, to form a large capacity auditorium.





# GYM EQUIPMENT WITH THE CHANGE BUILT IN...

Make that costly gymnasium area work full time. (And overtime, too!) You can when you plan a Brunswick Flexi-gym an area that can be used for assembly, food service, supplemental classroom, civic and social functions, theatre . . . and, of course, several gym sessions at one time. It's easily done with the *planned* use of Brunswick folding seating, partitions, backstops and stages.

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# a sound approach to structural ceilings

If students were never noisy, *any* kind of steel panels would be ideal for school ceilings. Steel offers long-span design. It can be painted any color . . . or economically washed. And steel panels never crack, warp, or burn. But, because students *are* noisy, Fenestra pioneered an *acoustical* steel ceiling panel.

This steel acoustical panel costs less to install. It is a perforated modular unit backed up by a patented, pre-formed, arched glass-fiber sound attenuation pad. It performs as many as five different building material functions: acoustical correction, insulation and roofing support, integral lighting, long-span structure, and finished flat ceiling. It spans up to 34', eliminates the need for bar joists.

Costs less to maintain. It can be washed or painted. Nothing to become loose or fall off.

And in years to come, Fenestra acoustical steel paneling will still retain its original appearance.

Fenestra has been a pioneer in this better kind of sound conditioning for over 30 years. Can our research and engineering service help you? Call your local Fenestra representative (he's in the Yellow Pages); see Sweet's File 2c/Fe; or write: Fenestra Incorporated, Dept. AF-15, 2296 E. Grand Boulevard, Detroit 11, Michigan.



Long-span acoustical "D" steel ceiling panels provide highly efficient noise absorption at all sound frequencies.

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BANK BUILDING, ATLANTA, FOR SEVEN YEARS, SINCE THE BUILDING WAS

COMPLETED. DURING THIS PERIOD OF TIME WE HAVE NOT REPLACED ANY

PARTS, NOR EXPERIENCED ANY DIFFICULTY WITH THE OPERATION OF

THESE BLINDS. WE CAN HONESTLY SAY THAT THE FLEXALUM VENETIAN

BLIND HAS GIVEN US OUTSTANDING SERVICE FROM THE STANDPOINT

OF BOTH APPEARANCE AND MAINTENANCE." CHARLES C. FORD,

GENERAL MANAGER, BANK BUILDING CORPORATION, ATLANTA, GA.

YOU, TOO, CAN BANK ON *Hexalum* TWI-NIGHTER VENETIANS

Bridgeport Brass Company, Hunter Douglas Division, 30 Grand Street, Bridgeport 2, Connecticut





At a large Midwestern state university, wall panels of Consoweld laminated plastic were used to add warm, appealing beauty to this new women's residence hall.



**RIBBON WALNUT** 

#### Richly grained patterns of enduring beauty.

Consoweld's new laminated plastic woodgrain patterns were the perfect answer for the women's residence hall at a large Midwestern state university. All the design-appeal, color, and luxury of authentic wood paneling add to the appeal of the building's inner beauty and charm.

#### Infinite number of applications possible.

Consoweld woodgrains are ideal for horizontal and vertical installations in offices, stores, churches, motels, cocktail lounges, restaurants, lobbies and other installations where permanent beauty and low maintenance cost are desirable. Shown here are three of the newest members of Consoweld's family of authentic woodgrain patterns.

From coast to coast, more than 100 distributors are strategically located to supply your requirements for Consoweld laminated plastic products.

> CONSOWELD CORPORATION Wisconsin Rapids, Wisconsin





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It's sprinkled with stars



New laminated plastic pattern by

CONSOWELD

Myriads of tiny starbursts make Fantasy glitter and gleam with color excitement. It's a gay, new pattern. Rich! Warm! Inviting!

Working with it you can achieve striking new design effects. Four high-preference colors enable you to get an open, fresh, clean look to complement any color decor. Specify Fantasy for countertops, showers, walls, wainscoting or for decorative effects with accent items or accessories.

Fantasy gives you a pattern with *proven* consumer acceptance. Market-testing reports consistently give it the highest acceptance ratings.

Ask your dealer for samples of Consoweld Fantasy.





Consoweld Fantasy has the delightful look of luxury. Yet, the beautiful laminated plastic surface cannot be harmed by boiling water, alcohol or fruit juices. Easy to clean. Easy to keep clean.

Cabinets by Youngstown Kitchens

## Projects

### A roundup of recent and significant proposals



WORLD TRADE CENTER FOR LOWER MANHATTAN

A new look for downtown Manhattan is proposed by the Port of New York Authority, which has recommended a \$355 million investment in the 16acre World Trade Center, above. Largest of the complex would be the 72-story world trade mart, built over a fivelevel enclosed concourse and plaza. Architects: Richard M. Adler of Brodsky, Hopf & Adler, guided by a board of architects: Gordon Bunshaft, Wallace K. Harrison, and Edward Durell Stone.

#### HOUSTON TOWER

Caged in steel and aluminum, the headquarters tower of the Tennessee Gas Transmission Co. and its associated firms will stab 475 feet into the Houston sky line. Recessed 5 feet behind the cage, the walls will be almost entirely glass, extending from the ceiling to within 15 inches of the floor. This 33-story tower, set in a landscaped plaza, is the work of Skidmore, Owings & Merrill's San Francisco office, and it is to get under way this summer.







STUDY MODEL FOR 1964 WORLD'S FAIR EXHIBIT

The ultimate in pedestrian circulation was to have been built into Eliot Noyes & Associates' Westinghouse building for the 1964 World's Fair: moving sidewalks would have carried spectators through eight spherical theaters within ten minutes, past a wide variety of company products and activities. In the central exhibit hall, pedestrians would have been on their own. The project remains a design study, however, for Westinghouse has decided not to participate in the fair.



TOWER AND MOAT IN LOS ANGELES

This moated office tower in Los Angeles, for the city's Department of Water and Power, will cost \$31 million, to be financed through sales of services rather than increased taxes. The moat tops a broad base, in which there will be an auditorium, a cafeteria, a laboratory, and service departments. This base, in turn, will be flanked by 2,400 parking spaces on three sides and three levels. Architects: Albert C. Martin & Associates; Ladd & Kelsey, consultants.

continued on page 51

## Introducing

## the resilient foam sealer for water-tight joints

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It's asphaltic bitumen impregnated polyurethane foam developed by Dutch scientists to solve sealing problems in all types of joints. Excellent physical and chemical properties.

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APARTMENT TOWERS IN SAN FRANCISCO

Atop Russian Hill in San Francisco, on the site of the old Hiram Johnson mansion, a San Mateo developer plans these 24-story cooperative apartments. The luxury appointments promised in each apartment, the heated swimming pool and health club in the lobby, and the terraces and waterfalls built into the site prompted its name, the Royal Towers. Architects Barbachano, Ivanitsky & Watanabe of El Cerrito designed the towers for the Belle Haven Realty Co., developer, builder, and contractor.

#### DAY SCHOOL IN CALIFORNIA

A thin-shell concrete chapel caps Architect Sidney Eisenshtat's design for Hillel Hebrew Academy in Beverly Hills, its position corresponding to the importance of religion in the school's curriculum. In the five stories below the chapel, behind a bronze grille, there will be 36 classrooms, science laboratories, a library, an auditorium, a swimming pool, a large gymnasium, offices, kitchens, and dining rooms.



### Projects contd.



#### CARNEGIE TECH HALL OF ENGINEERING

In Pittsburgh last month, the Carnegie Institute of Technology broke ground for the fifth new building in its \$29 million, ten-year development program, the Alan M. Scaife Hall of Engineering. Besides classrooms and laboratories, the College of Engineering and Science will have its offices there, as well as a computation center and conference rooms. Aluminum egg crate will screen the gray glass walls. Architects: Altenhof & Bown of Pittsburgh.

#### APARTMENTS IN CLEVELAND

A Cleveland developer proposes four 20-story apartment buildings for the Erieview urban renewal area, to be built along the lines of the first one, by Weinberg & Teare and John Terence Kelly (right). The dark band around the middle is a 15-foot indentation for private terraces at the 12th floor. Tenants of some of the large split-level apartments above the line will have terraces, too. Framing and exterior walls will be reinforced concrete.

#### PARIMENTS IN CELTERAD





PORTABLE OFFICES IN FLORIDA

A client uncertain of future development around the site he owns in suburban Jacksonville asked his architects for a demountable office building. Hardwick & Lee met the challenge with this precast concrete building, all of it reusable except the floor slab and footings. Poured first, the slab will serve as the bottom form for the Y columns and wall panels. Prestressed V-shaped beams, cast by a local yard, will be dropped from a truck directly into the crotches of the columns.

continued on page 53

ON THE WAY TO ACHIEVING "SPACIAL SILENCE"...with Bestwall Incombustible Acoustical Tile. The "Spacial Silence" principle is based on these elements: the spacial area above the tile, the fully-drilled face, the porosity-controlled membrane on the back. Bestwall Incombustible Acoustical Tile, its gypsum core fortified with glass fibers, provides an acoustical ceiling which combines beauty and high noise reduction with low maintenance cost. It is fireproof, washable, can be rapidly installed, easily removed. Low cost 24" x 24" units, available in plain or textured pure white finish, reflect up to 78% of light without

glare. These units, when installed and suspended as specified, insure a noise reduction coefficient of 70. Bestwall Gypsum Company, Ardmore/Pa.



Field Experience + Customer Needs + Modern Research + Modern Plants = Full Line of Bestwall Industrial Products



WINNING DESIGN FOR OREGON CITY HALL

The winner of a design competition for a new city hall in Eugene is this scheme by the local firm of Stafford, Morin & Longwood. Three sides of the block-square building will be offices, the fourth a covered arcade. In the center court, the city council will have its chambers, a separate structure seating 200. Eugene voters have approved the site but will decide this month whether to approve a \$2.4 million bond issue for construction. Total cost: \$2.7 million.



#### PRESBYTERIAN CHURCH IN MINNESOTA

With work on the first section nearing completion, the parishioners of Trinity Presbyterian Church in Brooklyn Center, Minn. will have the triangular sanctuary and the first portion of the church school (right) ready this summer. A fellowship hall and additional classrooms, the two remaining rectangles, will be built later around the paved plaza. Construction will be slab on grade, the bearing walls of brick and concrete block, and the roof of wood deck on steel beams, exposed in the classrooms. Architect: Roger T. Johnson.

ALLEADER PR

### Projects contd.



#### PRECAST TREES FOR HAWAII HOTEL

A few blocks from Waikiki Beach in Hawaii, Robert Guy and Charles Rolles, owners and developers, are building the small hotel above, which is to be ready for business in July. This design, by the Honolulu office of Architects Bassetti & Morse, is to be built mainly of concrete: precast column trees and joists, concrete slabs, and block walls. The total cost for the hotel's 15 units will be about \$130,000.

#### MOTEL-IN-THE-ROUND AT MONTREAL AIRPORT

The Hilton Inn at Dorval Airport, Montreal, will ultimately be a circle. Construction is to begin in August on two bedroom segments (96 rooms each) and the main building; the third bedroom wing, completing the circle, will be added later. Inside the main building,

which is shown as a drum in this preliminary study but which will actually be wedgeshaped, there will be restaurants, cocktail lounges, private dining rooms, and a ballroom. Architects: William B. Tabler; Gerard Notebaert of Montreal, associate architect.



#### LOS ANGELES MUSIC CENTER

On a 7-acre Civic Center site next to the Department of Water and Power offices (page 49), Los Angeles will build two structures in addition to the music pavilion already announced (far right). Designed by Welton Becket & Associates, these will be an 1,800seat theater and a circular forum of 800 seats set in a sunken garden. Both will be enclosed by a white marble colonnade and separated from the music pavilion by a mall. END





1060F, one of many 1000 SERIES models selected by Union Carbide for their New York headquarters

IT'S 1000 SERIES BY GF... the desk styled specifically to complement today's smart business interiors. Its all-flush surfaces and clean, uncluttered lines are the result of close collaboration between one of America's leading architectural firms and GF's own designers. And, of course, it's built to GF's exacting quality standards. Before you select any desk, see 1000 SERIES at your nearby GF branch or dealer. Or write Dept. AF-13 for our new color brochure. The General Fireproofing Co., Youngstown 1, Ohio.



### Products

### Interchangeable screen . . . flexible joint . . . continuous plywood



#### PRECUT SCREEN

The stock aluminum and plastic components below, left, slide together into Curtainscreen, a decorative mask for old building façades, elevator penthouses, cooling towers, and mechanical equipment, or a divider of interior space. Working with stock extrusions-mullions, panels, spacers, and glass stops-the architect designs his own screen, determining the panels' width, length, shape, color, spacing, and arrangement, and perhaps adding some other materials, such as wood, glass, or sheet plastic, which are not standard. The manufacturer does not supply stock patterns, but simply suggests some design possibilities from stock components. The mullions have one or two slots on each side so that the panels which fit into them may be set forward or recessed to create a three-dimensional effect. If freestanding, the screen may be finished on both sides.

Aluminum panels are 4, 6, and 8 inches wide and up to 20 feet high but can be made wider or higher by adding more panels side by side or end to end. They are available in several finishes, any color, and cut to angle shapes if desired. As a finishing touch, aluminum or plastic strips lock into the outside mullions, closing the slots. Cost runs about \$3 to \$10 per square foot, depending on the screen's complexity.

Manufacturer: Julius Blum & Co. Inc., Carlstadt, N.J.



#### **ONE-PART SEALANT**

A durable sealant, *Dow Corning 780* is silicone rubber, which requires no mixing, no catalyst, and no special storage conditions. It adheres to practically any building material—glass, masonry, and metal with the possible exception of some plastics; and it retains its elasticity despite temperature extremes, particularly impor-



tant in joints between materials of different expansion and contraction rates. The sealant is nonstaining and, therefore, may be used with light-colored masonry and other porous materials. In less than an hour after exposure to the air's moisture, it cures to a dry, tackfree surface; in 24 hours it cures to a depth of 1% to 14 inch.

Packed in polyethylene cartridges, Dow Corning 780 may be stored for as long as three months unopened. Sealant left in an open cartridge forms its own plug on exposure to the air, and this is easily removed when work starts again.

The cartridges are sold in 6- and 12ounce sizes and fit standard air- or handoperated guns. White, black, and gray are the standard colors, but for jobs requiring 20 gallons or more, Dow will mix special colors to match or complement. According to the manufacturer, the admittedly high price, about \$40 per gallon, is more than offset by reduced application and maintenance costs and by increased service life.

Manufacturer: Dow Corning Corp., Midland, Mich.

continued on page 56

#### MOTORLESS COOLER

The first thermoelectric refrigerator, which requires no mechanical compressor or refrigerant fluid, has been put on the market by the Norge Division of Borg-Warner, and the first 500 units will go into the Sheraton-Chicago Hotel, opening this month. These first units, which were built to Sheraton's specifications, are small (17% inches high, 13% inches deep, and 18% inches wide) to fit under bathroom counters, and their capacity is only 18 ice cubes, or one-half a cubic foot. Sheraton is paying under \$200 for each unit.

Because the thermoelectric system has no moving parts, it is noiseless. The cooling takes place when a direct current passes through two dissimilar metals, in this case alloys of bismuth and tellurium. The first commercial models will be designed for hospitals, medical centers, and doctors' and dentists' offices; home units are probably three to five years away.

Manufacturer: Norge Division, Borg-Warner Corp., Merchandise Mart Plaza, Chicago 54.



#### WOOD FILM

An invisible plastic sheet, factory-bonded to plywood, greatly increases its resistance to chips, mars, and stains, and is especially useful for walls and counterfronts in airports, restaurants, hotels, motels, and schools, and in elevator interiors and public telephone booths, all areas of heavy traffic. This permanent finish for paneling and doors is a thermoplastic film made from polyester resins developed by the Goodyear Tire & Rubber Co. Roll-laminated to wood, it protects the surface but does not change its natural color.

Marketed in stock and custom sizes and in many hardwood veneers, *Weldwood Permagard* panels and doors will cost



## Which of these Glidorama Window Walls did <u>YOU</u> design?

#### Like all Glidorama Window Walls, each was architect-inspired

... and each is a gleaming example of an architectural concept that became a practical reality through the *custom* application of Glidorama Window Wall Systems. Glass, metal, insulating panels, decorative panels... the materials *you* select are factory-fabricated into single or multiple-story window walls that reflect *your* design ideas in every line.

Reflected, too, in every line is Glidorama engineering excellence. Outstanding features such as integral horizontal gliding aluminum windows with automatic locking bolts. Positive weathertightness for low cost heating and cooling. More useable floor space. Faster, easier erection.

Our engineers will be glad to work with you in the development of Glidorama Window Walls for your next project. Write for Architectural Bulletin GL-12. Glidorama Division, Whizzer Industries, Inc., 355 S. Sanford St., Pontiac, Michigan.



REPRESENTATIVES IN PRINCIPAL CITIES OF THE U.S. AND CANADA

about 20 per cent more than the top-grade Weldwood Prefinished line but less than high-pressure plastic laminates.

Manufacturer: U.S. Plywood Corp., 55 W. 44th St., New York 36.



#### FOAM SLABS

Foumthane, a polyurethane foam insulation, marks Pittsburgh Corning's entry into the plastics field; it is the company's first nonglass product. By itself, Foamthane insulates walls, ceilings, and prefabricated wall panels, its rigidity helping to keep the metal panels flat. Of about the same density as polystyrene foam, from 1.6 to 2 pounds per cubic foot, it has approximately twice the insulating efficiency and, therefore, needs to be only half as thick to do the same job. Its effective insulating range is from -330 degrees Fahrenheit to 200 degrees Fahrenheit, and its K factor averages 0.14, compared with 0.28 for polystyrene foam. Recommended adhesives include hot asphalt, petroleum base mastics, asphalt emulsions, and mixtures of asphalt and petroleum solvents. Even though Foamthane alone is suitable for a number of applications, Pittsburgh Corning suggests that its greatest potential may be its use with another, older product, Foamglas (dark boards in photo below). Together they combine the structural stability of cellular glass and the space and cost savings of thin foam.

Sold in slabs of several sizes and thicknesses, from 1/2 to 15 inches, Foamthane costs about 19 cents per board foot in carload quantities.

Manufacturer: Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22. continued on page 58



## MODERN SUN CONTROL

with a bonus of beauty and economy Clean, simple, care-free Irvico grating affords functional, practical advantages - blends gracefully with

modern building design \* **IRVICO GRATING** is available

in standard panels or custom produced to your specification.



## **SUNSHADES**

of standard panels of Irvico aluminum grating reduce cooling costs and add handsome "transparent" appearance to this four-story classroom building.

The open mesh won't trap hot air next to glass.

Grating panels are strong enough

to be used as window cleaning walkways. They provide a permanent, practical solution. to the problem of sun control.

VESTIBULE MATS

Dirt and slush drop through open-mesh grating into receptacles below then are flushed into sewers,



preserving interior cleanliness.

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## RUGGED

Look at the *back* of this rugged HAWS fountain! The sturdy cast iron body is gripped in a thick shell of smooth porcelain enamel — impervious to weather extremes, corrosion, *even acids*! That's why HAWS Model 7X is the ideal specification for outdoor areas, industrial and chemical plants throughout the world! And good looking, too! This popular model matches anything on the market for sheer streamlined beauty. Get ruggedness with style. Specify HAWS!

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For post-tensioning concrete, a simple anchor system has been devised to eliminate several steps previously necessary and, therefore, to cut costs. The system, shown below, has three parts: a coil anchor and positioning plate, a rubber thimble, and two-piece grippers. The anchor and positioning plate, nailed along the form's outside edge, holds wire tendons in place while the thimbles are threaded onto the wire and pushed into the form. After the concrete is placed and the edge stripped off, the thimble is pulled out with pliers and the tendon stressed by hydraulic jacks. Before the jacks are removed, the split grippers are inserted and left in as a permanent part of the anchor. The last step is to cut off the tendon ends and grout the holes for a smoothly finished edge. According to the manufacturer, this system, which uses 7-wire strands of 3/s, 7/16, and ½ inch diameter, permits the post-tensioning of very thin members.

Manufacturer: Atlas Service Corp., 14809 Calvert St., Van Nuys, Calif.



#### STRONGER PLYWOOD

This machine, four stories high, in Georgia-Pacific's new Springfield, Ore. plant, swallows green veneers, heat-bonds them with dry glue and resin-impregnated kraft pulp, and turns out dry panels ready for ship-



ment. This new technique, claimed to be the first continuous process for making plywood, takes only a few minutes from start to finish, uses low-grade veneers, and adds stability to fir plywood's strength. Instead of three plies in  $\frac{1}{2}$ -inch plywood, *Fiber-Ply* has five, two of which are resinimpregnated wood fiber, and the remaining three, wood veneers. In  $\frac{1}{2}$ ,  $\frac{5}{8}$ , and  $\frac{34}{4}$ -inch thicknesses, there are seven plies rather than the usual five. Fiber-Ply has a hard, smooth surface on both sides, which eliminates the need for an undercoat and extends the life of a paint job.

Both exterior and interior grades of Fiber-Ply are available, in 4 by 8 foot panels. Costs are in the same range, grade for grade, as regular plywood.

Manufacturer: Georgia-Pacific Corp., Equitable Bldg., Portland, Ore.

#### PREVIEWS

The nails shown below are made of Celcon, a tough new plastic developed by the Celanese Corp. of America. Classified chemically as an acetal copolymer, it is hard, stiff, dimensionally stable, lightweight, and resistant to abrasion and weather, a combination of qualities which makes its performance predictable over a long period of time under extremely adverse conditions. It is a thermoplastic which melts only at temperatures above 280 degrees. These nails were made experimentally to show Celcon's strength; other likely building industry uses are hardware and extruded plastic pipe. In pilot plant quantities, Celcon costs about 70 cents a pound, but will probably be less when quantity production gets under way next year in a new Bishop, Tex. plant.

Cheaper curtain walls may result from new porcelain enamels which can be fired on steel at temperatures 500 degrees below those of conventional enamels. Savings will come from lower furnace, fuel, maintenance, and tooling costs. The Lead Industries Association reports that these extralow temperature enamels have the same chemical resistance and hardness as conventionally fired enamels but slightly less abrasion resistance.



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### Editorial

## Continuity for renewal and rebuilding

Naturally the reactions to President Kennedy's housing bill have been strong and diverse, since there is scarcely a field of interest in which more different kinds of lives are involved than cities and housing.

There are several provisions in this bill which, however, are very much more conservative than the response has made them sound. One of them is the disposition of \$2½ billion in federal aid to urban renewal over a period of four years. Actually what this does is to try to assure some continuity in a field of operations where continuity is indispensable and where the annual haggling of recent years has operated to make as ineffectual as possible the intermittent money that has been spent. FORUM's idea of an appropriate amount, as expressed last June, was somewhat more modest than the administration's has been, but the principle of supporting urban renewal federally, and of doing it over a four-year continuity, is one that intelligent citizens ought to endorse.

Listening to the voice of experience, the promoters of the bill have also put new emphasis on privately financed rebuilding and rehabilitation by making it easy for individuals to accomplish this kind of renewal through FHA machinery—and at the same time protecting these citizens against the so-called suede-shoe men who too often have made a racket out of unprocessed rehabilitation loans. This too is to be commended because all experience points to the fact that in an economy burdened with military expenditures and taxes, set against a population explosion, rebuilding and rehabilitation must play a fantastically increased role.

Some of the housing provisions have been by comparison open to debate as to their ultimate effect; for example, the question of 40-year financing for housing mortgage loans. Discussion of the house-building aspects of the bill is left by FORUM to house-building publications.

As for the proposal of 100,000 public housing units per year, an item never endingly distasteful to all who hate to see large segments of the population become permanently the wards of a welfare state, there are needs that it tries to meet which the free-enterprise building community must honestly confess are not met privately now: the adequate housing of minorities and that sizable number of Americans in distressed areas whom the economy does not properly clothe, house, and feed, and whom all the rest would prefer to forget—but who are there. It would seem by this time that the existing methods of supplying public housing have been so thoroughly tested and found wanting that it is time for other kinds of incentives to be found so that private enterprise can meet the need. Alas, there is a large group of politicians and bureaucrats whose vested interest in the present technique makes this difficult.

Much concern has been expressed by the National Association of Real Estate Boards about provisions of the bill looking to correlated planning of cities and highways, and provisions for grants for the purchase of open spaces. Of course it would be preferable if free-enterprise procedures could secure these needs. Unfortunately the actual record is that, except in very rare instances, these operations do not suffice. Indeed the engineers of the highway systems have been notorious in nibbling away at public *continued on page 81* 



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### Editorial continued

### In the Forum:



New kind of architect: "Dinos" Doxiadis . . .



... for a new kind of client: "Dick" Reynolds.

### Next month:

spaces and parks, giving a bigger population less open land, not more.

FORUM agrees with the sentiments of those who have asked the administration for "an attack on basic considerations." But those systems of taxation, code enforcement, et cetera, are locally executed and deeply ingrained in the American mind and could really not be set aside by any stroke of any federal administration whatsoever. The attitude that "nothing should be done until everything could be done" always assures that nothing is. With the general trend of the President's urban renewal, multiple-family housing, and rebuilding proposals, FORUM agrees.

Among FORUM's different kinds of readers, the architects are the ones who lately have been catching onto something new. They have been learning the value, for them, of a type of story which is unique to this magazine, and which the editors call the "business of building" story.

Many letters from architects have lately been coming in about the little volume called *Building*, USA, published in 1957 and made up of a group of such "business of building" articles, which show how all the different factors engaged in building operate—and also how this affects architecture. Dean Burnham Kelly of Cornell School of Architecture was the first, we believe, to grasp the value of this approach.

In this issue there are two such stories linked by one personality, Architect-Planner Constantinos Doxiadis, who appears in both: one story tells how "aluminum makes a market" (page 94), and the other tells about Dr. Doxiadis, the fabulous Greek (page 112). For architects the aluminum story carries some important information: for example, that a technique now exists for testing new designs and products in aluminum under controlled contracting conditions; that a powerful manufacturer, Reynolds Metals, is learning under field conditions how to expedite urban renewal; that still newer combinations are developing in that

"The low cost of fine buildings" will be FORUM'S June "business of building" story. Instead of dealing with the usual cost-cutting ideas, the article will point out those devices of investment management and tax accounting that can make good materials and design economically right and justifiable.

"The revolutionary architecture of prestressed concrete" will continue the analysis, by Engineer T. Y. Lin, of the ever active game of today, entitled "Who is the client?" And when it comes to Doxiadis, his work is a study of the smart handling of such new clients.

FORUM is proud of its "business of building" stories, in part because they supply definite information for the endless discussions about the new conditions of architectural practice. And the guarantee of both accuracy and importance is that *the clients also read it*. (Only FORUM has this client circulation.) So the business information has to be a) correct, b) up to the minute enough to interest business people, and c) indicative of really current trends.

There is of course a protection to FORUM's client readers, conversely, in the fact that these stories are read simultaneously by architects. It means that the stories are written with awareness how trends affect the end product, the fully designed building.

There is a further discovery to be made out of the architects' growing attention to "business of building" stories. It means that there is coming up a new type of architect. Not one whit less concerned than his predecessors about the deepest values of good planning and good form, he is ready to learn how to meet today's economics, today's urban conditions, today's costs. And that should be welcome to just about everybody. It means he can do the work.

way an advanced technology can revolutionize the opportunities in architectural design. Finding out what logical engineering can do may prove even more exciting than forcing engineering into arbitrary forms.

Buildings: an IBM laboratory by Eero Saarinen; an office building by Finch, Alexander, Barnes, Rothschild & Paschal; apartments by Hugh Stubbins; and others.



FACE 1: Louvered-south

FACE 2: Glazed-north

# Building of four faces



Main office block, facing south, stands in front of the auditing wing which is built above three parking decks.



FACE 3: Blank-east or west



FACE 4: Louvered-east or west

### Headquarters for a California utility is a successful experiment in sun control.

The most interesting fact about the new central office building for the Sacramento Municipal Utility District is not that it is handsome, equipped with a heat pump, flexible in office plan, and unusual in provisions for parking; rather, the most interesting fact is its successful control of the sun.

Because the main axis of the building runs due north-south, each of its façades had to be designed to confront sun or glare from one of the four points of the compass: 1) The north façades had to deal only with sky glare, so these were faced with gray-tinted glass set into aluminum mullions anodized in a pale bronze color. 2) The south façade had to cope with the high noonday sun, so this side was protected by vertical louvers of aluminum (to cut out low rays from the southeast or southwest) and by high, horizontal louvers which

are set level in the summer, but tilted to 45 degrees in the winter, 3) The east and west facades were shielded by movable, vertical louvers whose angle is adjusted by a time clock, 4) The mechanical and circulation core of the building, as well as the east and west end walls of the main office block, were enclosed by a blank curtain wall of aluminum extrusions and panels of precast, quartzaggregate concrete. As a result of this elaborate protective system, the sun never enters the building above the level of the desktops nearest to the windows. At the same time, the 450 occupants have the pleasant experience that comes from working inside an airy, glasswalled building.

They have the further pleasure of working inside a well-planned, well-designed building. For example, the north wing contains an unfinished fourth floor that provides 15,000 square feet for expansion. Moreover, this north wing has three levels of covered parking for 120 staff cars (section, page 85), supplementing parking space for 500 cars elsewhere on the 15-acre site.

Although the building was designed for a great variety of functions-including exhibits, lectures, sales, engineering, general administration, and auditing-the simplicity of its details and surfaces makes it seem like a very uncomplicated structure and lends great dignity to its public spaces. At that, the 166,000-square-foot building cost only about \$25 per square foot-hardly an exorbitant price to pay for a wellfinished, fully air-conditioned structure. The total cost of construction and sitework was about \$4.4 million, excluding fees, and was financed from the utility company's working capital.



Louvered face of 280-foot-long south wall (above) has fixed vertical and horizontal fins. (The vertical louvers on the east and west walls are adjustable—details below.) The ground floor contains public areas, including lobby, model kitchens, and auditoriums. Recessed walls of this floor are decorated with an abstract glass mosaic by Wayne Thiebaud, called "Water City." Flush curtain walls consist of aluminum extrusions and a fill-in of tinted glass (for north walls) or special aggregate concrete (for east and west walls—details below). The small photographs on this page and opposite show how changes in façade textures and patterns were used by the architects to separate the different planes and the different functions of the complex building.



Rock garden (above) is a sunny place outside a cafeteria where employees relax. View from northeast (right) shows two parking decks in one wing; a third is below grade.









The plan has three elements: 1) a square north wing, shaped by the layout required for the auditing section, whose electronic-data computers had to be centrally situated and surrounded by office spaces; 2) the office wing, 280 feet long; and 3) the mechanical and circulation core, joining the two wings. Section at right explains different levels. West side is brilliantly lit by afternoon sun; louvers protect the auditing department (far left), and blank walls enclose the central core and shield the office wing (right). Public lobby is an elegant, 3,000-square-foot space, under the center of the office wing and directly accessible from the parking decks. The floor is terrazzo, the ceiling is luminous, and the walls and columns are finished with Italian glass mosaic. Visitors can enter the auditorium and demonstration rooms from this lobby; and the staff can reach all offices through the adjacent circulation core. A staff cafeteria is located on a lower level.



MUNICIPAL UTILITY DISTRICT BUILDING, Sacramento, Calif. ARCHITECTS: Dreyfuss & Blackford. ENGINEERS: Lawrence Amundsen—Buehler & Buehler (structural); Lester A. O'Meara (mechanical), Alvin Norberg (electrical). LANDSCAPE ARCHITECT: Ralph W. Jones. INTERIOR CONSULTANTS: Robert Pedigo of Knoll Associates. GENERAL CONTRACTOR: Continental-Lawrence Construction Co.

PHOTOS: (BELOW) PHIL FEIN & ASSOCIATES; (OTHERS) BONDAL PARTRIDGE



Office floors have an unusual pattern of ceiling lights and air-conditioning slot diffusers, all laid out on a 5-foot module. Light intensity is 150 foot-candles at desktops. Welded steel trusses, spanning 60 feet, and movable partitions assure flexibility of office layout.











Like a carrier, Brasilia's airport will be long and narrow with a control tower at the center, and horizontal passenger circulation below the deck. Ground-level plane circulation is efficient, too: incoming aircraft on one runway will be almost at the loading stations when they end their landing runs; outgoing planes will taxi only a short distance to begin their take-off on the other runway.

## Carrier-based airport

Brasilia's shiplike plan for a jet port: an imaginative essay in multilevel logic.

BY WALTER MCQUADE

Getting a passenger and his baggage into a commercial airplane is one of today's great architectural challenges. As passenger traffic has grown (in the U.S. alone from 15 million passengers in 1950 to 56 million in 1960), so too has grown the size of the gigantic, jetdriven kerosene-consuming birds. The intricacy of airport congestion has forced most airports to choose between satisfying the demands of passenger convenience or of aircraft convenience. seldom balancing both. In New York, Idlewild concentrates on passengers, La Guardia on planes, and both have opposite faults. Apart from Eero Saarinen's design for the Dulles airport terminal now being built 23 miles outside of Washington, D. C. (page 93), the design of few new airports around the world is fresh architecturally.

In the world's newest capital city, Brazil's Brasília, however, the airplane was one of the basic planning tools. Brasília was sited, surveyed, and subdivided from the air (FORUM, June '58); the city plan is frequently compared with a swept-wing plane; for some months after its beginning, the city was accessible only by air, lacking even a road to the coast. The latest result of this skyward posture is a brilliant combination of ideas by Architect Sergio Bernardes for a jet airport which might finally untangle the competing traffic patterns of people and planes by restricting them vertically, as in an aircraft carrier.

Bernardes proposes to stretch two parallel runways on the clay plateau 14 miles from Brasília, and, in the space between them, to dig a 100-acre basement and subbasement housing most of the terminal underground. Growing up out of the center of the complex would be a combined hotel and control tower. The only other passenger facilities at ground level would be a radial shelter housing the loading positions for aircraft. Passengers for the planes would drive their cars into the subterranean complex on the lowest level without ever breaking into the plane traffic pattern on ground level; they would stop directly under their aircraft, and, instead of trudging the many hundreds of feet which most airports demand, would merely step into elevators and rise to the shelters beside their planes.

The Brazilian architect's idea can also be compared to a good railroad station, reshuffled. Some of the world's more convenient rail stations stop the trains under the terminal, to halve the long walks down strings of waiting railroad cars. It is less logical and more difficult to build airplane tunnels, so Bernardes tunnels the passengers.

Bernardes' ingenuity is in separating, not mixing, two scales: the top deck level is scaled to the massive lumberings of the enormous planes when ground-bound; below, the scale is that of the pedestrian and his human-sized gadget, the automobile. Because the hotel is in the center of the complex, even those passengers using the airport as a transfer point, or for an overnight layover, will not have to walk far, and a pool-surrounded sunken plaza is planned to make things even more pleasant. Brasília's new airport must look to private investors for much of its financial backing, so the hotel and entertainment center at its core is important. The tower will also hold a water reservoir, a night club, shops, and a planetarium, all huddling behind a double layer of acoustically insulating glass. In addition to the usual view down on the planes as they move on the ground, the airport will have an observation platform just under ground level looking up (drawing, page 91).

Although the airport plan is an immensely ambitious scheme, it is not without solid precedent in many of its

Basement level will handle freight, fueling, food-loading, fire-fighting, and other servicing functions. Passengers are to approach their planes in the subbasement, be checked into waiting rooms, then lifted to the ground level a short time before scheduled departure. Kain and wind shelters will protect them there. Complete control (including customs inspection) is simply maintained.





passenger-handling and plane-processing ideas. New jetports at Montreal and Los Angeles use the underground route, passenger-to-plane, although they do not use it as completely as Brasília proposes. At Brasília, planes will be serviced from underground without the usual small fleet of airport trucks swarming around them, and the firefighting equipment will be constantly focussed on them from the first basement. Bernardes has incorporated other features. For one, his runways are sloped by 1.25 per cent for about half the length of each. Departing planes, going downhill, gain an added burst of speed; and arriving planes, moving uphill, are correspondingly braked.

Bernardes also has shuffled levels ingeniously in the accommodations planned for overnight servicing and storage of planes. On either side of the central terminal are to be large terraced parking aprons for the big ones. The drops in level will keep the engine blasts of the jets on the upper terraces from annoying mechanics working on the lower terraces. Overhead shelters at the far plane-parks are designed as inverted hollow cones, funnels to collect rainfall, to irrigate truck farms planned for the surroundings of the airport. Bernardes' fertile and complete imagination has stopped just short of planning the menus from these farms.

To the airport layman these may be apparent drawbacks to the Brasília scheme, but there are professional answers for most of them. Dependence on



Key to the operation of the revolutionary Brasilia airport will be the fact that the intricacies are all in the planning, not in the movement of traffic. Partial sectional drawing at the top of the page shows the hotel-control tower core and its lavish underground level. At smaller scale, plan drawings show ground level (facing page) which is restricted to the traffic of the large and small airplanes, the first basement (above) with its service functions—including a large parking field near the outer periphery, where travelers' cars will be stored—and the lowest level (above right) with its peripheral road for cars and buses.



only two runways, and parallel ones, has been questioned, but Bernardes points out that the wind rose at Brasília is prevailingly east-west (the runway orientations), with relatively little variation. Moreover, today's big jets are so heavy that cross-winds up to 25 miles per hour are said to have small effect. Another problem: the central apron, which will accommodate as many as 50 planes at a time, must be designed stoutly. Bernardes proposes that the apron be supported through the basements by columns spaced 29 feet apart, making it strong enough to carry an average weight per plane of 200 tons, well over the Boeing 707's 151 tons.

The cost of the immense excavation for the underground facilities will be lessened by the natural topography of the site. Cost of the complete installation, including hotel and approach roads, is estimated at \$45 million to \$50 million. The Brazilian airport people are now at work attempting to line up sufficient capital to add to the government's \$8 million to \$12 million budget for basic expenditures. Sources they hope to tap include airlines as well as concessionaires and investors.

In connection with its cost the design has given rise to the objections that it will be difficult to construct in sections, over a long period, as most airports have been built, growing with their traffic. For the radial underground circulation to work, the airport circle must be completed. Brasília's air traffic is not yet near the anticipated port capacity of 60 planes per hour, so the scheme is considered visionary by some observers today. The same critics hasten to point out, however, that wideangle vision today by its planners may be the only assurance of adequacy for the future.

Another objection is that such an airport could hardly be expanded, within the Bernardes concept, once it had reached its maximum traffic. A slice cannot be added to a completed apple pie; the perfect circle cannot be improved. In contrast, Saarinen's Dulles terminal in Washington can easily be extended because it is an in-line plan. However, some air experts are becoming dubious about the advantages of endlessly expanding any one airport in an area, as opposed to establishing new ones, then interconnecting them with shorter-span transportation systems, such as helicopter lines, when the traffic demands.

Until Bernardes came along with his interesting new combination, airportterminal planning had settled itself into several patterns of two general types (diagrams on next page). One is the central terminal idea, the frontal type which grows under pressure of traffic into the finger type, or the mobilelounge type. The other is the unit type, with separate terminals for all the big airlines, a "campus plan" which exists only in Idlewild and Los Angeles International, and which may impress the public, but depresses most traffic experts because of the intricate, crisscrossing traffic patterns. The unit layout, however, does allow a fine use of architecture for advertising, in the competition for ticket sales.

One aspect of the future still winced at by air-travel experts, particularly by the Federal Aviation agency in Washington, D.C., who run the biggest air agency in the world, is the possibility of even larger commercial airplanes demanding even larger airports, as the step-up into jets did. The new superjet the F.A.A. looks forward to is superfast, but not supersized. Arthur Catudal, who heads the technical coordination staff, Airports Division, of the F.A.A. in Washington, sighs over finding the real estate and financing for new U.S. airports to roost still bigger commercial birds. "We haven't exactly told the airplane manufacturers to lay off on bulk; that is not for us to do. But we have told them that the federal government has drawn the line on runway lengths which it will help finance, and their plans for future airports. should be geared to those dimensions. We have reached the point of no return. We can't expect communities to continually expand their airports to meet the requirements of each new family of airplanes, or to start over again on a new site. This is it; we are running out of real estate and money."

Near Brasília, of course, land could still be found comparatively easily to build not just one, but several, of Bernardes' brilliant airports. Yet, if the first one builds up traffic fast enough to make it really practical, the same squeeze might soon develop, even in the vast interior of Brazil. Unit airport, like New York's Idlewild (right), places many of the airlines in separate buildings, a strikingly simple system which can lead to very involved plane and passenger traffic on the ground. Below, for comparison of size, is the projected Brasilia Airport, drawn to approximately the same scale as those on the facing page. Master plan by Port of New York Authority staff.

Mobile-lounge airport will reach its highest development at the gigantic Dulles airport (right), now under construction near Washington, D. C. From a central passenger terminal, large buses, looking like immense oldfashioned milk wagons, will take planeloads of passengers out to their planes, parked conveniently near the runways. Architects: Eero Saarinen & Associates.

Finger-type airport is the most common design for handling heavy traffic and is used at Rome's new Fiumicino plan (right). Planes taxi to airline locations in the long fingers. Passengers walk. This is the usual later development of the basic airport design shown in the example below. Architects: Monaco & Luccichenti.

Frontal airport, like the new central building at Orly field near Paris (right), is a single large building. Planes taxi up before it in steady traffic to load and unload. This terminal includes a small hotel. When a frontal-type airport has to grow, it grows fingers. Architect: Henri Vicariot.





PORT OF N.Y. AUTHORITY









ITALY'S NEWS PHOTOS







Executive Vice President Albert M. Cole.

### By building projects for themselves, Reynolds and Alcoa are testing ideas and pushing city housing. BY DAVID B. CARLSON

The urban housing market is getting a shot in the arm from somewhat unexpected sources: the nation's largest aluminum producers. Once wary of the tangle of problems implicit in developing urban housing privately or under the federal urban renewal program, which makes available large parcels of relatively low-priced land in cities but usually festoons projects with red tape, both Reynolds Metals Co. and the Aluminum Company of America have, within the past two years, developed vast new urban housing programs.

Reynolds has so far gone further than Alcoa and now has a fully developed program of sponsoring urban renewal projects in seven cities across the nation, operated under the Reynolds Aluminum Service Corp., a wholly owned subsidiary. It hopes to add two more to its roster, and thus will rank among the largest urban renewal redevelopers in the entire federal program. Alcoa, on the other hand, has so far limited its activities to participation with Developer William Zeckendorf in two privately financed apartment-redevelopment projects, and with Developer Lewis Kitchen in a federally aided project in St. Louis. And, last month, Alcoa announced that it would supply large quantities of aluminum for another Zeckendorf project but would not cosponsor it.

Reynolds started its push into urban renewal two years ago, when it hired Albert M. Cole, then administrator of the federal Housing & Home Finance Agency, and one-time (1944-1952) Kansas congressman, who had a key

## Aluminum makes a market in renewal

role on the housing subcommittee of the House Currency & Banking Committee in those years. Cole had headed HHFA more than six years, but was persuaded to work for Reynolds by Vice President David P. Reynolds, who had met Cole at a Washington housing conference and had been impressed by his drive and all-around knowledge of the federal housing program. Cole has had the singular experience of helping conceive housing programs in Congress, then having to administer and develop them as HHFAdministrator, and now of having to see how well he did his earlier work. He says frankly that "I wish now I had done many things that would have helped the program quite a bit today, but unfortunately you cannot legislate or administer via hindsight."

Cole brought with him to Reynolds Sid Jagger, who had been assistant commissioner of operations for the Urban Renewal Administration, an HHFA constituent, and thus Reynolds started its program early in 1959 with two of the most knowledgeable urban renewal hands in the nation. In fact, Reynolds admits that it probably would not have jumped so readily into the renewal program if it could not have gotten Cole and Jagger, as well as a staff of half a dozen other experienced professionals from the Washington housing scene.

As a result, Reynolds has achieved a remarkable degree of success so far. In about two years, it has garnered six large urban renewal projects, including the mammoth Eastwick project in Philadelphia, which is the nation's largest in terms of acreage (2,500 acres). And it is in the reaching, along with ten other competitors, for the choice Santa Monica, Calif., beachfront urban renewal site (FORUM, Apr. '61). Most important, Reynolds is in the happy position now of having many cities asking its help in their redevelopment projects.

Although Cole, Jagger, and the other professionals on Reynolds' payroll have provided the technical experience necessary to tackle the complexities of the urban renewal program, the company itself has a traditional interest in housing. Founder and board chairman, the late R. S. Reynolds Sr. long believed aluminum could be instrumental in building better, cheaper housing. Following World War II, Reynolds began to devote an increasing effort to the home-building market, and today, home building consumes 23 per cent of Reynolds production. Almost all of this is for single-family housing, with aluminum siding the fastest-growing component, but Reynolds believes the emphasis will gradually shift to urban housing, as its own urban renewal projects demonstrate new uses for the light metal.

#### Fourfold objective

Reynolds has four major objectives in tackling renewal. First is to develop a corporate image, an advertising phrase for making a corporation seem to be interested in various forms of public service and altruism not necessarily related to its profit statement. In a sense, Reynolds' urban renewal activities are a public relations venture, in that the corporation can achieve public purposes while at the same time garnering considerable visibility, to use another Madison Avenue word. However, with the knowledgeable Messrs. Cole and Jagger at the helm, the program has been considerably more than just a public relations venture, even though that purpose alone might be adequate for any company attempting to gain a firm foothold in the burgeoning urban housing market.

Second, although it is really the primary purpose, the company wants sim-



ply to sell more aluminum and sees the urban renewal program as a means of doing this. All of its projects will use much greater amounts of aluminum, and in a greater variety of ways, than any other urban housing ever built. This leads directly to a third purpose, which is, as Cole says, "to show uses of aluminum where it is not now being used." In other words, the several Reynolds' urban renewal projects are also testing grounds for new uses of aluminum, and so far they have proved invaluable in this respect. "In these projects," Cole says, "laboratory-developed products can be market tested, and thus new markets can truly be opened up." In this regard, Reynolds directly elicits the help of the architect of each project, and has so far been singularly fortunate in finding architects who have given generously of their talents both in incorporating present company products into urban renewal housing and in developing new uses themselves, some of which had not occurred to Reynolds' own designers and engineers.

Finally, Reynolds is anticipating profits from its urban renewal ventures in simple investment terms. This may sound surprising to many developers who have labored wearily in that vinevard and are still uncertain whether they can eventually break even. Urban renewal has had obstacles, ranging from the everyday difficulties of evolving a workable process for clearance, land sale, and FHA mortgage insurance under one program, to the over-all difficulties resulting from the federal government's reluctance to embark on a long-range capital-grant program. In Cole and Jagger, Reynolds has a team that should be able to work out ultimate profit potentials in the program if anyone can. Cole himself is optimistic, says that "our program must make a sound dollar on its own, or it will be useless. The other factors in our total

Santa Monica proposal, designed by Victor Gruen & Associates, is one of 11 plans competing for the 26-acre beach-front site.



Washington co-ops feature barrel-vault roofed town houses and an eight-story apartment building, in plan by Charles Goodman.



Richmond houses, to be sold for less than \$11,000 each, are laid out in surburban fashion in a design by Architect W. B. van Bakergem.

Cincinnati apartments designed by Constantinos Doxiadis will offer low-cost one- and two-story housing in a former slum area.





Goodman's design for Washington housing incorporates many Reynolds products, and introduces new, stamped-aluminum balcony screens on high-rise apartments (background).

approach are important, but it is absolutely essential that our urban renewal projects prove to be profitable investments for the company." The key to this is, of course, the fact that under the renewal program a relatively small amount of initial capital can have tremendous leverage for ultimate returns. Under FHA mortgage procedures, Reynolds can, as can any urban renewal developer, get 90 per cent mortgages on the value of its projects, and may eventually better than double its initial capital over a period of years. And Reynolds can skirt several shoals that have proved the undoing of other, more orthodox developers. For one thing, Cole and Jagger, who know not only the procedures but the personnel in federal housing, can keep their projects from being immersed in red tape and bureaucratic smog. For another, Reynolds Aluminum Service Corp. does not have the same overhead difficulties that plague other developers. The staff is held to a minimum (seven men are handling all the work entailed in nine different projects), and consultants are hired on a piecework basis for planning studies, feasibility surveys, and other project work. The division can draw as it needs to upon the full faculties of the parent company. This is particularly important in the engineering and product-development phases of the program, the costs of which are charged off against the parent company, further decreasing the division's overhead.

#### The projects

So far, this organization has worked extremely well. Not only have Cole, Jagger, and their staff handled effectively the paperwork and administrative headaches built into the renewal program, but they have seemed successful in testing and in expanding the market for aluminum. Cole himself is most instrumental in selecting architects for his projects. For the huge Eastwick project, he signed up Constantinos Doxiadis, whose high standing at the time in Philadelphia planning circles practically made him-and Reynolds-a shoo-in for the job. While Doxiadis' architectural scheme is not yet fully developed, his land planning for Eastwick represents a significant contribution to both the renewal program and the development of urban planning itself (page 115). Eastwick will be the most ambitious of all the Reynolds projects, including industrial and commercial facilities as well as 5.000 dwelling units, mostly town houses. The total construction cost of Reynolds share of Eastwick will be over \$200 million, and construction will take more than five years after ground is broken next fall.

More immediately on the horizon is Doxiadis' plan for Reynolds in Cincinnati, Ohio, where 323 units are being built in the Laurel section of the city's Laurel-Richmond project, adjacent to the huge Queensgate (formerly Kenvon-Barr) industrial renewal area (FORUM, Mar. '61). The first units are being occupied this month, making it the first Reynolds project to be completed. Doxiadis developed two basic designs, a two-story town-house type (131 units will be of this type) and a "maisonette" design for the other 192 units. These maisonettes will be threestory structures, with eight apartments in each, and entrances so arranged as to provide maximum privacy.

As on all of its current projects except Eastwick and a small Richmond, Va. project, Reynolds will sell the Cincinnati project to a cooperative group, in this case the Foundation for Cooperative Housing. As a result of many construction economies, a somewhat austere design, and the fact that these are cooperatives, prices of the units will be 15 to 20 per cent lower than that for comparable new rental housing in downtown Cincinnati. For instance, a two-bedroom apartment will cost \$550 down and \$89 per month, and a two-bedroom town house will cost \$600 down and \$93 per month. Reynolds believes the relatively low cost, as well as the pleasant plan for the project and the redevelopment planned for surrounding areas, will offset the onus of the area's slum history and the general unfamiliarity of Cincinnati residents with cooperatives.

In Washington, D.C., Reynolds is participating in the ambitious renewal plans for the huge Southwest area, where 518 units will be built at a total cost of about \$9 million. Architect Charles Goodman proposes that 385 of the units be in a single eight-story high-rise building, at one side of the project area. The rest will be in barrelvault roofed town-house buildings (photo, above). All units will be sold cooperatively at prices ranging between those for public housing and luxury apartments in adjacent areas of Southwest. Construction is scheduled to start next month.

Reynolds has two relatively small, low-cost projects in Kansas City, Mo. and Kansas City, Kan. The former, called Parade Plaza, is soon to get under way and will provide 600 units in garden apartments and town houses, at a total cost of \$6 million. The other Kansas City project will provide 300 units at a total cost of about \$4 million. Architects for both projects are Geis-Hunter-Ramos of Kansas City, Mo.

In Richmond, Va., which is Reynolds' headquarters, the company, in collaboration with Builder William Witt, is building 98 units of one-story, semidetached row housing, which have an almost suburban flavor, including a swimming pool and landscaped recreation areas, which will be owned by a neighborhood association. Construction has

continued on page 176







LOFT PLAN





# Big top for teaching

Education and circulation are unboxed to make a new kind of elementary school.

Across the top of this page are three school-planning conceptions all of which seemed radical not many years ago but which are familiar today in scores of variations and hundreds of places. All three represented schemes for permitting more flexibility of school organization than in the past. The fourth scheme is in this same tradition but it goes further: instead of rearranging the classroom boxes and their circulation, it eliminates the boxes, putting all children under one big "umbrella." The plan would put groups of about 150 children and a team of six teachers into one domed space; a cluster of three or more domes would make a complete elementary school.

Architects Caudill, Rowlett & Scott arrived at this scheme as a result of considering two different questions which eventually converged:

Question 1—Large, uninterrupted dome areas may become the most economical and potentially useful kinds of enclosure for schools; will we know how to use them well?

Question 2—Leaving aside all preconceptions based on former teaching methods, what would be a good design for team-teaching of ungraded classes in quickly set up and changeable space?

Ungraded classes—that is, the children grouped to cover the work of three school years, but to cover it individually at their own paces—are a hot idea in educational circles these days.

Funds for the development of the dome school were provided by a Ford Foundation-supported research organization; a client was found, the school system of Port Arthur, Tex. Because a bond issue failed, Port Arthur had to abandon plans for building; meantime, however, the idea is being considered in three other places. The architects emphasize that these are concept drawings, not finished designs for a specific client and place.



THE PLAN is intended to permit leachers the greatest freedom possible in arranging student groups of varying sizes and to permit free circulation flow in the three-level open space. So as not to interrupt the space, utilities are at three perimeter points; the sunken assembly area would be heated by buried connections from the nearest perimeter point. Utilities and service spaces fit beneath a 12-foot "hat brim" encircling the dome, most of which serves as overhang over outdoor spaces. Walls at the juncture of the dome and outdoor overhang would be either sliding glass doors or fixed windows interspersed with doors.





The mezzanine for arts and crafts roofs a sunken, curtained assembly area.

Both for functional and esthetic reasons, Architects Caudill, Rowlett & Scott wanted to retain the integrity of the domed space instead of parceling it off. The scheme keeps the space intact but at the same time differentiates it into three distinct places: the main-ground level, the off-center assembly ring, and the mezzanine that roofs the assembly.

The mezzanine would stand on its own stairs. From its circumference, on an electrically operated track, would hang curtains. The leaded acoustic fabric which the architects would use provides, in tests, an acoustical privacy comparable to a 4 to 6 inch concrete block wall. For movies, television, and other visual aids, the architects plan on rear projection onto the screen.

The mezzanine level would not be used for general academic space, but for arts, crafts, and other special projects.

Because the design is all in conceptual terms at this stage, there are implied many possible variations in detail. For instance, although the outdoor teaching courts were originally designed for Texas, Caudill thinks that with concrete-slab radiant heating they would be usable in northern schools. He suggests also that a movable roof, capable of extension to the courtyard walls, could convert the courtyards into rooms during the severest cold.

The design concept, including the outdoor as well as indoor spaces, was worked out in consultation with Robert H. Anderson of Harvard University; John I. Goodlad of U.C.L.A.; John Blackhall Smith of Greenwich, Conn.; Harry Becker of Norwalk, Conn.; and James D. MacConnell of Stanford University—all educators interested in team teaching and ungraded instruction methods. The design concept is shown on the next page.

LIGHTING is calculated to emphasize the continuous unified space. Hence, instead of frequent punctures, there is one central oculus and glass side walls. The cove lighting has not actually been worked out, and may be discarded.

SOUND CONTROL is based on acoustical ceilings and carpets, successfully used in an open-plan Caudill school in Andrews, Tex. The practicability of the woven lead curtain, a new material, has not yet been determined for this purpose.

VOLUME is put to efficient use by means of the freestanding mezzanine above the dropped space. The mezzanine and the assembly are offcenter to give maximum continuous ground level and to stress, esthetically, the unity of the dome.







SPACE ORGANIZATION and scale indoors depend in part on storage-chalkboard dividers. Space organization outdoors includes four courts intended for leaching and, as an integral part of the architecture, "to give the dome a sense of scale." The good plans are based on more requirements than mere security and serenity—nine cases.

This is the last in a series of three articles on housing for the elderly. The first two, both by William C. Loring, described the market (FORUM, Dec. '60) and its special design requirements (FORUM, Mar. '61).

# Housing for the elderly

The housing plan for the elderly that combines in one scheme every feature believed to be "ideal" is probably yet to be designed. Nevertheless, a thoughtfulness hardly apparent a few years ago, and a certain amount of experimentation, have begun to turn up in some plans for housing the elderly—the ordinary elderly who are not candidates for glamorous boating and country-club "retirement villages." A group of nine such schemes, each with something worthwhile beyond what is customary, is shown on the following pages.

Such experience as there has been so far in providing grouped dwelling units for the independent and reasonably active and healthy elderly, whether the housing is under public or private auspices, emphasizes a sobering fact: sooner or later most of those independent, active residents are going to be in serious or even dire need of medical or nursing care, perhaps for short intervals interrupting periods of independent living, perhaps for long periods.

Three of the plans on the following pages face up to this difficulty and attempt to plan for it: one with a diagnostic and short-term care unit, the other two with more extensive accommodations for several differing degrees of dependency.

Housing-project managers, responsible supposedly for merely providing good shelter for the aged, speedily become aware that inadequacy of health or nursing arrangements for residents grows into a monstrous problem which cannot be separated from the problem of housing itself. Reviewing the experience of San Antonio's housing authority with its elderly, Director Marie McGuire summed up: "Health is the Number One problem and all housing must take it into consideration. Must we settle for standard shelter, simply leaving the elderly occupants to die-alone-but surrounded with modern conveniences?" Experience has shown, she goes on, that the average elderly resident "will surely have a major medical problem within a few years, a few months, or even a few

days. We don't know when, but we know it will happen." The planning and the coordination of services that recognize this certainty, while at the same time providing primarily for the active and independent aged, is still exceptional but significant.

A second change in thought about planning for the elderly has to do with sites. Time was when the "ideal" site was an old-age island out in the country (even though, meantime, large numbers of elderly who could afford to were living in city hotels). Today, the choice of an out-of-town site is frequently hedged with apologetic explanations about the station-wagon bus service or special taxi-transportation arrangements that will be provided to take the residents in where the conveniences of everyday life are to be found — and the interest of everyday life.

Because of this change in viewpoint, much more flexibility exists today than in the past with regard to choosing a "good" site. Ernest J. Bohn, public housing director of Cleveland, a man of considerable imagination about sites, developed the sites for two related projects (page 108) out of what had amounted to hardly more than wasted leftovers of traffic intersections, and in so doing also accommodated elderly tenants in a pleasant, going neighborhood beside one of Cleveland's pleasantest parks. The example of housing for the elderly in East Harlem, New York (page 102) shows how much can be made of a site when the most severe limitations are regarded as a severe challenge to creating exceptional design.

Housing America's growing population of the elderly is a town and suburban, as well as a city, problem. Some of the most interesting town solutions have appeared in Massachusetts, where a state program of financing, in cooperation with town housing authorities, has produced a number of developments with individuality of character beyond that usually found in privately built developments for the elderly or for anybody else.





### On a crowded Manhattan site, three varied outdoor spaces for the elderly.

The design for this half-block-wide strip in New York's East Harlem includes not only 248 public-housing apartments for the elderly, but also quarters for a full range of city settlement-house activities — demands permitting only fragments of open spaces. However, so carefully were these spaces placed, and so intensively developed, that they will carry out, far better than generous sites commonly do, the vital principle that the aged should have constant choice among a variety of outdoor scenes and uses.

The liveliest of the three spaces is the community plaza, for persons of all ages. It is to contain a sculptural stage, meant also for informal sitting, visiting, or play. During shows or concerts, the play yard to the rear, separated by a 3-foot-high fence, will seat audiences. In this plaza, the elderly can mix into general community activity.

In contrast, the rear recreation garden, to contain a shuffleboard court, pergola, fountain, and planting areas raised to easy working height, is for the exclusive use of elderly tenants and their guests. It connects with their community rooms and kitchen, so it will be a convenient place in good weather for parties and socials. The planting areas will have places for potted plants brought down in summer from apartments. "This is really a New York back yard, and we have developed it as such," say the architects.

The most passive space, at the apartment entrance, is designed to add amenity, ease, peace, and greenery to a favorite occupation of city elderly: sidewalk watching. Housing Authority approval of some details of the designs is still pending.

Mayer, Whittlesey & Glass, architects; W. J. Conklin, associate partner for design.


Plot plan, Lutheran Home, Westlake, Ohio





Plan of cottage apartments with (at right) two converted to one

Cottage units



### On a strip in rural Ohio four kinds of quarters for all kinds of elderly.

This development, sponsored by the Lutheran Church in Westlake, Ohio, does not accommodate all conditions from the cradle to the grave, but it does provide for everything from active, independent old age to helpless senility. When the condition of a resident changes, he (or she) need not leave the development. Because persons, as they age, often do change radically in their degree of dependence, this is realistic planning.

For the independent, there are to be

two types of quarters: the first, community residences, are to be grouped around courtyards with each court cluster of 16 units containing its own communal dining and living-room facilities. For the most independent there will be cottage apartments, each apartment complete with its own kitchen and laundry. Two zero-bedroom apartments can be combined into one large apartment with the luxury of a work or guest room, as shown in the plan.

For the dependent, an existing threestory building, now used for community units, is to be converted into a medicaland nursing-care center, which can be used also by the normally independent residents during illness. The fourth type of accommodation will be a facility for study and care of the mentally confused, or senile, the object being to try to improve their condition so they may return, for a time at least, to more normal living.

Construction has started on the zerobedroom apartments; community units and conversion of the existing building will follow. Full development of the 18acre site will provide residence for 268 elderly persons.

Amedeo Leone, architect; Smith, Hinchman & Grylls Associates, Inc., associate architects and engineers.



Plans for Berwick Place range from houses (left) to nursing units (right)

### In Berwick, Pa., a project planned for sponsorship by the community.

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This development, for which a site has been chosen and funds are being sought, is expected to be under the aegis of a nonprofit community organization, analagous to a voluntary hospital board.

The cross-shaped unit will contain apartments and one tier of hotel rooms, all grouped around a lobby and gardens.

These tenants, as well as tenants of houses, will share community facilities with the more dependent residents liv-

ing in the medical and nursing facility. Beyond the nursing unit, and not shown on the plot plan, will be the community hospital. The development, it is expected, will relieve the hospital's geriatric load not only by providing new accommodations but by prolonging the period during which the elderly can live independently. To this end, apartments will have such features as adjustable-height kitchen equipment and special storage dividers for easier housekeeping. Most residents, it is expected, will pay an entrance fee to cover care of any kind necessary, and will pay rent according to accommodations. Architects: Edward H. Noakes & Associates.



Apartments at Haverhill; small building (left center) is commons



Two-story unit from commons side



Plan of commons



Two-story units face across path



Commons building

### In Massachusetts' small towns, small projects built with state aid.

This development of 52 apartments in one- and two-story houses at Haverhill, Mass. illustrates, along with examples on the two pages following, what is being built for the elderly by Massachusetts towns in cooperation with the State Housing Board. The project includes a commons building with canteen, lounge, and laundry.

The architects in this program speak appreciatively of the state's willingness to investigate and adopt unstereotyped



First-floor plan



Plan of one-story units

design, such as the laminated beam, post and beam, and wood-milled window-wall construction used in this example. The project is not radically different from the neighborhood of one- and two-family houses in which it is set. Its differences are such as to provide lessons for any development neighborhood: site planning and architecture which yield, without forcing, a quality both basic and elusive: a sense that here is a *place*. Small projects like these offer suitable housing to elderly citizens in their own home towns.

Construction cost, excluding land and fees, was \$10,960 per unit. Drummey, Rosane, Anderson, architects.

#### Architectural Forum / May 1961





One- and two-story units at Franklin

Waltham apartments, commons at rear in photo

### For northern weather, outdoor meeting places in summer and winter.

As Sociologist William C. Loring has pointed out (FORUM, Mar. '61), casual and frequent contacts among elderly neighbors, without unwanted inroads on privacy, depend greatly on frequent, happenstance meeting along walks that bring residents from differing buildings into the same travel paths. The buildings in the public-housing project for the elderly at Franklin, Mass. (left) are all sited toward the commons building, and all paths merge in this central area. The covered walks at the Waltham project (right) form a kind of tributary system into a main stream, again directed at the commons building which, in this case, is large enough for use by all the elderly of the town, from outside the project as well as from within.

Costs on the Franklin project of 40 units, including all costs except land, were \$12,200 per unit; Associated Architect and Engineer architects.

Costs on the Waltham project of 60 units and extra-large commons, excluding land but including all other costs, averaged \$15,000 per unit. Aldo A. Minotti, architect.





Apartments buildings, Natick

PHOTOS: (ABOVE) DAVID HIRSCH; (BELOW) KORDAY STUDIO





Plot plan, Natick

Split-level entrance

### For the agile elderly, twostory buildings arranged with half-story stairs.

One of the supposedly iron-clad precepts regarding housing for the elderly says "No stairs." Several of the Massachusetts projects for the aged, including three of the four shown on these pages, do have second-story residences, but not because the precept has failed to penetrate to Massachusetts. The towns concerned have a persistent demand from the elderly for second-story apartments. Thus in the Franklin project (opposite page), a distribution of 28 ground-floor, 12 second-floor units was decided on after much discussion. In the project above, for Natick, Mass., rolling ground contours accommodate split-level entrances, making the most difficult stair condition only a half flight to the ground. Without doubt, some twostory buildings do help mitigate the deadly visual monotony and horizontal sprawl so often characteristic of housing for the aged, and appear to be a reasonable feature if upstairs residents whose agility dwindles can be transferred to ground-level units.

The Natick project of 48 dwelling units cost \$9,040 per unit, excluding only land. Tekton Associates, architects.



Map shows relationship of two Cleveland projects



Plan of community center

Plan of diagnostic unit and typical apartments



In Cleveland, two housing projects sharing a clinic and a community center.

A problem in Cleveland's first—and pioneering—public-housing project for the aged, built in 1954, has been how to care for sick tenants. They have had to be rushed off to the hospital for diagnosis and frequently kept there too because, as Housing Director Ernest J. Bohn puts it: "Being ill in a dwelling with no one else around is pretty rugged."

Now Cleveland is building two more

projects for the elderly. This time a tenbed diagnosic unit, to be operated by Mt. Sinai hospital, will be included. Patients will return home from the unit if only medication is necessary, or they will be sent on to a hospital or other facility if that proves necessary. Ill tenants are not expected to be kept more than about two weeks in the unit itself.

The unit is to occupy part of the ground floor of one of the two high-rise apartment buildings. It will be reached from the other by a walk along a park or by car. Adjacent is a freestanding recreational center for the elderly, including, besides the usual meeting and social spaces, furniture repair shops. Why were the two buildings for the elderly not combined at one site? Cleveland's public-housing authority follows a policy of integrating the aged. Each of the two buildings will also accommodate young families with infants, and moreover will be placed among groups of four-story double duplexes for families with school-age children.

Cost, including land, of the larger building (Wade) containing 295 dwelling units, is \$11,994 per unit; the other (Springbrook), containing 272 dwelling units, is \$11,847 per unit. Schafer, Flynn & Williams, architects; Mayer, Whittlesey & Glass, W. J. Conklin associate partner, consulting architects.







Decorative wall enclosing terrace



Terrace adjoins patio under building



In San Antonio, public housing with facilities going well beyond shelter.

The features of Victoria Plaza, San Antonio's first public-housing project for the elderly, that are most evident to the camera and eye are the pleasant gardens, the sculpture and murals, the shaded patio, open galleries, and the thoughtful and colorful windbreaks and sunshades. In a way, this visible thoughtfulness is symptomatic of features that, while less spectacular, are even more significant: services such as employment consultation, library, public health clinic, and service workers available for a host of other problems. Such services are, of course, not provided by the public-housing program, but they were enlisted from the community and space was planned and provided for them, owing to the foresight of San Antonio's former housing director, Marie C. McGuire, who was recently named commissioner of the Public Housing Agency in Washington.

The building contains 184 dwelling units; cost, excluding land, was \$10,470 per unit. Noonan & Thompson & Krocker; Marmon & Mok, associated architects and engineers.

Plot plan, San Antonio project





Roughly paved "forum" (above) is focal point of sculptured campus. Landscaped area (below) is in front of the student center.





Stepped profile of protective canopies reflects the hilly site.

## Sculptured campus

Harriton High School's most interesting feature is the sculptural way the land has been treated. The five buildings, whose pitched roofs echo the terrain, are carefully stepped into the rising ground and surround a central, paved "forum," used for pep rallies, for music, and informal gatherings. Concrete canopies shelter the walkways linking the buildings and also reflect the terrain, stepping up where the ground rises. The school has a campus-type plan, and its site of 50 hilly, wooded acres in suburban Philadelphia makes this treatment particularly appropriate, since all raw materials for a truly handsome campus were already present.

Most of the delights of this 1,200-pupil school stop abruptly at the doors. In a few cases, native fieldstone retaining walls have been continued pleasingly into the buildings, but, for the most part, the classrooms are not exceptional.

Total construction cost of \$3.2 million (\$19.32 per square foot) was financed by 20-year general obligation bonds of the Lower Merion Township School District. Cost breakdown: structural, \$2.2 million; plumbing, \$197,000; heating and ventilating, \$363,000; electrical, \$310,000; sitework, \$77,000.

Architect: Vincent G. Kling. Structural engineers: Severud-Elstad-Krueger Associates. Mechanical and electrical engineer: A. Ernest D'Ambly. General contractor: Joseph R. Farrell, Inc.





Architectural Forum / May 1961



A far-ranging, fasttalking Greek planner is telling the U.S. some things about urban design that it may need to hear.



# The remarkable Dr. Doxiadis

BY EZRA EHRENKRANTZ AND OGDEN TANNER

Among the more persuasive-and successful - architect-planners currently plying the international circuit is an urbane, energetic Athenian named Constantinos Apostolos Doxiadis, who in less than a decade has built up possibly the largest, certainly the most remarkable, city-planning practice in the world. From his handsome modern headquarters looking out to the Acropolis, 48-year-old "Dinos" Doxiadis and his tightly run organization of some 500 employees range out to 13 branch offices and twice as many current projects (map, above). At home, they are building a music center for Athens, planning the development of its 25-mile coast-line, and engineering 500 miles of highways through Greece. In Baghdad, they are guiding the expansion of the city, and, in fact, the entire housing program of Iraq. In Karachi, Doxiadis Associates are building a huge new satellite town for 500,000 refugees (left), and reaching north to lay out Pakistan's brand-new capital of Islamabad. They are sometime planning consultants to seven other Asian and African countries, the United Nations, and the World Bank. Their latest beachhead is the U.S. itself, where Doxiadis is being doted upon by some and damned by others, and despite both is telling Americans some things they may need to hear.

Doxiadis' invasion of this country, managed by the former Baltimore deputy urban renewal director, Ellis Ash, and a 15-man office working out of Washington, D. C., ranges from minor planning studies in Oklahoma to a comprehensive report for Washington's own Redevelopment Land Agency, from a garden cooperative project in Cincinnati for Reynolds Metals (see page 95) to a river-front redevelopment in downtown Louisville for the same company. But the planning plum, so far, is Philadelphia's 2,500-acre Eastwick project, biggest redevelopment area in the U. S., which Doxiadis, Reynolds, and the brothers Samuel A, and Henry A. Berger managed to pluck away from seven competing teams (FORUM, July '60). In Eastwick Doxiadis will have a chance to demonstrate on a large scale, to an American market, planning principles he is already watching grow into reality in other areas of the world.

The doctrine of Dr. Doxiadis, expounded from the recent convention rostrum of the National Association of Home Builders to the lecterns of M.I.T., is not so much a brilliant original as a distillation of many old and new ideas, assembled into a new framework and delivered with occasionally spellbinding effect. Doxiadis the Greek, of course, has a word for it: "Ekistics," the science of human settlements (derived from the Greek word for home, on which the English words "economy" and "ecology" are also based).

It is the thesis of Ekistics that while man spends more time and money on his physical environment than on anything else, and while major efforts have been made toward an environment in which life can thrive and expand, seldom has a coordinated, rational result been attained. Even a clear definition of a body of pertinent knowledge to build on, and a term for it, have been lacking, say the Ekisticians. Ekistics, then, tries to fill the gap by widening the planning of everything from dwelling units to regions to bring together not only the architect, the engineer, and the city planner, but, on an equal footing, the sociologist, the economist, the geographer, and other specialists as well.

#### The failure of planning

"There is practically no place in the world," says Doxiadis, "where dwellings keep pace, quantitatively or qualitatively, with population growth and economic developments in general. There is no branch of the technical sciences with lower per-capita productivity than urban construction. The most retarded technicians are those who build our cities. City planning has not become a science; it is mainly a technique to handle the problems of the cities after the industrial revolution. We are unable to face problems of a different stage of development in a different part of the world. The best illustration is the failure of Western planners to train planners for the underdeveloped countries, and the failure of planners of underdeveloped countries who have been trained in the West to adjust their concepts to their own habitat.

"We have been trying to build a picture of human settlements by studying one case, the industrialized cities of the twentieth century in the Western

Doxiadis' plan for Korangi in Pakistan illustrates his planning formula: rectangular superblocks, divided by a grid of access streets, and interspersed with public spaces.



In the east: a typical superblock of Doxiadis' Western Baghdad Development is subdivided into small blocks of housing by a network of cul-de-sacs and pedestrian ways. Public building sites are concentrated at the center of the superblock; small neighborhood squares (photo above) are interspersed among the housing units.



DR. DOXIADIS

World. This is very much like trying to conceive the evolution of species by studying only one species of animals.

"The American city," Doxiadis continues, "is a city built for man but invaded by the car; it is a city in transition, caught between two phases of development. It is no longer built on the modulus of the human being, but it is not yet built for the car. It can therefore satisfy the needs of neither.

"In contrast to the jungle-type development at the center of American cities, the outskirts are reminiscent of large nomadic settlements of people living in their carts, ready to move at a moment's notice-communities without any of the characteristics of permanency and cohesion. The new communities were socially misconceived; they were built primarily to accommodate the car. Walking distances necessary for the development of the social and economic bonds of the community have been abolished. Suburban settlements are more costly than they ought to be: more land is used up per house unit; utility lines are extended and cost considerably more than they should. The cost of operating all services is unreasonably high because of spreading. It is even more disturbing to consider the nervous tension and frustration the average American undergoes daily in getting to and from his work.

"The U. S. is the first nation in which the big new urban problems have appeared. It is the first nation which had to pay for a tremendous industrial development by losing something of its normal way of living. Before it is too late, an end should be put to the transitional phase; new, radical solutions have to be adopted for the American city if we want to guarantee livable conditions. The efforts of the planner, however, will be handicapped unless there is a national plan for the organization of urban life on a national level. The house, the street, the square cannot be studied and designed as independent entities but have to be viewed also as parts of the whole, the city. Cities themselves must not be faced as independent problems, but seen as interrelated parts of a national program covering the total settlements of the nation.

"The size, complexity, and develop-

ment of the problems of human settlements influence more than anything else the lives of men," Doxiadis sums up with a sweep of the hand. "They are an expression of history, civilization, but more than anything else they are an expression of the degree of happiness of the people living in them. Our contemporary problems are the phenomenal increase in population, the impact of the machine, the gradual socialization of society. The modern city is spreading all around endlessly and continuously. In the modern city the fourth dimension, the dynamic growth through time, is the dominant one."

"From what I have seen," he concludes, "I am very strongly inclined to believe in the need to create a new American city rather than try to remodel the existing one."

#### "Dynapolis" or "Miracle Miles"?

This, of course, is where the good doctor begins to cross swords with other planners, some of whom are pretty able spellbinders themselves. Victor Gruen, for example, agrees with Doxiadis' not-so-new principle of the superblock to separate pedestrians and cars but violently disagrees with what Doxiadis calls his theory of "Dynapolis": an open-ended city whose core can grow in one direction, keeping new residents always conveniently opposite their work. "More 'Miracle Miles,'" groans Gruen. "Our downtown cores are already much too large and loose, including many uses which don't belong. The job is to tighten up this inner sprawl, not eat up more and more land by elongating the city core, and having the older end die off." Dynapolis has its defenders too, among them Director John Searles of Washington, D. C.'s Redevelopment Land Agency, who was instrumental in first introducing Doxiadis to the U.S. under a State Department "leader grant" to tour a handful of U. S. cities back in 1958. Says Searles: "He has a remarkable ability to see all the different forces at work, the forest for the trees. The openended city, for one thing, prevents you from strangling yourself inside a fixed highway loop." Other planners respect Doxiadis' general principles, and his energetic salesmanship and managerial capacities, but find much old internationalist dogma in the authoritarian,



In the west: Doxiadis' plan for the 2,500acre Eastwick Redevelopment Project in Philadelphia follows the Baghdad format, except that the cul-de-sacs are widened to

make room for parking lots. Tree-lined esplanades (sketch above) connect the residential areas with the central commercial, educational, and cultural facilities.





Doxiadis' architecture in Iraq ... a market



. two-story dwellings



... a neighborhood court



inhumanly repetitive quality of his vast-scale master plans.

In explaining his current preoccupation with improving mass housing and living conditions, Doxiadis says, simply: "I was a refugee at the age of one." He was, in fact, born in 1913 in Steinmachos, now in Bulgaria, and was bundled along when his family fled to Athens at the outbreak of World War I. His father, a physician, was subsequently appointed minister in charge of refugees and public health, giving young Constantinos some knowledge of people in discomfort. Later he went to school in Athens, took an architectural degree there and went on to win a doctorate in civil engineering with honors in Berlin, with a thesis on "City planning in ancient Greece." Returning to architectural practice in Athens, he became chief of town planning at the advanced age of 23, two years later was promoted to chief of regional planning for all of Greece.

Doxiadis' professional life was temporarily blocked by the second war, in which he fought as an artillery officer on the Albanian front until his country's fall. But during the occupation he was able to rebuild his young staff 'into a novel resistance group which, between pin-pointing enemy installations and kidnapping the entire Italian counter-espionage unit in Greece, quietly prepared detailed studies for rebuilding the homeland. All that remained for the government at war's end was to name him minister of reconstruction (at age 31) and bid him carry out his program with allied economic aid, during which time he began to come to the notice of U.S. and other officials serving abroad. Doxiadis held his post, later enlarged to minister of development and coordination, through 21 successive governments of varying political shades, seeing some 3,000 Greek villages rebuilt and taking time out to join his country's U. N. delegation to the San Francisco charter conference in 1945. By 1950, however, the strain began to tell. Doxiadis had a nervous breakdown, convalesced for six months, then emigrated to Australia with his wife and two children to take up farming far away from it all (during his two years there, however, he managed to write a report on Australia's future development by the utilization of immigrants like himself).

By 1953 the lure of his own country proved too strong, and he returned to Athens to set up, with four compatriots, Doxiadis Associates, consulting engineers. Bolstered by commissions at home, he began to branch out, choosing the nearby underdeveloped countries of the Middle East as his first field of action.

Since 1955 one of Doxiadis' major, continuing efforts has been under contract with the Government of Iraq, where poverty, population increases, and mass migration to the cities are being met with both urban and rural programs of his devising. To raise the living standard in rural areas, and thus indirectly stem the tide to the city, Doxiadis men are shaping new villages for some 45,000 families, and giving backbone to old communities with new utilities, streets, and public buildings. They have also set up vocational schools to train Iraqians in planning and the building trades so that programs can be carried out (similar schools have been started by Doxiadis in Lebanon and Pakistan). In urban areas workers living in mud huts are being rehoused in simple masonry dwellings, with their own pleasantly walled gardens and screened roof terraces for sleeping on summer nights. Western Baghdad is being built as a virtually new self-contained city of 100,000, with schools, parks, mosques, and shopping centers properly distributed within.

#### Sectors and superblocks

Like most of Doxiadis' city plansincluding Eastwick in the U.S.-Baghdad is laid out on a repetitive grid of giant "sectors" separated by major high-speed roads. A typical sector can be from  $\frac{1}{2}$  mile to 1 mile on a side, and is penetrated only by dead-end feeder roads or cul-de-sacs. In Baghdad sectors, each handful of houses, bunched close to its own alley for shade, has its own little community space or "gossip square" where neighbors can meet, mothers chat, children play. (The equivalent in Eastwick is a small "totlot," or park.) From these small focal points a system of pedestrian walks leads to neighborhood schools, and to a community center in the middle of the superblock where there are shops, a continued on page 154B

# The planner descended

Richard D. Hedman, a 29-year-old planner now at work as a designer for New York's Donald Deskey on the Century 21 Exposition in Seattle, sometimes wonders a little -as does every planner-about the long, intricate process of inspiration, dedication, allocation, and desperation which is essential in city renewal. His musings soon will be published in the cartoons of a book he is completing in collaboration with Fred Bair Jr., Florida planner and consultant, to be titled And on the Eighth Day, several illustrations from which are shown for the first time here. Hedman, a tall, cheerful man whose other interests include allegorical cartoons centering on religion, and whose nickname is Saint, is not certain when the book will be completed and available-in time, he hopes, for the American Society of Planning Officials convention this month. "But you know, sometimes I wonder about publishing, too . . ." he says.

DEUS EX MACHINA: A gift from the gods for this troubled urban world of ours, the planner has been sent to solve all our problems magically with the drop of a master plan.



THE BRAVE BEGINNING: Do you honestly think we really have enough information to justify a decision to establish a base point?



PROGRESS: In.



REACTION: The general public is not always receptive to the proposals of the planning department.



ACCEPTANCE: The planner: always a midwife, never the mother.



FULFILLMENT: Think what il would have been without planning!

### Technology

Author Tung Yen Lin is one of the leading experts—and enthusiasts on prestressed concrete. A professor of civil engineering at the University of California, Berkeley, Mr. Lin is also chairman of the school's Division of Structural Engineering and Structural Mechanics, and director of the Structural Engineering Laboratory. He is a partner in T. Y. Lin § Associates, consulting structural engineers.

Mr. Lin is vice president of the International Federation for Prestressing and a member of the Joint American Concrete Institute— American Society of Civil Engineers Committee on Prestressed Concrete. In 1957, he was general chairman of the World Conference on Prestressed Concrete, held in San Francisco.

Although his designs are not new to the magazine, this is the first time Mr. Lin has written for the FORUM. Next month, FORUM will publish a second article by this distinguished engineer dealing with the exciting future for prestress in U.S. building.



# **Revolution** in concrete

#### Prestressing redirects the force of gravity and permits a new wide-span architecture to be born.

Traditional architecture, as in the modern skyscraper, is founded on the verticality of the path of gravity: the skyscraper is conceived on the vertical transmission of gravity loads down through a forest of columns. Conditioned to think in these terms, the architect and engineer shy away from wide horizontal spanning, for they are taught that the weight and expense of structures will be increased by floor and roof bending and shearing. But what they fail to see is that prestressing enables the balancing of gravity loads within the roof or floor itself, since the once-troublesome structural burdens can now be deflected to travel in almost any predetermined direction. In other words, a large number of vertical supports can be eliminated since the verticality of the gravity path is no longer the rule. Horizontality now prevails. Hence the new architecture.

What blessings can this bring? To the designer, it brings a new freedom of architectural planning and expression. To the building owner, it means new economies of construction and thus lower building costs. This is well-understood in bridge construction: since 1950, when the first prestressed concrete bridge was built in the U.S., the engineers have built many thousands of such bridges. Every seventh bridge we build today is prestressed.

But in buildings the revolution is

still in an earlier phase. It will continue to lag until the designers understand what is involved in prestressing—that it is more than simply a new "construction material" substituting for an older one. The purpose of this article is to crystallize the principle and to show how it enables the architect to create new forms and extensive space. Next month, the discussion will look into the future of prestressing, where its revolutionary character will have its most dramatic impact.

Let us first discuss "the horizontal path." The cantilever is a good starting point. A conventional cantilever can bend and deflect under the transverse load of gravity. "Weary" cantilevers with a slight droop are too well-known. Such a cantilever is not only heavy and costly; it is often impractical. A pre-



Great cantilevers are possible through prestressing, as on the race-track grandstand, near Caracas, with 90-foot spans, because gravity loads are balanced by prestressing loads. Thus, the cantilever "thinks" it is a column, because the resultant force travels along the length of the member. The architect was Arthur Froelich; the engineers, Henry M. Layne. T. Y. Lin Associates was the consultant on each of the structures shown.



stressed cantilever, on the other hand, causes the gravity force to travel along the length of the cantilever, so that bending is eliminated. In other words (as shown in the sketch at the top of the page) this cantilever is now transformed into a sort of "horizontal column." So far as the cantilever "knows," it has no weight extending out beyond its vertical support, because all the bending stresses of gravity, where the cantilever projects out into the thin air, are countered by the upward pull in the prestressed cables, and there remain only "axial loads" which are carried back through prestressed lateral cables until these loads rest directly atop the vertical support just as if that were where they originated, as if there were nothing there but a column continuation. By contrast an ordinary cantilever can never forget itself because of its bending forces.

The concrete cantilever roof over the grandstand of the Hippodrome National, in Caracas, Venezuela (above), is an excellent example of the manipulation of gravity forces. This roof cantilevers 90 feet and its gravity load is totally balanced by prestressing cables. Thus, the resulting force travels horizontally. The amount of prestress here is slightly more than the gravity loads, so that when the roof was erected it cambered upward about 1 inch. In time, there will be slight relaxation and the roof will move to a level position.

What would be the case if this roof had been constructed of ordinary reinforced concrete? It would be twice as heavy; it would deflect downward some 6 inches with time. And, most important, there would develop unpredictable secondary stresses within the structure. Indeed, a reinforced concrete roof of these dimensions would be a risky feat of engineering.

Another application of the concept of balancing gravity loads is shown in a simple beam: if the beam is prestressed with a parabolic cable (sketch, opposite page), the uniform upward force from the cable balances the downward gravity load on the beam, so that the beam is not under bending stress at all. Instead, the horizontal end push from the prestressing cable compresses the concrete, transforming it from a brittle material into an elastic one. Any additional load on the concrete beam will be resisted by the concrete's elasticity.

An example of this balancing of loads in a simple beam is shown in the 120-



"Weightless" beam is achieved by means of a prestressing cable whose upward force counters the beam's downward gravity load. The precast T-beams shown in the photo span 120 feet in a building for Telecomputing Laboratories, near Los Angeles. Prestressing reduces weight by as much as 50 per cent over conventional construction, and saves as much as 25 per cent in construction time.





"Invisible" column: by anchoring a cable at the base of a beam (top sketch), then prestressing the cable, an upward force is created at the beam's midspan—an invisible column, in effect. The action is like that of a drawn bowstring, encased in concrete.

foot T-beams (above), which were precast and erected for the Telecomputing Corporation building, in Los Angeles. During precasting, sufficient prestress was applied to balance the weight of each beam. Then the beams were erected and roof slabs were poured over them. Additional prestressing-by means of the prestressing cables within the beams-was then applied to balance the added weight of the roof slabs. Thus, the beams remained level at all times, and no deflection took place even after the slabs were poured. In this instance, because there were cables above and below the center line of the beams, there developed an unstressed area in the central or "web" area, where it was possible to leave big holes -8 feet by 18 inches-to accommodate air-conditioning ducts.

#### The invisible column

Prestressing often enables the designer to eliminate supporting columns. In effect, these missing columns are replaced by bent cables, as shown in the sketch (far right) of a prestressed beam with a cable bent at midspan. These prestressed cables, in seeking to shorten, exert an upward thrust which supplies support, just as a midspan column would do. This principle was applied in the remodeling of the San Francisco-Oakland Bay Bridge, in order to remove some of the deck supports. And a more complex system of bent cables was developed for an unusual bridge, designed to connect two Union Oil buildings in downtown Los Angeles. Indeed, this application illustrates the architectural possibilities of prestressed

pedestrian bridges, each with a main span of 102 feet; each is limited to a structural depth of 27 inches—to match the spandrel depth of the buildings.

In addition to a design live load of 100 pounds per square foot, each bridge carries marble facing which weighs 800 pounds per lineal foot. For architectural reasons, two piers had to be placed along the sides of the bridge, not under it. Ordinarily, the eccentric placement of these piers would have introduced terrific torsion (or twisting forces) in the structure. Indeed, the piers could not have been so placed in conventional construction. But by the prestressing of transverse cables within the structure, a second pair of invisible columns was created, which eliminated the torsional tendencies. The significance of these examples transcends bridge construcPrestress versus conventional: this parking garage in Beverly Hills, designed by Welton Becket, illustrates economies of prestressing. The building was first designed for conventional construction, then redesigned for prestress. The columns shown in white in the plan represent the columns which would have been necessary if the garage had been built conventionally. By prestressing, making possible greater spans, these columns were eliminated.





tion, of course, for in the planning of any structure of prestressed concrete a number of such invisible columns can be conceived and built into the structure's beams.

#### The earthquake problem

If prestressing can make cantilevers behave like columns and make invisible columns carry gravity loads, it can also create forces within real columns and thus protect buildings against forces created by wind and earthquake. In the 90-foot cantilever, we saw the resistances of prestressing applied in a more or less horizontal direction, thus balancing the downward pull of gravity loads. Now, to counter earthquake forces, we create new resistances through vertical prestressing, as shown in the sketch at the right. In this example, which is drawn from a ten-story garage in San Francisco, the resistances of vertical prestressing are exerted within a great pylon which extends through the building and down



into its foundation. The vertical arrows in the sketch represent 146 high-tensile steel bars of  $1\frac{1}{8}$ -inch diameter, with prestress of 7,000 tons. An earthquake force of 1,200 tons (represented by the horizontal arrow) is deflected in a vertical direction, minimizing sideward motion during a quake and maintaining the building's strutural integrity. Since its completion in 1953, this garage has withstood several earthquakes without the slightest sign of weakness.

These concepts of prestressing become realities through the development of new materials and techniques, essentially the combination of highstrength steel and high-strength concrete. In these past 11 years since prestressing began to be applied in a major way to U.S. construction, it has proved itself to be sound both tech-



Two-dimensional prestressing: in the Beverly Hills garage, beams and slabs are both prestressed in order to achieve 75-foot spans for beams and 20-foot spans for the 5-inch slabs. Such developments should enable prestressing to move rapidly during the sixties. In ten years, as many as 15 per cent of all new buildings may be designed with prestressing.

BEAM

SECTIONA-A

nologically and economically. Now architects and engineers have the duty to take full advantage of it, to give it meaning, to give it form, and thus to give birth to a new architecture.

The historical development of prestressing in the U.S. helps to explain why the building designers have failed to recognize its real potential. In contrast with Europe, where prestressing was pioneered by prominent engineers before it was utilized by the industry, the U.S. witnessed its pioneering done by industry, not by structural engineers and architects. Indeed, the economy of prestressed concrete was first realized in the U.S. by the concrete producers, who saw in it the possibility of lighter and stronger products at lower cost. The U.S. structural engineer was skeptical: he believed that the higher cost of labor would prohibit broad use of prestressing. But he underestimated the capacity of U.S. industry to mechanize production. And once it was mechanized, the higher labor costs were more than offset by the reduction in hours.

As soon as the precast and prestressed concrete industries were able to produce floor and roof panels in competition with products of conventional design, structural engineers were fast enough to pick up momentum and apply prestress in the field of bridges. But architects generally overlooked its possibilities: because it had been an industry development, they regarded it simply as a new product, not realizing that its concepts, when combined with the basic properties of high-strength steel and concrete, present to the architectural world structural possibilities which were never before dreamed of.

Prestressing was first developed with the aim of putting concrete into compression so that it could take tension. i. e., the idea was to transform a brittle material into an elastic material. Important as this was, it did not bring out the potential of prestressing, for such a step requires maximum cooperation between architect and engineer. The engineer is familiar with the technical aspects of prestressing, but he seldom has the architectural background to exploit the structure's possibilities in layout and form. The architect, on the other hand, while qualified to express the esthetic aspects of design, can easily get lost in the technical problems involving structural behavior and strength, often encountered in this type of construction.

Prestressed lift slabs: the sketch (bclow) shows the prestressing principle applied to 8-inch-thick lift slabs, spanning up to 32 feet. San Francisco, site of this 13-story building designed by W. Baumann, has led other cities in revising their code to permit such construction. The National Building Code, now in revision, will facilitate highrise prestressing in other cities.







The economic advantage of prestressing is registered first of all in the vastly reduced amount of reinforcing steel that is required, since all of the many concrete slabs found in new buildings can have their steel arranged in so much more efficient a manner. Ordinary reinforced-concrete slabs are relatively inefficient under loads that tend to bend them: since concrete has virtually no tensile strength, resistance to bending forces requires large quantities of steel reinforcing. But in prestressed slabs the high-quality steel, which overcomes the bending forces, is so arranged as to require only small amounts, from 0.4 pounds per square foot of floor area to 1.5 pounds, for spans of 20 to 120 feet. This compares with the 10 pounds of reinforcing bars or 20 pounds of structural steel that conventional types

of construction would require. In effect, the strength is doubled at an added cost of 10 per cent.

Further, the inherent capacity of prestressed concrete floors and roofs to carry loads placed directly on top of them permits a complete change in building layout. The usual span of 20 to 30 feet for conventional steel and concrete construction can be increased to 60 or 120 feet by prestressing. To be sure, such construction often requires special forming which could upset the normal economies gained in prestressing. Therefore economy in prestressed design often demands the multiple use of standard forms.

An example of the application of prestressing for better planning and lower cost is the Beverly Hills City Garage, recently completed in the heart of that city's shopping district (photo and sketches, on previous page). By using the concept of balancing gravity loads, along with modern techniques of precasting, prestressing, erection, and movable formwork, it was possible to cut the cost from \$786,000 to \$599,000 -a saving of 24 per cent. The greater part of this saving was affected at the planning stage, when it was decided to use 75-foot spans instead of the usual 30-foot spans: the longer spans were feasible here because of prestressing. The elimination of columns, as shown in the sketch, meant that 400 cars could be parked on 130,000 square feet of floor instead of some 158,000 square feet, which would have been required in conventional construction. This saving of 17 per cent in floor area accounted for most of the cost reduction.



#### The prestressed lift slab

The 13-story apartment building (above), recently completed in San Francisco, illustrates a further possibility with prestressing: the use of lightweight concrete lift slabs. In this case they are 8 inches thick, spanning up to 32 feet. They were all cast on the ground, prestressed, then lifted into position. By carefully balancing the force of gravity, the slabs were made rid of deflection or camber. The resultant force travels horizontally along the slabs to the supporting columns. Thus, as in the case of a beam, the prestressing deflects the path of gravity. The slabs can be said to be transformed into "horizontal walls." Because the slabs are made to carry only direct compression, the bending having been

eliminated, an 8-inch thickness is quite sufficient. Because they are under axial compression, the slabs will not crack. Roof slabs of this construction can be so compressed that they are waterproof.

These properties of prestressing must be made known to the architectural profession: the architect should be familiar with the balancing of gravity loads, the horizontality of the gravity path, the invisible column built into a beam, the transformation of a cantilever into a column, of a column into a beam, of a slab into a wall, and of a wall into a beam. At first, these phases might seem mere structura' semantics. However, they are real and meaningful, as the illustrations on these pages demonstrate. Out of such concepts as the control of the path of gravity force a new architecture is being born. To

flourish, it will require the cooperation of architects, engineers, building owners, and building officials, as well as the industries involved. But the leadership in this development must come from the architects, supported by the technical ability of the engineers, and endorsed by economy-minded clients. Even in their school education, tomorrow's architects must be directed toward this manipulation of the forces of nature which is now made possible through prestressing. Properly understood, this new technology can create a new architecture. For the first time, the architect is free from his traditional adversary-the force of gravity. The only obstruction to this new freedom is the habit of traditional thought. When this can be overcome, there seems no limit to the potential of prestressing.

# Air Academy chapel shapes up



Delayed by controversy concerning the appropriateness of its design, the chapel of the Air Force Academy in Colorado Springs is finally taking shape on the two-year-old campus. And the design is that originally proposed by the architects-engineers, Skidmore, Owings & Merrill, of Chicago. Last month the framework was finished, a lacy skeleton of tubular steel tetrahedrons stacked one on top of the other, reaching 150 feet toward the sky—the most striking example of this relatively new kind of structure in the U. S.

The frame consists of 100 identical tetrahedrons, each 75 feet long and weighing 5 tons. They were fabricated in Missouri, shipped by rail, and hoisted in place by cranes. The tetrahedrons are spaced 2 feet apart creating gaps in the framework which will be filled with 1-inch-thick panels of stained glass. The rest of the exterior will be covered with triangular wall panels faced with aluminum; the inside, with lath and acoustical plaster.

Interestingly, the Air Force several years ago thought seriously of building tubular steel hangars, but dropped the idea. Now it has a tubular steel chapel as big as a hangar, the result of independent thinking by its architects—a truly modern frame enclosing a space of impressive scale and promising beauty.

Top tetrahedron, one of two forming each spire, is hoisted in place by a giant crane where it will be bolted, then welded to horizontal runners.





Finished framework, suggesting the chapel's final form, contrasts sharply with the rectilinear dormitory at the left. Tubular structure, viewed directly upward, is reminiscent of Gothic ribbon structure. Stained glass will fill in openings between tetrahedrons.



The interior rebuilding of a New York office floor shows how aging "young" space can be updated.



Before: open areas, exposed utilities.

During: partitions, ductwork going in.



# Life begins at ten

When Philip Morris Inc. moved into a new skyscraper at New York's 100 Park Avenue ten years ago, its fourth-floor headquarters seemed just about the latest that modern architecture and engineering could devise: big, open working areas, polished tile floors, hung fluorescent lights beaming 30 foot-candles down on metal desks, conditioned air pumping in from exterior and interior ducts (photo, top left). In New York, however, a company has to watch developments, including other people's offices, its own corporate image, and a mobile labor pool. Two years ago Philip Morris called in Architect Ulrich Franzen. The company had some 250 head-office employees and the same 30,000 square feet of space-plus some new ideas.

What Franzen and Philip Morris have done to a typically aging young office, after nine months of doubling up while construction crews moved from place to place, is one of the handsomer remodeling jobs in constantly remodeling New York. It also demonstrates just how fast office standards can change, particularly in mechanical and electrical demands, and suggests that too many buildings even now are going up not fully designed for change.

The large, open areas which seemed a nice, friendly, and not overly expensive way of arranging space back in 1950-55 have largely given way to a more sophisticated series of smaller, interrelated rooms which introduce the departmental order and privacy—and some of the design amenities—now deemed necessary in office life. Junior executives, for example, have traded their open bull pens for compact, smartly partitioned, quietly carpeted offices (opposite). Those on the outside wall share both daylight and a neat, twoway storage wall and pass-through counter with their secretaries (top). Those on the inside wall, backed up to the building's service core, borrow light and view through full glass partitions, gaining some privacy with solid instead of transparent doors (bottom). Also preventing claustrophobia, and heightening the appeal of these offices, is a simple but effective device: three or four incandescent floodlights, washing colored back and side walls with light.

Throughout the new offices, repartitioning has been accompanied by a new hung acoustical ceiling concealing old beams and new extensions of old trunk cooling ducts. Striking innovations here are square, flush fixtures for lowbrightness, high-intensity light, developed by the architects, engineers, and manufacturer. Despite their "soft" look when viewed from below, the multiple fluorescent tubes and parabolic aluminum reflectors deliver 70 foot-candles.

With the addition of considerable new lighting, the air-conditioning load has gone up. This has been partly taken care of by the building's central system, partly by a new 5-ton package unit installed to service new interior conference and board rooms (overleaf).

Total remodeling costs, paid for out of company funds, averaged \$17.60 per square foot of existing space, plus \$5 per square foot for new furnishings (largely designed by architect and manufacturer working together).

Mechanical and electrical engineers: Jaros, Baum & Bolles. Contractor: 100 Park Avenue Corp.



After: executives in outside offices share daylight and a storage-wall pass-through with secretaries (right). Inside offices (below) have more glass for view, walls washed with incandescent floodlights.





PHILIP MORRIS OFFICE REMODELING



Private offices (left) were created out of large open areas (below). Sill-height heatingcooling units remain the same except for new black tops which cut sun glare.





Top executives occupy their own corner suite with a small waiting lounge at the far end. Storage walls and secretarial desks here are teak instead of walnut. Square lowbrightness fixtures give over-all illumination; the row of incandescents at right create a dramatic wall-washing effect.



Board room is paneled in teak, lighted from ceiling coves and pinhole spots. The end wall is covered by an enlargement of an old Dutch tobacco-making print.



PROTOS: (HIGHT) BUCK PETERS; (OTHERS) C EZRA STOLLER ASSOCIATE



Reception desk faces the elevator lobby in front of a curved wall concealing coat closets. Lighted display cases are built in. Above: the same area before.



Conference room is divisible into large and small sections by sliding, foldaway panels below a special hung ceiling. Projectiontelevision openings are seen at right.



Bold canopy shelters the clean, open, customer offices which resulted from the remodeling of a discount clothing store (photo opposite).

Lush shrubbery, big areas of glass, and comfortable seating make the lobby an inviting space for customers.





Displays are architect-designed . . .

# Bright base for business



The Spokane headquarters of Pacific Telephone/Northwest marks a smart departure from the Bell System's frequent habit of discreetly hiding secondrate offices in second-rate urban areas. Right on the corner of a busy downtown intersection, this rebuilt customer office provides a bright base for a building which, mainly due to poor elevators and an ugly lobby and façades, is otherwise untenanted.

After gutting the ground floor, the architects installed a suspended acoustical tile ceiling, floors of vinyl asbestos tile (terrazzo in the entry), and a new heating and cooling system. Exterior columns are faced with travertine; the steel-framed canopy with metal lath and marble-chip stucco.

The telephone company paid about \$30,000 of the \$86,000 rebuilding cost (Finucane & Galland, the owners, paid the rest). Annual rent including improvements is \$3.95 per square foot over a ten-year lease compared with \$5 to \$6 per square foot for ground-floor space in new buildings in the area. Cost breakdown for 4,200 square feet: general, \$54,084; mechanical, \$16,947: electrical, \$8,846; display and furnishings, \$7,000.

Architects: Walker & McGough. Structural engineers: Lyerla & Peden. Mechanical engineers: Rice & Strecker. Electrical engineer: Joseph Doyle. General contractor: P & B Const. Co.



. . simulate rooms where phone is desirable.





### Housing bill would boost rebuilding programs

Two significant new programs to assist residential rebuilding would be inaugurated under the Kennedy administration's housing bill sent to Congress on March 29 (see pages 5 and 79).

Most important for cities would be a liberalization of urban-renewal legislation to permit the federal government to pay two-thirds of the net loss involved in rebuilding existing housing for resale to public, limited-dividend, or nonprofit organizations for rental or cooperative occupancy by moderateincome families. This would allow the resale of a structure in need of rebuilding at a "realistic" reuse price, which would cover the extra cost of putting it into acceptable condition and would still keep the rents or cooperative charges within the reach of moderate-income families.

Originally the administration had contemplated authorizing the resale of such buildings to anyone for their fair reuse value, including a write down, if necessary. In the bill sent to Congress, however, both the moderate-income and limited-dividend or nonprofit provisions were added, eliminating the possibility of any entrepreneurial profits being made from this program, except from the ordinary rebuilding work that might be involved.

The bill would also authorize a new type of FHA-insured loan on singlefamily and multifamily dwellings. These loans could run as high as \$10,000 per unit, repayable over as long as 25 years, at interest up to 6 per cent. They could be second-mortgage loans, or even unsecured loans, both of which are presently taboo. Lenders who made such loans in urban-renewal project areas would be permitted to resell them to the Federal National Mortgage Assn. (Fanny May) under its special-assistance mortgage-purchase program. In another technical liberalization of FHA's rebuilding loan limits in urban-renewal project areas, the bill also would allow total loans to amount to as much as 90 per cent of the cost of the rebuilding plus the previous value of the property, rather than the current limit (on a single first-mortgage basis) of 90 per cent of the appraised value after rebuilding. All of the new-type loans would have to be processed by an FHA office, however-a step calculated to avoid the scandals associated with "suede shoe" or high-pressure salesmen that have occurred under FHA's nonprocessed or group-insurance home repair and improvement loan program. The latter has not been an effective instrument for rebuilding, because it has been limited to loans up to \$3,500 repayable within five years, and advance discounting has made their real interest cost more than 9 per cent.



### Seattle World's Fair sparks rebuilding wave

The Century 21 Exposition, the World's Fair to be held in Seattle next year, has already stimulated extensive rebuilding there, both large-scale and minute. Among the larger projects are a \$1.8 million conversion of a 50-year-old pier into a motel and restaurant, the rebuilding of two other piers as a restaurant and tourist center, and a \$2.5 million refurbishing of the civic auditorium (photo above).

The auditorium project, by Architects James J. Chiarelli and B. Marcus Priteca, will include a complete exterior resurfacing with brick, after the exterior columns have been reinforced and footings enlarged to carry the additional loads required by extensive interior remodeling. Inside, the old balconies will be replaced by two new balconies within a new concert-hall shell built inside the present walls. A new sloping floor will be installed, elevators



added, the lobby expanded, and the entire structure will be air conditioned.

In a demonstration project for the Central (downtown merchants) Assn., Frederick & Nelson's department store has spent some \$500 for a model newsstand outside its main entrance (photo below). The association is now promoting a plan for area-wide renovation of 100-odd stands at about \$200 per unit, the cost to be shared equally by building owners and the newsboys' union.

### Briefs

Luxury regained: Philadelphia's E. J. Frankel Enterprises have launched a \$3 million remodeling of the 16-story Wellington Apartments on Rittenhouse Square which have seen service as luxury apartments, a Sheraton hotel, and Navy officers' quarters since they were built some 40 years ago. Frankel will retain the skeleton and shell of the old structure but will entirely reconstruct the interior into 150 new air-conditioned luxury apartments. The first floor is being lowered to grade and a large modern lobby created by Architects Nowicki & Polillo. The first two stories will be refaced with a modern exterior, but above this the building's distinctive stone scrollwork will be retained.

Times Square in New York will soon witness the rebuilding of its namesake landmark, the 57-year-old, 24-story *Times* tower designed by C. L. W. Eidlitz and Andrew C. Mackenzie. A month ago the newspaper sold the building to Douglas Leigh, creator of outdoor advertising signs, who announced plans to transform it into a combination exhibition hall and office building, with a new rooftop luncheon club, restaurant, and observation deck.

In Jeffersonville, Ind., Developer Joseph H. Connor is turning the historic Quartermaster Corps Quadrangle into a modern shopping center. The old Army supply depot, which once stored surplus Civil War material, covers four city blocks and consists of a huge open space enclosed by solid, fortresslike, two-story buildings. Connor bought it for \$320,000 at a government-surplusproperty auction in 1959. Now he plans to make a giant parking field out of the inner court, in which he will eventually erect a department store, and is rebuilding the peripheral structures into END restaurants and shops.



At left is a console-type Johnson Pneumatic Control Center installed in the National Bank of Detroit. Albert Kahn Associated Architects & Engineers, Inc. Panel at right is installed in the First Presbyterian Church, Elkhart, Indiana. Wiley & Miller, architects; Bevington, Taggart & Fowler, mechanical engineers.

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*Decibel ratings	by Geiger	& Hamme	Laboratories	per ASTM	E90-55
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Partition	"240"	"A"	"B"	"C"	
Sound Reduction 125/4000 cps av.	37.4	32.4	31.8	27.9	
354/4000 cps av. (Industry Standard)	41.8	35.8	36.4	33.0	
Acoustic Panels	steel 51/8" wide, wt. 1 lb./sq. ft.	uses cardboard	steel, 23/4 " wide, wt. 1/2 lb. / sq. ft.	uses cardboard	
Sealer Strips	8	8	4	4	
Foam-Lined Jamb-Seal	yes	yes	no	no	
Air Release	yes	no	по	no	
Pull-In Latch	yes	yes	no	no	
Best Fabric Weight— Outside Covering Only	45 oz. per lin. yd.	45 oz. per lin. yd.	18 oz. per lin. yd.	27 oz. per lin. yd.	
Top Row Horizontal Hinge Plate Depth	81⁄2″	3″	(vertical)	11/2"	
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ADDRESS					
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#### Abroad





#### TWO SWISS TERRACES

Let it never be said that the Swiss are not men to match their mountains. In one new group of terrace apartments near Zurich, Architects Claude Paillard and Peter Leemann have turned the steep terrain to fine advantage with a northfacing atelier for their own firm, set over a low garage building on the road (above). From here, planted outdoor steps descend to separate apartments for their tenants, each of whom has his own bedrooms, glassed living space and roof garden toward the view (section and photo right).

Just a yodel away, on a hillside in Zug, some understanding building official has allowed Architects F. Stucky and R. Meuly to float a veritable village of new balcony-houses up a mountain slope with their garages tucked underneath. Each step is actually a private house built on an easement over the one below. Quite Wrightian with its gardens growing in the air, the scheme would seem tailor-made for such land-hungry cities as Los Angeles or San Francisco, where tract developers, TV writers, and Hollywood starlets have long been takingless economically and handsomely-to the hills.







PHOTOS: COURTESY "WERK"







#### CONTINUITY IN BERLIN

One of Germany's oldest temples, the neo-Romanesque synagogue on the Fasanenstrasse in Berlin, was smashed and burned by the Nazis during the tragic "Kristallnacht" of Nov. 9, 1938. It remained a deserted ruin until well after World War II. Now the small Jewish community in West Berlin has replaced the ruin with a typically neat, mosaic-

faced modern structure—with one difference. Touching reminders of the past, in the form of a broken column and an entrance arch left over from the original ruin, have been placed in front of the new façade like pieces of freestanding sculpture. West German Architects Dieter Knoblauch and Heinz Heise won the commission in an open competition.



#### FLOWER IN MORROCCO

One of the more exuberant structures yet designed by the famed Spanish Engineer Eduardo Torroja is this stunning water tower for the Sidi Bernoussi section of Casablanca. Reaching for rain like a thirsty desert flower, the tank rises some 95 feet on a concrete stem whose radial stiffeners flare out at the crown to separate eight petal-

like conic vaults. Convex toward the inside, the vaults are just under 6 inches thick and are supported by prestressed radial partitions inside; they are almost entirely under simple compression loading and their shape is designed accordingly. The angle of the vaults was set by Torroja so that they could be concreted using only external formwork.



#### GYMNASIUM IN JAPAN

Architect Eiji Miyagawa's new 6,000-seat gymnasium for Niigata Prefecture, part of a sports center being erected for the 1963 Asian Games, owes much to the Raleigh, N. C. pavilion and the Berlin Congress Hall. The high sides, however, are almost ideal for a maximum number of seats with a central, unobstructed view. The overstated concrete members are hollow for ducts and pipes. END



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Design for solar screen by Confer, Willis and Anderson, AIA, Oakland, Calif.

#### Oakland architect envisions office center with Alcoa Sol-Dec Screens

Here is an architect who achieved 100 per cent sun cutoff with Alcoa<sup>\*</sup> Sol-Dec Screens—as described in the design detail. But office centers with a shading problem during sunlight hours are merely one application. Other architects are exploring striking new decorative treatments, as in facings for new or old schools, hospitals and commercial buildings; overlays on cooling towers, penthouses, lobby walls and canopy soffits; vision screens and barriers for rooms, patios and gardens.

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Face of basic panel is twisted out of vertical mounting plane to form a hooded opening. Angle of sun cutoff can be varied easily from project to project according to orientation limits. Percentage of openness of screen can be varied by length of the units cut.





Light-controlling Thinlite panels provide excellent natural light, help reduce heating and cooling costs for the new \$20-million Intelex Systems Post Office in Providence, R. I. Charles A. Maguire & Assoc., Providence, supervised design and construction.



Northwest Suburban Y.M.C.A., Des Plaines, Illinois, is one of a series of new Y.M.C.A. buildings in the Chicago area in which Thinlite is used. Y.M.C.A. architect Eugene White commissioned Eckroth, Martorana & Eckroth, Chicago, to design Des Plaines Y.M.C.A.



Architect Enos Cooke, New Kensington, Pa., used Thinlite in a major way at Stewart Junior High School, Lower Burrell Township, Pa., blending light-controlling panels with windows and aluminum-faced insulating panels.



Extensive use of Thinlite prismatic panels, in combination with gray glass and porcelain enamel panels, controls harsh sunlight and severe weather in John Quincy Adams School, West Allis, Wisconsin. Architect, Schutte, Phillips & Mochon, Inc.



All exterior walls of the new research facility of Miles Laboratory at Elkhart, Indiana, designed by A. M. Kinney & Assoc., Cincinnati, will utilize the light-controlling features of colored Thinlite panels. The ground-to-roof installation will provide a more pleasant controlled environment for modern research.



Severe New England winters called for a weather-control exterior at the Split Ball Bearing plant in Lebanon, N. H., so C. M. Koelb Associates, Weston, Mass. specified Thinlite curtain wall with vista panels and ceramic accent panels.



Lee Center School, Lee Center, Ill., used Thinlite Curtain Wall for this new addition that has taken years off the appearance of the school. Samuelson & Sandquist, Chicago, architect.



West Carrollton (Ohio) Senior High School (Architects-Outcalt, Guenther & Assoc.) features extensive use of prismatic and window panels to protect occupants from sun and weather in classrooms, corridors and cafeteria.







Thinlite panels of Clear Vista accented with ceramic colors, admit maximum light with low heat transmission in the new office building of the State Employees Building Corporation, Sacramento, Calif. West America Engineering Company, Inc., San Francisco, designed the structure.



At Fontbonne Academy, Allegheny County, Pa., architects Celli-Flynn, McKeesport, combined light-controlling panels of green Thinlite with window and metal panels to achieve this unusual effect in the classroom wing.



Thinlite glass tiles achieve sun control with built-in prisms that disperse harsh rays softly and evenly to interior areas.

## THINLITE curtain walls enclose buildings across the nation

Unique system offers many practical advantages for wide variety of structures:

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Wide selection of panel materials, colors and arrangements permits unlimited design possibilities.

#### SUN CONTROL

Thinlite solar-selecting tiles diffuse sunlight on all exposures. Distribution of light is excellent and brightness is well controlled.

#### SOLAR HEAT CONTROL

Tests show Thinlite tiles transmit less solar heat than any other light-transmitting medium.

#### SAVINGS IN HEATING AND AIR CONDITIONING

Significant savings in heat and air-conditioning can be achieved with Thinlite curtain walls. Tiles transmit less solar heat while the doubleglazed construction guards against heat loss. Through-metal is kept to a minimum.

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For complete information including details, see Thinlite catalog in 1961 Sweet's Architectural Files - Curtain Wall Section.

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American Electric Power Company, New York City. Architect: Emery Roth & Sons.

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mosque, a secondary school and other public buildings along a series of pedestrian malls and squares. The community centers of adjoining sectors are joined to form a continuous core, which can be expanded along its axis as the city grows. Depending on its function, the city also has its own groups of sectors for industry, federal government, special sports centers, or major parks. But in none do cars endanger pedestrians nor do pedestrians slow the efficient speed of cars.

The superblock, to be sure, is nothing new. It dates back before Planner Clarence Stein developed it for single parklike residential communities fed by culde-sacs, like Radburn and Baldwin Hills, and Victor Gruen and others adapted it to whole downtown areas starting with Fort Worth. Doxiadis simply adapts it to *all* areas of the city, as a *unit* in an over-all grid replacing the smaller grid of the city block now outmoded by the onslaught of the car.

"Our settlements," say Doxiadis, "have changed scale, or rather they have had a second scale, that of the machine, thrust upon them. Now it must be a combination of scales—that of man, the automobile, the airplane."

Aside from the considerable contribution Doxiadis Associates is making in organizing the settlements of underdeveloped countries, his principles of planning are beginning to strike home in the highly urbanized—and highly disorganized—metropolises of the U. S. The National Association of Housing and Redevelopment Officials and the Ford Foundation have thought enough of his approach to give him \$25,000 to take a long, critical look at this country's philosophy of urban living, and at what is needed to strengthen the national urban renewal program.

What annoys some of his U.S. counterparts is that Doxiadis, in his spellbinding of potential supporters, does not give credit to the ideas of pioneers in the field and cite examples of their work as precedents for his own. Others feel that his actual plans, born of trying to house vast numbers of refugees in government-directed communities abroad, lack some of the warmth and human texture that American neighborhoods demand. With some exceptions—notably his own Athens headquarters and his "courtyard" houses in Iraq—Doxiadis' architecture is not up to the standard of his planning. But then, as he says, he is not concerned primarily with innovation for its own sake. He does not try to design a beautiful building or a beautiful city so much as a building or a city that functions well.

#### Zeus and the IBM

Doxiadis' head office (photo right), on the slopes of Lycabettus Hill overlooking Athens, is a model of his philosophy, and work is carried out with IBM efficiency. On the eighth and top floor is the doctor's own office and those of other executives who coordinate work around the world. On the seventh floor are the program and regional and town-planning divisions; on the sixth, the buildings and housing branches; on the fifth, offices for highway engineering and projects in Greece. On the third floor are finance and administration, on the second, a cafeteria and lounge; and on the first floor, a lecture hall and exhibition space. When a project or idea comes to Doxiadis Associates, it goes from the top floor down, stage by stage, with frequent crossfertilization of ideas. A glance at the organization charts show many specialists not found in most architectural or even planning offices-specialists whose presence lends credence to Doxiadis' "Ekistical" utterances. In addition to scores of architects, planners, and engineers, there is a smattering of archaeologists, cartographers, topographers, geologists, meteorologists, mathematicians, social scientists, economists, lawyers, and even a psychologist or two. Ekistics, like Doxiadis himself, is regarded on Lycabettus Hill with something aproaching the awe of Zeus.

Across an open sculpture court from the office building, a lower five-story structure houses the administration and classrooms of the Athens Technological Institute, Dr. C. A. Doxiadis, founder and chairman of the board. ATI enrolls some 900 students, and grants, among other lesser degrees, a two-year master's in Ekistics, taught by the master himself. Doxiadis feels that the institute, already attended by a number of foreign students, can become a true "melting pot of East and West" where technicians from highly



Doxiadis' headquarters in Athens is an eightstory office building partly masked in this photo by his five-story school, the Athens Technological Institute. The two buildings are separated by a sculpture court (above).



developed and less developed countries can learn much from each other. "Lying as it does between two worlds," he says, "Greece is the place where one can grasp the viewpoints of both." Doxiadis Associates is also careful each year to grasp the most promising graduates of old ATI for itself.

As one British architect and housing specialist puts it: "Doxiadis is a curious mixture of realist and idealist, with a Greek flair for diplomacy and a German punch-card thoroughness and discipline. He has a genuine concern for underdeveloped countries, and a deep respect for local customs. Unlike many planning consultants, he refuses to do a 'prestige' plan if he knows it will never be carried out."

If Doxiadis continues to study the local customs, the union of East and West may prove fruitful yet. END Books

#### World art . . . local planning . . . ancient words

ENCYCLOPEDIA OF WORLD ART, VOL. II— Asiatic Protohistory to Byzantine Art. Published by McGraw-Hill Book Co., Inc., New York, Toronto, London. 839 pp. of text, 490 plates. 91/2" x 12". Cost of complete set (15 vols.): \$570.

This is a phenomenally ambitious job, handled with enormous care and, apparently, with great scholarship. The *Instituto per la collaborazione Culturale*, of Venice and Rome, has pulled together an impressive, international "Council of Scholars" to supervise the production of the 15-volume encyclopedia. Among these scholars are architects like Aalto, Gropius, and Nervi; architectural historians like Henry-Russell Hitchcock; and museum curators and directors like Charbonneaux (Louvre), Ettinghausen (Freer), Goodrich (Whitney), and Read (Institute of Contemporary Art). Who could ask for anything more?

Getting down to those subjects that are related to architecture, one finds a concise note on Marcel Breuer (by Professor George Collins of Columbia); a magnificent biography of Brunelleschi (each of whose many accomplishments is discussed by a different expert); a fine piece on the English nineteenth-century architect, William Butterfield (by Hitchcock)-but, oddly enough, no mention of Burnham, who may, of course, have been reserved for a later note on the Chicago School. There is no hint of parochialism in the selection of subjects: while the emphasis in this volume is on such "greats" as Bramante, Bernini, Sir Charles Barry, Berlage, and Behrens, American architecture is adequately represented-considering that not many of our great names start with the letter "B." In short, this seems like a remarkably fine job, complete with good illustrations, generally well reproduced. Anyone wishing to have the last word on "world art" at his fingertips had better start building another bookshelf-or two.

THE COMMUNITY BUILDERS HANDBOOK. Edited by J. Ross McKeever. Published by the Urban Land Institute, 1200 18th St., N.W., Washington 6, D.C. 476 pp. 61/4" x 91/2". Illus. \$15.

This new and revised edition of a respected work, first published in 1947, will continue to be an invaluable standard manual for developers, architects, builders, and planning officials. Herein are the views and tested practices of the Urban Land Institute's Community Builders Council, made up of recognized authorities in land planning and community development, home building, architecture, real estate analysis, and merchandising. The new edition contains an expanded section on residential building, including the increasingly important subject of building near airports. The second section, on shopping centers, has been completely revised, with fresh emphasis on leasing and management problems. In all some 150 subjects are reviewed, along with 100-odd new photographs, plans, tables, and charts.

#### MANUAL OF LATHING AND PLASTERING. By John R. Diehl. Published by MAC Publishers Assn. 384 pp. 8" x 9".

The purpose of this volume, which is subsidized by five trade associations in the field, is to emphasize the versatility of lath and plaster and the recent advances that have been made in the craft. This it does in a thorough and highly readable way. Author John R. Diehl, of Diehl & Stein, Princeton, N.J., architectural firm, covers such subjects as basic plastering materials, lathing and the preparation for plastering, analyses of various wall and ceiling systems and assemblies, acoustical and thermal characteristics, and fire resistance. The book is generously illustrated with photos and detail drawings. Copies are being made available without cost to leading architectural and engineering firms. Additional distribution is handled by the National Bureau of Lathing and Plastering, 2000 K St., N.W., Washington, D.C.

VITRUVIUS. The Ten Books on Architecture. Translated by Morris Hicky Morgan. 5%" x 8". 331 pp. Illus. Published by Dover Publications, Inc., 180 Varick St., New York, N.Y. (Paperback edition.) \$2.

It was not Vitruvius who said: "Wellbuilding hath three conditions: Commodity, Firmness, and Delight." That was the English humanist, Sir Henry Wotton, in 1624, in a volume called The Elements of Architecture, which was, indeed, based upon the writings of Marcus Vitruvius Pollio. What Vitruvius had said, some 1,600 years earlier, was: "There are three departments of architecture: the art of building, the making of time pieces, and the construction of machinery." For those who would like to have a faithful record of all of Vitruvius' fascinating, and often basic, if rather prosaic, aphorisms on architecture, this new paperback will be a handy and handsome addition to their library. Meanwhile, let us hope that someone will get around to republishing Sir Henry Wotton, who seems to have known how to write poetry about architecture. END

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For more information on Delta System and other plywood components, and name of fabricator nearest you, write Plywood Fabricator Service, Inc., Chicago 17, Ill. Delta components are made and sold only by PFS licensees, and are available in most parts of the country. For basic plywood design data, write (USA only) Douglas Fir Plywood Association, Tacoma 2, Washington.



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#### Excerpts

#### Foul fair . . . needed leaders . . . perceptive pygmies



FAIR IS (SO FAR) FOUL

In recent issues of "Industrial Design" and the New York AIA Chapter's "Oculus," Editors Ralph Caplan and E. O. Tanner joined other New Yorkers in questioning the unimaginative symbol proposed for the 1964 World's Fair.

"All signs point to a superlative fair at Flushing Meadows," World's Fair President Robert Moses wrote recently, but the signs he saw have not yet been revealed to the world. In the meantime, all the public signs (especially the theme structure, above) clearly and sadly point to a fair that many important nations have already rejected, and that has itself rejected every opportunity to achieve distinction in design.

The theme itself is a design unworthy of any spectacle more serious than that stirring moment in burlesque when the orchestra switches from "A Pretty Girl Is Like a Melody" to a syncopated march beat, and the girls prance out, saluting, in red-white-and-blue spangled halters and top hats. But the fair symbol lacks even the brassy excitement of such moments, just as the fair itself promises to lack excitement.

The lesson of history is that when Robert Moses is blatantly wrong he can be beaten by anyone who cares enough about what is right. Do designers and architects care enough?

-

\*

With all the exciting things to be said about man's advances and aspirations in this explosive world, and with all the exciting language of modern architecture and engineering in which to say them, must we go back to a heavy, literal version of the ancient armillary sphere, with decoration by Rand McNally and world capitals and satellites in winking lights? Surely America, a world leader in design as well as ideologies, has a duty to welcome its visitors more eloquently than this. Surely it could be a structure which people could participate in, perhaps seeing things inside or ascending for various views. Or simply a stunning piece of architectural sculpture that speaks of the essential unity and grace and optimism of all mankind. America has the ideas and talent in abundance. Why cannot some of them be tapped?

#### LEADERS AND PUBLIC HOUSING

Urban Specialist Dr. Robert Havighurst recently told St. Louisians to change their public housing policy, and was seconded by the "Globe-Democrat."

The policy of forcing families out of public housing because they begin to ascend the economic ladder is shortsighted and not in the public interest.

The policy removes incentive. Many families, faced with a promotion or higher wages which would cause them to leave public housing, simply decline the advancement. This gears their progress to the lowest common denominator and stifles individual ambition.

In addition, the policy tends to remove from public housing the better families, who could be a stabilizing force and who would be the natural social and community leaders in these projects. This is doubly regrettable in view of the urgent necessity for leadership and responsibility in the lowest-income areas.

To meet the problem, rents for those better able to pay should be raised. To shuck them out of public housing often drives them back to slums.

One of the best ways to upgrade the entire public housing picture is to make it possible for natural leaders to emerge, without forfeiting their right to remain in the housing, and to assist in the ever present job of community leadership.

#### WANTED: TWO-INCH PYGMIES

In one of his recent speeches Vice President Fred Smith of Prudential Insurance Co. found need for a race of little people to live in architects' redevelopment models.

One of the greatest hazards in the field of redevelopment is the technical genius of an architectural office to produce a three-dimensional model. These glamorous creations provide a God's-eye view of the completed job: a geometric pattern of structures scattered throughout dozens of acres; the contemplated play of light and shadow on massive surfaces and high rise walls; sparkling touches of color to point and counterpoint contours. But that is not *continued on page 169* 

## HERE IS AN INTERESTING NEW MATERIAL by Carlisle

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RCHITECTUR FILE-"Maintenance of Vinyl Asbestos Tile and Asphalt Tile Floors," published by the Institute, N. Y. 17, N. Y.

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#### Excerpts contd.



the way it is going to be at all when the thing is built. People won't be above it, looking down at it; they will be down below, looking up at it-or straight ahead. What appeared to be, on the model, a dramatic juxtaposition of planes and surfaces may well turn out to be a cavernous void; that interplay of light and shadow may look, from the street, like a lack of warm sunlight-cold and damp and uninteresting. What we need is a race of discriminating, 2-inch-high pygmies who can be rented out to architectural offices to wander through their three-dimensional models and tell us how things look from down there. They may well observe: "Master, it may be breathtaking from up where you stand, but down here it's just plain dull."

#### A PACKAGE FOR ARCHITECTS

Builder Joseph Muscarelle recently told the Architects League of northern New Jersey it should actually like the type of "package" building he represents.

A client who comes to us is looking for the answer to his entire building problem. He wants answers in a hurry to such things as long-term capital gains, tax structures, property values, traffic flow, construction costs, available land, labor, utilities, leasing versus ownership, mortgages, various state or locally sponsored development programs. If things have gone far enough to show serious intent to build, our company recommends that an independent architect be engaged. This is where this person-this package builder so disliked by architects-actually is of good service to architects. Just think back and add up all the effort you have wasted on preliminary drawings on jobs that never materialized, with prospects who never became clients. How often are you called upon by dreamers and talkers who never build? For every one you have, we get at least five more. That's why I say we qualify the prospects for the architect. We separate the dreamers from the builders and keep the dreamers from wasting the architect's time.

#### **OPEN PLANNING**

The closed-door policy of the National Capital Planning Commission is the subject of a recent editorial in the Washington, D. C. "Post."

The bureaucratic fondness for "finalizing" projects before they are unveiled for public appraisal bespeaks an understandable wish to minimize controversy. But it also reflects a wholly outrageous contempt for the rights of the citizen and taxpayer. The planning commission, of all places, ought to be an open forum where all the knowledge and skills and desires of the community can be freely applied to the problems of the city's growth. This cozy "keep it in the family" attitude has no place in public business. END

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scale production. Polymerite makes possible a floor tile with the character-istics of fine tile: clear colors . . . resiliency . . . smooth, easily-maintained surface . . . light reflection . . . grease and stain resistance . . . flame retardance . . . greater resistance to wear. Yet its price compares with the most economical types of tile. To our best knowledge, Matico Polymerite is the only floor tile with all the superiorities described, at a low competitive price.

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Additional Construction		
Cost	\$ 42,000	
Net Savings on Initial Costs	\$ 16,870	
Projected Annual Operating Costs \$ 6	4,222\$ 59,469	
Savings on Operating Costs, per year	\$ 4,753	



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### **REYNOLDS METALS**

continued from page 96

just begun. The houses, unlike other Reynolds developments, will not be cooperatives but rather will be sold under the condominium principle, whereby home buyers will hold their units in fee simple but will be partners in the areas subject to community ownership. This is the first time that the FHA has approved a mortgage under the renewal program for this type of ownership.

The smallest but hardly the least significant of all Reynolds projects is one in Baltimore. There, in a special pilot project, Reynolds has purchased three aged three-story walkup row houses for conversion into nine refurbished units. Each unit is estimated to cost about \$5,000 to rehabilitate. Aluminum will be used wherever possible, but Architects Rogers, Talliafero & Lamb and the Reynolds engineers have been stymied on the exterior-Baltimore's typical solid red brick. This project may be the only one that will not prove profitable for Reynolds on its own economic merits due to the problems of getting FHA financing and the difficulty of reselling the units at their rehabilitated cost. But Reynolds believes the project is worth-while if for no other reason than it will iron out FHA mortgage procedures for rehabilitation under Section 220, and thereby make future urban rehabilitation easier.

#### New aluminum uses

So far, most of the aluminum used in the Reynolds projects has involved products already in the company catalogue. All the projects will have aluminum windows, gutters, leaders, ductwork, hardware, weather stripping, insulation, fascia-soffit work, lighting fixtures, and other conventional uses. Many of these have, however, been refined through the program. In Cincinnati, Doxiadis and Reynolds engineers developed new varieties of siding, although siding has been a standard part of Reynolds building output. It will also use aluminum shingles. The community swimming pool at Richmond will be of aluminum, as will fencing and railings. In the Kansas City, Mo. project, special modular panels were developed for side walls, as well as a new type of roofing shingle. But there are still many problems involved in getting more volume of aluminum into urban housing projects. Some of these entail codes, which do not yet permit the use of aluminum, but these problems are rapidly being solved. Some are simply the result of economics-where cheaper materials can be used to do the same job those materials are used despite Reynolds' obvious predilections. Reynolds' contract with the builder of each project is a guaranteed upset price contract, allowing the builder to buy his materials where and how he can; his primary concern is to hold the price line. Not only must aluminum be able to compete with other materials on Reynolds jobs, but Reynolds itself must be able to sell aluminum more cheaply than its competitors, or the builder can buy his aluminum from another manufacturer.

No single job has made Reynolds happier, in terms of design and uses of aluminum, than Goodman's River Park Homes in Washington. Goodman has had a great deal of experience with aluminum and therefore was a perfect choice to do Reynolds' first highrise job. Goodman says: "Reynolds had no preconceptions when they came to me. I was free to use stock materials or to develop new uses." Actually, he did both. Most important to Reynolds, he developed a design for a decorative balcony screen that has been perhaps the most important single new product to come out of the whole program. This screen can be stamped from sheet aluminum, rather than extruded, and this cuts the cost considerably.

Goodman's background in aluminum is broader than most architects, according to Reynolds engineers. "Our biggest problem is finding architects who have had some experience with aluminum, or even know what kinds of products are in our line," says a Reynolds engineer. Ordinarily, a Reynolds engineer works with a selected architect for as long as a week in a coordinated effort to insure the maximum use of aluminum. But Reynolds believes that only as the program develops and more qualified architects are used, will it Mo-Sai precast concrete curtain walls provide enduring beauty and economy for this new municipal office building in Sacramento. White quartz aggregate glistens in a white cement matrix to form the face of the Mo-Sai curtain wall panels. The light panels contrast sharply with the deep-toned mullions. The three-inch-thick Mo-Sai panels were bolted directly to the frame to form the complete wall unit.



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### **REYNOLDS METALS**

continued from page 176

begin to get the sort of product development it has gotten from Goodman.

#### Some other problems

Reynolds has other problems, besides educating architects in the uses of aluminum. For one thing, the company has not yet fully worked out what its role is to be in the renewal program. All of its early projects, for instance, will be sold to cooperative groups. Thus, Reynolds is in effect a builder only, getting out of the project as soon as the cooperative is ready to go. But the Santa Monica project, designed by Victor Gruen, will include rental housing, as will Eastwick, and in these Reynolds must resolve a key problem : it does not want to be in the real estate business, but neither will it walk away from a project as soon as it is built. Cole says: "We do not intend to be real estate operators. All we want to do is use aluminum where it is not now being used. But if this puts us in the rental business, we will do it."

If Reynolds gets both the Santa Monica and the Louisville jobs it will probably not tackle any further projects for a while. The Louisville project seems to be pretty safely in the bag, as it is a negotiated proposition and one which has already been turned down by several other developers. (Reynolds has something of a proprietary interest in Louisville, where the first Reynolds plant, manufacturing cigarette package foil, was opened in 1919.) But these two projects would add considerably to the already great strain on its small staff, and probably will force Reynolds to add new people even if it does not undertake further projects. Additional projects would also create economic problems for the parent company. Each project receives a separate allocation from the Reynolds treasury, and so far, although Reynolds has not verified it, an estimated \$5 million has been earmarked as the money needed to get the first projects started. Eventually, expenditures many times more than this amount will be needed, of course. Although Reynolds does not operate its renewal activities on a fixed budget, it probably will not expand the program until it sees more clearly how financially successful its current projects will be.

Many observers of the renewal scene see Reynolds' efforts as a new force in the future of redevelopment, representing the first time that a major building materials producer has become seriously involved in urban housing. Cole himself has talked to "over a dozen" other manufacturers about the Reynolds program and says that they have all shown interest. But most are watching Reynolds, to see what progress it makes, and most are hamstrung by a problem Reynolds does not have-lack of experienced personnel in the renewal field. Reynolds has in effect cornered the market there.

Alcoa's program probably involves the expenditure of more money than Reynolds', but in a significantly different manner. It has a 40 per cent equity interest in the \$40-million apartmentoffice development Zeckendorf is putting up near the UN building in Manhattan, from designs by Harrison & Abramovitz. This will probably be a group of aluminum - and - glass - faced high-rise buildings. Alcoa is also involved in a joint venture with Zeckendorf to build the \$300-million Century City project in Los Angeles, designed by Welton Becket & Associates. Both of these projects are privately financed. In St. Louis, however, Alcoa has joined forces with Developer Lewis Kitchen on the \$45-million river-front apartments, facing the soonto-be-built Jefferson Arch, designed by Eero Saarinen. This federally aided project calls for 1,700 units in high-rise apartments as well as stores, restaurants, offices, and a 400-room motor hotel. Alcoa has lent Kitchen, on a shortterm basis, equity money to get the project started, and the buildings, designed by Architects Schwaz & Van Hoefen, will use aluminum liberally.

Alcoa's purpose, like Reynolds', is to expand the market for aluminum, but it has no plans at this time to establish a special division to plunge into urban renewal. But both Alcoa and Reynolds will undoubtedly be competing vigorously in the broad area of redevelopment, whether under the renewal program or not, in the years to come. END



Architect Mario J. Ciampi of San Francisco blended square units with Shadowal block to form this handsome sculptured wall.

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### Letters



#### SOLERI'S CITY

#### Forum:

It was good to see your articles on Paolo Soleri and his "City on a Mesa" (FORUM, Mar. and Apr. '61). Our students are finding great stimulation in their contacts with this sensitive man and his provocative ideas.

He is now at work in one of our studios on an enormous drawing that is part of his further development of Mesa City. A few students are able to work with him, and the whole school is observing with high interest. Your articles will similarly challenge others.

> JAMES W. ELMORE Director School of Architecture Arizona State University Tempe

Forum:

Your publication of Paolo Soleri's city is absolutely outstanding. It is incredible that we still have such imaginative talent, and most encouraging that you let it come to the fore with an impressive presentation.

> H. H. WAECHTER Architect Creswell, Ore.

#### CHANGING SUBURBS

Forum:

"The changing suburbs," (FORUM, Jan. '61) is one of the most enlightening, informative, and well-written articles that I have ever encountered on what is perhaps the most exasperating phenomena of this day and age, one which is not easy of solution.

Being a member of the Granby Planning Board and director of the Springfield Metropolitan Planning Council, this write-up had more than passing interest. RICHARD LANGLOIS South Hadley, Mass.

#### PARKINSON'S LORE

Forum:

I applaud Professor Parkinson. His writing is stimulating and, although startling, contains much that is true (FORUM, Mar. '61).

It is very often necessary to be both controversial and belligerent in order to emphasize the most obvious facts often overlooked because of their familiarity.

If I may add to the Professor's litany of the bathroom, why are all bathtubs on the floor? Have you ever bent over double, after a hot bath, to clean the damn thing out, and had vertigo? W. R. KELLOUGH Real estate consultant

Toronto, Ont.

### PARK AVENUE BILLBOARDS

Forum :

The January FORUM carries an advertisement showing the gigantic office building to be built behind Grand Central Station. I notice that the latest addition to this project is an enormous sign advertising one of the building's occupants, Pan American Airlines, placed to face up Park Avenue.

Is it the beginning of a trend, perhaps to be joined by Pan Am's estimable neighbors? Surely a neon billboard for soap or whisky is as appropriate on Park as one for air travel.

> CHRISTOPHER ADAMS Fort Huachuca, Ariz.

### REBUILDING: YES AND NO

Your rebuilding issue (FORUM, Feb. '61) was provocative, instructive, and good to look at.

An interesting subject along rebuilding lines might be a study or re-evaluation of the rebuilding potential put into structures today.

It seems to me that the rate of technological progress is increasing so rapidly that rebuilding in terms of replacing, for instance, the entire mechanical system may very well become one of the governing factors in the initial design of large structures. ULRICH FRANZEN

#### Architect New York City

New Yo

Forum:

The February issue on rebuilding is so well-meaning and so wrong.

Granted, old buildings can and should be used and maintained, but that doesn't mean every time there's a change of style they need a "face-lifting." The Parthenon and Notre Dame don't get "redone" with the changing fashion. Our older American buildings deserve the same respect.

Certainly a building needs air conditioning and the newest mechanical and electronic gadgets, but these should be worked into the existing fabric.

How much better would those renovations look had new heavy, nondescript ceilings not been hung from beautiful coffered original work. Careful lighting could have high-lighted, made dramatic and even more handsome, the paneling, the coffers, the architectural media which we lack so today. We have this in our immediate heritage, and are all too quick to cover up. The new look is insipid, false, slavish to fashion, and more than anything, not so good as that which it covers.

> HOWARD BARNSTONE Architect Houston, Tex.

#### AVIATION IN BUILDING

Forum:

After reading your April article "Aviation eyes the building industry," I discussed it with people at Lockheed's Architectural Products (LAP) division and pass on some observations.

No doubt Lockheed's idle tools and factory space at least suggested its entry into the curtainwall field. This stimulated interest in other products, and their projected fields of activities indicate ultimate participation in many facets of the technique of building—e.g., sun screens, interior partition systems, skylights, floor systems, etc.

I expressed my concern with the problems of high overhead costs so prevalent in the aircraft industry and the competitive disadvantages that must be overcome because of this. Lockheed's answer is the severance of LAP from the general overhead structure of the company. A comparaslight administrative tively charge is levied against the subsidiary but otherwise they will be on their own so far as overhead is concerned. Lockheed will financially nurse them through early stages, but technical development will be the responsibility of LAP. Test facilities, processes now employed by the parent company, etc., will be available to LAP on a subcontract basis (just like tools).

Personnel has to great extent been recruited from the building products industry rather than from Lockheed's own ranks. The youth of some of LAP's personnel is interesting. They may sweep out cobwebs in the industry—on the other hand they may get caught up in a few.

LAP is of the opinion that while some of the exciting ideas of the FORUM article might indeed be of practical value, many will be employed only for most esoteric items—too precious for the building industry.

Even as a developer of many new techniques in the aircraft industry, their attitude is much more conservative than one might have imagined.

> GEORGE VERNON RUSSELL Architect Los Angeles

### TWENTIETH-CENTURY CAVES

Forum:

The prospect of this proud nation of free men embarking on such a shelter program (FORUM, Mar. '61) is most shocking.

Since the development of atomic and biological weapons, the world faces an unprecedented situation. And here, I submit, is something worth editorializing about: We can no longer even entertain the possibility of war.

Although there have been many hopeful signs, much of our behavior, in particular the continuing arms race, indicates our lack of understanding of the finality of this proposition. Building caves to crawl into at the sound of the siren would appear to be a final, irrevocable demonstration of our inability to face up to reality.

#### HENRY C. HEANEY Architect Boston

Because the U.S. cannot possibly control with infallible success the 20 or more nations that are acquiring the ability to make atomic bombs, refusal by those who know the facts "even to entertain the possibility of war" is either sentimentalism obliterating reason or else an indication of readiness to surrender forthwith to the Communist powers. As for refusal to protect even the innocent young, consigning them to the alternative possibilities of mass murder or enslavement, this would not, in FORUM's opinion, hasten the disarmament toward which all honest men seek to hasten, but would and does invite attack by the wellshelter-protected Communist dictators.-ED.



Striped walls are Scored Tile Design SD-1. Plate 406.

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Corridor fountain repeats the decorative motif of the entrance. Architects: Heyl-Bond-Miller. Plate 409.



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# Now, with new, lower prices... Kentile Rubber Tile costs so little



Now you can specify Kentile<sup>®</sup> Rubber Floors for many more commercial and institutional installations. The cost? Close to Vinyl Asbestos and other floors ... even less than Solid Vinyl Tile. Look at this comparison:

1/8" thick marbleized			Approx. installed cost				
10,000 sq. ft.	Rubber Tile	(a)	47c sq.	ft.	==	\$4700	
10,000 sq. ft.	Vinyl Asbestos Tile	(ā)	41¢ sq.	ft.	=	\$4100	
10,000 sq. ft.	Solid Vinyl Tile	@	61¢ sq.	ft.	=	\$6100	

### Provides so many more advantages

- The most quiet and comfortable underfoot of all colored resilient tile. (Only cork tile exceeds rubber tile in these characteristics.)
- Can be used anywhere indoors . . . even over concrete in contact with the earth, on or below grade, with the use of special adhesive.
- Tight-fitting joints . . . that stay that way permanently.
- Easy to clean and maintain. After the first few months' use, Kentile Rubber

Floors are as economical to maintain as Vinyl Asbestos or Solid Vinyl floors.

• Excellent resistance to indentation. (See chart below.)

Lbs. per square inch -		au Linn	250
RUBBER TILE		-	TEPE:
SOLID VINYL TILE		a gracowi	
VINYL ASBESTOS TILE	-		

Which tile for which installation? Kentile Architectural Representatives offer expert advice to professionals. Since Kentile makes all leading types of resilient tile, counsel is unbiased. Call your nearest Kentile sales office.



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