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New FHA room count rules give major boost to apartment building mortgage limits

Apartment builders have just been given their second major break in two months on FHA mortgage insurance rules. On August 12, FHA headquarters approved a liberalized room count system for calculating maximum mortgage allowances, which according to FHA Chief Architect Neil Connor, will also achieve better planning. Only a month earlier FHA eased its rules for high-rise apartments in central city areas (Section 207) by scrapping the requirement that no more than 20 per cent of a project’s accommodations may be efficiency units (Forum, Aug. '60).

To the jubilation of plumbing manufacturers, the most important change in the room-count system will now allow each full bathroom to be counted as one-half of a room in computing maximum mortgage limits. A lavatory (toilet and basin) will be counted as one-quarter of a room. Previously bathrooms were not counted at all, in a pointless conformity with the traditional real estate industry custom that completely ignores the bathroom in stating the size of an apartment or a house (unless there is more than one and attention is called to this fact by describing a unit as having so many rooms and so many baths). This new rule makes every apartment at least one-half room larger and thus eligible for a larger FHA-insured mortgage under the agency’s maximum loan per room schedules (except in projects that would still average less than four rooms per unit and are still subject to a “per unit” limit). It also should be of major importance in stimulating construction of more second bathrooms in larger apartment units.

Another liberalization of FHA rules will allow a foyer of at least 120 square feet to be counted as one-quarter of a room, whereas previously such space received no credit. In efficiency and one-bedroom units kitchenettes of at least 40 square feet will now be allowed one-half room credit. On the other hand the new rules reduce the count for balconies from one-half of a room to one-quarter of a room. In many cases, FHA officials felt, balconies had been added to some projects only because they raised the allowable mortgage ceiling by more than their actual cost. Snorted one top FHA officer: “We were getting damned tired of balconies in Alaska.” Connor put it another way: in encouraging more sensible layouts and better design, the new rules should end the “warped planning” that sometimes resulted from efforts to capitalize on the old rules.

Ordinarily an FHA apartment mortgage cannot exceed an average of $2,700 per room in a garden apartment, or $3,000 per room in an elevator building. Now, provided appraisals find actual costs or values that will justify such loans, builders can expect FHA to insure project mortgages for higher total amounts adjusted to correspond with their increased room counts under the new rules. Consider, for example, an elevator building averaging four rooms per unit under the new count (a living room, a bedroom, a kitchen, a bath, and a one-half-room dining alcove). Under the old rules the room count would be 3½ and the maximum mortgage insurance would therefore have been determined on the unit basis of $9,400 per unit, or $13,775 per unit in a certified “high-cost area” where increased mortgages (up to $1,250 more per room in some areas) are permitted. Under the new rules, because the average room count of this building is four, its mortgage limit would be figured on the basis of the room schedule rather than on the “unit” basis. Thus it would qualify for a maximum mortgage of $12,000 per unit—or up to $17,000 in a high-cost area.

The new room-count rules will be mandatory for all projects effective February 1. In the interim FHA will allow their use on an optional basis, so as not to penalize or interfere with projects already being processed with FHA and designed to make the maximum utilization of the old rules. Taking note of the fact that the liberalised rules would allow loan limits that would be more than adequate in some of the cities that are now certified for “high-cost area” allowances, FHA simultaneously revised many of these certifications. In Washington, D.C., for instance, it reduced this extra allowance from $1,000 to $700 per room over the regular ceiling. Among other cutbacks: Baltimore, from $800 to $600 per room; Buffalo and Columbus, from $1,100 to $800; Cleveland, from $1,100 to $900; Detroit, from $700 to $600; Milwaukee, from $1,250 to $900; Seattle, from $1,250 to $1,100.

Opera in Lincoln Center to cost $8,400 per seat

Late last spring the Lincoln Center for the Performing Arts in an intensive public participation program that included full-page newspaper ads and other public relations efforts solicited widespread public gifts to help raise a total of $102 million for its impressive New York cultural center. This advance of $27 million over its previous goal was sought because of the general increase in building costs as well as because of expansions in the scope of the center and its buildings.

A month ago the center’s latest annual report released by President John D. Rockefeller 3rd explained that before the inauguration of this program “a survey indicated that only 25 per cent of the adult population of the metropolitan area had heard of the center.” In addition, the annual report gave the continued on page 8
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College spending may win $14 million for Chicago

The University of Chicago turned the spotlight last month onto one of the most important but least publicized of federal urban renewal payment plans. The university asked the Chicago Land Clearance Commission to approve a project that would help it complete its South Campus development and at the same time might obtain for the city a federal bounty of $14.4 million that it could use for other renewal and redevelopment projects.

In the Title I amendments enacted last year, Section 112 provided that certain expenditures by private or public institutions of higher learning in or near urban renewal projects can be treated as if they are project grant-in-aid expenditures of the municipality to cover its share of the write-down subsidy for a project. This grant-in-aid (in lieu of cash) status may apply to any college or university outlays to buy, clear, or rehabilitate property (including relocation expenses) if they are to be used for educational purposes, including student or faculty housing, and provided that the city has approved such activity as beneficial to its urban renewal program. Also significant, credit may be allowed retroactively for any such expenditures that were made up to five years before the formal federal-city contract for a project was signed.

Under a plan prepared by the University of Chicago, the university asked the city to designate as an urban renewal area a 58-acre tract that includes 31.5 acres the university already owns and is developing for its South Campus. The university already is committed to spend over $4.5 million here under its own plans. Taking these outlays into account as if they were municipal grant-in-aid expenditures, the city could qualify for a federal grant of as high as $21 million for this project, even though the city's own direct expenses in buying the non-university portion of the project area and reselling it to the university for its fair reuse value would be only about $6.6 million. Under URA's "pooling" plan that allows cities to apply unutilized write-down credits to other projects, Chicago would thus be able to apply its surplus $14.4 million federal credit from this project to the write-down subsidies for other Title I jobs.

To encourage further use of the Section 112 program, URA has announced a $46,500 federal "demonstration" grant to Wayne State University of Detroit "to analyze and report on the methods by which urban universities are elimi-
nating blight from surrounding neighborhoods and are integrating university development programs with local urban renewal efforts.” Enactment of Section 112 has given this two-year study special urgency, said URA Commissioner David M. Walker. It will involve a detailed analysis of the activities of about 25 universities confronted with the problem of slums and blight in adjacent areas, and will determine how university expansion might serve urban renewal purposes too.

Three finalists left in Golden Gateway race

The eight developers contracting for San Francisco’s glamorous Golden Gateway redevelopment project were narrowed down to three last month after the report of the architectural advisory panel had been considered by the local redevelopment agency:

- Kern County Land Co. and Del E. Webb Construction Co. partnership (Welton Becket & Associates and Lawrence Lackey, architects), which had bid $6 million for the site, plus $6 million ten years later, or $9 million 20 years later.
- Tishman-Cahill Renewal Associates (John Carl Warnecke & Associates, Gardner Dailey & Associates, and Victor Gruen & Associates), whose land offer was $3,620,000, or the “fair market value,” whichever was higher.
- Perini–San Francisco Associates (Wurster, Bernardi & Emmons and DeMars & Reay), who offered $3,250,000 for the main residential portion of the project.

The redevelopment agency is now conferring with these finalists to determine revisions they might make in their architectural plans or land offers, and selection of the winning developer is not expected until later this month.

The agency is still keeping secret its previously established “fair reuse values” for the site, and there is still no clue as to how it will reconcile design and land-price factors in picking the winner of what most developers originally had considered to be primarily a design contest (FORUM, Aug. ’60).

Meanwhile, the redevelopment agency awarded a 7-acre tract in its Western Addition project to the pension fund of the longshoremen’s and maritime workers unions, to erect co-op apartments designed by Marquis & Stoller, with landscaping by Lawrence Halprin. Two other developers also sought this site, at a fixed price of $827,000. This award was made on the basis of design and rental scale.

Huge buildings planned on former Zeckendorf sites

As retrenching New York developer William Zeckendorf sold off a number of his most valuable properties to bolster his cash position, his sales touched off three announcements of other major new buildings that the buyers would erect in still-booming mid-Manhattan.

- Brothers Percy and Harold Uris, builder-owners of many of New York’s largest postwar office towers, bought Zeckendorf’s long-term lease of the vast 90,000 square foot blockfront next to the Radio City Music Hall where excavations were started last year for the $65 to $75 million Hotel Zeckendorf. Instead of a hotel, the Urises in a new equal partnership with Rockefeller Center will build on this site a $75 million, 1.7 million square foot office structure designed by Emery Roth & Sons, with Harrison & Abramovitz serving as consulting architects. Prudential Insurance Co., which owns the land, will provide the permanent financing—a loan “substantially higher” than a $27 million commitment it had issued previously for the shelved hotel. (In their new partnership with the Rockefeller interests, the Urises also will erect a $75 million, 38-story, 2,200-room luxury hotel on another 90,000 square foot blockfront two blocks farther north on the opposite (west) side of Sixth Avenue. Preliminary plans were drawn by Morris Lapidus, Kornblath, Harle & Liebman, but Harrison & Abramovitz will be consulting architects for this structure too.)

- On the block immediately adjacent to the Uris-Rockefeller office project on the north, Zeckendorf completed a 40,000 square foot blockfront assembly (25,000 square feet owned by his Webb & Knapp organization) and sold it to the Columbia Broadcasting System as the site for a new headquarters tower to be designed by Eero Saarinen & Associates.

- One block west, on Seventh Avenue, where Zeckendorf had planned a $21 million cooperative apartment building, he sold the 60,800 square foot site for $5 million to Loew’s Theatres, Inc., now controlled by the brothers Laurence A. and Preston R. Tisch, hotel chain owners. The Tisches announced that they would break ground next month on the already-cleared site, and by August 1962 they would complete a $50 million, 50-story hotel (see photo). The Tisches operate the Americana Hotel in Miami Beach and will call this the Americana of New York. Two months earlier they broke ground for a $25 million, 500-room, 21-story hotel on Manhattan’s east side initially called the Americana (see photo) but to be renamed the Americana East of New York. The Tisches learned that the Seventh Avenue site was on the market on July 13 and, after a feverish negotiating session, signed a contract for it at 4 A.M. the next morning, and took title the following day.

In consolidating Webb & Knapp’s position, Zeckendorf was not calling a complete halt to new ventures. Last month he signed a new agreement to purchase the 56-acre Twentieth Century-Fox property in Los Angeles for a total of $43 million in cash, in place of a previous deal to pay $56 million over a ten-year period, subject to approval by the film company’s stockholders.
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Labor raises building costs despite dip in materials

Last year rising prices for building materials were the main cause of increased building costs. This year material costs have been declining steadily but building costs have kept heading higher just the same—because of a marked increase in labor costs that began just about the same time that material prices began to ease (see chart).

In the first half of 1959 nonresidential building costs rose 2 per cent, reflecting the behavior of wholesale building material prices which climbed 2.6 per cent to a record peak while average hourly earnings of building construction workers showed a slight, 0.6 per cent, dip.

In the year since June 1959, building costs advanced another 2 per cent, but the trends in labor and material costs were completely reversed. During this period the index of average building material prices dropped 1.9 per cent to a point only 0.6 per cent above the level of January 1959. In the first six months of 1959 this index was pushed up by a sharp 7 per cent increase in prices for lumber and wood products. Since then, however, lumber prices have surrendered most of this gain, and in June were only 1.0 per cent above January 1959. This year's cutback in home building (after its fat 26 per cent advance in 1959 over 1958) caused the price of standard ¾-inch Douglas fir plywood to drop to $60 a thousand square feet in July, its lowest level since shortly after the war. Last month, however, after several weeks of sharply curtailed production, two of the largest manufacturers, U.S. Plywood and Georgia-Pacific, advanced their prices to $64 again, but still far below the $72 level of 1958, and the $80 level in 1955. Other building materials that have registered price declines in the year since June 1959 include heating equipment, down 1.2 per cent; metal doors, sash, and trim, down 1.8 per cent; asphalt roofing, down 6.2 per cent; plate glass, down 5.3 per cent, and window glass, down 2.9 per cent. Structural clay products rose 0.8 per cent, however, and plumbing equipment, 0.5 per cent.

The role of labor costs in the continued on page 13

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The role of labor costs in the continued on page 13
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tinued uptrend in building costs was highlighted last month in an analysis by the Bureau of National Affairs covering 1,755 new management-labor contracts in all branches of industry negotiated during the first half of this year. Construction unions have won substantially higher wage increases than any other unions. The median increase in 281 construction industry contracts was 14.7 cents an hour, considerably above the second highest median of 11.9 cents in 20 contracts in the trucking and warehousing industry. The construction union median was a hefty 58 per cent greater than the median of 9.2 cents in all industries.

People

With the support of a $25,000 grant from the Ford Foundation, the National Association of Housing and Redevelopment Officials has engaged Greek Architect-Engineer-City Planner Constantinos A. Doxiadis to make a critical study of "what constitutes this country's philosophy of urban living and what is needed to strengthen the national urban renewal program ... to come up with a set of principles and criteria for measuring performance that can serve American cities as long-term guides for renewal."

The nation's renewal program needs a fresh evaluation of its goals and efforts, said NAHRO President Charles L. Farris in announcing the project. "It is not just slum clearance and the building of structures that are involved, though these are what meet the eye. To get the whole picture and set guide lines for the future, a complex of social, technical, and political factors affecting obsolescence of our cities must be appraised. This we will do with the aid of Dr. Doxiadis, who has made study and work with human environment his career."

NEW PLANNERS IN WASHINGTON

After serving 15 months beyond the end of his term, until President Eisenhower named his successor, 70-year-old veteran City Planner Harland Bartholomew, of St. Louis, stepped down last month as chairman of the National Capital Planning Commission in Washington. As a planning consultant, Bartholomew prepared Washington's first zoning map in 1920, and in 1950 a comprehensive city plan, before he was appointed to head the Commission in 1953. To succeed Bartholomew as chairman, the Presi
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Set within a background field of any of Suntile's palette of 35 standard colors, they enable you to create a wide variety of interesting wall treatments. Only a few of the many design possibilities offered by these basic patterns are shown here.

For guaranteed installation by skilled craftsmen, call your Authorized Suntile Dealer. His name is listed in the "Yellow Pages" of your phone book.

For folder showing the complete selection of our new stock pattern insets, write to Dept. S-F9

Suntile’s Patented® SETFAST MOUNTING
— simplifies tile setting— saves time and money

SETFAST is the patented development of The Cambridge Tile Co. It has proved itself in thousands of installations to be the easiest, fastest and most economical method of installing wall tile or floor tile. Goes right over existing walls. Can be used with approved adhesives or self-curing mortar in thin-set installations. All tiles are perfectly spaced at the factory. No paper to soak off, no mess to clean. Because it's installed face up, errors are avoided, tile setter can inspect his work as he goes along.
NEW IMAGINATIVE DESIGNS

IN FLOOR TILE

it's new... it's original...

it's SERPENTINE by Suntile

If you're looking for something different, something distinctive in a ceramic tile floor design—here it is—Suntile's new SERPENTINE pattern.

This intriguing new design is no optical illusion. Through a new method developed by Cambridge the tiles (1" x 1" or 2" x 2") are actually set in an interesting serpentine pattern that offers a new originality never available before.

With Suntile's special "Setfast*" mounting, it is possible to set precision mounted 2 foot sheets of tile with greater ease than ever before. This new method not only saves installation time but gives a uniform hand-set appearance to your SERPENTINE floor.

SERPENTINE pattern units are available in solid colors or interesting multi-color combinations that lend themselves to many attractive over-all floor patterns. Pictured here are but a few of the interesting design effects you can achieve with this new SERPENTINE pattern. For special folder showing additional SERPENTINE patterns, write today. Address Dept. S-F9.

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Now you can get Clay Pipe with this built-in root protection. New research-developed, factory-made compression joints form a tight seal that assures long, trouble-free service, even in root-infested areas. These stronger joints seal in seconds, and—together with new longer pipe lengths—make Vitrified Clay the fastest, most economical pipe to install... the most efficient in performance. And remember—Clay Pipe does not rust, rot, corrode, or disintegrate. It is the only pipe with all the features you can trust... protects your reputation.

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Only precise control of indoor comfort makes space truly usable. That’s why it’s so important to integrate good design and comfort control right from the start in any type of building. You can depend on Honeywell to help your engineer specify the best possible temperature control system for each of your clients’ particular needs. You’ll find that Honeywell’s seventy-five years of leadership in temperature control will go far toward assuring your clients’ complete satisfaction. For further details, call your nearest Honeywell office, or write Minneapolis-Honeywell, Minneapolis 8, Minnesota.

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See us in Sweet’s 1960 Architectural File, Section 30 D /MI
VERSATILE J-M MOBILE WALLS in this office, above, meet an unusual height requirement, adapt economically to a plan calling for glazed and solid units of varied dimensions. Also, these asbestos walls can satisfy style preferences ranging from the contemporary, right, to traditional, far right. These walls can be easily painted any color, can be veneered with wood or other laminates.
New approaches to old problems with modern products by Johns-Manville

Every project makes its own new demands for combining beauty and performance. Perhaps there’s a Johns-Manville Building Product that will suggest a solution to one of your current interior design problems.

On these pages are Johns-Manville Interiors at work in offices, stores, schools. Call in a J-M representative when you’re in the planning stages of your next project. (J-M has led in building product research and development for over one hundred years.) Write Johns-Manville, Box 158, Dept. AF-960, New York 16, N. Y. In Canada, address Port Credit, Ontario.

J-M CORRUGATED TRANSITE forms an inside-outside wall that’s visually appealing, rugged in service. This stone-like, asbestos building panel accepts paint beautifully . . . or can be used unfinished in its natural medium gray.

J-M CORRULUX is used here as an upper wall. Translucent, it admits soft, natural light. Corrulux panels of fiber-glass-reinforced plastic are shatterproof as well as colorful and decorative. Panels are available in standard lengths up to 12'; longer on special order.
PLEXIGLAS letters and modular background panels at Bank of Old York Road, Abington, Pa. Architects: Haag & d'Entremont

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SUPERIOR ALL-COPPER PLUMBING IN THIS SCHOOL AT LOWER COST TO TAXPAYERS

COPPER SANITARY DRAINAGE LINES roughed-in among structural members at Gower School. This space-saving installation would have been impracticable with heavy, bulky pipe requiring threaded or caulked joints.

COPPER SANITARY DRAINAGE LINES for second floor lavatories at the Gower School. Light weight of copper tube and ease of making solder joints save many dollars on multiple installations like this. Compact assemblies eliminate wide plumbing walls, give greater usable floor area.

Phil Bergeron and Jerry Wehrmeister, plumbing contractors near Chicago, have found that the installation economies with copper tube and solder-joint fittings enable them to offer all-copper plumbing—water supply and sanitary drainage—at a cost lower than competitive bids based on installing ferrous piping. Recent jobs awarded to them as low bidder include the Gower School, the LaGrange Township Junior High School, a church, health center, two restaurants and a store. Anaconda was used for all these jobs. Phil Bergeron says, "We specify Anaconda Copper Tube and Fittings because their consistent fine quality and close tolerances makes our work easier and keeps the job costs within our estimates."

Contractors, builders, and architects the country over are finding that they can provide long-lasting, low-maintenance all-copper plumbing at a cost competitive with ferrous piping. For information on Anaconda Copper Tube and Fittings, write for a copy of Publication C-33. Address: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

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DIVISION OF TOLEDO SCALE CORPORATION
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Change after change, a Mills Movable Wall System maintains its integrity because it has been custom-crafted to the building module. Only Mills design assures you that even after many changes, joints and trim will be tight; partitions, on module. Mills representatives are now showing further examples of Mills-conditioned office space; you may see them by writing to us, The Mills Company; since 1921, manufacturers of movable wall systems: 922 Wayside Road, Cleveland 10, Ohio.

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MILLS
Look at the amazing things Alcoa Industrial Foil is doing!

Luminous; uninterrupted span heightens the striking, modern decor. The recently remodeled offices of Lockheed Aircraft Corporation at Marietta, Georgia, are under the world’s most modern ceiling—Hexcel Honeylite®, made from ALCOA® Aluminum Foil only .004 in. thick. Foil honeycomb conceals overhead pipes, ducts and sprinkler heads. What a change, say old hands.

Soft, glare-free, shadow-free light bathes every nook and cranny—diffused by millions of ¼-in. hexagonal cells. Installation was simple and inexpensive. For one thing, aluminum honeycomb weighs only 3 ounces a square foot. But more, the panels are framed in aluminum and supported by a system of aluminum T-rails... which means little maintenance, no deterioration, new appearance indefinitely.

Aluminum Honeycomb Ceiling brings tranquility and shadow-free light to Lockheed Office

ALCOA does not make foil honeycomb, but we will be happy to send names of manufacturers who do. Our product is aluminum foil, the versatile material that forms, twists, colors, combines with other materials, weaves into cloth... cuts costs and improves techniques in hundreds of industrial applications. Have you taken a close look at ALCOA Foil recently?

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Look up to the Burgess-Manning Radiant Acoustical Ceiling at the International Minerals & Chemical Corporation, Skokie, Illinois. Here, maximum employee comfort and operating efficiency are assured by the ultimate in radiant heating, cooling and noise control.

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The Burgess-Manning Radiant Acoustical Ceiling offers new design flexibility in layout, ventilation and lighting systems. Too, many additional important installation savings are achieved...with maximum usable floor space—no radiators, convectors, registers, etc. are needed. Standard hot, water heating or water chilling equipment together with standard controls are utilized.

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As color accelerates the swift trend to rustproof, corrosion-resistant aluminum for commercial building, Reynolds introduces new colors... plus a new color-before-forming process with important advantages.

The exclusive "Colorweld 60" process permanently bonds to aluminum color that is so tough it stands up under forming and embossing... maintaining absolute uniformity. This means greater beauty, clean-lined and clear-textured. It means faster production—immediate availability. And it brings the cost of color down to only a few pennies per square foot!

Get the full facts on "Colorweld 60" from the nearest Reynolds sales office. Mail the coupon now for your copy of new Color Brochure! Reynolds Metals Company, Richmond 18, Virginia.

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The prime coat is the basic foundation that determines the long-lasting performance of coatings.

There can be no compromise with the prime coat — it is the basic foundation, it must take hold and adhere tightly, it must provide a sound, compatible base for the finish coating. It is here that Rust-Oleum's experience as corrosion-resistant specialists can help you. Whether it's a shop coat by the fabricator, or job site application over structural steel, Rust-Oleum has the right primer for the specific job — from quick-drying primers for shop coating, unique primers to apply directly over rust, or bare metal primers. For the fullest measure of protection — specify the Rust-Oleum System of primer and finish coat. Your nearby Rust-Oleum Industrial Distributor and your Rust-Oleum Factory Specialist will be happy to work hand-in-hand with you.

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New 30-page Rust-Oleum Architectural Specification Catalog features actual color charts. Clip coupon to your letterhead for your free copy of Form No. 259-A.
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The designers of the world's first off-shore sulphur mine had to plan for the corrosive effects of salt air, high humidity, sulphur fumes and occasional hurricanes. That's why buildings of this man-made island were made of Gold Bond Corrugated "400". It shrugs off harmful chemical fumes, salt air and moisture, and it will not rot or burn. Always specify Gold Bond Corrugated "400" when your buildings must resist rot, fumes and moisture. They go up fast and need little or no maintenance. Write Dept. AF-960 for complete technical literature.

NATIONAL GYPSUM COMPANY, BUFFALO 13, NEW YORK
Famous Park Avenue beauty enjoys Flexalum light control

Regard the Seagram Building. What glamour it adds to Park Avenue! How shapely! How well-groomed! For its 3,676 windows, the architects naturally chose Flexalum Twi-Nighter venetians. What's more, Hunter Douglas engineered two custom features so that haphazard slat-tills and blind heights wouldn't interrupt the symmetry of the building's facade. A special 3-stop action keeps the blinds fully raised, fully lowered, or set at one happy medium, while the unique tilt mechanism fixes slats at a 45-degree angle. No other window covering is so ideal for buildings with curtain-wall construction.

Naturally, Hunter Douglas is concerned with the people inside, as well as sight-seers outside. Flexalum venetians give real light control, let in soft, diffused light, or make rooms dark and strictly private. As for maintenance problems, there aren't any. Only Flexalum venetians are designed as an integrated whole, so they don't suffer from malfunctions that often afflict blinds whose parts have been garnered from several sources. Flexalum venetians won't rust, chip, crack or peel. And they're guaranteed for 5 years. See our latest specs in Sweet's Architectural File 19d/Br or write to: Dept. AF-9, Bridgeport Brass Co., Hunter Douglas Division, Bridgeport, Conn.
New Gold Bond system gives economical sound control
to the fabulous Fontainebleau Hotel on Miami Beach

Three convention halls, parking for 1,000 cars, an auditorium seating
8,500 people, and 500 new rooms in addition to the original 558 rooms.
that's the size of the sound control problem in the immense Fontainebleau
Hotel and new addition. But the architects were prepared. They designed
partition walls with the "Gold Bond" Holostud® and HS Resilient Clip
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from the studs, isolating airborne sound. The system earned a 46 db
rating from a recognized testing laboratory, plus deep gratitude from hotel
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Requiring a minimum of space — costly penthouse construction is eliminated. Operation is smooth and effortless — quiet with a minimum of vibration.

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With the new BOLTA-FLOOR color line, design and decorating possibilities are unlimited... your imagination has full reign. And because of its deep, surface-to-surface homogeneous vinyl construction, color and pattern can't fade or wear off. Plan now to step-up to quality, step-up to BOLTA-FLOOR tile or roll goods on your next project. A letter from you today will bring samples and complete information.

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This freedom of architectural design has grown with development of polysulfide sealants. Their unique sealing qualities... multi-material adhesion, long-life bonding, sympathetic expansion and contraction, shock absorption, high resistance to all deleterious elements, custom fitting to the job on the job, wide range of colors... have made polysulfide sealants integral to an expanding “architexture.”
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Through Facing Tile. The enduring beauty of the Han Dynasty vase is mirrored in the lustre of facing tile. Two thousand years apart in time, the two have an affinity in art. Each is drawn from the earth and employed by the artist to produce lasting art and enrich man's purpose.

FACING TILE INSTITUTE
1520 18th Street, N.W., Washington 6, D.C.
A roundup of recent and significant proposals

**UNIVERSITY OF NEBRASKA ART GALLERY**

This art gallery, of monolithic concrete faced in travertine, will be built on the University of Nebraska campus in Lincoln later this year. It was designed by Philip Johnson. In honor of the donors, the building will be called the Sheldon Art Gallery, and its two-story central hall, finished in travertine, will contain two sculptural reliefs as memorials to the Sheldons. Elsewhere in the building there will be 12 galleries, a 300-seat lecture hall, and a board room for the state art association.

**58 MILLION HOTEL ADDITION ON NOB HILL**

San Francisco's Fairmont Hotel will add a block-long, seven-story base structure and a 22-story tower to the existing building. The extension will up the Fairmont's room count by 252 and add three levels of parking, an exhibit hall and ballroom, a kitchen and service area. The glass-walled dance pavilion in the foreground will be connected to the original hotel lobby, and there will be gardens, by Landscape Architect Lawrence Halprin, between the pavilion and the tower. Mario Gaidano of San Francisco designed the addition for Benjamin Swig and Jack Weller, the hotel owners.

**TWO-BLOCK DEVELOPMENT IN DOWNTOWN MILWAUKEE**

This $17 million commercial development has been proposed for downtown Milwaukee by John W. Galbreath, Harrison & Abramovitz, and Turner Construction Co. The Marine National Exchange Bank, which will give its name to the project, already owns or controls most of the land on the two-block site and will occupy the small bank building (left) and the lower floors of the 22-story glass-and-metal tower. On the next block, a six-level garage will be accessible via a pedestrian bridge from the tower's second story. Robert E. Rasche of Milwaukee is associated architect.
BEVERLY HILLS OFFICES OVER CONCRETE ARCHES

Broad, flat arches will carry this new Beverly Hills office building designed by Charles Luckman Associates of Los Angeles. Under the arches, the first-floor space will be divided between an entrance lobby and a parking garage, the cars veiled by a precast concrete screen. The curtain wall around the building's upper floors will be panels of porcelain enameled steel and tinted, heat-resistant glass. Completion is scheduled for July 1961. Cost: $2.5 million.

TITLE I APARTMENTS IN NEW YORK CITY

These three 28-story towers of reinforced concrete (two of which are joined) are the first under construction in what will eventually be the largest Title I housing project in the U.S., Webb & Knapp's Lincoln Square apartments adjacent to Manhattan's Lincoln Center for the Performing Arts. Cost of the first towers, containing 1,369 dwelling units, will be $25 million. Architects: S. J. Kessler & Sons.

CHICAGO TRAINING CENTER

Beginning with September 1961, United Air Lines will groom 2,000 management trainees and stewardesses a year in a new education and training center (right). The center, on a 51-acre site near O'Hare Field in Chicago, is the work of Skidmore, Owings & Merrill's Chicago office. The building is a prestressed concrete square, hollow in the middle; the bays are 48 feet wide. A tunnel will connect the center to a bubble-topped swimming pool, seen at the right.

TALLEST BUILDING IN SAN DIEGO

In January construction will start on this combination garage-office building which will dominate the San Diego skyline. The base, wrapped in a grille of copper-colored concrete, will be a six-story and two-basement garage. Over it will rise a 16-story tower providing 144,000 square feet of offices. Irvin J. Kahn, the San Diego builder and developer who will give his name to the $6.5 million building, is associated with Lou Lesser & Associates, Lawrence Holzman, and James Murphy in this venture. The architects are Palmer & Krisel, who are working on another building a block away for the same investing group.
HOUSTON PETROLEUM CENTER

The Houston Petroleum and Trade Center is to be a complex of oil industry offices, exhibits, and a convention hall. Work on the first portion of the development will start this month; the rest of the center's buildings, numbering 15 in all, will get under way in 1961. In their plan (right), Architects Lightfoot, Burleson & Associates put two seven- and eight-story buildings in the middle, separated by a sizable lagoon, and distributed the lower buildings, none over two stories high, around them. The tallest building will have one ceramic mosaic wall.

CIRCULAR APARTMENTS IN SAN FRANCISCO

A group of San Francisco businessmen have proposed this circular reinforced concrete apartment tower for a plot in the city's Western Addition Redevelopment Area. From the inside out, the core will be filled with elevators, storage, and stairs surrounded by a public hall; next will come a ring of kitchens, baths, and foyers; and outside, living rooms and bedrooms. Architect: Donald Powers Smith.

SANTA MONICA MOTEL, POOL, AND RESTAURANT

The Westerly, a motel with its trimmings—a restaurant, a sun deck, and a swimming pool—open to the public as well as to overnight guests, will be built in Santa Monica by Fer- man Builders, Inc. The motel's six stories, of concrete, masonry, and glass, will have 100 rooms, some of them facing the pool and others opening on small balconies. Architects: Victor Gruen Associates of Los Angeles.

LOS ANGELES FACETED TOWER

The textured walls of this 15-story office building for Wilshire Blvd. in Los Angeles will be lightweight precast concrete panels designed by Girard Kupfer, a Swiss architect. At night, the panels' bold hexagonal pattern will be accented by special lighting. In addition to offices, the project will accommodate a first-floor bank, a terrace restaurant, and five levels of parking underground. Steven M. Heller of San Francisco and Rochlin & Baran of Los Angeles are the architects; Wilshire-Mattei Corp. is the owner.

LIFT-SLAB APARTMENTS IN MICHIGAN

The largest Youzt-Slick lift-slabs in the U.S. are being hydraulically jacked into place, two at a time, by the builders of the Huron Towers apartments in Ann Arbor. Altogether, 24 slabs, each 215 by 70 feet, will be lifted in place for the two buildings. Both towers stand on stilts, and the ground-floor walls will be set back, creating sheltered promenades around the buildings. Balconies around each floor will be precast concrete. Architects: King & Lewis, Inc.
Plain or fancy...

you can strengthen just about any kind of masonry wall with Dur-o-wal

Hats off to today's architectural designers for a new world of beauty in concrete masonry. And orchids to the modern builders who are making that beauty last with Dur-o-wal. It's the rare block pattern, plain or fancy, that does not permit America's most practical, most widely used, most widely proved masonry wall reinforcement. Dur-o-wal is versatile.

Dur-o-wal's trussed, butt-welded construction—with deformed rods that lay straight and flat—has been engineered to do a job. Increases the flexural strength of a masonry wall at least 71 per cent, as much as 261 per cent, depending on the weight Dur-o-wal used, number of courses, and type of mortar. This makes for truly permanent masonry wall construction and looks.

For technical details, write to any of the Dur-o-wal locations below. See us in Sweet's.
Precast garage . . . big prefabs . . . shell coat . . . stone shaper

PRECAST GARAGE

Opposite the Abraham & Straus store in Hempstead, N. Y., Tishman Research Corp. is finishing its first Tierpark, a concrete garage which will soon be prefabricated throughout the country. The Tierpark system, conceived and designed by Engineer Edgardo Contini, is based on three prestressed, precast elements: a slab, a ramp, and a column bolted together on the site to form a split-level ramp garage. Standard metal railings, curbs, and lighting fixtures are part of the package, although these may also be custom-designed.

The Tierpark system adapts equally well to large, open sites, such as land around airports and shopping centers, where the garage would be a single tier, and to built-up areas in central business districts, where the garage would be narrower and several tiers high. The Tierpark for Abraham & Straus, for example, stands three tiers high and parks 1,200 cars, but it could be enlarged by adding more tiers or lengthening those in place, using more standard components. If the store should decide to move its Tierpark, it could disassemble it and ship the components to a new site for reassembly.

The typical floor panel is a slab 11 inches deep at its thickest point, 10 1/2 feet wide, and 28 feet long, supported at its center by a single tapered column, an elongated hexagon in cross-section. (The column's hexagonal shape is said to aid drivers in parking at the proper slant.) The ramp slab, cast in up and down versions, is of the same length but is 1 1/2 times the width of the typical floor slab and is supported by two standard columns. The absence of beams and girders reduces the floor-to-floor height to 8 feet. To take care of drainage, the floor slabs are slightly concave near the center, and weep holes carry off water into drains in the middle of each column. Prefabricated steel side railings are modular units which are welded together and to the one-piece end railings and curbs installed at the ends of each tier and along the ramps.

Speedy erection results from the use of prefabricated, stockpiled parts. This applies not only to the structural components but also to the lighting, railings, and curbs, which can be installed as soon as the structural parts are up.

Tierpark is intended for self-parking and, for that reason, the aisles and stalls are of generous width (about 20 feet and 8 feet, 8 inches net, respectively) and the ramps have a pitch of only 12.5 per cent. For single tier structures, the minimum recommended dimensions are 60 by 147.

continued on page 64
one of 24 models in the quality line

- Serves hot water for instant coffee, etc.
- Serves refreshing Temprite-cooled water.
- Cold storage compartment, 1 cubic foot.
- Two large ice cube trays.
- Temprite quality construction throughout.

Consult Yellow Pages under "WATER COOLERS"

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Send me details on Model PCH.

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BIG PREFABS

Last year Stran-Steel Corp. commissioned Industrial Designer Harley Earl to study its well-known "pre-engineered" steel buildings and to recommend design changes which would upgrade their appearance. His suggestions have been incorporated in new building fronts, new colors, and new architectural details, all aimed at making sheet-metal buildings better looking while retaining mass-production economy.

Stran-Steel offers four packaged fronts to fit its standard 100-foot-wide stores, supermarkets, restaurants, bowling alleys, and factories (sketches below). The first package, style I, contains ribbed sheets used alternately with porcelain-enamel panels, and produces a solid wall to the right of the entrance, suitable for a sign. Style II, turned so that the side becomes the front, has five bays formed by enamel panels and ribbed sheets. The entrance and sign, shown here in the middle bay, could be fitted into one of the other bays. Designed for automobile showrooms, furniture stores, or other businesses that need a lot of window-display space, Style III has a glassy front divided by a porcelain-enamel band to carry the store's name. Style IV, mostly glass and enamel panels, has a recessed entrance and could be a warehouse or factory front, with an office section to the right. Costs for these buildings run about $2.25 to $2.40 per square foot of floor area, based on a 100 by 100 foot building. This price does not include erection costs.

When he came to the standard ribbed rolling service doors

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Walter Balfour & Co. Inc.
Brooklyn 22, N. Y.
steel buildings, Earl revised and simplified their details in two respects. Flashings were redesigned to eliminate overhangs and make square, clean corners and to cast shadows on the building walls. The redesigned window is stamped from sheet metal in two styles, one-light and two-vent, and its ribs continue those on the wall sheet. Glass is zipped in with extruded neoprene gaskets similar to those used by the automobile industry for installing windshields.

The new color line, applied to Stran-Steel's architectural panels as well as the pre-engineered buildings, includes blue and green, previously the most popular colors Stran-Steel offered, two grays, white, and two accent colors: yellow and orange.

Manufacturer: Stran-Steel Corp., Division of National Steel Corp., Detroit 29.

SHELL COAT

Addez Roof Shield Specifications are waterproofing compounds developed specifically for thin-shell concrete roofs. Since concrete-shell roofs are quite watertight in themselves, the primary consideration is not to prevent leaks but rather to prevent moisture absorption, which can cause spalling. Then, too, shells are prone to develop hairline cracks as the concrete sets, and these exert minor stresses which crack the waterproofing if it is not reinforced. Another hazard is the latent moisture in the concrete, which tends to blister the coating unless there is a "breathing" allowance to let moisture escape; the asphalt emulsion in these compounds is vapor-permeable. The new compounds are formulated to meet these requirements and to eliminate the need for protective edgings around the shells.

They are applied directly over the concrete by brush, spray, or roller—first, two coats of asphalt emulsion, the primer coat thinned with 30 per cent water; then the reinforcing, of heavy-duty glass-fiber mesh; and, last, another asphalt coating.

The new Dor-O-Matic Hydra-Cushion concealed-in-floor door control gives maximum protection to doors and frames. Stops and overhead holders which cause damaging shock when doors are banged open are unnecessary! Now doors are gently cushioned to a stop by an adjustable hydraulic action as they approach open position. No need for expensive, heavy-duty anchor or pivot reinforced hinges because the Dor-O-Matic Hydra-Cushion eliminates the damaging stresses transferred to hinges and door frames when doors are brought to a smashing halt. Positive built-in back stop . . . and built-in hold open . . . eliminate door or floor applied stop devices.

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Chemical agents added to the asphalt adhere to the reinforcing fibers and bond it to either damp or dry concrete. Collectively, these coatings are called Addex Specification TS-1. If desired, a white reflecting finish, Addex Color-Shield, may be added as the final coat, and this combination is called Addex Specification TS-2. The total cured weight, without reflective topping, is about 0.55 pounds per square foot. The cost is about 25 to 35 cents per square foot for TS-1, and TS-2 would run about 20 cents per square foot more. Both coatings are guaranteed for ten years.

Manufacturer: Addex Research, P. O. Box 3057, Cleveland 17.

OUTDOOR FLOODLIGHT
Called Lumitor, this floodlight holds a quartz-iodine lamp, the pencil-slim tube General Electric introduced last year, which spreads an intense horizontal beam 100 degrees and a vertical beam 8 degrees. A few of these at the base of a tall building will wash the facade in an even glow or, mounted in other ways, light stadiums, runways, and signs.

Available in two sizes, 500 and 1,500 watts, the fixtures have cast-aluminum bodies, finned for heat dissipation, and lenses of 3/4-inch tempered glass. Built-in devices aim the beam and level it. The 500-watt model operates on 120 volts, has an output of 10,500 lumens, and costs $56; the larger light operates on 277 volts, 33,000 lumens, and costs $72.

Manufacturer: Wide-Lite Corp., P. O. Box 191, Houston.

JET TORCH
This hand-operated torch, called Oxweld FSJ-6, is a small version of the afterburner flame of a jet engine, designed to shape, cut, and texture granite. An oxygen-kerosene mixture, burned in a water-cooled chamber near the nozzle, produces a thin, short flame with temperatures as high as 5550 degrees F. When the torch passes over a granite surface, the combined heat and velocity (7,000 feet per second) cause a thin layer of granite to crumble off along the natural cleavage lines of the quartz and feldspar crystals. Weathering tests confirm the manufacturer's claim that "thermal texturing" does not impair the granite's natural
hardness, for samples subjected to the equivalent of 4½ years of wind and rain showed no spalling, fracture, or appreciable weight loss. Because the torch exerts no "bearing down" force, it can be used safely on slabs only %4-inch thick, such as those which might be used for veneering purposes.

One of the first jobs done with the torch was narrowing the structural piers of the Queensborough Bridge in New York City to make way for seven instead of five lanes of traffic on the lower deck. According to the contractor, a section 15 feet high and a foot deep was cut away in half the time it would have taken five men using ordinary mechanical tools. The photograph above shows the stone being removed and the clean surface exposed.

The torch weighs a little over 7 pounds and is 37 inches long. It sells for a basic price of $906, plus a royalty to Linde for the fuel consumed.

Manufacturer: Linde Co., Division of Union Carbide Corp., 270 Park Ave., New York 17.

BRIEFS

Du Pont's Elastomers Laboratory has developed a "fothing" method of producing even-textured urethane foam. The secret is to pre-expand the foam before the start of the chemical reactions which cause it to gel. In the mold, the foam further expands, possibly as much as six times its original volume, but much less than in conventional manufacturing techniques, in which the expansion is 30 to 40 times. This new technique promises better-quality foams, thinner sections, and lower molding costs. Du Pont expects the process to encourage the use of rigid foams in wall panels, refrigeration units, and insulated transportation equipment.

Shiny fibers of aluminum oxide, an extremely hard, heat-resistant material, are to be used to reinforce plastic nose cones for rockets and might some day serve the building industry. These fibers, developed by Horizons, Inc., a Cleveland research firm, approach the physical qualities of the hardest known substances, and they withstand a pull of 3 million pounds per square inch. Added to steel as reinforcing, they could double its strength. The first licensee is the Minerals & Chemicals Corp. of America.
Gilbert School is evidence of many special values to be obtained with Hope's Multi-Story curtain wall construction. The window wall units are Hope's rolled steel sections No. 2030, creating a vertical system that fully spans the three floors of the main structure with continuous tubular mullions. Assembled in the units are the insulated panels, the large lights of fixed glass and the ventilators (Hope's Heavy Intermediate).

See Hope's Window Wall Catalog for detailed drawings illustrating the extreme flexibility of these systems. The architect enjoys complete freedom in layout. Doors, windows or louvers may be located at any point. Window walls may be installed either between the building columns or completely covering them. The use of Hope's Window Walls increases usable interior space. Ask for Catalog No. 152.
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The two party platforms in this election year—by consensus the most thoughtful, widely contested, and biggest attention-getters in many a year—exhibit a startling agreement on national goals in everything from foreign policy to civil rights to atomic testing to urban affairs. Cynically, this might be attributed to the political propensity to come out strongly against sin and squarely for mother, flag, and country. But even in their negative tribute to virtue, the platforms affirm the national concern, as against a narrowly local one, for such pressing problems as urban development. Indeed, on all issues affecting the building of America, the parties are in fair and hopeful agreement.

The Democratic platform pledges an expanded economy, lower interest rates, and special mortgage assistance to raise home building to more than 2 million units a year (1959 total: 1.5 million new homes) and to support a substantial low-rent public-housing program. It pledges to expand federal aid to communities for slum clearance, redevelopment, planning, school building and teaching salaries, commuter transportation, health and hospital facilities, sewage disposal, air and water pollution, and expanded park systems. And it pledges a coordinated national transportation policy and a new department of cabinet rank for urban and metropolitan problems.

The Republican platform pledges vigorous support of measures to assist the flow of mortgage credit into private housing, plus research programs to reduce housing costs and to develop special housing for the aged. It pledges continued effort to help clear slums, promote urban renewal and planning, provide aid for school construction and college housing, coordinate mass transportation, help build medical schools, public health and nursing facilities, and fight water and air pollution—"all designed to supplement and not supplant private initiative."

Where the platforms differ profoundly, of course, is in the means to these ends. The Democrats propose to finance their vastly expanded program by raising taxes if necessary, but with major reliance on closing tax loopholes and on doubling the present rate of national economic growth, by means not yet visible, to a magic 5 per cent annually—probably the most contentious point between the parties. The theory is, as developed by Economist John Kenneth Galbraith and others, that there is a big lag in investment in the public sector—"private opulence amid public squalor"—and that to meet the needs of an expanding population at home and critical commitments abroad a vastly greater growth rate and public investment are needed. The Republicans, too, pledge policies toward an increase in growth rate, by means even less visible at the moment, but with no fixed percentage as a goal, and with general reliance on so-called natural economic
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Editorial continued

forces. The theory is expressed in the platform's conclusion: "We limit our proposals and our pledges to those areas for which the government of a great republic can reasonably be made responsible."

In the area of urban renewal, therefore, the impression is that the Democrats would do more, the Republicans somewhat less in the way of promises. The figure most bandied about by Democrats at Los Angeles was some $600 million annually for urban renewal, with the total construction program calling for immensely more than that. The Republicans at Chicago breathed no specific figures, and are not likely to, but general attitudes indicated that nothing greatly above the magic 1954 budget, largely stable now for half a decade, would be countenanced. It is between these basic attitudes that the citizen must make a choice, and it is a difficult and portentous one. But either way the needs of a growing urban society will be met in some measure.

Continuity

Readers will be pleased to know that the cause of urban continuity and harmony (for which FORUM has fought many a battle) has just received an impressive boost at 8100 Sunset Boulevard, Los Angeles, Calif. On this site, the Lytton Savings Bank is about to complete its handsome, new home. As the picture (above) shows, the new bank will have a folded, zigzag roof of concrete. And as the picture also shows, a Los Angeles entrepreneur has beaten Lytton Savings to the draw: right next door to it, at 8200 Sunset Boulevard, he has constructed what must be America's most lavish hot-dog stand (aptly named The Plush Pup) and topped it off with a folded, zigzag roof of plywood.

While The Plush Pup leaves some problems of scale-relationship (and so forth) unresolved, the spirit behind the effort is to be applauded. But, one minor suggestion may be in order: to balance the stately composition, perhaps Lytton Savings should acquire the site on the left and erect thereon a handsome, zigzag-roofed ice cream parlor, similar in design to The Plush Pup. Suggested name: The Classy Cone. P.S.: The architects for Lytton Savings are Hagman & Meyer; the man who beat them to the draw is Architect Dan Dworsky.
Moving stairs connect street with lobby.

Carbide unwrapped

New York's latest high-style skyscraper, the 53-story Union Carbide Building, was getting its final touches on Park Avenue last month. Workmen polished the glittering stainless-steel mullions, and stripped the last protective skins from the spandrels of stunning black steel. Carbide employees moved into their big, luminous-ceiling offices, and passers-by wandered appreciatively across broad sidewalks of pink terrazzo and short-cut through deep colonnades on all sides. To keep elevator pits out of Grand Central Station's trackage below, Architects Skidmore, Owings & Merrill had lifted the lobby to the second floor, where moving stairs emerged into the grandest new public room in town. On completion, Forum will report in detail this vast circulation-exhibit space, along with Carbide's other contributions to office-building design.

Deep colonnade extends the sidewalk into the building.
Park Avenue façade is generously set back from the building line. Grand Central tower is at the left (background).
Harvard's course in continuity

By Richard A. Miller
A thoughtful meld of structures, spaces, connections, and paths, the new building at America's oldest university holds a lesson for every growing campus and worn-out city.

When Dean José Luis Sert was asked to describe the objectives in planning Harvard's vast building program, he said: "A university is a cultural center within a city, and it should set an example of good planning and good design. It is, in a way, a micro-city, and its urbanity is the expression of a better, more civilized way of life."

Indeed, the physical Harvard has, over the years, obtained that all-too-rare civic quality: a sequence of diverse buildings forming clearly defined open spaces connected to each other like beads on a string. Woven through these spaces is a coherent system of pedestrian paths. Now, these buildings, spaces, and paths are being extended by planning in a way instructive for any campus—or for any city.

Like many of its younger sisters, Harvard ended its last great period of construction with the depression. With the exception of the Graduate Center, buildings built during the depression and early postwar years merely filled chinks in a development pattern already well-defined. But with the success of the $82.5-million Program for Harvard College—the first of the great college fund drives—and the development of similar expansions in the graduate schools which surround the college, Harvard in the fifties faced the prospect of adding major new elements to a physical plant built, mellowed, and beloved through more than three centuries past.

The most fervent admirers of that Harvard, of course, were alumni. Facing them in Pittsburgh in 1958, President Nathan Marsh Pusey said: "Harvard has grown in a wonderful harmony of scale in buildings and open space which changes from generation to generation—but never violently. This harmony we want to keep. But the physical Harvard is only the surface aspect of what concerns us. The physical Harvard must renew itself because the inner intellectual and spiritual Harvard is growing and changing all the time, and it has to find a new form, and do it, today, within the complexities of the great urban area in which we live."

To help find this new form, Harvard established, for the first time in its history, a university planning office with its own professional staff and with a coordinator responsible to the administrative vice president. Since 1956, Sert, who is dean of the Graduate School of Design, has acted as consultant to this office, and with his guidance the painstaking job of collecting information on the physical university was then begun. Now assembled in a single large volume, the information gave Harvard, virtually for the first time, a summary picture of itself and its setting. Including the graduate schools in Cambridge and across the Charles River in Brighton (but excluding the medical school several miles away in Boston and adjacent Radcliffe, the women's college) the entire institution, with an enrollment of 11,819, occupies 275 acres. In this area 3.2 million square feet of academic space and 2.6 million square feet of residence space are already built. With the addition of administrative or non-university uses, Harvard is therefore already the proprietor of better than 6.4 million square feet of space.
The fundamental planning problem facing Harvard was to schedule, locate, plan, and build nearly 2 million additional square feet of floor space at an estimated cost of $59.3 million. A second problem, perhaps more difficult logistically, was to remodel some 389 thousand square feet of existing space at an estimated cost of $3.9 million.

The planners early saw that Harvard had only a few choices for the directions of expansion. The university found itself in the built-up center of the Boston metropolitan area. Land is scarce, and the supply of expansion land, acquired piece by piece over the years, is running out. A long-pending urban renewal project on one side of Harvard and purchase of a subway car yard on the other would ease the land problem, but even if both develop, Harvard might be land-shy.

To Serf's mind, there are three alternatives to land acquisition for building expansion: to build more compactly on land Harvard now has, to grow in height, and to make better use of existing buildings. All three have already been done. Buildings like the Harvard-Yenching Institute, the Harvard University Herbarium, and the James Bryant Conant Chemistry Labs, have been sandwiched into sites which might normally be considered too small for buildings. The two new residence buildings, Quincy House and the Leverett House Towers, at eight and 12 stories in height, are taller than anything else in the university save the spires. Further, Freshman dormitories and the Language Center in Boylston Hall (FORUM, Aug. '60) were reshaped from buildings ranging to 250 years old.

These early projects have been more or less successful. In any event, new construction is not yet prominent enough to threaten the total ambience of the traditional Harvard. But the future depends very largely on the success that architects who are now at work will have in interpreting the traditional Harvard to new needs.

Some 12 separate architects or firms are currently involved in Harvard commissions, the two newest being LeCorbusier, planning the $1.5 million Visual Arts Center, which will be built next to the Fogg Museum, and Minoru Yamasaki & Associates, working on a $1.5 million Behavioral Sciences Building and a $900,000 Engineering Sciences Building.
and some without

Harvard's immense variety of buildings includes some examples of how not to do it as well. For example, the cluttered architecture of the Cambridge Electronic Accelerator Laboratory (12), built in stages over the last several years by M.I.T. and Harvard with the Atomic Energy Commission, leaves an edge of the university thoroughly disorganized. Likewise, the picture-windowed Georgian pile of Kresge Hall (15), the Commons Building for the Business School, is clearly inappropriate. Again, the James Bryant Conant Laboratories (14) establish a nearly total discontinuity to the adjacent Malinckrodt group, despite routine repetition of the brick and stone trim. Architects: Charles T. Main, Inc. (12), Perry, Shaw & Hepburn (15), Voorhees Walter Smith Smith & Haines (14).
For these architects, Consultant Sert has set down some guide lines for the solution of their individual problems:

"A good physical environment should provide a balance between open landsca ped spaces and built-up areas. It should provide a dignified, well-scaled architecture that is an expression of our times but which still can live side by side with buildings of the past. . . . It should use good materials, old and new, without prejudice. It should be dignified, serene, and harmonious."

Sert’s prescription, difficult as it may seem in today’s complex times, nevertheless is pretty much a description of the traditional Harvard, which achieved its present state by planning and design—but also by accident and attrition. Harvard, indeed, has nearly always built true to its present. Beginning with red-brick Massachusetts Hall, the vernacular Georgian building which is the oldest in the Yard (1), and ranging through the white granite University Hall by Bulfinch (2), the sturdy Romanesque of H H. Richardson’s Sever and Austin (3), and even—in a sense—the grand eclectic mood of the houses along the river (4), Harvard has always built in the best contemporary mood. Thus, when, in the forties and fifties, it came time for the Graduate Center (5) and a run of mildly contemporary buildings (6, 7), Harvard accepted them easily.

This graceful acceptance was not so much a matter of matching materials (although the dark red Harvard brick has been a useful linkage) as it was a matter of basically sound construction, good materials, well-detailed shadow lines, textured surfaces—and, of course, ivy and New England weather to help things along. Indeed, even congruent scale seems to have been less a matter of the size of building than a matter of the size of building elements, and the hierarchical organization of forms. Thus, such new structures as the Business School’s Kresge Hall (14) miss the mark while the new eight-story Quincy House (8) fits beautifully into the older pattern.

If the latest building, Architect Hugh Stubbins’ Loeb Theater (9—to be published in full next month), is perhaps particularly modest, two buildings now under construction are the less so. But these buildings: Shepley, Bulfinch, Richardson & Abbott’s already controversial 12-story Leverett
... and connecting links

Bridges, gates, and passages are used to link one open space to another. At the new Quincy House (23), a bridge between the main building and the library separates outdoor space into two courts. The Yard is enclosed from adjacent streets by iron fences with brick gate structures (24). At Lowell House (25), one court opens to another through a passage under a building, and at the new International Legal Studies Building (26) by Shepley, Bulfinch, Richardson & Abbott, a glassy bridge separates one court from another. In a few cases such as the passage and gate at Kirkland House (27), connections to open spaces now being planned are already available.

... and sometimes a break

The traditional pattern is violated at the new James Bryant Conant Laboratories. The link to the older Malinbrød Laboratory group by way of a dull passage also blocks the flow of open space through the area.
towers (10) built on a particularly tight and difficult site, and Sert, Jackson, & Gourley's ten-story Health Center (11), with a complex function and step-stage construction, will be more typical of Harvard's future.

While the new structures clearly depart from the older Harvard buildings, both depend for congruity on the character and scale of open space and the system of paths which relate them to other sections of the university and adjacent Cambridge. And, in fact, it is likely that these two factors are more important to Harvard's character than the design of the buildings themselves. The open space patterns, which planners everywhere have carefully studied, range from the informal and wide-open space between the houses on one side of the river and the Business School on the other (15), to the close and interpenetrating geometry of Yard courts (17). While this varied pattern depends in part on a series of master plans for Harvard starting with a Bulfinch plan of 1814 and continuing through the Coolidge plan of 1922, other influences were as important.

One of these, indeed, was the cow-path pattern of Cambridge. As the university spread beyond the Yard, spaces became more informal, and rigid axial planning, that affliction of so many campuses, became impossible to establish. Thus, walking through Harvard and sections of adjacent Cambridge is a matter of going circuitously from space to space, each space with a different character and focus. Along these routes, classic pedimented structures are seen more generally from the side across an open sward of grass than along an axis; small-scale wooden Colonial houses are seen surrounded by newer and grander masonry buildings (38); and buildings turn the path in the distance (36) or stand on the skyline to help with orientation.

In basic sympathy with this background, the new Health Center may typify the future. Located strategically between the houses and the Yard, it will link, through a sequence of small courts and arcades, these two long separated areas. Thus, an objective sought since building on the river began a half century ago will be fulfilled. But it will be done along the lines of an exceedingly contemporary aesthetic and in fulfillment of today's complex needs.

**Within the spaces:**

**fascinating walks . . .**

The "cow path" street pattern of Cambridge and the policy of laying paths wherever people wanted to walk helped form Harvard's pedestrian paths. These paths web along streets and through courts to shape a fascinating series of walks. Many of the walks are brick-paved, and, where necessary, they are interrupted by the roots of large trees (30). Elsewhere, the paths are comfortable asphalt edged in brick.

Since university property is interspersed with churchyards, commons, commercial squares, and residential streets, walking in Cambridge is a particularly varied and stimulating experience.

. . . from Sever to Leverett

A student walking from H. H. Richardson's Sever Hall in the Yard to the new Leverett House Towers starts from a small quadrangle in the Yard (29), passes through gates to Quincy Street (30), and re-enters the Yard at Lamont Library (31). At the Houghton Rare Books Library (32) he walks downhill to a small passage under a row of freshman dormitories which edge the Yard (33).

Just outside the passage the student crosses busy Massachusetts Avenue (34) to Bow Street (35), and passes an entrance court at Adams House (36). Walking alongside the wall enclosing a garden for the senior tutor of Quincy, he sees the glass and concrete towers of Leverett ahead (37).
Another student walking from Austin Hall to the new Loeb Theater passes between the Hemmenway Gymnasium and nineteenth-century Gannett House (38) to cross Massachusetts Avenue into the Cambridge Common (39). Crossing another street he enters the yard of Christ Church (40). Walking between the church and the burial ground, he arrives at the dead end of Farwell Place (41).

A few hundred feet brings him to Brattle Street, where he turns to walk to the corner (48). Across the street is the brick-paved entrance porch of the theater (45).

The path between Kresge Hall and the older Weeks footbridge across the Charles is apparently blocked by a new structure: actually an unnecessarily confusing and ornate footbridge (44) over Soldiers Field Road built by Boston's Metropolitan District Commission.
Main floor level (seen in plan above) can be approached from all sides by means of winding exterior stairs. The shape of the interior, according to the architects, was determined by acoustic considerations, for the Negro institution boasts an excellent choir. A large space to house the choir and organ was provided behind the pulpit (see also opposite). Light enters the sanctuary in two ways: through long skylights of heat-resistant glass; and through small, colored glass slots cut into some of the exterior wall areas. This colored glass will never be directly visible to a congregation, but will let light filter into the sanctuary by reflection from adjacent walls. The sanctuary will seat 1,200.

Reflected ceiling plan (below) shows the two long skylights cut into the sides of the roof, and the acoustic baffles formed by a hung plaster ceiling. The roof structure will be a hyperbolic paraboloid of open-web steel joints. The effect of the warped and corrugated ceiling surface lined by skylights is suggested in the drawing opposite.

Famed Negro college plans a religious building that reflects faith in the future.

Sanctuary of sculptured concrete

When Tuskegee Institute was founded, in 1881, Booker T. Washington insisted that every new building be constructed by the students and the faculty themselves, and of brick which they were to make under almost incredibly difficult conditions. Years later, Tuskegee had so perfected its brick that it could compete with the finest sold in any market.

This process of sophistication in Tuskegee's building has grown to the point that the institute is now about to put up one of the most remarkable structures proposed for any college in the U.S. or abroad. The new, nondenominational chapel shown here, by Architects Fry & Welch in association with Paul Rudolph, bears almost no obvious relationship to Tuskegee's earlier buildings. But in certain symbolic ways, it should hold an important meaning for the followers of Booker Washington.

Like the earliest buildings at Tuskegee (in which, according to one visitor, you can almost see the sweat pour out of the brick walls), the new chapel will be strong to the point, almost, of brutality—of rough concrete, rather than brick, because the architects felt that the kind of brick available today would bear little resemblance to the handmade brick of earlier days at Tuskegee. Like the institute's first structures, the chapel will be a sanctuary in the original sense of the word—an inviolable asylum, surrounded by ramparts that recall a medieval fortification. And like Tuskegee's first structures, the new chapel will represent a shining achievement to an institute built by the contributions of men and women of very small means but of very great faith.

The chapel is to be the first building in a new master plan developed by Rudolph. It will be located at the center of the campus, accessible from all directions, yet open only to the sky. It will sit embedded in a sloping ridge that runs through the center of the campus, and on which are buried some of those who have served the cause for which Tuskegee stands—among them Booker T. Washington and George W. Carver. It will be connected to other elements of the campus by covered walkways, and it will face, across a wide lawn, a tall campanile (also of concrete) that will be the focus of the campus when it is completed.

To most architects, the influence upon this building of Le Corbusier's chapel at Ronchamp is self-evident, and Rudolph frankly admits its debt to Le Corbusier's building. "The important thing about Ronchamp is that it speaks to many kinds of people, as a chapel should," Rudolph says. "We hope that our chapel will be equally eloquent."
East-west section through the chapel explains the relationship of various interior levels to existing grades on the site. The tall element at the left end of the building is a meditation chapel lit from above and through slots of colored glass. The tall element at the right is a concrete wall perforated with roughly triangular openings that will hold church bells of different sizes.

Intensely sculptural character of the chapel is suggested by the south elevation (above). This character is due, in part, to the requirements of acoustics, and in part to the architects' determination to make this focal building distinctly different from the rest of the campus. Massive piers will support the sanctuary block; below it there will be a lounge and other communal facilities.

ARCHITECTS: Fry & Welch (working drawings).
ASSOCIATE ARCHITECT: Paul Rudolph (design).
ACOUSTICAL CONSULTANTS: Bolt, Beranek & Newman.
STRUCTURAL ENGINEER: Dr. Walter T. Daniels.
MECHANICAL ENGINEERS: Counts, Lawrence & Wheeler.
LOCATION: Tuskegee Institute, Tuskegee, Ala.

Bird's-eye view from the west shows the downhill end of the chapel surrounded by terraces. The proposed campanile (with open slots for bells) is at the right, and Tuskegee's present, domed student-center building is visible in the distance. Covered walkways 20 feet high will connect major buildings under the new master plan.
New addition, the Jacob M. Kaplan Building on 12th Street, is set back from the New School’s older Alvin Johnson Building (left), which itself made architectural news in 1930 (Architect: Joseph Urban). Below, the new Albert A. List Building on 11th Street completes the “campus” to the south. The ground-floor library faces the street.

Small lounge above the library entrance is one of many places to read or relax.

Campus in a city back yard

Built around a garden in midblock, Manhattan’s New School offers a bright lesson in urban design.

Celebrating its 40th birthday in the forefront of adult education, New York’s New School for Social Research has completed a $2.4 million expansion program that not only fills handsomely its own needs, but also contributes nicely to its city’s growing sense of urban design. Next door to the school’s first permanent home on West 12th Street, Architects Mayer, Whittlesey & Glass have added a new classroom-office building in a vertical modern mode, setting it back slightly to the enhancement of itself, its predecessor, and older Greenwich Village houses on the street (photo left, above). Behind, they have placed a lower companion building facing 11th Street, which also invites visitors with planting and an open glass ground floor (left). Between these two additions they have created the real core of a miniature campus: a delightful, much-used garden court which brings together all three buildings, and some 6,500 students and faculty a year (photo, opposite).

The scheme works strikingly well. The open, set-back buildings make an alluring break along the street: the garden, a new walk-through and gathering place that did not exist before. Like other plans which look to the back and sides as well as to the public front, this one suggests many possibilities for opening up a tight, dominant city grid with secondary patterns of more human scale: pleasant little gardens, malls, alleys, arcades which zigzag through the basic block pattern, providing new meeting and relaxing places, short cuts, variety, and surprise.

For the New School, the idea is particularly appropriate. As an institution devoted solely to teaching adults—most of them college graduates in the professions and business—it must first attract them, mainly after working hours and against the stiff competition of New York’s other lures.

“Adult education here,” says Architect and Board Member Albert Mayer, “is not an adjunct as in some colleges and universities, but the raison d’être. In contrast with standard-sized college classrooms scattered over a large campus, the New School must have a great variety of room sizes and arrangements, all located compactly on a half-acre site. We use the 550-seat auditorium of the older building for guest lectures of broad community interest. We must also have intermediate spaces for large classes, luncheon and dinner meetings and exhibits, regular classrooms seating 20 or 30, seminar rooms for a dozen. The school never knows how many students it is going to have in each of 800 courses a year. They may audit courses by paying single admissions for the first two or three weeks; when enrollments become definite, rooms often have to be rescheduled. This makes a wide range and flexibility of spaces doubly important.

“The crossroads of the school is the garden, which serves as a place for meeting, talking, reading, relaxing. Its intimate size, about 4,000 square feet, epitomizes the close-contact aspects of the school, the vital discussions that take place casually before and after class. Coffee is served in the garden for two hours before the major evening classes begin, and we have tried outdoor concerts of recorded music with fine results. It is this garden, along with the many other lounges, halls, and indoor meeting places, that make the New School not so much a school as an intellectual-artistic-social center for the community.”
The court: a double bridge, carried by welded pipe-trusses, links the two new buildings. Exhibit panels screen neighboring back yards.
Garden is walled off from adjoining yards; a low platform defines sitting areas furnished with seats, planting, and granite sculpture by Isamu Noguchi.
Reading room overlooks the garden to the rear. Across the hall is a smaller room where readers may smoke, or where informal meetings may be held (see plan).

Meeting room on the fourth floor has a metal acoustical ceiling, movable chairs, and a serving pantry. It is used for lectures, art exhibits, and dinner groups.

Lounge leads down from the school's main lobby to the garden court. Across the court is the library, and the lobby through to 11th Street (seen at left).
Modern architecture lacks jazz, and this is cause for sadness. Architecture is the only art so afflicted. Music has drawn a good deal out of jazz—this once-despised popular addiction—and so have painting and sculpture. A leading reason why architecture could profitably look at jazz is that it badly needs relief from its thin flat one-one-one-one rhythm. Too many modern buildings resemble cages. Their uniform pattern, cold and dry except in the hands of masters, is barely tolerated by the public and is a hangover from the early “machine age.” “Modular grids” dividing whole large façades—and floor plans—into exactly equal subdivisions come out of early machine ideas and characterize design today just as the subtle Greek system of modulations once did.

The only thing certain is that people now want to get as far away as they can from machine rhythms, and especially after working hours. Modern architects, too, look for escapes from their own machinery. They have been eyeing Persia and Venice again, and leafing through old classical texts—doing everything that the modern prophets forbade them to do—in scanning the past for devices of “greater interest” to cover the monotony they are producing, though they still ignore the cultural trend of their own times and the folk art of their own people.

Disguise it as architects will, the one-one-one-one rhythm still comes through. It is evidenced in three examples from among hundreds of possible selections.

Each example is out of a different school or “current” of modern architecture. Here is a metal-classic office building by Mies (1); there a prestressed concrete, romantically Gothicized college building by Yamasaki (2); and here a group of arcaded neo-neo-classical “performing arts” auditoriums by Johnson, by Harrison, and by Abramovitz (3). Every one of these buildings goes one-one-one-one, as may be observed, though only Mies is thoroughly comfortable with it. In jazz language, all are “square.”

**Times Square—jazz, low-class**

Times Square might seem like a tough place in which to start a counter-demonstration. Architects despise Times Square. But the people love it: raw, raucous, and shabby though it has become. And the Square has...
The jazzlike scene low-class: Times Square. Improvisations with signs (4) create a varied rhythm while the general arrangement subordinates or obliterates the architectural divisions between buildings (5) and creates an effect as if the whole street were in movement (6) with a momentum like that of jazz. Piet Mondrian, favorite "purist" painter of modern architects, called his last painting "Broadway Boogie-Woogie" (7), showing not only his pleasure in jazz displacements but his appreciation that they ride on an orderly pattern.

points that lift it far above the wild, free, loathsome standard of juke-box or roadside googie architecture.

Times Square is an architecture by signmakers who, having nearly obliterated the existing buildings and thereby put the professional architects out of the joint, have created a vivid effect out of improvisations in two varieties.

One is the nighttime Great White Way, each jeweled lighting display flashing or stepping or gyrating in its own tempo, and all suggesting a hypnotic silent symphony as seen together. The remark has been made by Paul Rudolph, architectural dean at Yale, that this is a new, magical architecture all constructed of lights and, he might have added, lights doing a time-dance.

The other jazzlike effect, visible by daylight, emerges from the catch-as-catch-can improvisation of crowding signs together. These signs stand to one another in anything but a one-to-one relationship (4). The jazzlike improvisation with signs ignores, obliterates, or distracts attention from the architectural dividing lines between the individual buildings on which the signs are strung (5). They consequently create a new irregular rhythm of their own, which seems to set the whole street in motion, like a parade of banners (6), with many a skipped step and displaced emphasis. The outcome illustrates that "jazz rhythms create what can only be called a momentum."

One key factor converting Times Square into visual jazz is that the elements of which it is composed are prevailingly abstract. Here are no Turkish domes and Chinese pagodas and fairy-tale fantasies, all recognizable images in up-to-date electrical rococo, such as fill the famous Tivoli Gardens in Copenhagen (the big exception: the Pepsi-Cola waterfall). Nor is this googie—buildings in random shapes, or symbolizing an ice-cream cone or a brown derby. The total rhythm and effect is so abstractly potent that it dominates all the literal elements, just as a robust jazz tune, according to Leonard Bernstein, can overcome the mood of a song's self-pitying words. G. K. Chesterton remarked that, had he been unable to read, he would have thought Times Square at night a paradise. But the secret, as modern painters soon discovered, is that nobody thinks about what he is reading: "Chevrolet" or "Kleenex" become symbols too banal to engage the mind, while a wonderful fascination grows up for the eye out of the abstract form of words and individual letters. The artists soon started introducing these in their paintings.

There is no doubt about it, Times Square as visual jazz is low-class jazz—jazz suggested rather than accomplished. And there are those who would deny it any value because the collective effect does not represent
a collective effort. Such people miss the point, however. Just as football rules, on a football field, produce a game of football, so the setup on Times Square—a method of covering long street façades with signs in varying dimensions—puts all individual improvisations into the game that everybody follows. That is how jazz works too, as a system (with lots of offshoots). What John Kouwenhoven says about musical jazz is true too of the Times Square basic setup: it points to Emerson’s ideal of a union which is perfect “only when the uniters are isolated.”

**Le Corbusier—jazz, high-class**

But, to get on with it, there already exists a jazz architecture of the high-class and indeed the very highest. Quite naturally it flourishes on the culture of the Mediterranean with the African tom-toms just across the blue water. Among these Mediterranean architects, Le Corbusier is the master.

Quite a lot of Corbu’s architecture is jazzlike because jazz, whether in music or in the other arts, is a way of playing with expectations, for the sake of surprises.

To understand the central nature of the effort it is not essential that one be a jazz expert nor is it essential that every device of the music be translated into an architectural equivalent.

Jazz does appear however to be always twofold. For example, the jazz beat depends on changes in a regular beat. As Bernstein says in his *Joy of Music*: “Syncopation means either the removal of an accent where you expect one, or the placing of an accent where you least expect one. In either case there is an element of surprise.
and shock. The body responds . . . ." It would not do so if the basic beat of the jazz piece were not as regular as a heartbeat. So too with jazz dissonance: it is produced by the "blue" notes of the jazz scale used in the melody, and played against regular scale used in the harmony. And even improvisation, the glory of jazz, though it can reach into the wildest solo extravaganza, works over a known "pop" song, and depends in part on its own version of the "variations on a theme" method of the classical musicians. To describe jazz in architectural terms, one might say that it consists in finding "an order," just as Louis Kahn does, and then say with Bernstein that it "goes to town" with that order, playing around with it. Both the order and the play are integral to the idea.

And, architecturally, that is just how Corbu works. Take as an example a typical elevation and plan and section of his Secretariat at Chandigarh in India (8, 9, 10, 11). Its basic plan and structure are as regular, on a one-one-one-one grid, as New York buildings are. That is, almost. But the elevation shows every sort of Jazz at Harvard: the projected Medical Center by José Luis Sert, a "Corbu" enthusiast, is more restrained than the Secretariat. A more or less "square" early model (13) shows the regular beat in its framing, on which an overlay of surprise beats has been put in the curtain wall of the later version (14). Spacing of the narrow vertical panels is still always equal (see next page).
Playful repeat-and-variation themes run all through Le Corbusier's new La Tourette monastery (15, 16, 17). Where Sert uses narrow vertical panels all spaced alike, Corbu keeps varying the spacing, with jazzlike effect. Whether any comparison with jazz was or was not intended is not the question: it is there, in interior dispositions as well as in façades.

Corbu in turn uses narrow vertical panels as Sert does at Harvard, but more interestingly because of jazzlike improvisation with the unequal spacing. In one degree or another jazzlike elements have entered other work, and usually that which is most classically regular in its basic "architectural order." Louis Kahn, for example, denies all context with jazz in his new University of Pennsylvania medical labs (18), but, regular as his basic tower plan is, he improvises (or adapts) in the disposition of the towers and in variations in the details, such as the chimneylike service stacks. And in Philip Johnson in his Boissenas house (not illustrated) has even put some jazzlike displacements into a scheme basically Palladian, with a vast gain in interest.

The common sense in jazz

From all this talk about playing new games, there may be drawn the notion that jazz in architecture is youthful nonsense. Nothing could be more mistaken, for its prototype, jazz in music, owes its vigorous existence to the fact that it solves problems for people. Jazz is not only more
sensitive, more inventive, and more fun than the one-one-one-one rhythm of the "squares," but it happens to be more responsive to practical needs also. For not only do people need play for getting away from monotony but they find a certain amount of playful invention useful in work, too; and jazz with its surprises can lead to more supple and amenable adjustments on the practical side of architecture. For example, more than once it has happened that two different modular systems refused to jibe, for example where window divisions on one beat might meet partitions on another. Le Corbusier's methods can solve this nicely by varying the window rhythm, without altering the building frame.

Nor need such variations be handmade or "primitive" in their techniques. In FORUM's article on multi-modular systems published last month, there is provided a good sound mathematical base for sudden displacements in architecture, comparable with the sound mathematics that underlie jazz in music. The very diagram which demonstrates the coincidence of three modular systems within a single frame (21) composes, all by itself, into a ringing demonstration of possible variation based on a master beat. Nor is that the end of the matter. For today's machines are no longer the primitive affairs of the early machine age and they respond to far more complicated signal systems. Those varying dimensions and shapes that might be required for constructing a full-fledged jazz-in-architecture system could be produced already, theoretically, on something not much more complicated than an automobile assembly line (see "The machine-made Parthenon," FORUM, Jan. '57). Though the emotion of architectural jazz is strong, glad, sad, and primitive, its techniques need not be rough and undeveloped. Skill with instruments is a big point in jazz.

Modern architecture as a whole still lacks jazz, and this is cause for sadness. Although in the evenings modern architects may dance new and tricky dances or listen to cool jazz on the hi-fi, in their work many seem lost and heedless. They go snooping around looking everywhere but in themselves for new, more vital methods of expression. The jazz they already love might put them on a road that leads well beyond jazz.
An ace in the hole: The biggest, most complex missile job of all is the burying of the Titan ICBM launch facilities beneath 25 to 35 feet of earth and reinforced concrete to make them safe from an H-bomb attack. There will eventually be 18 Titan I installations like the one shown at the left (at Lowry AFB near Denver) at five different bases between the Pacific and the Mississippi. A single Titan complex is 2,000 feet long, about 1,500 feet wide, and consists of three launching sites and attendant facilities connected by a 10-foot-diameter steel tunnels (bottom photo, below). The diagram (left), which follows the configuration of the Lowry site, shows the three missile silos at the top, each 160 feet deep and flanked by one 40-foot-deep silo for launching equipment and another 20-foot-deep silo containing fuel storage tanks. The missile itself is raised through massive 150-ton concrete and steel doors to the surface for firing (photo, above). In the center of the complex are two steel-concrete domes (photo, below), one housing the control center, the other an electric power generator. In the foreground are the two elevated radomes used as part of Titan's guidance system.
What architects and engineers are doing on the ground—and under it—is often as spectacular as the high-flying missiles and satellites themselves.

America’s entry into the space age, which assumed gargantuan proportions after the first Russian Sputnik was launched almost three years ago, has provided the building industry with a great and exciting challenge. Not only have completely new kinds of buildings had to be designed, but they have usually been designed and built under an incredible pressure unknown in private building jobs. Several hundred architect-engineering firms have already become involved in space work. Some architects believe that it was almost never architects in Washington, D.C., who convinced the military that they should design some phase of the great space complex.

The effort to master space takes two basic forms: the military portion, by far the largest, involving completely new design concepts, and the $333-million space-exploration program, headed by the civilian National Aeronautics & Space Administration. Until recently, these programs were largely uncoordinated, tied by little more than the need of the NASA to use military missile-test and research facilities at Cape Canaveral and on the West Coast. Both programs call upon architect-engineering firms to design all facilities except the missiles themselves and some of the support mechanisms (e.g., guidance systems, fueling apparatus) needed to service them. Everything from selecting and planning the site, laying out the total complex of an integrated missile base, and designing all elements of it fall to architect-engineers. As one architect-engineer with experience in missile base work puts it: "We design everything but the missile and the button that sets it off."

Actually, although almost all of the firms that have been most heavily involved in missile or space-exploration work call themselves architect-engineers, the emphasis is heavily on engineering. One firm tries to define the breakdown in work by saying that "our architects are only involved to the extent that the project deals with people—personnel quarters and such facilities. The vast majority of missile installations involves straight engineering work." Yet the fact is that almost all of the firms doing design work in space programs, including firms like Ralph Parsons Co. and Bechtel Corp. which have done a great deal of missile work, use architects for such jobs. And the most successful firm of all in getting missile work, use architects for such jobs. And the most successful firm of all in getting missile work, Daniel, Mann, Johnson & Mendenhall, is an architectural office which has gone heavily into engineering work. Some architects believe that it is almost impossible to devote as much energy to engineering as DMJM does and still have time for creative architecture. Yet, for all its success in getting missile work, DMJM is giving increasing attention to its other work, particularly office buildings, schools, hospitals, and apartments.

Another large architectural firm that has carried a heavy load of space and missile work is Giffels & Rosetti, of Detroit. The firm had basic responsibility for most of the design work for Bomarc B ground-to-air missile sites, including drawing standard plans for the basic Bomarc missile installations. G & R also did conceptual studies for missile launching shelters and for a theoretical "hardened" Bomarc base, which was never built. The firm has also done support facilities and base designs for the Strategic Air Command, and was the principal architect-engineer for the "Mid-Canada Line" early warning system. G & R believes that an architect-engineering firm generally gets the call for such jobs over a straight engineering firm because of better organization, as well as more design capability and management flexibility. On the Bomarc jobs, architects did all the initial planning and direction of the over-all project, the engineers being called in for work on their specific specialties.

The unique problems of Titan

Certainly a great part of DMJM’s success has been due not only to its strong engineering section, headed by President Irvan Mendenhall, but also to what is basically an architectural approach to unique problems. Nothing demonstrated this so clearly as the Air Force’s selection of DMJM to design the prototype and training facilities for the first operational squadron of Titan missiles (see box, page 118). The Titan is a two-stage, liquid-fuel missile weighing 110 tons and standing 98 feet high. Its launching facilities involve completely new design concepts, for, unlike the first bases for the earlier Air Force ICBM, the Atlas, Titan bases were to be completely "hard," that is, able to withstand the better-than-100 pounds per square inch pressures resulting from the near-direct hit of a three-megaton thermonuclear warhead. (Bases for the advanced model of the Atlas missile are now being built hard, and some earlier Atlas installations have been made semihard by building huge steel and concrete "coffins" for the missile to lie in, from which it is raised vertically for firing.) The answer was to put the whole Titan complex underground (photos, page 116), and DMJM had to work out the over-all concept for this underground community in an incredibly short time—the basic ideas for the facility were wanted by April 1958, only three months after DMJM had won the contract. Preliminary working drawings and specifications were to be finished by June, and construction was to begin by July of that year. As DMJM partner in charge of...
How Dimjim got the Titan job

The most exotic and challenging space-age job yet given the building industry is the $540 million task of building at least 42 installations at eight different bases for the Air Force’s No. 1 deterrent weapon, the Titan Intercontinental Ballistic Missile. Following what was probably the most thorough winnowing-down of architectural-engineering firms in military construction history—more than 300 were considered by the selection panel of the Air Force’s Ballistic Missile Division—the initial-contract for design of the prototype Titan installation went to the firm of Daniel, Mann, Johnson & Mendehall of Los Angeles and three associated firms.

“Dimjim,” as DMJM is called by the military, was certainly no stranger to defense construction, having worked on research and development facilities for both the Atlas and Thor missiles. But the factors that impressed the Air Force went far beyond Dimjim’s experience, and provided a revealing clue to the criteria that are considered in awarding an architect-engineering contract for large space-age jobs.

DMJM Partners Kenneth Johnson and Douglas Russell (who has since left the firm) attended a briefing on Titan, along with representatives from 27 other firms, which had been picked from the initial list of 300. The Titan job would be unique and complex, including such factors as designing underground “hard” missile facilities capable of withstanding 100 pounds per square inch of “overpressure” (pressure above sea-level pressure). It would necessarily involve close cooperation with manufacturers of the missile itself, for the design of the Titan missile was not yet final, as well as with contractors and consultants working on fueling systems, propulsion systems, guidance systems, and the launching apparatus. The contract, like most missile facilities design contracts, would be cost plus fixed fee, and the architect-engineer would need enough financial strength to support its own activities for about six months. This last factor alone discouraged some smaller firms, but DMJM felt that it could manage it despite the size of the project.

In the early days of January 1958, DMJM’s partners huddled for three days on almost an around-the-clock basis to develop a team of experts and an approach to the Titan problem. To do this, it formed a joint venture with three other firms: Leo A. Daly, of Omaha (another architect-engineer firm with extensive military design experience), Rust Engineering Co. of Pittsburgh, and Mason & Hanger-Silas Mason Co., Inc. of New York, which had conducted tests for the Atomic Energy Commission in Nevada and had experience in developing underground structures. About 60 key people were selected from the 1,150-man personnel of all four firms to do the Titan job; office space meeting Air Force requirements was optioned, and, finally, the group, called Daniel, Mann, Johnson & Mendehall & Associates, wrote its proposal to the Air Force.

The group that was to get the contract for the prototype Titan installation, to be built at Vandenberg Air Force Base in California, and the first operational squadron, at Lowry Field, near Denver, would have to be prepared to move immediately into action. DMJM was prepared. When the 12-man selection board met late in January, it considered the technical capabilities and the operational organization of each of the firms submitting proposals, and also weighed each firm’s experience in military design. On the latter, DMJM scored high, for it had an incredibly good record, particularly in its ability to get along without extensive change orders on government jobs, a source of irritation to budget-minded military men. The selection panel finally picked three firms, in order of preference. DMJM, which had been ranked first, struck agreement on a contract, then set out the toughest job it ever tackled.
given missile is completed, the Corps of Engineers, which supervises actual construction after the Air Force has accepted all the design work, pretty much duplicates it at the new sites. The basic differences come in adapting the prototype to the sites.

ICBM mobility is being pioneered in development of the Minuteman, a solid-fuel rocket. Because it does not need the elaborate fueling system of Atlas or Titan, Minuteman can be carried on rail cars or trucks, although the latter has not so far proved practicable. Because of the need for mobility and the development of solid-fuel missiles, fixed missile installations will probably not demand as much architect-engineer work in the defense program once the Titan is fully developed.

However, if the future portends less architect-engineer work on fixed bases, it also promises more design work on the elaborate missile-detection system currently in its early stages. Although the Distant Early Warning (DEW) Line is completed, with a string of radar detection stations across the Arctic, the much more sophisticated Ballistic Missile Early Warning System (BMEWS) is only about one-third complete. This system, which will ultimately cost over $1 billion, will provide a detection net against enemy ICBM's. (The DEW line is only effective against conventional aircraft.) The first of three BMEWS stations, which involve more actual buildings and structures than most missile bases (photo, right), is now being completed at Thule, Greenland, and the two others will be at Clear, Alaska, and Yorkshire, England. The Thule station, designed largely by Metcalf & Eddy, had to be built to withstand 185-mile-per-hour winds and -65 degree Fahrenheit temperature, and had to be able to support up to 6 inches of ice, such an accumulation being capable of doubling the weight of the radar surveillance antennas. The whole facility was built on the peculiar Arctic soil, ridden with permafrost which sometimes reaches depths of 1,200 feet.

Probing space

Architect-engineers will also be increasingly called upon in the burgeoning space-exploration programs of the NASA. Three of the biggest projects, the Saturn rocket-powered space vehicle, Mercury man-in-space project, and the tracking program, are already well under way. Burns & Roe, Inc., of New York, which designed all the U.S. stations for the SAGE automatic warning system, is responsible for similar work on Mercury's tracking system. Saturn will be a mammoth rocket, capable of putting 15 tons or better into space (the heaviest Russian space satellite weighed about 5 tons). So far, the most singular achievement in building Saturn support facilities has been the huge, 28-story tower designed by Miami Architect-Engineer Maurice Connell, who has done much of the work at Cape Canaveral, and by Kaiser Steel Corp., which also built the tower.

Also part of NASA's space exploration is the Goddard Space Flight Station at Greenbelt, Md., designed by Voorhees Walker Smith Smith & Haines. The research center includes laboratories as well as central control and range operations facilities for planned space probes.

An old construction hoodoo

One of the most pressing problems in the whole area of press-facilities construction right now is the same problem that has long plagued the construction industry—the jurisdictional squabbles between building trades and industrial workers. Particularly affected are the first four Atlas bases, which the Defense Dept. charged recently were three to six months behind schedule due mostly to disputes between construction trades unions and missile contractors and their respective industrial unions. The dispute centers on the fact that the missile-makers themselves have had general supervision over much of the launching equipment and support facilities, as well as building the bird itself. This has led to the manufacturers' industrial workers doing much work that the building trades consider to be rightly theirs. In an effort to begin to unsnarl the jurisdictional problem, the Labor Dept. is trying to determine which jobs come under the construction trades wage provisions of the Davis-Bacon Act. But until the full weight of the AFL-CIO is put into play, the issue may drag on. Last...
Dining-living space flows freely under the sheltering tree-like structure growing out of the central fireplace trunk.
Artistry in redwood

This wood house midway down a slope in Marin County, Calif, is the work of a reserved architect, Jack Hillmer, whose 20 years of practice have produced few buildings but very expressive ones. In his hands even a small commission becomes significant architecturally.

Designed for a bachelor, the house is built on a triangular grid which shows in the prominent roof beams, six of which radiate from the chimney as from a tree trunk. There are no full-height partitions to cut up the interior space or to distract the eye from the roof’s structure and sheltering sweep, nor are the exterior walls allowed to interrupt the view of this powerful roof. The upper part of these walls is glass, letting the roof edge all the way around be seen like a great canopy. Even the beam ends, beyond the walls, are turned into equilateral triangles (photo, page 122) to fit into the basic pattern and, incidentally, to prevent the common trouble of twisting.

The second strongest element of the architectural concept is the lapped board railing of the bedroom balcony. It extends into the living-dining area, and out again, interrupted only by glass, visually tying together the inside and outside spaces. By day this railing seems stronger than the triangular pattern of the beams; by night the reverse is true.

The rest of the house is designed with complementary care. The detailing of the wood partitions and window walls, all redwood, is meticulous. Panels of glass are sometimes butted against each other in precise joints without mullions. What the house expresses architecturally, above all, is very rare in modern architecture—the kind of quiet, continuous character which binds together both large and small effects, keeping any single idea, even the fascinating ceiling, from taking over. (The coloration, mostly natural wood, helps in this, too.) It is a house full of small visual discoveries planned in long, painstaking hours over a drafting board; even the light pushbuttons are set in neat clusters into the woodwork and are color-coded, replacing the usual switches and plastic cover plates.
Huge steel-supported cantilever carries the bedroom balcony and frees the carport of structural obstacles. Main entry is at left.

Concrete fireplace is the focus of the living-dining area.

Beam ends are mitered twice to form triangles.

Bedroom mezzanine overlooks the living space—and the hillside beyond.
Dining area, like all other rooms in the house, borrows the ceiling of adjacent rooms to increase the feeling of spaciousness.
Convertible bank

Businessmen who build in fast-growing suburbs, only to outgrow their quarters in a year or two, might take a tip from the new $52,000 Gulf Coast National Bank in Almeda, Tex., just south of Houston. Behind a parking lot expansible to twice its present size, the bank's trim, Miesian portico of white-painted steel shades interiors from hot sun on the south, and encloses pleasant planting areas of boxwood and low ivy. As business increases, the front wall of glass and aluminum sash can simply be moved forward to this portico line, and the exposed grade beams that separate the plant beds can be covered with flooring, adding another 1,000 square feet to the 3,000 square foot interior. Should the bank decide to move to still larger quarters or another location, the interior is designed with a clear-span roof and no inside bearing walls, so that it can be sold and used with a minimum of changes as a small office building, showroom, or store. The central bay comprising the sheltered entrance and main banking floor is paved in durable glazed brick; the adjacent officers' "platform" is set off simply by a carpet and colored panels above desks (below). Architect: Kenneth E. Bentsen. Engineers: Walter Moore (structural), Raymond Jenkins (mechanical). Interiors: Evans-Walsh. Contractor: Spaw-Glass, Inc.
Golfers arriving at Spokane County, Washington's new Liberty Lake public course, are greeted by this playfully swooping clubhouse, whose roof looks to the shape of nearby hills, and whose walls are roughly textured with stones gathered during construction of the course itself. Under an 8-foot overhang, the main entrance (right) is set off by a big, bonelike structure from which is cantilevered a curved, steel-trussed balcony finished in white stucco. This balcony adjoins an upstairs meeting room for community groups; in the back, a similar balcony gives the caretaker's apartment a view of the entire course. On the ground floor, locker and service rooms are lined up toward the entrance road; a pro shop, gallery lounge, and a restaurant with lunch counter and tables enjoy the greenery and view to the rear. Cost, including year-round air conditioning, was a modest $88,500, about $15 a square foot. Architect: Warren Cummings Heylman. Engineers: John P. Esvelt (structural), Joseph M. Doyle (electrical). Landscape architect: Robert Woerner. General contractor: Northwestern Construction, Inc.
Under a vaulted roof, the recreation building opens out to an entrance porch along the front.

Three-in-one

A far cry from the polite and porticoes of old-time city halls, this new municipal center for Cleveland's fast-growing Brook Park Village (population: 7,000) reflects a fresh approach to modern community life. It is designed to serve citizen activities as well as city business. Set back some 200 feet from the road, the building's scalloped roofs of thin-shell-concrete barrel vaults add lively focus to a flat, treeless site. To the right of a covered entrance court, these vaults rise above clerestory windows which light a public lobby and meeting hall. This hall, in turn, is flanked on one side by an administrative wing with up-to-date offices, on the other by a complete police department with its own two-cell jail.
Canopied walk with benches connects the center’s buildings.

Mayor’s office is typical of the handsome, simple interiors.

Service side suffers slightly from an exuberance of fixtures.

town hall

(see plan). Both wings can be expanded by knocking out the end brick walls.

On the opposite side of the entrance court, separated so it can function independently from morning until late evening, is a 42 by 70 foot community recreation hall equipped with its own utilities, kitchen, and stage, and its own covered entrance-exit porch along the front (photos left). This vaulted hall serves organization meetings, adult dances, teen-agers’ “canteens”; four smaller rooms along the rear accommodate club groups. Cost of the center, including sitework and furnishings, came to $438,000. Architects and engineers: Dalton & Dalton. General contractors: Schirmer-Peterson Co.
Shingled shrine

On the banks of the Wabash in New Harmony, Ind., Architect Philip Johnson has completed an arresting memorial to the Rappites who founded the town as a utopian religious community a century and a half ago. At the end of a 130 by 230 foot walled-temple garden, planted with myrtle, hackberry, and golden rain trees, rises a bell-shaped, gently undulating parabolic dome of laminated pine arches 50 feet high, covered with rough cedar shakes. To some it recalls a Hindu stupa or a Scandinavian bell tower, to others the soft, sheltering lines of the grand old American shingle style itself. Under the shingles, which are backed by a plastic vapor barrier and plywood sheathing, the arches curve upward from massive elliptical piers of limestone to a steel ring 16 feet across, at the center of which is an oculus 4 feet in diameter. The top of the dome is plastered white, dramatically reflecting light from spots buried in the flowers around a bronze “Virgin” by Sculptor Jacques Lipchitz (right). The shrine, part of a general cultural renaissance planned for New Harmony, was built by descendants of the original settlers with $300,000 from the Robert Lee Blaffer Trust. Structural engineers: Wilcox & Erickson. Lighting consultant: Richard Kelley. General contractor: Traylor Brothers.
In the business of selling suburbia, architecture and industrial design can both play starring roles, though they sometimes tread on each other's toes as well. Lord & Taylor's new Chevy Chase branch department store outside Washington, D.C., for example, is simple, straightforward, and unimpeachably white (above). At its recessed main entrance, however, Industrial Designer Raymond Loewy has placed a slick package of pseudo-Palladian arches, coffered wall plaques, and flapping arena flags, which are only remotely related to the building's function, structure, or locale (architects: Fordyce & Hamby; contractor: Hegeman Harris Co.).

Two stores, two approaches

At the opposite end of the country, and the retail scale, a new Market Basket store outside Renton, Wash. encloses the more mundane functions of food-buying in a festive architectural frame (below). Its light steel structure is set off simply by tilt-up concrete panels faced with common brick cavity walls, and with glass set handsomely in standard aluminum sash. Curved door canopies, projecting light globes, and colored awnings for hot summer days are the only other decorations, and each one serves a useful purpose. Cost: a low $9.30 per square foot. Architects: Johnston, Campanella & Associates; contractor: Baugh Construction Co.
Indianapolis

Backed only by local money, Indianapolis is running its own renewal race. Question: Can the tortoise sprint for the finish?

Before an early-morning session of the Indiana State Senate’s Committee on the City of Indianapolis, an independent Hoosier spoke up vigorously last year against a bill that would have permitted the use of federal funds in the redevelopment of Indianapolis. Paul McCord (64), long-time chairman of the city’s Redevelopment Commission, was pounding away on a favorite theme. “If we use federal funds in our redevelopment work, it will go slower, not faster,” he emphasized. “When you take that kind of money, everything, even sometimes the selection of appraisers, has to wait on Washington. Indianapolis has cleared sites and built buildings while other cities have been stalled in red tape. We’ve seen what has to be done, and we’ve done it.”

The committee, impressed, unani-
goes it alone

mously recommended the defeat of a House-approved federal aid bill. The Senate obediently killed the bill. Indianapolis was then free, and determined to show how much could be done by a city on its own with no federal participation. There is no question that Paul McCord's Indianapolis, a wheel-shaped capital city of giant construction sites and even bigger plans, has stepped forward energetically; but its results, far from being marked by lightning speed, have been characterized by being gradual and steady.

This record has been chalked up:

Item: Indianapolis started early. Its leading architects were talking redevelopment even during the war; and although Harold Ickes' public-housing development of 1936 was the last federal activity Indianapolis allowed, it helped set a precedent for the city in revitalizing its downtown, and the Redevelopment Commission was founded in 1945.

Item: 340 acres have been acquired and cleared since then, with an expenditure of $7.2 million in local public money. This rate of $21,000-plus per acre contrasts strikingly with the $230,000 per acre, mostly federal money, spent in New Haven to clear $230,000 per acre, mostly federal money, spent in New Haven to clear 158 acres. The difference is that Indianapolis was working steadily, and mostly in areas of scanty occupancy.

Item: 338 building lots have been sold by the Redevelopment Commission to a nonprofit home-building agency, Plaza House Homes, which allows buyers, mostly Negroes, to build up equity by means of a self-help work program. A total of 240 private homes have been financed thereby. This once again illustrates slow, steady progress—77 family units per year for the past three years in a city of 500,000 people.

Item: An extraordinary tax (10 cents per $100 of property valuation, later reduced to 5 cents) was levied to meet the expenses of the Redevelopment Commission in 1945. The tax has brought in to date a total of $3.3 million. In 1957 the Commission was given the power, rare in U.S. renewal work, to issue bonds.

Item: A metropolitan planning agency, coordinating zoning and other growth requirements for 24 incorporated cities, towns, and unincorporated communities within the Indianapolis area, has been operating since 1955. It has assisted development work on its own budget by charting the growth of slums and suggesting new land uses.

Item: The lobbying necessary to get legislation for both the Planning Dept. and the Redevelopment Commission through the rural-controlled state government has been managed by the forward-looking Indianapolis Chamber of Commerce.

Item: An estimated $8 million has been put up on redevelopment sites since 1945 ($6 million in the last three years). Now under way is another $100 million of buildings sparked by the city's efforts to renew itself.

More the money

Varied and impressive as these accomplishments may be, they are not in themselves proofs of McCord's antifederal-funds argument. In those few U.S. cities where successful renewal programs are being carried out, money alone, from whatever source, has not been the driving force that has made it run. That springs rather than the creative use of various tensions within the living city. And a question more to the point than how does Indianapolis do it without federal funds is where do its leaders get the tensioned energy to overcome urban inertia?

One element of tension in Indianapolis is the Metropolitan Planning Dept. and its director, Planner Calvin S. Hamilton. Hamilton, young (35), design-conscious, impatient, believes strongly that the Senate Committee reached the wrong decision when it disallowed federal funds. As an objective outsider, Hamilton is less impressed by the city's clearance program than others. He feels that blight is being arrested in the city center, where it has been an eye-sore to shoppers and office workers, but that it is growing apace beyond the city limits. He is concerned that the city's problems are sprouting faster than its solutions.

Yet Hamilton is tolerated, even admired, by the most conservative elements in Indianapolis because of what he has done. Since he came to the city six years ago, he has set up a well-balanced planning team of experts who have been able to make planning and zoning stick where applied; he has drafted a master plan and comprehensive zoning ordinance for the entire metropolitan area that will be formally adopted in December; and by creative suggestions rather than legalized negatives he has been able to convince the overlapping agencies that make up any modern metropolis to coordinate their thinking. For example, his department's work in laying out an integrated $800 million capital improvements program (and getting it approved by the City Council) is now generally recognized as one of the most important planning contributions in Indianapolis since the city first came off the drafting boards. And a surprising 40 per cent of his design plan for the central business district has already been adopted.

In these efforts Hamilton has had several factors working for him. Among them were: first, the geographical happenstance that Indianapolis is neatly situated in the center of Marion County (so most of the problems of metropolitan sprawl could be encompassed within the boundaries of one county); and second, the legal conception that his agency should float independently between city and county governments (thus allowing him a greater freedom from both than most metropolitan planners enjoy). But floating free of power politics is not the way to get things done in Indianapolis, Hamilton discovered. "Let's face it," he says, "urban redevelopment involves politics and politicians. No one can expect to get his ideas across without getting deeply involved in political maneuverings, pressures, and accom-
A combined transportation center is one of the more impressive proposals of the Metropolitan Planning Dept. It is to be built above and around a reconstructed version of the existing Union Station. The complex would combine facilities for bus, train, and helicopter services.

Another tension element in the Indianapolis power structure is the Civic Progress Assn., a confederation of large-caliber downtown businessmen who, with the Chamber of Commerce, have an obvious stake in keeping the city healthy. The CPA's 70-odd members command some $150 million worth of downtown real estate. Their president is Frank McKinney, a former Democratic national chairman and board chairman of the largest bank in Indiana. Their executive director is Jack Harris, a one-time all-American halfback who went from the Green Bay Packers to a 30-year career in public transportation, thence to the CPA.

Among the CPA's accomplishments great and small since 1957 are these:

- An Urban Land Institute survey which made it clear that something had to be done to stimulate downtown growth was financed by the CPA; also a Real Estate Research Corp. study of the city's hotel capacities.
- Improvement of off-street downtown parking—whereas there were 14,034 spaces in 1954, there are now, thanks to CPA efforts, 35,000 spaces.
- A one-way street system suggested by the CPA and endorsed by mayor Charles H. Boswell is now in effect. The mayor, faced with re-election in a city that has a history of not returning mayors for second terms, nevertheless dared put the one-way plans into effect the week before election. (He won by a plurality of 18,037 votes.)
- Downtown face lifting has been another CPA project; several score trees have been planted; covets of pigeons and starlings have been banished; flower planting pots have been hung on lampstands.

Despite this record, or perhaps because of it, the CPA is considered by some to be more enthusiastic than enlightened. McCord says of the group: "It just seems strange that so many of them talk about building up the downtown area and then go ahead and build shopping centers out in the county." And the criticism is justified in Indianapolis as in other cities. No comprehensive economic rationale has yet been thought through; no significant attempts made to relate what is going on downtown (spotty activity in the face of an unmistakable trend toward suburban withdrawal) to new industries that are building on the city's periphery.

Furthermore, on the subject of federal funds, the CPA and the Chamber of Commerce are somewhat ambivalent. Their members like the conservative feeling that Indianapolis can control its own development program by paying all the bills, but feel uncomfortable about being left out of a nationwide effort. Says Harris: "We take the stand that it would be better if no money were allocated by the federal government for urban renewal. However, since it is, and since all taxpayers contribute, Indianapolis should receive its share. The money could be used for big projects."

The yearning toward the big project that is felt within the CPA undeniably results from the realization that its own activities and philosophies have been limited. Downtown as a shopping, commercial, and entertainment centrum is yet to be fully conceived. Individual questions of badly needed hotel space, to go with an arena or auditorium for which locations must be chosen, are all considered as isolated political issues. The CPA and the Chamber of Commerce, however, do serve the necessary purpose of carrying on the grinding work of keeping businessmen involved in city progress.

Renewal by limitation

Limited scale is also the curse and the credo of the Redevelopment Commission, a third element in the Indianapolis power structure. The new chairman of the Redevelopment Commission is Fred T. Green, president of the Home Loan Bank. Although Green testified before the Senate Committee in favor of bringing federal funds to Indianapolis (which is significant as an indication of gradual change from Paul McCord's teachings), and although Green has his own
views of how to accelerate the pace of Indianapolis' renewal, he continues to support the carefully limited policies that McCord originated. "From a practical viewpoint," he says, "these things can't be pushed too fast without stirring up too many people."

Here is what has been pushed through by the Redevelopment Commission within the past 15 years:

**PROJECT A** (complete): a relatively large but low-density, 178-acre area, previously mixed use, has been totally cleared; 181 single-family homes, 26 two-family units, and 146 apartments have been built, as well as a shopping center and other service facilities.

**PROJECT B** (complete): an ugly 8-acre area at the main gateway to Indianapolis has been reclaimed, put to commercial use.

**PROJECT C** (complete): 4 acres of marginal land have been cleared, sold to the Park Dept.; a recreational center will soon be built.

**PROJECT D** (complete): 18 squalid residential acres in the neighborhood of Indiana University Medical Center have been cleared, sold to the university and general hospital.

**PROJECT E** (about three-quarters complete): an old residential area of 164 acres laid out on small lots with no water and sewage systems is being cleared, and systems are being installed, mostly for sale to Flanner House Homes.

**PROJECT F** (about two-thirds complete): another small, 19-acre island of shacks is being cleared and sold to neighboring Indiana University School of Dentistry.

**PROJECT G** (planning stage): on an even smaller site, formerly occupied by homes and small businesses, a new commercial district will be built.

**PROJECT H** (planning stage): a middle-income apartment development of 1,000 units is to be built on 42 deteriorated acres in downtown Indianapolis—the most significant phase of the city's renewal—financed by the sale of bonds.

**REHABILITATION PROJECT 1 and 2:** the two sites together comprise slightly...
Hundreds of feet above the concrete sidewalks of our cities, seemingly suspended between heaven and earth, there lives a strange specie, half bird and half man: he is the steel erector, that incredibly fearless individual whose job it is to bolt together the structural skeleton of a new skyscraper while supporting himself on a tightwire or a toehold located somewhere in midair. He is to the building industry what the astronaut is to flying—and what Nijinsky was to the ballet.

Why do these steel workers take on such a hazardous job? One reason is that the pay is good ($4.70 per hour in most metropolitan areas). Another is family tradition: some “connectors”—the men who, working in teams of two, put together columns and beams swung over to them by the raising gangs—are third-generation acrobats. A very few—not more than 2 per cent in the New York area—are American Indians by origin, and find most twentieth-century occupations not rich enough for their blood.

What about safety precautions? Wherever possible, steel connectors work above not more than two open floors, i.e., wooden planks are laid across steel beams two floors below them, to break any fall. But in many cases this is not practical, and the men just have to rely on their training and their sure-footedness. (The union now requires 2½ years of apprenticeship and a test before letting a man work as a steel erector.) Safety belts of the kind used by window washers are useless, for the men must be able to move around quickly and freely. What about the accident rate? “We don’t like to think about it—don’t like to figure it out,” said one third-generation steel erector. “Whatever it is, it’s too high.”
Photographs by Mort Schreiber
In the casting bed (left), dug in the arena parking lot, the 36 arch sections were formed atop one another, pancake fashion. Photo (above) shows workmen putting finishing touches on one of the arch sections.

Reinforcement consists of transverse steel rods, spaced 8 inches apart, plus 16 rods running the length of each arch section. Photo at left shows rods in place, ready for the first pour. Rods project at sides and ends of sections so that sections may be welded together during the assembly operation. Photo below (left) shows nested sections curing in the casting bed.

Roof plan (right) shows how structure is divided into 36 arch sections of nine different sizes (designated alphabetically). Each of these is less than 9 feet wide; the largest pairs (J) form arches of about 100-foot spans in the center of the arena. The concrete sections are uniformly 3\(\frac{1}{2}\) inches thick (bottom sketch).
The significance of this reinforced concrete ice-skating arena in southern California is not its unusual shape—a section of toroid—but rather the unusual method by which it was formed.

The structure's concrete arch sections were precast, one atop another, in contoured beds at the site, as shown in the photo (above left). These beds, four in all, were prepared with a concrete surface, then plastered smooth. First to be cast in each bed was one of the largest sections, those which would span over the center of the building. When the concrete in these sections had set, their surfaces were coated with a nonadhesive substance and the forms and reinforcing rods for smaller sections were positioned for the next pour— and so on until nine arch sections, each 3½ inches thick, were cast pancake fashion in each bed. With the pouring completed, the concrete set, and the 36 sections ready for placement, two 45-ton cranes moved onto the site and lifted the 10-ton arch sections into position.

Companion sections were placed simultaneously: each crane maneuvered one arch section, first setting it on its foundation, then, working together, joining the two sections at the peak of the arch. At this point, steel plates, which had been cast into the sections, were brought into precise alignment and welded. When all 18 arches were in place, the projecting ends of their transverse reinforcing rods were spliced and welded. Then the 16-inch-wide gaps between the arches were backed with plywood and filled with spray concrete.

The cost of the 18,600-square-foot arena, including its foundation, shell, parking facilities, and mechanical and electrical installations (but not including the rink freezing coils), was $108,000, or $5.80 per square foot. The cost of the shell itself was about $46,000.

Architect Carl Maston, of Los Angeles, planned the project. The engineer was Richard R. Bradshaw, who believes that such reinforced concrete arch construction can be used safely for spans of 300 feet. Rains-McLellan Corp. was the general contractor. The owner of the arena is Ron Priestly, a former ice-skating champion.

Architect Maston sees wide usage of toroidal structures in the future: "Concrete is a plastic material and is most properly used in this fashion— large areas, clear spans— rather than to imitate the rectangular sections in conventional use. A building of this kind utilizes concrete for its true inherent qualities."
Space planes: a new idea in wood

The space plane is the latest idea to emerge from a fast-paced research program in wood. Only a year ago, the space plane was not sufficiently developed to merit attention with other of the wood industry's structural developments, such as the glue-laminated beam and the folded-plate roof (Forum, Aug. '59).

Actually, the space plane is an extension of the folded plate. A folded-plate roof consists of rectangular plywood-sheathed diaphragms, tilted so that the long edges are level and the short edges inclined. The space plane, on the other hand, is made up of two or more diaphragms, usually triangular or polygonal, which interact and support vertical loads without beams or trusses.

The space-plane buildings on these pages illustrate some of these physical differences. Note, for example, that chords—which are parallel in a folded plate—are nonparallel in the structures shown here. Thus, the simplest space plane would be polygonal in plan, with its chord members intersecting at a common center, and would look much like a pleated lamp shade. Such a structure can be designed for 200 foot spans.

Like the folded plate, a space plane either may be prefabricated as a double-faced stressed-skin panel or as an open-faced unit; or it may be conventionally framed and sheathed, provided the individual planes are engineered as diaphragms. Shop fabrication which takes advantage of adhesives develops the most efficient use of plywood and wood. In conventional construction, nails are usually used to transfer shear, but glue is also used occasionally to provide added stiffness. In either case, temporary support is necessary during construction, because the strength potential of a space plane is not realized until permanent connections between the diaphragms are made on the site.

To date, only a few space-plane structures have been built, despite certain real advantages inherent in this structural form. One reason for this is the lack of general design data: structural analysis is considerably more complex in a space-plane design than in conventional construction. The applied research section of Douglas Fir Plywood Assn., which has done most of the research on wood space planes, is developing such design data, along with loading test data on actual structures.

DFPA engineers see various advantages in space-plane construction which should win it wide acceptance in building. They believe that the plywood space plane offers the designer a greater design potential than any other clear-span technique. Where long, clear spans are required, space-plane construction makes it possible to eliminate much of the heavy and uneconomical framing often required for structures such as churches, bowling alleys, and auditoriums. Moreover, the possibility of prefabrication permits closer cost control, reduction of labor cost, better control over construction technique, and less dependence on weather.

To be sure, there are also disadvantages to this type of construction. The shape of a space plane sometimes makes it difficult to apply conventional roofing materials. Asphalt shingles are suitable in some instances, but spray-on synthetic materials—or plastic sheets joined with tape—seem most often to be the best solution. Another drawback is the complexity of engineering a space plane—as its shape becomes more elaborate, the complexity of the engineering increases. Finally, space-plane construction itself can be a problem, because, as already mentioned, the structure is not completely self-supporting until the last joint is finished.

Most of the plywood space planes built thus far function as one-piece roofs and require edge support from shear walls or concrete buttresses to resist lateral stress. But the potential is by no means confined to roofs: as the church building (right, below) suggests, space planes can form complete building shells. Such shells, whose shear is carried by the skin, yield a highly efficient use of materials.

Children's theater in Oakland, Calif. is a space-plane structure the sections of which are built like airplane wings. Architect Irwin Luckman designed this bilaterally symmetrical roof in the form of a four-pointed star.

The roof was prefabricated in eight sections, two sections for each star point, as shown in the sketch. The roof, temporarily bolted together on the ground, was then disassembled into four double sections and trucked to the site where each double section was hoisted into place by a mobile crane. Each double section weighed about a ton, and measured 22 by 38 feet. As each section was added, the roof gained rigidity until it became a single, rigid structure, supported only by eight 3½-inch steel pipe columns.

The roof sections are stressed-skin panels built up of 2 by 2 and 2 by 4 framing lumber and covered with ¼-inch fir plywood. The biggest advantage of this roof system, says Luckman, is that much of the assembly can be done off the site, minimizing sheafolding and other requirements of in-place construction.

The cupola (photo, right) has no structural relationship to the roof system—it is merely a “visual” attachment. Luckman chose this design because he “wanted to get far away from the traditional medieval castles used for theaters of this type.”

Church in St. Louis is probably the most elaborate space plane yet built. The shell was assembled from 80 shop-fabricated stressed-skin panels in four different triangular shapes and sizes (sketches) ranging up to 47 feet in length. Three of these panels are mirror images: A, and A; B, and B; C, and C. The fourth, D, is repeated along the base. The panels were fabricated with ¼-inch fir plywood skins, glue-nailed to a 2 by 8 foot perimeter frame and 2 by 4 stringers, 2 feet on center. The individual panels were joined into a complete shell with bent steel plates. Steel buttresses, attached to the first-floor and basement foundations, resist lateral thrusts. The roof has a clear span of 32 feet, a height of 55 feet, and a length of 114 feet.

Architects Manske & Dieckmann chose this design to “take full advantage of the landscape.” The height of the building and high elevation of the site make this Congregational church visible from all points of the countryside.
Dining hall for the Methodist Mission in Sacramento, N. M. is a classic example of the circular folded-plate roof—the simplest form of space-plane structure. Note, for example, the roof's converging chords, which join at the steel ring at the center of the roof. In a conventional folded-plate roof, these elements would be rectangular, rather than triangular. This design, by Architects Brittelle-Ginner and Associates, Inc., proved to be slightly less expensive than other clear-span methods of construction.

This ten-sided shell, spanning 67 feet, is composed of 20 triangular panels—43 feet, 8 inches long and 14 feet, 5 inches across the base. The panels' skins of %4-inch fir plywood were nailed to five sizes of dimensional lumber framing, precisely positioned in accordance with the panels' varying strength requirements.

Folded-plate school: the four detached buildings of the campus-planned Northeast Elementary School in Tacoma, Wash. are topped with folded-plate roofs. Two buildings contain four classrooms each; one has two classrooms, a library, and offices; the fourth is a clear-span multipurpose room and play court. The roof of each 65-foot-square building consists of eight triangular stressed skin panels; each has %4-inch exterior fir plywood for its top skin and %4-inch interior plywood for the bond skin, with spacers of 2 by 4 and 4 by 4 lumber.

The framework of the panels was made of minimal glue-laminated beams at ridges and valleys. These function as actual beams only during the placement of the roof components, after which they function as tension connectors for the folded plates.

The main supports for each roof are steel A-frames, at the midpoints of the four side walls. These frames, which rest on 1,500-pound concrete pads buried in the ground, absorb the thrust exerted by the roof at the ends of the roof valleys. Some additional support is provided the roof by 6 by 6 inch corner posts and 4 by 4 inch perimeter columns on 4-foot centers.

These buildings, designed by Architects Robert W. Evans and Gordon Johnston, cost just under $11 per square foot.
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GERMAN TOWERS
In designing Phoenix-Rheinrohr's headquarters in Düsseldorf, Architects Helmut Hentrich and Hubert Petschnigg admitted that a typical, vast, modern office floor is not so flexible as it looks. (It is actually only flexible inside the bounds of the column bays, within which removable partitions may be erected at will.) The architects determined to use this limiting fact as the building's architectural theme: its 14,000-square-foot office floors are split in three parts (see plan above), each of which is one bay wide and fully flexible within its length; its exterior mass looks more like three nestling towers than one highly integrated building (photo at left); the gaps separating the towers are the between-bay corridors. In keeping with the client's position as one of Germany's leading steel manufacturers, the building has a steel frame; the curtain wall is made of stainless steel, clear glass, and gray anodized aluminum. Beneath the upper-floor dining rooms and executive offices are 18 office floors, and beneath the lawns surrounding the building are two parking levels. For all the building's logic, it commits the illogic of blocking parts of the city from a view of the park.

POLISH SAUCER
The model of the winning entry in a competition for a multipurpose sports hall in the Polish city of Katowice looks like a flying saucer making a sloppy landing. Actually, the saucer floats rather than flies, resting on a concrete hull. The sides of the 12,000-seat hall are built up from the hull; the roof is a series of concentric rings that transfer their forces into the innermost circle. Counteracting the forces at that point is the outthrust of the central dome that lights the arena beneath. Architects and engineers of the space-age proposal were J. Hryniewiecki, M. Gintowt, M. Krasiński, W. Zalewski, M. Wlodarz, and J. Zorawski.
JAPANESE LOUVRE
A three-story prefectural museum in Matsue, near Tokyo, is a notable addition to the architecture of Japanese civic buildings. It carries on the modern theme of expressing traditional wood post-and-beam structure in rough concrete and at the same time makes new contributions to spatial design and climate control. The top floor of the museum is for exhibits; the mezzanine, a melding of voids and solids, is for offices and conferences; the ground floor is for receptions and outdoor events. The windows of the main exhibit room are controlled by three-paneled, rotating louvers. Two of the panels are steel, the third glass, allowing a variety of conditions (see sketch).

AUSTRALIAN CO-OP
Rising above Sydney Harbor and above its own folded-roof carport is this ten-story cooperative apartment block (photo below), designed by Architect Harry Seidler. From the public lobby, two elevators take owners up to private entries, each of which gives access to two of the 40 identical units. The only public corridors are galleries that are cantilevered out from the building's brick face. The galleries connect stair landings at every other floor. Because all living rooms face Australia's sunny north, the apartments are shielded by broad aluminum sun screens (photo at right), and living-room balconies are recessed.
This new 3101 East 6th Avenue Building in Cleveland meets every modern requirement in the book. Attractive exterior, with glass and aluminum curtain walls. Most comfortable interior, with air conditioning by Gas-operated Carrier Absorption Refrigeration.
H. L. Vokes Company of Cleveland, designers and builders of the new 3101 Euclid Avenue Building in that city, are experts in two-way satisfaction. They satisfied their tenants and their own cost requirements with one of the most efficient types of modern air conditioning—Gas-operated Carrier Absorption Refrigeration.

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10:30 A.M. Wednesday, August 12, 1959, steel framework completed, 17\frac{1}{2} working hours later. You are weeks or months ahead when your building has a steel frame.

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**USS Structural Steel erected in 17\frac{1}{2} hours**

Greensboro Division of Guilford College

Talk about fast construction with steel—here's a story that will amaze you!

Early one Monday morning in Greensboro, North Carolina, a truck started unloading steel on a lot near the center of the city. The lot was vacant except for footings put there by the general contractor, H. D. Barnes, Inc., of Greensboro.

By 9 o'clock that morning a steel column was bolted to the footings, and the framework for the building was underway.

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For your copy of "Hot Rolled Carbon Steel Shapes and Plates," a handbook containing design details, dimensions and weights, write to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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Nation's first automated Post Office uses prefabricated THINLITE curtain wall for sun and weather control

Project Turnkey in Providence, Rhode Island, is a $20 million postal laboratory ... the nation's first fully mechanized Post Office. Charles A. Maguire & Associates, Providence, is the architect-engineer; Gilbane Building Company, Providence, is the general contractor. Intelex Systems Incorporated, subsidiary of International Telephone and Telegraph Corporation, is the prime contractor.

The new building, 420 feet long, 300 feet wide and 55 feet high, will be completely air-conditioned. Walls are topped with 31,000 square feet of Thinline Curtain Wall for maximum control of daylight and temperature.

CONCRETE—some 800 cubic yards per roof unit—is poured in place above timber falsework. Falsework was moved to another segment after concrete had cured.

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R. H. Bird has developed plenty of problem-solving experience in the field of maintenance painting during more than 20 years with Du Pont's Finishes Division. Enthusiastic about its many possibilities for more efficient maintenance at lower cost, he has developed Color Conditioning programs tailored to meet the needs of a wide variety of schools, hospitals, churches, office buildings and industrial installations. A member of the Construction Specifications Institute, Bob works closely with architects drawing up paint recommendations.

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THE IMAGE OF THE CITY. By Kevin Lynch. Published jointly by Harvard University Press and the Technology Press of the Massachusetts Institute of Technology, Cambridge, Mass. 194 pp. 6'/2" x 9'/2". Illus. $5.50.

It bodes well that the first publication of the Joint Center for Urban Studies (a cooperative venture of M.I.T. and Harvard) should be The Image of the City, because Author Kevin Lynch has come up with a readable, tautly organized, authoritative volume that may prove as important to city building as Camillo Sitte's The Art of Building Cities.

Based on the well-known and generic researches conducted by Lynch and Georgy Kepes on the perceptual form of the city, the present work turns the research into a full-blown discussion of legibility and "imageability" in urban environment. Out of investigations conducted in Boston, Jersey City, and Los Angeles, Lynch has elicited five factors that are fundamental factors in the perception of urban form. (As illustrated above, the factors are edges, paths, landmarks, nodes, and districts.) The distinctive qualities in these factors are the external stimulus in the formation of one's image of a city — an image forged in experience and anticipation.

This basic thesis is illustrated in effective symbols and maps which will, no doubt, become familiar "language" to urban designers. The thesis is tested in a special analysis of Boston's Beacon Hill and Scollay Square area reported in the appendix.

All this sounds very intellectual—and it is. But that does not in any way mean that the book is not practically meaningful for city designers or interesting for people who merely like to look at cities in a casual way.

"Looking at cities," says Lynch, "can give a special pleasure, however commonplace the sight may be." And later: "... A highly developed art of urban design is linked to the creation of a critical and attentive audience." Both objectives for the art and the audience are well served by Lynch's book.

THIS LAND OF OURS. By Alice Harvey Hubbard. Published by The Macmillan Co., 60 Fifth Ave., New York 11, N.Y. 272 pp. 9'/2" x 6'/2". $4.95.

"Do what you can, where you are, with what you've got," said Conservationist Teddy Roosevelt. So says this book, designed for those who would better their communities by saving their natural heritage. A random roundup of 180-odd success stories at grass-roots level, it ranges from petunia contests and antibillboard drives to the United Nation's Community Development Program.

LAND FOR THE FUTURE. By Marion Clawson, R. Burnell Held, and Charles H. Stoddard. Published for Resources for the Future, Inc. by the Johns Hopkins Press, Baltimore 18, Md. 570 pp. 9'/2" x 6'/2". Illus. $6.50.

This broad and heavily statistical study of America's land inventory and needs, written by land, agricultural, and forestry economists on the staff of Resources for the Future, analyzes the changing uses of land in the U.S. and attempts to project them to the year 2000. Like other observers, they see urban pressures continuing to mount: the nation's population will grow to 310 million; 150 million more people will live in urban areas, calling for new investment in urban property of over $1.5 trillion, at an average $40 billion a year. Average family income may rise to as much as $15,000 a year (in 1955 dollars), and more people will want larger houses with more land. Land in cities will increase from 17 million acres to 41 million; recreation land will rise from 46 million to 95 million acres, even assuming that only half the demand is met. On the other hand, further increases in farm and forest-management efficiency will allow a slight decline in total area devoted to both. Like most studies, this one concludes with a call for more studies: for uses of by-passed areas in our spreading cities, for more attention to urban renewal and blight prevention, for more information on the land-use problems of smaller cities and towns, for ways of using highway building as a public means of influencing better land patterns, for further analyses of recreation.
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veloped a plastic and occasionally powerful style entirely his own.

In only two respects does this book seem to miss its mark: First, because the authors (with pardonable pride in their California heritage) tend to ignore or downgrade similar and sometimes earlier developments in other parts of the world. Indeed, more detailed references to parallel developments in the rest of the country or in Europe would, in some cases, give added importance to the authors' five heroes. Second, the inclusion of the much younger Schindler seems odd in terms of chronology, although one is grateful to have this remarkable man's work on record. But with Schindler in, the omission of Neutra can be explained only as being due to the availability of a great amount of published material on the latter's pioneering work.


This book is not a testament to Southern regional architecture, as the reader might expect, but an indication that there isn't really very much regionalism down South. There is characteristic design—but characteristic of the architect (Victor Lundy's churches, for example), not of the latitude.

Another quality this book lacks, which somehow the reader comes to expect in regional design literature, is heaviness or academism. The authors are lively and highly opinionated: Frank Lloyd Wright's place in architecture can perhaps be best understood if he is thought of not as the first of the modern architects but as the last of the great Victorians"; "Mies van der Rohe's... is an architecture of the white corpuscles rather than the red."

Obviously the Waughs are not talking merely about, or even to the area in which they live and work.

NATURE IN THE METROPOLIS—Conservation in the Tri-State New York Metropolitan Region. By William A. Nierling. Published by the Regional Plan Assn., Inc., 330 W. 41st St., New York 36, N.Y. 64 pp. 8'/2" x 11". Illus. $3.

Third of four publications in New York's Park, Recreation, and Open Space Project, this booklet by a well-known botanist and ecologist outlines in text, pictures, and maps the various land uses of the region's 7,000 square miles, suggests that 246 areas totaling 141,000 acres are in urgent need of conservation to maintain the vital balance of nature and man in the face of rapid population growth. Actual sites are not specified because of possible effect on their price, but are available to appropriate officials and private groups. This survey might serve as a model for other metropolitan areas worried about their own vanishing natural land.
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more than 100 acres; if the "paint-up, clean-up" methods prove effective, it is hoped that similar projects on a larger scale can soon be undertaken.

The basic decision within the Commission that continuity should be stressed in Indianapolis rather than a sweeping renewal program has, thus, not brought dramatic results. Only small, desperately decayed areas have been singled out for clearance; many renewed blocks indeed seem suffocated by surrounding neighborhoods, almost as bad as they once were; even within renewed areas some old but "standard" dwellings and commercial buildings remain that stand out with the painful urgency of a tooth one cannot afford to have fixed.

Furthermore, the kind of redevelopment Indianapolis has waged virtually eliminates low-rental housing (which is usually found in areas capable of being cleared without political complications). Neither the owner-occupied Flanner House homes (page 133), which require average monthly mortgage payments of $76, nor the $16 million Project H, which seeks to hold middle- and high-income renters in the downtown area, has room for the irregularly employed, low-income apartment dweller.

Another indication that the work of the Redevelopment Commission does not proceed without a kind of make-ready expediency is the story of how downtown merchants are persuaded to improve their deteriorated properties. When, for example, the Civic Progress Assn. brought it to the attention of the Commission that a number of properties near the railroad station on South Illinois Street were unsightly and falling into bad repair, the Commission drafted a letter to the owners that brought prompt action. The letter said, in effect: "clean up or else..." This approach is possible because the owners understand fully that the Commission is equipped with condemnation powers, that the pistol held against their heads is loaded. (It has so far been used but rarely.)

The Commission uses similarly direct, informal tactics in the two rehabilitation areas it has opened up. Although definite progress is already visible, rehabilitation is a continuous process, allowing no predictable completion dates.

Challenges ahead

The magic that may lie in private money as opposed to federal funds seems, then, to have little to do with the way renewal is actually effected in Indianapolis. The magic lies more in the clever use of available power mechanisms and in the severe limitation on scale of the projects tackled.

It also appears from comparing the projects already completed in Indianapolis (like the elimination of skid row on South Illinois Street) with those that yet remain to be tackled (like the plan for recreational development of the city's frontage on the White River) that the most commercially attractive, politically inoffensive elements of the master plan are those which have been undertaken first. This undoubtedly sound approach, which has succeeded in winning the cooperation of the business interests in Indianapolis for the work of the Planning Dept. and Redevelopment Commission and in channeling the energies of the power structure toward renewal may, however, lead to difficulties.

One small indication of the difficulty that will be encountered is the bitter on-going fight over the location of the new county jail. Hamilton, and the forces in the city that think in terms of visual and functional organization, want a full block site so that other governmental functions can be combined with the jail to make an integral grouping. On the other hand, the owners of the aged but still sound buildings now on the site protest that they should not be forced to abandon their locations because of an "abstract" idea. And Indianapolis' conservative elements, which tend to downgrade the need of city, county, and state governments in the face of business needs, are coming to the support of the property owners.

It is precisely this sort of crack in the coalition that may make the larger problems of future Indianapolis more difficult to solve. The biggest problem is public transportation. In Indianapolis, as in many other middle-aged cities, transit is now a matter of an ailing bus line, the trolley having long since departed, and the private car being the only vehicle that people really like to ride in.

continued on page 198
The photograph tells the story. Ceilings have a smooth, uninterrupted flow with Fissured Armstrong Acoustical Fire Guard . . . now available in square-edge, as well as bevel-edge, detail. To learn more about Acoustical Fire Guard—the first time-design-rated acoustical ceiling tile—contact your Armstrong acoustical contractor (he's in the Yellow Pages) or Armstrong district office. Or write Armstrong Cork Company, 4209 Rooney Street, Lancaster, Pennsylvania.
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A series of interim measures have been adopted to keep the Indianapolis Transit System in business. The most recent of them was a CPA-supported bill passed by the state legislature last year to give the line a kickback on the gas tax. This measure, which involves $100,000 a year, is obviously no real answer to the problem. A more expensive and longer-range proposal, which would have put tracks for express trains down the middle divider of certain new freeways to serve the need of Indianapolis’ swelling commuting population, has not been approved because of disagreement among the agencies involved. More money will have to be raised and spent, and larger realms of power organized before the transportation picture becomes unmuddled.

The same thing can be said for the problem of keeping Indianapolis’ planning structure expandible enough to cover new needs. Studies indicate that by 1975 one-fourth of all workers in the Indianapolis area will be commuters from outside the county. Furthermore, there is an increasing need to acquire more land for new industries as well as for old firms that seek to renew themselves by moving out from their cramped, vertical sites within the city. Both Hamilton’s farsighted 1958 zoning ordinance that reserved some 10,550 acres for industry within Marion County and Mayor Boswell’s aggressive measures for land acquisition (10,000 acres earmarked or annexed) are already regarded as inadequate. The difficulties of planning a workable and agreeable highway ring pattern are only beginning. But the usual problem of whether the neighboring counties will be willing to—or can be pressured into—abandoning a measure of their hegemony for the benefits of a truly regional planning body looks extremely sticky at this point.

It is because of these large-scaled challenges, which involve long-range benefits to Indianapolis rather than immediate profits, that some Indianapolis leaders are beginning to have their doubts about the wisdom of trying to do it all themselves. The intimate, slow-moving, ground-level removal that has gone on in the city, and the uneasy alliance of public and private groups that have made it work, may prove inadequate for the ever greater problems of the modern metropolis. But, as Paul McCord points out from his office overlooking Monument Circle: “This kind of renewal works here; we understand it and believe in it. And until something else comes along that works better, this is the way we want it.”
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month, AFL-CIO Head George Meany failed to attend a meeting of architect-engineers, contractors, and missile manufacturers called by the Secretary of Defense. Meany is reportedly miffed because more labor representatives were not invited, and seems to be disinclined to help until the military grants AFL-CIO more recognition.

Besides trying to unravel the labor snarl, the Defense Dept. has also been streamlining its own missile-base construction apparatus. Several weeks ago both the Air Force, which lets initial contracts to architect-engineers for base development, and the Corps of Engineers, which reviews designs and supervises construction, centralized their construction branches. The Air Force has given its Air Materiel Command full responsibility for building all operational ICBM sites (it was formerly the responsibility of the Ballistic Missile Division, a part of the Air Research & Development Command); and the Corps has put all its missile supervision work under a new Ballistic Missile Construction Office. This new office will replace the old field office and district office setup, and, by shortening the chain of command, make it easier to control construction. The Corps is also attempting to cut out the activities of "job brokers" who low-bid a construction job, then farm out as much as 90 per cent of the work to subcontractors. A new Corps policy will require prime contractors on ICBM jobs to do at least 15 per cent of the construction work themselves.

Architects, engineers, builders, and military men themselves feel that much of the delay in missile-base building is due simply to the fact that space-age construction is still a new experience for everyone in it. There are few ground rules, and the changes in missile development itself, as well as policy shifts affecting their deployment and housing, make it unlikely that there will ever be very many firm rules. But architect-engineer firms and contractors that have so far played major roles in missile and space-development work have shown their enthusiasm in the vigor with which they attempt to garner new contracts for such work (DMJM's Philip Daniel made 154 round trips to Washington in one 15-month period). Although it is true that a relative handful of firms have done the lion's share of architect-engineer work (due largely to the fact that a firm gains a favored position once it has licked some of the massive problems involved in missile and space design), the services themselves favor a policy of getting as many firms into the work as possible.

And once a firm is in, something of the exotic nature of space exploration and missile defense seems to rub off on it. For instance, Philip Daniel talks optimistically about building "a lanai in the sky with a picture window and swimming pool! . . . You have the same problems in space stations as in a five-room house." However, if the past short history of space architecture is any guide, the picture-winded lanai in the sky will be obsolete the day it is finished.

END
2000 skating enthusiasts or 200 parked cars make no difference with steel pipe on the job

Baltimoreans can be proud of their combined ice skating-parking area just outside the new Memorial Stadium. And with reason. In winter they can enjoy ice skating at its best. When crocuses harbinger spring, the rink disappears. In its place, a parking lot serves spectators of the events held in the adjacent stadium.

Versatile? Yes. Cost cutting, too—because of steel pipe. For steel pipe makes possible this dual-purpose area. When it's skating time, a steel pipe refrigeration system, imbedded in the 85-foot by 185-foot concrete slab, freezes 11/2 inches of water into mirror-smooth ice. Yet, the steel pipe, acting as reinforcing in the concrete, has the structural strength to withstand the load of cars parked on the area during the spectator events seasons.

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From an unfolding rosebud might have come the inspiration for the continuously curving interior surfaces of the auditorium at the Massachusetts Institute of Technology, as shown at the left. The sweeping boldness of the design demanded a material with exceptional flexibility. The answer, of course—plaster.

Only plaster permits such complete freedom of expression... follows, with such absolute fidelity, every intricate curve and plane in the architect's plans. And only plaster combines such visual and textural beauty with durability, lightness, fire-resistance and acoustical excellence.

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What about the

Noise criteria curves demonstrate permissible sound levels.

Accurate performance data assures you of the best possible auditory environment.

Ask to hear it: new Barber-Colman slide film, "Making Sound Behave."
Facts about air distribution sound levels of importance to engineers and architects

An architect skillfully uses both color and light to create the proper environment. A good analogy exists between an architect working with frequencies of light (color) and an engineer creating ideal air distribution specifications with sound.

Until recently engineers used only the decibel level in selecting air distribution equipment. Today this is not enough to assure comfortable environment, for sound must be measured and specified not only in terms of over-all magnitude, but also in magnitude at different frequency levels.

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The results are twofold: data is available for comparison with noise criteria curves which are used for specifying permissible sound levels in different frequency bands; scientifically proved performance data is provided for correct selection of air distribution equipment.

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WHAT'S BEHIND BEAUTY?

At the recent conference on architectural education at Sagamore, New York, Architect Lawrence B. Anderson, head of M.I.T.'s Department of Architecture, condemned the willingness of U.S. designers to hide unsolved social questions behind pretty buildings.

The optimistic tradition in American culture (together with our emphasis on material well-being through technology and the need to influence public taste in connection with consumption) has tended to lead even our most able architects toward the idea that beauty in architecture is a matter of formal organization for visual effect. This effect is of a kind that can readily be appreciated by the man in the street, even though it may not be expressive of any underlying reality. Such superficial prettiness and even artificial grandeur seems to be coming back now that "modern" is accepted as a style and now that its earlier vigorous functional and social philosophy is more or less forgotten in our affluent society.

Specifically, what demanding architectural themes of philosophical importance are being avoided here?

- Kenzo Tange speaks repeatedly of the need for architecture to represent the "naked human being." Alvar Aalto's one commission in the U.S. was a protest against what he called our cellophane-packaged drugstore architecture. Le Corbusier, in his later years, evinces more and more his revolt against the rational design argument of organization man.

There is a whole generation of sensitive young men in other countries who dislike our packaging approach, our willingness to institutionalize everything and give it a facade, our tolerance for the esthetic cliche.

- Every year a population equal to that of greater Philadelphia is put into new housing on suburban land. This is the biggest commitment we are making in conversion of land use and in fixing the architectural environment. But professional skill in architecture and in planning are very little used in this activity. It is dominated by the entrepreneurs, with a little bit of regulation by local building codes and zoning laws. The large-scale speculative builder is in a competitive, intricate market. The public makes the easy assumption that what is good for him is good for the country.

- Then there is the enormous program of superhighways. This is clearly a public utility and so should be executed in the best long-term interests of all the people.

But no way has been found to introduce consideration for anything but the immediately expedient factors.

- We still have both urban and rural slums. These exist as islands of degrading poverty that resist being washed away by prosperity. Although the destitute poor are now in a minority, they are still always with us. Our economy has learned to do without child labor and can afford to retire almost everyone at about 69, while still continuously reducing the work week. We can probably also afford to eliminate poverty and the slums, even though this means subsidizing people who can make little or no contribution in return. If we could do this it would be easier to eliminate these physical evidences of destitution and despair that are a disgrace on our landscape.

These thoughts suggest the generalization that we have many tasks of a public and social nature where some good architecture would help. Unfortunately we have a rather bad record, architecturally speaking, for our public services. The expression "public housing project" conjures up an image of hopelessly inept design entirely without amenity, a place that no one with a grain of self-respect would give as his address. Similar pictures come to mind when we think of the county hospital, the city hall, or even the municipal library. And if you think the country is full of delightful schools like those of John Reid or Bill Candil you choose not to look within the city limits.

BREAKING UP THE CYCLE

Writing in a technical bulletin of the Urban Land Institute, Dr. Homer Hoyt ventured the guess that zoning and other controls may have done away with the traditional, dangerous real estate cycle.

The future of real estate values is being affected by many factors (such as zoning, differential tax rates, long-run popular growth) of which the economic ups and downs of the real estate cycle may no longer be, as they once were, the most important and critical factor. Methods of national regulation, which have controlled in recent years the extreme aberrations of the business cycle, have also so far controlled the real estate cycle. Local zoning regulations and differential tax assessments are also influencing the volume and direction of urban growth.

The extreme fluctuations of the real estate cycle may thus have been a manifestation of a youthful, highly individualized society of small producers, laborers, continued on page 311.
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*This comparison is based on actual material and labor costs in effect on January 7, 1960, in a mid-west metropolitan area of 75,000 population.

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and farmers. That former economic phase of our national life was subject to few controls by federal or local government, and was the mirror of alternating moods of optimism and depression of masses of people.

It remains to be seen, of course, whether our mixed economy, with its combination of national and local controls, will eliminate the real estate cycle altogether, or whether it will break out from the underground caves in which it may be hiding to assert itself again with its old-time virulence.

PARADISE DECLINED
During the past summer, "The New Yorker" designed to look at the suburban real estate columns of the local press.

A paradisaic land begins on Page 2R—for "Real Estate"—of the Sunday Times, and we have taken to strolling through it once a week. The line of country described in the Times R ads is spectacular. We recognize it as an endless expanse of wooded mounds, swaying perpetually. Every site is described as Gently Rolling and either heavily or thickly wooded, and each of these eminences is occupied by a Brilliant Housing Extravaganza or a Crowning Achievement in Luxury Building, which may be either a Breathtaking Georgian Home or a Ranch Home with a Gloriously Orginal Façade. Huge is the smallest any site is—as in the Huge, Wooded 1/4-Acre Sites offered by a Crowd-Stop, History-Making New Community. Another advertises 10,000-square-foot Junior Estates—a 1/4 acre minus a few hundred square feet. A 1/4 acre calls for a more potent adjective—Magnificent. An acre is the largest unit of area, and guarantees Old-Fashioned Spaciousness.

Of the thousands of homes we liked best "contained"—no house in R Land ever just has anything—Graciously Conceived Floor-to-Ceiling Dressatories and a Sun-Splashed Dining Area, a Gracious Living Room, and an Impressive Foyer. It is a Uniquely Luxurious Split-Level Design in an Oversized Estate Setting (the acreage is not specified). We liked also, needless to say, the "uniqueely designed sprawling ranch"—thrown off balance, no doubt, by the rolling county—"set on a full acre of land" that "awaits the proud owner who has already made his mark in life."

Last week, we took a sheet of this new authentic American poetry with us to a daisy field in a pasture we know well and lay down to read it. Like Piers Plowman, we fell asleep and dreamed a dreadful dream—that Split-Level, Bi-Level, Raised-Level, Continental, and Early-American Ranch-House Igloos in the French Provincial Tradition of Early Victorian Splendid Elegance were sprouting under and all around us, like Formica-topped par-cell mushrooms, with Muzak, hot-and-cold status, and 30-year mortgages with sunken suicide clauses. In the dream, we got our left ankle caught between a Pecky Cypress Exposed Beam and a Completely Covered Portico Entry on two houses that were growing too close together. (In real life, we suppose, the developers thin them out, like lettuce plants, when this occurs.) We awoke and were happy to recognize our surroundings, which have never been described in R and never, we trust, will be.

TRANSIT—A FEDERAL PROBLEM
The case for regarding metropolitan transportation as a national rather than local problem was recently made by the mayor of St. Louis, Raymond B. Tucker, appearing in Washington before a Senatorial subcommittee as president of the American Municipal Assn.

Many people would agree with everything that has been said about the need for subsidized metropolitan transportation but then say: "This is a local problem which should be solved at the local level; why are you coming to the federal government for help?"

In the first place, when they say "locally," who do they mean? By its very nature the mass-transportation problem is metropolitan in nature. It is created because of the mass movement in and out of the core city during the same hours of hundreds of thousands of people from a vast area crossing city, county, and even state lines. There is no locality with jurisdiction to handle the problem in its full implications. The core city can at best solve only part of the problem, the counties and states only another part. Second, the problem is national in scope because two-thirds of our people live in these metropolitan areas. Our whole national economy, our national defense, and the pursuit of our foreign policy suffer staggering losses as a result of the millions of man-hours lost to our national effort because of the strangulation of movement in our metropolitan centers.

Third, our nation has a tremendous investment in a federal highway program, the largest public works program ever embarked upon in this country. On the one hand, the development of our federal highway program has aggravated the problems of mass transportation, and on the other hand the collapse of mass transportation will bring about staggering increases in federal highway expenditures.

Fourth, legislation proposed to date does not call for grants or subsidies by the federal government, but long-term, low-interest loans to assist local public bodies in underwriting the cost of these improvements. These loans would be used to help finance acquisition, construction, or improvement of equipment and facilities for use in mass-transit or commuter service. I think it is particularly appropriate for the federal government to ease the burden of high interest payments we must make to finance these improvements, because it has been federal government policies which have raised our interest rates.

continued on page 215
"AND WHY, MIGHT I ASK, DID WE NOT INSIST ON A BARRETT ROOF?"

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Architectural Forum / September 1960
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A $4,000,000 multiple-dwelling project in Memphis, Tennessee, proves the advantages that can be yours with Stran-Steel lightweight steel framing.

- Easy on-site assembly and hand construction eliminates need for crane rental, speeds job completion.
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- Practical Stran-Steel nailable floor joists were installed without cutting or detailed shop drawings. Joists for 90' buildings were installed in one day.
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Eason, Anthony, McKinnie & Cox designed 31 Memphis project apartment buildings with Stran-Steel components. Sidewalls and trusses were assembled on wood jigs near building sites. Every five minutes, workers lifted 31' trusses weighing only 140 pounds into place—including welding to the top channel of the load-bearing wall.

Perfect alignment of trusses shows straight roof eave. No shims were used. Hood houses lead pipes for radiantly heated floor. All steel in this 90' building was erected in three days.

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STRAN-STEEL IS A DIVISION OF NATIONAL STEEL CORPORATION
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In "The Mortgage Banker," Forum Consultant Miles Colean called for wider and more imaginative efforts to tap new sources of savings to finance the mortgages necessary for the next decade of building.

The total outstanding U.S. mortgage debt on residential and commercial property is in the neighborhood of $184 billion—the largest single category of the national debt, except that of the federal government. The net increase last year was close to $24 billion. Of both total outstanding and average annual increment mortgages on one-to-four-family structures mortgage servicing amounts to about three-fourths. By 1970, outstanding home-mortgage debt may well be pushing the $300 billion level and total mortgage debt, $375 billion.

Where will such an amount of money come from? Today mortgage lending is a highly institutionalized process. All but about 12 to 15 per cent of it, moreover, comes from four classes of institutions: savings and loan associations, life insurance companies, mutual savings banks, and commercial banks. Of these, only savings and loan associations may be confidently counted on to maintain their recent rate of increase in mortgage holdings. During the new decade, the others can be expected to show declines in respect to their own mortgage investments as a ratio of the total. The difference must be made up elsewhere, and, despite the most optimistic estimates of savings and loan growth, an increasing part of it will probably have to come from outside the present principal institutional sources. That there is a trend in this direction is evidenced by data prepared by the Department of Commerce for the past several years. The outside sources I refer to are individuals, pension funds, endowments, and other trust funds.

Existing facilities for tapping these sources are primitive. One of the challenges of the decade will be to develop better facilities. The possibilities are great. The potential of direct individual investment in mortgages is a thoroughly unexplored quantity but the growth of the mutual security investment funds suggests that, if suitable media were available, the results would be rewarding. About the pension and endowment areas there can be no question. Asset growth here is at a rate exceeding that of any of the principal institutional groups I have mentioned.

Some new institutional inventiveness is in order. A few encouraging efforts are under way, but more needs to be done. The original concept of private national mortgage associations, which was discarded in the legislation of 1948, might be dusted off and looked over for its possible applicability. The regulated investment company or mutual fund in the securities field offers another promising model that could, with some changes in the Internal Revenue Act, be readily adopted to the purpose.

THOSE BIG COSTLY CITIES

Testifying before the House subcommittee on housing, Architect Robert Snyder came out strongly against urban redevelopment at the cost of human scale and individual solvency. Snyder is head of the department of architecture at the Cranbrook Academy of Art.

How can we possibly permit ourselves to stimulate the redevelopment of these so-called supercities with government subsidies? If we are to justify ourselves as planners in the literal sense of the word, how can we ignore the very basic purpose for which we plan: the edification of man? Why should we continue to paste together obsolete and ill-conceived machines for communal living, when the evidence against their usefulness is so great?

We are all aware of the fact that our national economy is based upon the interaction of men (primarily living in the East) and raw materials (found mostly in the West). But how much does it cost us to bring these two together? I couldn't even...
venture an intelligent guess, so vast is the problem. Now, if these great metropolitan areas do not meet the needs of man, and if they are too costly, and if they are in the wrong places, why should we spend untold billions for their rehabilitation? We could be investing the same money in such a way that we would take advantage of all of the positive factors of man’s productivity and so use our resources—human and material—that we could increase our standard of living indefinitely and so expend our economy for the welfare of all.

I believe we have an obligation to ourselves to examine these problems more critically. I believe we have an obligation to future generations to plan more intelligently for their spiritual and material welfare, if we are to justify our existence as sound planners and thinkers.

I believe we must refocus our attention upon urban development rather than urban redevelopment. We must stop thinking that our present urban structures are going to take care of the new Americans who will join us in the succeeding years. We must stop thinking statically and assume a more dynamic approach. We must develop a “new town” approach with cities no larger than 120,000 as being a more realistic solution to the future. Above all, we must reinvest our earnings in a more solvent economic tomorrow.

OH, TO BE IN ENGLAND

“The Economist” recently reported on the boom in British architectural practice specifically, and on British building generally.

New work commissioned from private architects in Britain in the first quarter of this year reached a record value of $601 million (for dollar equivalents, multiply by $2.80), an increase of one-third over both the previous quarter and the first quarter of last year. According to a survey made by the Royal Institute of British Architects, commissions for new work for public authorities showed the greatest proportionate increase—$110 million against $53 million a year earlier; the value of new hospital building commissioned during the first three months of this year was about four times that of the first quarter of 1959, reflecting the increased share of government expenditure on hospitals at the beginning of this year. New commissions for educational buildings also rose, to $56 million against $27 million in the preceding quarter and $26 million a year earlier.

Commissions for new housing rose to $126 million, against $94 million a year earlier. About 85 per cent of this total represented work for private developers; while local councils now account for about 45 per cent of the new houses actually built in Britain, many local authorities either employ their own architects or build to contractors’ plans which have not been drawn up by an architect. Commissions for banks and office buildings declined slightly, to $20 million. How much of an indication of future building activity (as opposed to potential demand) can be gained from the RIBA’s survey remains to be seen. Not only is about half the building in Britain (and almost all the private industrial building) done without using the services of a private architect, but an indeterminate part of new work commissioned is abandoned before contracts are let and work begun. The credit restrictions already imposed by the government could have a considerable effect on work commissioned in the first quarter, as well as on work now being commissioned.

The RIBA states that there are now almost 3,100 private architects’ practices in Britain, an increase of 4 per cent since the middle of 1958; the number of architectural staff has increased at the same rate, and now totals over 15,000. But the volume of work has increased at a much greater rate during that time; many offices would like to take an additional staff, but cannot find them, and the RIBA Appointments Department now lists over 300 vacancies in London and the Home Counties alone. This may tend to slow the progress of building work in the design stage unless the volume of new work commissioned declines in coming months.
According to architect Leo A. Daly, this large freight depot was designed to provide completely enclosed facilities for loading, unloading, and storing train cargos. The long clear-span allows uninhibited movement for efficient freight handling, and calls for admitting natural daylight—with some provision for venting gases and smoke in the case of fire.

Freight Depot by Leo A. Daly Co.

Daylighting by Wasco

Architect Daly solved the daylighting problem in the best way possible by specifying 64 trouble-free, weatherproof Wasco Skydomes in two rows... running the length of the depot. This design floods the interior with pleasant, glare-free natural light that eliminates the expense of artificial lighting during the day. And he solved the need for automatic fire venting by adding Wasco Pyrodomes and Pyrovents to the roof (55 in all), located adjacent to each structural bay to halt the spread of damaging smoke or heat.

Only Wasco makes Skydomes... the original daylighting units... proved in more than ten years of service. Skydomes are available in many types—to help you solve any problem in daylighting, fire venting or roof ventilation. Call your Wasco representative, or see Sweet's File 20a/Wa.

Good Daylighting Design Starts with Wasco Skydomes

Wasco Products, 5 Bay State Rd., Cambridge 38, Mass.
In Canada: Wasco Products (Canada) Ltd., Toronto, Ont.
Steel pipe building frames make a strong structure lighter

Swiss Fabricating, Inc., of Pittsburgh, Pa., saves money for customers by using USS National Butt-Welded Steel Pipe for lower-cost, faster-erected building frames. This particular building will house an automobile sales agency consisting of a show room, parts and service departments and a body shop. The building is 350' long with 80' clear span steel pipe trusses.

Steel pipe is strong, yet it's light enough to cut the weight of a structural frame by approximately one-third. In a test performed on a 60' clear span building designed to support 65 pounds per square foot roof load, a load of more than 182 pounds per square foot was safely handled through uniform loading. Deflection at
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USS National Butt-Welded Steel Pipe is ideal for many structural applications in buildings such as: trusses, columns, posts, scaffolds, towers, frames. It is available in sizes 1/2” thru 4” from your local National Tube Distributor.

For additional information, write National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. Ask for Bulletin #2, entitled "Pipe for Mechanical and Structural Applications."

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**NEEDED ENCOURAGEMENT**

Forum:

Many thanks for your article on Louis Kahn’s medical laboratory at the University of Pennsylvania (Forum, July ’60).

In case you doubted it, and I think you sometimes do, there are a few of us who are still young enough, and perhaps foolish enough, to be seeking immortality instead of riches.

An article like this encourages us, and we sorely need it.

ROBERT F. EIGHTOWER
Architect, Grand Junction, Colo.

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**HOW BIG THE MOTEL?**

Forum:

Your article, “The changing hotel market” (Forum, Aug. ’60), is much appreciated as a compilation of data on the rapid growth of the hotel field, especially the motor-hotel segment.

But one figure needs clarification. You say the average motel consists of 55 units. But at other times you have said the average motel has 25 units.

ROBERT C. FREEMAN
Editor, “The Hotel Monthly,” Chicago

*Forum was defining new motels, the average size of which is 55 units. The average size of all motels, new and old, is 25 units.*—ED.

Forum:

By definition, the concept of a motor hotel adjacent to an airport seems to contain a basic flaw.

WILLIAM H. BONHAM
Architect, Los Angeles

*Like a coach flight on a jet airplane!*—ED.

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**HIGH BIDDER**

Forum:

Usually accurate Forum slipped up in its July story on the award of Philadelphia’s Eastwick project to Reynolds Metals Co. and Samuel A. and Henry A. Berger.

Is it not true that the Redevelopment Authority’s choice of the plan designed for Reynolds-Berger by Dr. Constantinos A. Daskalas “disregarded the fact that the competing home builders’ corporation had offered a higher land price.” A careful analysis of both bids reveals that the Reynolds-Berger offer is clearly higher than that of the competing Philadelphia Builders Eastwick Corp.

It is true that the lone member of our Authority, who dissented from the award to Reynolds-Berger, said the home builders’ bid was higher. But your article neglected to mention that the undersigned promptly denied that this was so.

MICHAEL VON MOSCHINEN
Chairman, Redevelopment Authority of the City of Philadelphia

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**GUGGENHEIM INSULTED**

Forum:

Frank Lloyd Wright was accustomed to insults during his lifetime, among them the transformation of the Larkin Building into a parking lot and a university’s threat to the Robie House.

New York has succeeded in outdoing them all in the form of a white brick apartment house being completed across the street from the Guggenheim Museum (photo below). It has been argued that the museum is not in the best location. But the architectural and art world and New York are both grateful and proud of Wright’s presence: it would have been proper to do his presence honor. This we have failed to do.

Throughout history the recognized masterworks have enjoyed friendly relationships with their neighbors. When will we start respecting the recognized masterworks, our architectural heritage?

ROBERT TRENKENRAUM
Architect, New Haven, Conn.

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**TEAMWORK OR DEATH**

Forum:

Perhaps the Burchard Case (Burchard was charged with having permitted an engineering corporation to practice architecture illegally under the guise of a “fictitious, nonexistent” complementary architectural partnership—Forum, July ’60) will become a cause célèbre. It may indeed precipitate cogent discussion, leading to a revamping of professional codes and procedures and ultimately to the architect’s resumption of his central and essential role in society. Should this be the happy result, Charles Burchard will surely merit the A.I.A. Gold Medal.

Unlike some of the more doctrinaire of my A.I.A. colleagues, I see little sense in bloodying our hands battering at the “package-dealers,” engineers, and industrial designers whose services have been tailored to meet the demands of modern society. Instead, I urge that we reassert our high tradition as master builders and drive the encroachers from the temple by applying our superior imagination and ingenuity to produce evocative, efficient, economical buildings—on schedule, and as members of building industry teams. If we fail to do this, the profession as we know it will become extinct. Then, at some future date, the most skilled and imaginative builders will again begin to call themselves architects.

LEONARD J. CURRIE
Head, Department of Architecture, Virginia Polytechnic Institute, Blacksburg, Va.

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**HOSPITAL DESIGNERS**

Forum:

Through some oversight or misunderstanding, the architects who designed the nuclear survival hospital in San Antonio (Forum, July ’60)—Page, Southerland & Page (Whit Phillips, associate)—were not mentioned in your article. Although associated with Phelps & Dewees & Simmons on the project, we were responsible for its design.

LOUIS F. SOUTHERLAND
Architect, Page, Southerland & Page, Austin, Tex.

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**FREEDOM FOR SCULPTORS**

Forum:

This latest effort of Sculptor Herbert Ferber (photo above, right), his pioneering in the impact of space on the viewer from within a form and with its manifestations over and about the viewer, will add to the experience that form can convey. It will also further the sculptor’s freedom with form uncontrolled by the bonds of utility imposed on architecture. This presentation in your issue (Forum, Aug. ’60) can open a new frontier to arts and new emotional reactions.

MAX ABRAMOVITZ
Architect, Harrison & Abramovitz, New York City

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**FORUM: Solomon R. Guggenheim Museum**

American Realism, an exhibition of the works of 181 American artists. The exhibition is on view at the museum through March 1961. The forum invites you to attend the opening of this comprehensive exhibit. A special event will be held during the opening. For further information, please contact: The Guggenheim Museum, 291 West 58th Street, New York, N.Y. 10019.