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Modern facilities and modern architecture go hand in hand at Cheltenham High School. This beautiful structure houses such advanced features as an Olympic-size swimming pool, sound-proof music rooms and foreign language booths. It was built with 1,434 units of LUPTON Type "H" and 122 units of LUPTON Type "G" aluminum curtain wall, plus 87 LUPTON "Master" projected windows.

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ASPO and World Planning Congress speakers hit shortcomings of both cities and suburbs

There was no lack of variety in planning ideas and opinions propounded at the annual conference of the American Society of Planning Officials in Miami Beach late in May, or at the World Planning and Housing Congress held the following week in San Juan, Puerto Rico. For almost any viewpoint that a delegate might like to hear, he could locate a speaker who was expounding it; and the various facets of city and suburb were both praised and criticized.

Opening the ASPO conference, keynoter Jefferson B. Fordham, dean of the University of Pennsylvania Law School, questioned "whether the 'save-the-center-city-area movement' is well conceived." The auto has made it feasible to shift many urban activities to outlying areas, he observed. But then, leaning in the other direction, Dean Fordham added that he still has a "notion that there are important cultural and intellectual values which can be realized to the highest extent only through the kind of human setting provided by the interchanges, the competitive demands, and the intensity which are likely to characterize living in a substantial urban area." Turning to suburban troubles, Dean Fordham criticized acreage zoning, or "Ivy League socialism," which excludes people of limited means from some communities just as effectively as racial discrimina-

As many as six huge jet clippers can nestle simultaneously under the 4 acres of elliptical cantilevered umbrella roof at the Pan American World Airways terminal opened for service last month at New York International Airport (Idlewild). There are no long finger-like "sheepruns" leading to scattered, unsheltered loading aprons. Instead passengers board or leave planes at cabin level direct from the main terminal structure, across special bridges, and are sheltered from the weather by the umbrella roof. The $12 million structure, able to withstand winds over 150 m.p.h., was designed and engineered by Tippetts, Abbott, McCarthy & Stratton and Lives Turano & Gardner, associates.

Housing and long-range planning continued on page 6
problems associated with the "population explosion" caused the sharpest conflict of opinion between two speakers at the ASPO conference and the subsequent World Planning Housing Conference held in San Juan. At ASPO, Richard L. Meier, of the University of Michigan, and visiting lecturer this year at the Harvard University department of city and regional planning, saw a need to curtail this country's rapid population growth. "We need a birth rate for the long run that is just about half what it is today," said Meier. "We must create some new environment that embodies a style of life attractive to many people but not conducive to large families. We know that suberbia is not the answer. Many women, although still a minority, have come to understand that the satisfactions afforded by suburban life are overrated. Very likely some new form of urbanity will need to be invented. My suspicion is that an exciting redevelopment of the central city, combined with some shocks to expectations, may induce a part of the younger generation to decide not to encumber themselves with children.

Some will discover from the practitioners of human genetics that they carry bad genes, and ought not reproduce."

At the San Juan conference the following week, however, Ernest Weissmann, assistant director of the U.N. Bureau of Social Affairs, said the world can adequately house and clothe almost any number of inhabitants provided that the necessary planning has been done, and everyone can obtain the necessary education and a means of livelihood. Agricultural technology is simultaneously increasing the world's food supply and decreasing the number of farm jobs, Weissmann declared, but more jobs for more people can be created by greater industrialization in and around urban areas, where a vast number of people can be housed comfortably. The most important requirement, he said, is to obtain more order in the development of cities and "to stop the haphazard sprawl we see everywhere."

Supreme Court dismisses 4-acre zoning appeal

An appeal to the U.S. Supreme Court to invalidate a local zoning ordinance that estabished minimum 4-acre lots in some areas was dismissed by the Court on May 31 "for want of a substantial federal question." An objecting property owner had claimed that adoption of the 4-acre minimum in a portion of New Canaan, Conn., previously zoned for 2-acre minimum lots violated the 14th Amendment, which stipulates that no person shall be deprived of property without due process of law. The owner contended that the zoning commission had acted arbitrarily in adopting a new town-wide rezoning ordinance that changed minimum lot sizes from 2 to 4 acres for a 436-acre tract that he owned. He had intended to sell this property for a real estate development of 2-acre lots, he said, and he would suffer a loss, or be deprived of some of its value, if he had to sell it under 4-acre zoning.

New Canaan officials argued that the rezoning had contributed to the community's "health, safety, welfare, convenience, and prosperity." First Selectman Charles F. Kelley said the high court's decision "strengthens our belief that we have a right to run our own affairs" and will be able to escape the "tight congestion" that has developed in some other suburban areas in recent years. After the decision, zoning officials of nearby Greenwich, which has almost 10,000 acres zoned for minimum 4-acre lots, also breathed easier.

Skilled personnel shortage compounds urban troubles

One of the most serious problems associated with rapid urbanization of the U.S. has received little attention up to now. It is a shortage of skilled administrative and professional personnel for state and local governments. There has been a need not only for more administrative manpower (state and local non-school-system employees have increased more than 50 per cent since 1945), but also for personnel who are able to deal with increasingly complex matters.

Last month a new national organization to tackle this problem, the Municipal Manpower Commission, was established under a $500,000 grant from the Ford Foundation. President Eisenhower gave it a boost in a letter to James E. Webb, its first chairman and former Budget Bureau director. The commission's proposed program, the President wrote, "is vital at a time when the resources of local government are being strained by the explosive growth of our urban areas. State and local governments can and must continue to carry their important share of the responsibility for government services. But without adequately trained manpower these governments could easily be overwhelmed by the enormity of the problems confronting them. Should this happen, the pressure to have everything done by the federal government would become even greater than it is today."

Webb said the commission would launch an extensive research and education program to help improve the quality and performance of municipal administrators and assist them in dealing with mass population shifts to urban areas that are "producing a revolutionary change in local government and present us with what may be our best opportunity since colonial and frontier days to develop a vigorous system of local self-government."

The Harvard-M.I.T. Joint Center for Urban Studies has been engaged to make the first study for the commission; the commission will also work closely with the American Municipal Assn., ASPO, AIP, and other appropriate planning and civic organizations.

Other commission members include Ralph Lazarus, president of Federated Department Stores; William O. Baker, research vice president of Bell Telephone Laboratories, and Quigg Newton, University of Colorado president and former mayor of Denver. The director, headquartered in Washington, is Allen E. Pritchard Jr.
Saarinen feels buildings near St. Louis national arch should not exceed 200 feet—but city rejects idea

In the considered opinion of Architect Eero Saarinen, any structures in the area of the soaring 600-foot stainless steel arch that he designed for the Mississippi river-front Jefferson National Expansion Memorial Park in St. Louis should be limited, from the architecturally esthetic standpoint, to a height of about 200 feet.

Despite this view of the creator of the arch, which was chosen in a national competition as the most appropriate form for a national memorial at this site, St. Louis officials last month seemed determined to ignore it. They were intent on approving with all haste a redevelopment project on the edge of the park that would include three discordant 28-story, 275-foot-high apartment towers.

Latest developments in the effort to dissuade St. Louis officials from approving any adjacent project that would detract from the esthetic effect of the arch, a national monument that will be the possession of all Americans, included an interview with Saarinen in the St. Louis Post-Dispatch, in which he explained the reasons for his recommended one-to-three height standard: “Excessively high buildings next to the park will hurt the memorial. The limit of what is good for the memorial is about 200 feet. Such a height provides a very good relationship with the memorial, making the arch about three times higher than the buildings. That was the view I expressed at last summer’s meeting with federal and city officials that was never publicized in detail, and my opinion is unchanged. If you examine the St. Louis sky line, you find quite a few buildings which end at the 195- and 200-foot level. An adjoining development with buildings 200 feet high would unite all the structures very nicely into a quiet background.”

Asked if he considered Redeveloper Lewis Kitchen’s proposed 275-foot towers a serious drawback (Kitchen originally had planned two 40-story, 450-foot towers), Saarinen stated: “Well, I think his revised plan is much better than the first. Towers rising to 450 feet would have been murderous to the arch.” Saarinen emphasized that all of his remarks were concerned solely with esthetic considerations involved in the height of buildings in the vicinity of the arch, and he declined to express any preference or to discuss any other aspects of the project proposed by Kitchen and a rival project proposed by St. Louis Builder G. J. Nooney. The Nooney project would consist of a continuous S-shaped seven-story structure oriented north and south parallel to the arch.

In an open letter to the Board of Aldermen, Harris Armstrong, St. Louis A.I.A. chapter president-elect, recommended that the Board avoid making a hasty decision in the memorial-redevelopment situation, and urged that it name a jury of objective non-St. Louis architects and realtors to analyze both the Kitchen and Nooney proposals. “Such a jury could be assembled in a short time on a matter of such great national importance architecturally,” said Armstrong. “It would give a very constructive report on the advantages of each scheme and might very easily, by laying down some ground rules for the project, give St. Louis a vastly superior solution to either of the present proposals.”

Armstrong’s plea, and a request by Nooney at a public hearing for a closer study of the competing proposals by architectural experts and land economists, were quickly rebuffed. A. J. Cervantes, president of the Board of Aldermen, said he saw “absolutely no merit” in deferring action, and Alderman A. Barney Mueller, chairman of its committee on housing also said he felt any further study was unnecessary. Strangely and deplorably silent were the voices of the powerful inner circle of St. Louis business and civic leaders, who in recent years have helped the city earn a reputation for fostering music and other cultural activities. In this instance the city was turning its back on architecture and completely rejecting its responsibility as a national trustee charged with developing the area around the national memorial arch and park in a complementary manner.

Editorials in both St. Louis newspapers quickly echoed the official “no delay” stand, and observers predicted that authorization for the Kitchen plan would be reported out of committee and given final approval by the full Board of Aldermen before the month ended and it began its summer recess.

Nuclear survival hospital started in San Antonio

To date there has been almost limitless discussion, but scarcely any action, on the construction of buildings to afford protection from atomic warfare blasts and fallout.

In San Antonio, however, South-west Texas Methodist Hospital has started a five-story 175-bed building that will have an underground “nuclear survival complex” in which 1,200 people could be sheltered and all regular activities of the hospital could be conducted for two weeks without any access to the outside world (see photo). To finance this special construction, as a demonstration prototype, the federal Office of Civil and...
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Two cities experience big public housing vacancies

Public housing projects in two widely separated cities were troubled with embarrassing vacancy rates last month:

- In St. Louis there was a 9 per cent vacancy in the 6,200 units in the city's seven completed projects, the same rate the Housing Authority reported last December 31. The rate increased sharply last year, booming from 3 to 9 per cent between March and December. Adverse publicity about crime in St. Louis projects has been a large factor in discouraging many families from applying for units. A grand jury report last December said the rate of reported rapes, robberies, and aggravated assaults in one of the St. Louis projects occupied almost exclusively by Negroes was about two and one-half times the rate for the city as a whole, but less than in adjacent Negro areas. The jury also noted that its report was based only on "reported" crimes, although "it is quite apparent that there is a considerable amount of crime in these projects which is never reported"—because of fear of reprisals. In one police district occupants of public housing projects represented 31.8 per cent of the population, but accounted for 47 per cent of the arrests for juvenile crime. In the city's other projects, the grand jury reported, it found no serious crime situations. Nevertheless, it urged the Authority to modify some design features of future projects to eliminate building factors that contribute to crimes against the person, such as soundproof vestibules, in which numerous robberies occurred.

According to James T. Drought, deputy director of the Authority, however, conditions are already improving and vacancies should decline to less than 5 per cent again by November 1. Major crimes in the city's three worst projects were 59 per cent fewer during the first three months of this year than a year earlier, largely as a result of the Authority's employment of additional private watchmen, some of them accompanied on their patrols by police dogs.

- In Waterbury, Conn., on May 1 the regional director for the federal Public Housing Administration took over the management of the 400-unit Berkeley Heights project from the Waterbury Housing Authority because a 35 per cent vacancy rate threatened the solvency of its operation. (For PHA's entire New England region, the vacancy rate on March 31 was only 1.1 per cent). This project, completed in 1954, was fully rented for several years, but fell into disrepute after racial occupancy problems arose. After some tenants started to leave garbage in the halls and follow other poor housekeeping practices, it became difficult to find a steady supply of new tenants. As one observer summarized the situation: there apparently were not enough qualified low-income Negro families in the community to fill the project, and not enough low-income whites who cared to move into it after it had acquired a poor reputation. PHA hopes to rehabilitate and upgrade the project with various tenant improvement campaigns, as well as improve maintenance and management programs, and eventually to return it to the Housing Authority.

Architect-engineer dispute flares in Ohio again

A long-standing dispute between Ohio architects and engineers has erupted again. In Cincinnati last month the state's five-member Board of Examiners of Architects began hearings on charges that Architect Charles Burchard, "by fraud and deceit," permitted an engineering corporation to practice architecture illegally under the guise of a "fictitious, nonexistent" complementary architectural partnership.

On the second day of the hearing, before complete presentation of the state's case, however, the hearings were suspended indefinitely, when a serious illness in his family made it necessary for the special counsel pressing the charges to return to his home in Dayton. Pending the opportunity to present his formal defense, Burchard denied the charges and registered his dismay at the unforeseen delay in the proceedings, but expressed confidence in his ultimate vindication. Before the unanticipated postponement, Marcel Breuer was heard out of schedule as a character witness for Burchard, because he had already arrived in Cincinnati from New York for the purpose. After receiving M.I.T. and Harvard degrees in 1926 and 1940, Burchard was an assistant professor of architecture at Harvard with Breuer from 1945 to 1953, worked in Breuer's office, and for a time had a private practice of his own in Cambridge.

The charges against Burchard arose from his dual relationship with A. M. Kinney, Inc., an engineering firm, and A. M. Kinney Associates, an architectural and engineering office, and an Ohio law prohibiting practice of a profession by a corporation. The state's complaint charges that A. M. Kinney Associates is a "fictitious and nonexistent-
ent partnership," and that Burchard's activities were primarily as an agent of the engineering firm, and thus permitted that corporation to practice architecture unlawfully.

Said A. M. Kinney Sr.: "This is essentially a conflict between the architectural and engineering profession in Ohio. This results from a serious ambiguity in the statutes governing the areas in which these sister professions may practice. It is deplorable that the architects have seen fit to endeavor to settle this conflict by a deliberate and vicious attack upon a man of Charles Burchard's character and reputation."

**Briefs**

The British Crown sold its former Hong Kong Parade Ground in an exciting 110-bid auction last month, and starting in September the site will be developed with a 22-story, $12-million, 1,040-room luxury hotel scheduled for completion in October 1961. The successful bidders, who immediately made a $250,000 deposit on their winning offer of $2,480,000, were Texas Hotel and Real Estate Operator Leo Corrigan Sr., and Dallas Oil and Real Estate Tycoon Toddie Lee Wynne. Bidding vigorously against them for this choice 40,000-square-foot downtown Hong Kong parcel, one of the most sought-after hotel sites in the world, were other realty interests and syndicates from the U.S., England, and Japan.

California voters overwhelmingly approved two state bond issues for construction totaling $700 million on June 7. By a margin of almost two to one, they sanctioned a $300 million issue for school-building assistance to local communities, and by about two to one approved an additional $400 million to continue the state's veterans' loan program for the purchase of homes and farms.

The first U.S. Public Health Service research grant ever made to an A.I.A. chapter has been awarded to the New York chapter for a three-year, $100,000 study of hospital operating suite planning and design problems. Chapter member Robert Hyde Jacobs Jr. will direct the study, starting this summer, and after it is organized will engage an architectural assistant and a researcher, the latter possibly a surgical nurse. The project will include intensive investigation of routines followed in operating suites, a survey of work being done to combat hospital-acquired infections (insofar as this relates to the layout and equipment of operating suites), an analysis of existing and projected operating suite plans, and other studies to help architects develop new designs or unique solutions in this aspect of hospital architecture.

**Median school cost set at $15.99 per square foot**

When the Ford Foundation's Educational Facilities Laboratories completed a year-long study of school costs, including planning, financing, and building expenses, it found that the median construction cost of all the projects it analyzed was $15.99 per square foot of gross building area, after adjustments to allow both for regional cost differentials and year-to-year changes in building costs.

Emphasizing that building costs will always vary from structure to structure, depending on quality of construction and countless other factors, the researchers nevertheless computed a breakdown for the main elements of this median building cost. Many architects, builders, and school boards may wish to measure costs of their schools against these median costs, but they will realize, of course, that variations from the median will have no special significance unless allowances are made for all the factors that might cause any given project to vary from such a national median. The breakdown:

- **Excavation** $ .34
- Footings and foundation 1.00
- Structural frame 1.57
- Structural floors 1.25
- Roof deck .50
- Roofing and insulation .45
- Exterior walls 2.00
- Interior partitions 2.45
- Finished floors .40
- Ceilings .28
- Plumbing 1.15
- Heating and ventilating 1.90
- Electrical, lighting fixtures 1.45
- Miscellaneous equipment
  - (built-in) 75
  - Contractor's job overhead .50

**Total** $15.99

Another organization has released data on the variation in school costs for virtually identical construction in a single community. The U.S. Chamber of Commerce, which opposes federal school construction aid (particularly the federal Davis-Bacon Act's "prevailing wage" requirements that would apply to projects receiving federal aid), reported the following differences in hourly wage rates in one community for a school that was built with local funds and another erected with federal-aid funds:

<table>
<thead>
<tr>
<th>Job category</th>
<th>Local Federal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common labor</td>
<td>$.75 $1.15</td>
</tr>
<tr>
<td>Carpenter</td>
<td>1.75 2.25</td>
</tr>
<tr>
<td>Concrete finisher</td>
<td>1.75 2.85</td>
</tr>
<tr>
<td>Concrete mixer</td>
<td>1.50 2.75</td>
</tr>
</tbody>
</table>

**World design competition for Dublin library**

Architects from all over the world have been invited to enter a competition to design a new library at Trinity College, Dublin, adjoining the present library structure erected in 1752. Although most buildings on the crowded 37-acre central-city Trinity campus are of Georgian and other traditional styles, no conditions have been attached to the external appearance or materials for the new building, which must contain "a net-floor area of 65,000 square feet, exclusive of circulation," and has been budgeted for a total of $1.4 million, including furnishings and fees.

Three prizes of $4,200, $2,800, and $2,100 will be awarded, and the first-prize winner will be appointed architect for the project at the regular fee scale of the Royal Institute of Architects of Ireland. Programs are available from the Competition Registrar, Trinity College, Dublin, for a deposit of $14, refundable to all who submit bona fide entries. Registration closes Aug. 31; designs must be submitted by March 21.
"Push-button umbrella roof" of stainless steel gives Pittsburgh a new all-weather auditorium

Watching a play or listening to music under the stars heightens the enjoyment. That is, until a passing shower comes along to wash out the fun. But now comes a new idea in auditoriums. In this one, an umbrella roof of Nickel Stainless Steel will close at the first drops of rain — and on with the show.

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Reynolds-Berger team wins Eastwick project, based on Doxiadis plans; architects spur Miami renewal

Competing against some of the best-known names in U.S. building, the redevelopment plans of a Greek architect, engineer, and city planner won for his clients last month the contract for Philadelphia's vast, 2,506-acre Eastwick project. It is the nation's largest Title I project in area—a city within a city that ultimately will consist of more than 10,000 new housing units coordinated with commercial facilities and an 800-acre industrial park.

The architect-planner is Constantinos A. Doxiadis, 46, head of world-ranging Doxiadis Associates, of Athens, which now has branches in seven foreign lands (including a U.S. office in Washington, D.C.). When only 23 years old, Doxiadis headed the Greater Athens Area Town Planning Office, and from 1945 to 1950 he was Minister of Housing and Reconstruction and Coordinator of the Greek Recovery and Economic Development Program. During the past decade his office has been a planning consultant for nine nations, the World Bank, the United Nations, and the Washington (D.C.) Redevelopment Land Agency. Now he also is board chairman of the Athens Technological Institute.

Doxiadis' successful clients in Philadelphia are the Reynolds Metals Co., which has been moving into redevelopment on a national scale during the past year under the direction of Albert M. Cole, energetic Kansas lawyer and former HHFA Administrator (1953-59), and Reynolds' local associates for Eastwick, Philadelphia builders, and brothers, Samuel A. and Henry A. Berger. The Reynolds company believes there is a huge undeveloped aluminum market in construction, and that outstanding, well-designed redevelopment projects will make excellent proving grounds and showcases for its building wares in large quantities. Other cities where Reynolds has been seeking redevelopment projects include Cincinnati, Kansas City, Washington, and Baltimore. Usually the company expects to provide only planning and seed money for projects, which will be erected by local builders. It has allotted an initial $750,000 for Eastwick, but may invest $2 or $3 million more in equity funds if necessary to backstop its builder associates.

Originally seven different groups made offers for the Eastwick project or portions of it last September. These included Cerel, Perini Associates, Inc., and McCloskey Industries, Inc. The McCloskey firm, headed by Philadelphia Builder and Democratic National Committee Treasurer Matthew H. McCloskey, wanted to develop only the industrial tract and later withdrew its offer because of other commitments. Finally competition was narrowed to the Reynolds-Berger team and Philadelphia Builders Eastwick Corp., a joint venture of ten Philadelphia home builders. Redevelopment Authority Director William L. Rafsky then tried to induce these two groups to join forces to develop the project along the main lines of Doxiadis' plans. But this match-making effort failed, and the Authority's commissioners, chaired by Michael von Moschiziner, then voted 4 to 1 to award the project to Reynolds-Berger. In deciding in favor of redevelopment as planned by Doxiadis, the Authority disregarded the fact that the competing home builders' corporation had offered a higher land price (under a complicated sales procedure). Excluding building costs, gross costs for Eastwick's land and site improvements will be about $100 million, including an estimated $22 million write-down subsidy from HHFA, and a more than usual $33 million from the city. Total development costs will be about $330 million.

The lone dissenting Authority member was Mrs. Goldie Hoffman. She said she saw no justification for rejecting the higher land price offered by "local interests."

MAGNAMINOUS MIAMI ARCHITECTS

When Miami Architect H. Samuel Kruse was president of the A.I.A. Florida South Chapter in 1954, he set the wheels in motion for greater participation of architects in city planning and redevelopment affairs. He had a bill introduced in the legislature (although it was not enacted) that would have authorized country-wide master planning. He also created an A.I.A. chapter committee on community development, of which he has since become chairman. Last month, Miami had reason to be thankful for the fruits of Kruse's civic-mindedness and two recent A.I.A. chapter contributions toward the redesigning and redevelopment of the city, directed by Kruse and his fellow committee members, Irvin Korach, Marion L. Manley, T. Trip Russell, and Robert Law Weed.

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To achieve maximum efficiency in vertical transportation and the utmost in space utilization, the architects for this modern Maytag office building, planned its transportation facilities at the hub of the work area.

Here dependable Montgomery Elevators of the latest operatorless design will be easily and quickly accessible to efficiently serve the needs of all surrounding office personnel.

For your next commission requiring vertical transportation, investigate the elevator equipment that is designed and built by craftsmen who are traditionally dedicated to producing the finest in elevator workmanship — Montgomery.

Montgomery® ELEVATOR COMPANY, Moline, Illinois
offices in principal cities
MONTGOMERY ESCALATORS — STEPHENS-ADAMSON "SPEEDWALKS" AND "SPEEDRAMPS"
Exclusive Manufacturers of Passenger and Freight Elevators Since 1892
New! Kinnear POWER OPERATOR

FINES ROLLING DOOR OPERATOR EVER DESIGNED

FEATURES:

New "Removable" Design — doesn’t disturb auxiliary hand-chain operator.

Any Mounting! Vertical or horizontal — on door or wall bracket, or through-the-wall!

Easy Installation. Simple in-the-field control-wiring to a terminal strip.

Reserve Power for smooth action regardless of wind pressure, drifted snow, collected grime, or extra years of usage.

Thermal Protection Against Overload — motor cuts out before damage can occur.

New Worm Gearing for highest efficiency and longest service.

Centrifugal Clutch transmits motor action to door with no shock. Prevents motor stalls and overload damage.

Seven Sizes! Capacities for doors of any size!

MOUNTS ON DOOR:

OR ON WALL....

(OR THROUGH THE WALL)

A new high in door efficiency is reached in Kinnear Rolling Doors equipped with the new Kinnear "Series Three" Power Operator. This is an all-new concept in motorization for rolling doors — designed with a single goal in mind — to reduce to minimum all chance for troubles from overload, torque shock, constant start-stop action — in a motor that assures easiest installation and maintenance, and permits any type of mounting.

The "Series Three" Kinnear Power Operator, like the Kinnear Rolling Door itself, is the finest achievement today’s engineering skills can produce.

Write for new Power Operator Bulletin

The KINNEAR Mfg. Co.

FACTORIES: 1440-40 Fields Avenue, Columbus, Ohio
1742 Yosemite Avenue, San Francisco 24, Calif.
Offices and Agents in All Principal Cities

1946. Effective this month he will head a new school in the College of Fine Arts at Ohio University, Athens, Ohio, which will offer a Bachelor of Architecture degree upon completion of a five-year program. Before joining the A.I.A. staff, Taylor taught for 15 years at Columbia and Syracuse Universities. He also practiced architecture for 25 years.

TAYLOR

KELLY

At Cornell University, the new dean of the College of Architecture, effective this month, is Burnham Kelly, associate professor in the department of city planning at M.I.T. since 1945, former director of the Massachusetts State Association of Architects, and author of The Prefabrication of Houses. He succeeds Thomas W. Mackesey, who has resigned to devote full time to teaching.

In Houston, Tex., Rice University announced that Architect and Engineer Felix Candela has accepted an appointment as staff specialist in architecture. Since 1953, Candela has been professor of design in the school of architecture of the National University in Mexico City. Rice students who wish to specialize in structures will consult with him there.

SYRACUSE ALUMNI HONORED

During the commencement program at Syracuse University, the highest alumni honor, the George Arents Pioneer Medal was awarded "for excellence in architecture" to Rochester, N. Y., Architect Donald Q. Faragher, '30, and "for excellence in civil engineering" to J. Burch McMorran, '22, New York State Superintendent of Public Works.
Beauty and Structure Become One

Through Facing Tile The plastic power of clay, expressed in the bust of Pavlova and the structural beauty of facing tile, reflects the kinship of sculpture and architecture. To the architect, facing tile offers integrity of design—structure, finish, flexibility, color, permanence—the material means to art.

FACING TILE INSTITUTE
1520 18th Street, N.W., Washington 6, D.C.
Found—in the finest squares and circles—
\textbf{steel pipe}, the versatile tubular conductor

A new dimension in consumer services is exemplified by Fashion Square—a "first of its kind" personal service center in Santa Ana, California, conceived and built by nationally famous Bullock's, Inc.

In keeping with the Square's functionalism, \textit{steel pipe} was logically first choice for plumbing, heating, vent lines and fire protection. Because \textit{steel pipe} was readily available—black for fire sprinklers, galvanized for water, vent and drainage lines—its use resulted in low-cost, durable service piping that was quickly installed.

\textit{Steel pipe} is always first choice when economy \textit{plus} strength \textit{plus} ease of working \textit{plus} choice of finishes \textit{plus} ready availability are required. Whatever the application—water, oil or gas transmission; fire protection, heating, cooling and plumbing; vent and drainage lines; refrigeration, ice making, radiant heating or snow melting; electrical or communications conduit—\textit{steel pipe} serves best.

\begin{center}
\textbf{COMMITTEE ON STEEL PIPE RESEARCH}
150 East Forty-Second Street, New York 17, N.Y.
\end{center}

\begin{center}
\textbf{STEEL PIPE IS FIRST CHOICE}
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\item Low cost with durability
\item Strength unexcelled for safety
\item Formable—bends readily
\item Weldable—easily, strongly
\item Threads smoothly, cleanly
\item Sound joints, welded or coupled
\item Grades, finishes for all purposes
\item Available everywhere from stock
\end{itemize}
\end{center}

\textit{INSIST ON PIPE MADE IN U.S.A.}

Yours for the asking . . .

Write for your copy of the 48-page booklet "Radiant Panel Heating with Steel Pipe." It details the design, installation and operation of radiant heating systems.
CONTROL: first step to comfort

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.

See us in Sweet's 1960 Architectural File, Section 30 D/MI

Honeywell First in Control
ST. PETER'S LUTHERAN CHURCH, EDINA, MINNESOTA

Ralph Rapson, A. I. A., Architect

J. L. Crouse, Contractor

In this church the auditorium is octagonal, the congregation seated on all sides of the altar. Above, the eight large gable windows give the feeling of space within and a gem-like quality to the exterior.

The engineering of the gable windows was complicated by the decision to have them incline inward from the vertical to obtain exactly the effect desired. The windows are custom built to most carefully prepared plans and specifications. Engineers at Hope's worked closely with the architect in the structural design.

The building also has large wall areas using Hope's custom rolled-steel sub-frames with Hope's Heavy Intermediate Projected Windows, glass and insulated panels. In still other locations Hope's pressed-steel sub-frames hold glass and doors.

Such a building benefits especially from the availability, in Hope's Engineering Department, of a large, trained staff, thoroughly experienced because it is a permanent organization, continuously occupied with the problems of fenestration of important buildings in all architectural styles, traditional and modern. The lasting quality and the satisfaction given by Hope's Windows come also from the skill of experienced craftsmen working with the best materials.

Write for Bulletin No. 152

HOPE'S WINDOWS, INC., Jamestown, N.Y.
HOPE'S WINDOWS ARE MADE IN AMERICA BY AMERICAN WORKMEN
New floor tile discovery from Romany-Spartan...

**Ceramaflex**
rubber-cushioned ceramic mosaics in 9” squares

It's flexible and resilient!
Ceramaflex, because of its unusual flexibility, adjusts automatically to minor imperfections in sub-floor. But the rubber grid which makes this possible serves other functions, too. Ceramaflex floors are quiet because they are mounted in resilient rubber which acts as a cushion between the ceramic mosaic tiles and the sub-floor, and they are easy on the feet. Heavy furniture and appliances will not dent the surface.

Tiles are mounted in rubber pockets!
Each of the 64 ceramic mosaics that make up one 9” x 9” unit is permanently bonded in a pre-formed rubber grid. Because the edges of Ceramaflex 9” x 9” units are beveled, they lay up so tightly that joints are unnoticeable in the finished job.

So easily installed!
Because Ceramaflex is pre-grouted, installation is simple and fast. It's ready for use the instant it's laid. Ceramaflex is installed with a special adhesive as quickly and easily as conventional resilient floor tile. It can be installed satisfactorily on or below grade as well as above grade, over proper sub-flooring. Simple, rapid installation results in application cost substantially lower than that of conventional ceramic mosaic floors.

To You, Mr. Architect, Ceramaflex opens a broad new field for floor application of ceramic mosaics. This labor-saving, high quality product embodies all the most-wanted qualities of ceramic tile, plus two important additions: floors that are both quiet and easy on the feet. This makes Ceramaflex a superior flooring material for many areas in schools, institutions, retail, commercial and industrial establishments. And in residential work resilient Ceramaflex can be used advantageously in kitchen and family rooms as well as the more frequently tiled areas.

Ceramaflex is as new as tomorrow, so if you don't yet have samples and information... call your nearby Romany-Spartan sales representative or distributor, or write for Bulletin RS-228. United States Ceramic Tile Co., Dept. AF-14, Canton 2, Ohio.

*Trade Mark. Ceramaflex is the exclusive product of United States Ceramic Tile Company.
McQuay thin-line design individual room Seasonmakers are popular, not only because of their convenient size, their high efficiency and their inherent quality, but because they are so extremely versatile and dependable. Every part is easily and quickly accessible. They are easy to install and easy to work with. For example, filters are easily changeable; the slide-out fan deck is quickly removable; the hand of coil is easily reversible in the field.

All McQuay Seasonmakers utilize central station heating and cooling and are available with capacities of 220, 330, 440, 520 and 640 cfm. They furnish individual room comfort at any desired temperature level—heated, filtered air in winter and cooled, dehumidified and filtered air in summer. Seasonmakers are ideal for multi-room buildings such as hotels, apartments, motels, schools, hospitals, offices and residences.

If you haven’t already done so, investigate McQuay individual room Seasonmakers. For complete information call the McQuay representative in or near your city, or write McQuay, Inc., 1609 Broadway St. N.E., Minneapolis 13, Minnesota.
Inside or out, it has to be glass to last

This luminous ceiling extends from the lobby clear out to the street.

It has to be glass, if you want it to take weathering without warping or sagging or discoloring or wearing.

It has to be glass, indoors or out, if you want a material that is non-static, doesn’t attract dust. A material that can be kept clean for the price of a damp cloth and an ounce of elbow grease.

It has to be glass, if you want really delicate control of illumination. This installation, for example, uses an ingenious Corning glass called Crystopal.

The glass is a unique mix of clear crystal and translucent opal. The crystal prisms control brightness and bend light down to achieve high-level illumination. The opals reduce reflected glare and obscure the light source.

Inside or out, it has to be glass to last.

You can get a wealth of data on Crystopal glass and other lighting glasses by requesting a copy of Commercial Lighting Application Guide. Write to Lighting Sales Department, 64 Crystal Street, Corning, N.Y.

CORNING GLASS WORKS
CORNING MEANS RESEARCH IN GLASS
The best ideas are more exciting in concrete

Precast concrete and sand molds make “sculptured walls” come easy!

To achieve the striking design effect pictured here, the architects chose precast concrete. With it they turned the fronting wall of the building into an heroic bas-relief.

Famed sculptor Costantino Nivola “carved” the designs in damp sand. Cast directly from these sand molds in 132 panels, the concrete captured all the detail and rich texture of the original sculpture. Color variations on buff-toned background increase the feeling of depth.

This is just one example of how today’s architects are using concrete to create outstanding decorative effects in buildings of every purpose, every size and type.
the Headliner by DOR-O-MATIC...

positive overhead door control that is hidden from view

Beauty. It’s built in... and performs out of sight, even when doors move to the full-open position. No visible hinges, closers, arms, or holders interrupt the beauty and clean lines of doors and frames. Here is highly efficient door control concealed in any 1⅝” x 4⅝” head jamb or transom bar. Headliner sets the scene for good doorway design... entrance, vestibule, interior... in any building and at lower cost than with many other types of door closers.

Performance. The advanced new Headliner Overhead Door Control operates smoothly and quietly. Cushioned positive back stop and optional hold-open may be obtained at either 90° or 105°. Headliner also features positive centering and no accidental hold-open. The Headliner provides positive control... throughout opening and closing cycles for double or single acting doors. Simple, accessible two-speed closing and spring force adjustments are provided.

Installation. The Headliner is designed for packaged unit construction so the complete doorway—frame with pre-installed Headliner and door—is quickly installed. Gone is the usual time-consuming preparation. One trip completes the installation... the door is securely set in the frame in seconds with the Headliner Fast-Set Arm and Pivot.

For the full story, communicate with your door manufacturer or hardware consultant... or write Dor-O-Matic today.

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7356 West Wilson Avenue  •  Chicago 31, Illinois

CANADA: Dor-O-Matic of Canada, Ltd., 550 Hopewell Ave., Toronto 10, Ontario
GENERATION AFTER GENERATION of architects have seen Koppers coal tar pitch roofs last 25, 30, even 40 years. The reasons for this long life are the complete waterproofness of coal tar and its unique ability to heal small cracks. Coal tar pitch also resists . . . but your Koppers roofing specialist can give you the full story.
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PROVEN PERFORMANCE • Millions of Ware Aluminum Windows, in installations all over America—residential, institutional, industrial—have been demonstrating their quality for more than a decade.

NEW DESIGNS • Forward looking management will introduce a number of new designs in the next few months that will add to the attractiveness of this great window line. Write now for details.

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1. Never-before Total-Area Versatility and Space Utilization
2. Coordinated Planning, Design, Installation
3. OneSource Responsibility for Specifications, Performance, Service
4. Lower Total Cost when Planned and Installed as a Package

Only Brunswick, the world's largest manufacturer of gymnasium equipment, can give you the time, cost and functional advantages of the Coordinated Flexi-Gym. Only Brunswick has the experience, the staff and the desire to help you plan and produce a total functionally advanced gym... a gym area far beyond your traditional expectations and at total cost far below seating, partitions, backstops, stages planned separately.

BRUNSWICK CORPORATION
2605 E. Kilgore Road • Kalamazoo, Mich.

SEND FOR FREE BOOKLET "GYM IDEAS"
Describes, illustrates recent Flexi-Gym Ideas, recent Installations and Services

Name
Title
Firm/School
City Zone State
AT WORK—Advanced Planning resulted in a truly versatile 15,600 square foot gymnasium area, Loyola Academy, Wilmette, Illinois; Very Reverend Michael I. English, S.J., School Rector; Naess and Murphy, Architects.

FOLDING GYM SEATING permits transformation of basketball court into dance floor in moments following league games. In 15 minutes two men can set up or remove seating for 1200 students. Additional stands are used on the horse-shoe balcony. Easy mobility of stands and self-storing feature permits maximum use of floor space for all-purpose use.

“A VERSATILE PLAN showing Flexi-Gym at its practical best is this dimensional view of a high school ‘idea’ gym designed by the Brunswick Planning Service. It includes 14,400 square feet on main floor and balconies; seating for 5200; can be divided into 5 separate areas for physical education, sports, assemblies, dining areas, study areas, other educational and community purposes.

SIX ELECTRICALLY OPERATED BASKETBALL BACKSTOPS which fold within themselves on the ceiling handle total basketball needs. Main court backboards are glass to provide complete audience viewing. Wooden backstops are used on four practice court baskets. In addition to extensive intramural and gym play, the school has four basketball teams in interscholastic leagues. Flexibility of basketball set up permits constant use of total gym area for variety of physical ed purposes, including volley ball played on the balcony area. School schedule calls for two classes run at same time.

FORMAL AUDITORIUM usage of the gym area is confined to four honor assemblies, June Graduation and three student masses. For these affairs, folding gym seating is augmented with chairs. The 50’ x 28’ stage is also used by the dance band for three important school dances a year in addition to other purposes. Future plans call for reverse fold gym seating on the balcony with these stands also providing partitioning of the balcony into individual and private class areas.
You can install STREAMLINE DWV COPPER TUBE AND FITTINGS at savings up to 15% and get the most modern drainage system possible... a compact, space-saving system that's lightweight, sanitary, non-rusty and clog proof.

**COMPARISON WITH RUSTABLE MATERIAL PROVES INSTALLED COST OF STREAMLINE DWV COPPER TUBE AND FITTINGS IS LOWER!**

<table>
<thead>
<tr>
<th>3&quot; ALL COPPER DWV DRAINAGE INSTALLATION</th>
<th>3&quot; GALVANIZED AND DURHAM DRAINAGE INSTALLATION</th>
<th>3&quot; IRON DRAINAGE INSTALLATION</th>
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<td><strong>COST TO PLUMBING CONTRACTOR</strong></td>
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<tr>
<td>Stack Fittings and Tube</td>
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<td>Stack Fittings and Pipe</td>
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<tr>
<td>Drainage Branch Lines</td>
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<td>Solder and Flux</td>
<td>Lead and Oakum</td>
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<td><strong>TOTAL COST OF INSTALLATION</strong></td>
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<td>$174.66 *</td>
<td>$204.92 *</td>
<td>$182.17 *</td>
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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.

Complete technical information on Streamline DWV Copper Tube and Solder-Type fittings is included in big, new 32-page Bulletin D-459. Send for your free copy today.

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* * *

Horace Jordan is a paint expert whose 30 years of experience have helped him solve maintenance problems for a variety of institutions and industries. As a Du Pont "Color Counsellor," he's seen Color Conditioning pay off for countless plants, office buildings, schools, churches and banks. In demand as a speaker, he recently delivered—in a single month—32 talks on color and its application, at the request of the Department of Home Economics of his state.

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Architectural Forum / July 1960
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StanSeal gaskets have been subjected to exceedingly severe tests (as in the photograph above). Air pressure equivalent to wind velocities in excess of 100 miles per hour have had no effect on the efficiency of these structural neoprene gaskets. Nor have "hurricane" pressures under elevated temperatures. Such performance, combined with the long service life you can expect from properly compounded neoprene makes possible a real weather-tight, maintenance-free building.

StanSeal gaskets are extruded, hence can take practically any shape that best fits your needs. (See Sweet’s Architectural File, Section 3F.) Let us work with you on your next curtainwall building. Send us your detail drawings!

BUILDING PRODUCTS DIVISION

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Clean, modern styling. 48" long, 42" wide, 14" high. Six pastel colors and snowy white.

Distinctive beauty—generous bathing area—integral corner seat and wide rim seat . . . these are just some of the preferred features found in the new Delray square recess bath by Eljer. Nationally advertised to help presell your customers, the new Delray is currently featured in full-page, four-color ads in House Beautiful and Living for Young Homemakers magazines.

Straight apron floor line minimizes tile cutting and installation costs—back and ends flanged for wall tiling.

Estate de luxe siphon jet toilet is styled and color-matched to complement other fine Eljer Fixtures.
The Catalina lighting fixture developed by Benjamin has become a classic in commercial lighting. Its beauty of design, unique simplicity and universal adaptability has made it the first preference of architects and illuminating engineers. Leading the field with thousands in use, it is today’s most-copied commercial fixture. Only 3½ inches from top to bottom, available in 4’ and 8’ lengths, it is easily coupled for uninterrupted flowing lines of light. Your Benjamin distributor has the Catalina in stock, for immediate delivery.
FOR KITCHENS in private dwellings, as well as hotels, restaurants, hospitals, etc., CAPRI MOSAIC TILES add aesthetic luxury and practicality. Mosaic tiles are becoming increasingly popular—in fact—an integral part of a model sanitary functional kitchen. They embody all of the concepts of elegance, easy maintenance, durability and are remarkably economical. Especially recommended for Kitchen backsplashes and Counter Tops, as illustrated.

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Specify Eastern's New Sparkle Panel

The attractive, three-dimensional design, developed for Eastern's Sparkle Panel by Lippincott and Margulies, gives this new metal lay-in tile an ultra-modern face...suggesting unusual opportunities for striking ceiling effects.

Sparkle Panel, built for simple and economical installation in 2' x 2' and 2' x 4' sizes, is a die-formed sound buffer which does not require hold-down clips...and is, therefore, fully accessible. A functional flange on its two sides, keeps the panel flat and permanently in place.

The prime steel used in Eastern's Sparkle Panel is put through a multi-stage anti-corrosion process, then coated with a permanent refrigerator-type enamel. To retain Sparkle Panel's original lustre for life, only an occasional dusting is all that is ever needed.

...A METAL ACOUSTICAL LAY-IN TILE OFFERING UNUSUAL DESIGN FLEXIBILITY!

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Please send me full information on your new Sparkle Panel

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FLINTKOTE ANNOUNCES A 
IN ROOF INSULATION...NEW!

keeps Bitumen on the roof instead of

EVERYBODY BENEFITS WITH NEW GOLD-N-KOTE!

ARCHITECTS can specify Gold-N-Kote for a superior bonding at lower costs.
BUILDING OWNERS save on maintenance cost through added insulation. There's less danger of blow-offs, fewer blisters and wrinkles.
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BONDING ROOFING MANUFACTURERS make fewer "pay-outs" from failures caused by improper adhesion.

SAMPLE OF ORDINARY ROOF INSULATION SHOWING ASPHALT ABSORPTION.

<table>
<thead>
<tr>
<th>ASPHALT ABSORBED: LBS. per 100 SQ. FT.</th>
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<tr>
<td>BRAND X ASPHALT IMPREGNATED ...........32</td>
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<td>BRAND Y ASPHALT COATED .................32</td>
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<tr>
<td>BRAND Z ASPHALT IMPREGNATED ...........44</td>
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<td>BRAND Z ASPHALT COATED .................45</td>
</tr>
</tbody>
</table>

Excessive absorption of bitumen wastes both material and labor. It also results in reducing the thermal resistance of the roof insulation.
GREAT NEW DEVELOPMENT

GOLD-N-KOTE*

in it to provide a superior bond at lower costs!

SAMPLE OF NEW GOLD-N-KOTE SHOWING
ASPHALT ABSORPTION.

ASPHALT ABSORBED: LBS. per 100 SQ. FT.
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GOLD-N-KOTE ASPHALT
IMPREGNATED: ONLY 15 LBS.

*Trademark of The Flintkote Company

FLINTKOTE

Manufacturer of America's Brodest Line of Building Products

THE FLINTKOTE COMPANY

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Only dome skylights made of PLEXIGLAS® acrylic plastic—the original and the best material for domes—can bear the label shown above. It is your assurance of completely successful performance in light transmittance, daylight control, heat-light ratio, surface brightness and outdoor stability.

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OKLAHOMA
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Plasteco, Inc.
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Houston 11, Texas

Southwestern Plastics Co.
5615 Rice Ave.
Houston 36, Texas
A roundup of recent and significant proposals

ARCHITECTURE AT PRINCETON
Princeton University is currently passing a capacious hat among alumni for $53 million, part of which will go toward badly needed buildings. Of that sum, $1.5 million has been allotted to the School of Architecture’s handsome new quarters (left), by Architects Fisher, Nes, Campbell & Associates of Baltimore. Above the ground-floor administrative and classroom spaces will be a 20-foot-high drafting room. Solid brick panels, trimmed in limestone, project from the drafting-room floor; inside, these spaces will display student work, lighted by narrow window strips flanking each panel edge.

SAN FRANCISCO MOTEL
A windy site in San Francisco, close to Fisherman’s Wharf, forced Anshen & Allen to forego the balconies they had planned around this two-story motel (left). Instead, they provided shallow bay windows in each unit and an open, landscaped court in the motel’s center. A precast concrete platform will raise the motel 20 feet; above that, the frame will be of wood. Parking will be under the ring.

NEW JERSEY SYNAGOGUE
A tent of wood planking over laminated wood bents will roof part of Temple Emanu-El in Livingston, N.J. Along the ridge there will be a skylight, and more glass, perhaps in a color, will fill the east and west ends. Under the wood tent, two sets of sliding doors divide the 175-seat sanctuary from the social hall. During High Holy Days, the sanctuary will expand to accommodate 600; for large social occasions, the sanctuary portion will shrink. Architects: Blake & Neski.
NEW YORK CITY APARTMENTS

The World's Fair date of 1964 is also the target date set by the Lefrak Organization for completion of Lefrak City (above and left), a 5,000-apartment, 20-building project in Forest Hills, Queens, N.Y. Four 16-story apartment towers, built at right angles to each other, will cluster around fountains and circular gardens. There will be five apartment clusters and a shopping center, all designed by the Lefrak staff, of which Jack Brown is chief architect.

SCIENCE BUILDING BRIDGES STREET IN OREGON

The composite photograph below shows how the University of Oregon's science building in Eugene will look when completed: steel lattice, strung between concrete piers, spans a street, an alley, and some one-story university buildings. The bridge idea stems from work by Lawrence, Tucker & Wallman, the building's architects, and the State College engineering department to find an exterior wall which would free the interior from columns and allow several window treatments. They arrived at an exterior "space frame" which integrates floors and trusses and hides window inconsistencies in the curtain wall behind. A narrow walkway will run between frame and wall.

MANHATTAN NURSES' TOWER

A $21 million building program is one part of Memorial Sloan-Kettering Cancer Center's all-out drive to raise $126.5 million in five years. One of the first buildings slated for construction is a $5 million, 20-story nurses' residence (below) by Harrison & Abramovitz, which will rest on a terrace above a New York City sidewalk. The tower walls, of glazed brick panels, glass, and aluminum, will contrast with the limestone facing on the first level, above the base platform.

$20 MILLION SHOPPING TRIANGLE NEAR CHICAGO

Three major department stores—Carson, Pirie, Scott & Co., Montgomery Ward & Co., and Wieboldt Stores, Inc.—have set up the Randhurst Corp. to build "the largest regional shopping center in the U.S." at Mt. Prospect, Ill. (above). Victor Gruen Associates, Randhurst's architects, planted the stores at the points of the triangular plan; the spaces between will be occupied by more than 100 smaller stores. In the center, under a steel dome, there will be a three-level plaza, where restaurants and shops will be arranged around an open space for public events: fashion shows, concerts, and exhibits.

NEW JERSEY COOPERATIVE

The adjoining 11-story buildings (right) are cooperative apartments being built under Section 213 as part of a Title I project in New Brunswick, N.J. Because the site adjoins the New Jersey College for Women campus, most owners will be faculty members there or at Rutgers. Half of the apartments will have precast concrete balconies, glued (with an epoxy) to brackets cantilevered from exposed columns. Architects: Turano-Gardner Associates of New York City.
THREE-PART DESIGN FOR TWO OWNERS OF A TEXAS BLOCK

When the American National Bank in Beaumont, Tex. acquired a block site for a new building, it decided to sell part of the land for an office building of compatible design. To Architects Harrell & Hamilton fell the task of working out designs for both owners, as well as a third structure for parking. Result: 13 office stories for Centex Properties, Inc., a five-story bank building of gray glass and aluminum frames and spandrels (shaded by a translucent marble outer wall), and a two-story garage behind the bank.

THREE-PRONGED APARTMENTS IN MIAMI

Fanning out from a utility core, the three wings of the Continental apartment building in Miami are arranged so that all tenants will survey Biscayne Bay or an assortment of pools and gardens on the premises. The exterior wall is a series of precast concrete mullions, glass, and precast concrete panels. Loads transmitted by the mullions are picked up by a pedestal supported, in turn, by sculptured concrete columns on the ground floor. Polevitzky, Johnson & Associates of Miami are the architects.

NEW ENGLAND HIGH SCHOOL CAMPUS

North Senior High School in Weymouth, Mass. (above), for 2,000 students, including 350 in a vocational wing (top, left), will be of reinforced concrete, brick, and glass. Classroom sections, grouped around open courts, will be two stories high, while the outlying gymnasium, circular cafeteria seating 750, and swept-wing auditorium (right, rear) will be one-story structures. Bids came in at $13.65 per square foot, a construction contract cost of $3.7 million for a total of 196 rooms. Scattered parking areas will hold up to 500 cars. The school's architects are Coletti Brothers of Boston.

PHILADELPHIA APARTMENTS

Rimmed with balconies from the third floor up, this 32-story tower (below) on Philadelphia's Rittenhouse Square will offer 499 luxury apartments. Another tower, twin to the first, will be built 40 feet away and connected to it at the first floor. Milton Schwartz & Associates designed the towers for Webb & Knapp, Inc. The first tower, facing the square, will cost $9 million and is scheduled for construction this fall.

NASHVILLE AUDITORIUM

Thirteen years ago Nashville voters approved bonds to finance a municipal auditorium, but a site proved harder to find than the money. Now, however, an urban renewal site has been designated and a building designed. The domed plan (left), by Marr & Holman, would give the city 76,226 square feet of exhibition space and a small arena.
"AND WHY, MIGHT I ASK, DID WE NOT INSIST ON A BARRETT ROOF?"

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bubble threshold . . . computer-room floor

ACOUSTICAL PATCHES

An acoustical treatment applied to walls or ceilings in "spots" instead of continuous stretches is called Geocoustic by its manufacturer, Pittsburgh Corning Corp. Acoustical experts have known for some time that good hearing conditions could be achieved by using scattered sound-absorbing materials, but Pittsburgh Corning cites its cellular glass unit as "the first practical patch absorber." In this concept, Geocoustic units are separately distributed at the most efficient points—usually at or near the corners of rooms and along the edges of walls or ceilings—to absorb sound. This means that sounds reflected from the room's hard surfaces are softened and diffused by the patch absorbers. Where these units are placed and how many are used depend on the geometry of the room and the acoustical effect desired. The important consideration in placement is that the patches be separate (rather than butt together) and that they be installed with an air space between them and the wall.

Each Geocoustic unit is $13\frac{1}{4}$ inches square, $2\frac{1}{4}$ inches thick, and weighs slightly less than 2 pounds. Roughly 2,400 holes $\frac{1}{16}$-inch in diameter on front and back faces are precisely dimensioned for maximum absorption efficiency. Four small pads, mounted at the back, hold the unit 1/2 inch away from the ceiling or wall, creating, in effect, a resonant chamber. Either acoustic cement or mechanical fastening methods attach pads to the wall. The advantages of glass as an inorganic material are, first of all, its incombustibility, and then again its nonwarshrink, dimensionally stable characteristics. Since Geocoustic is all one material, there is nothing to delaminate under moist conditions. White or cement-block gray are the introductory colors, but units may be spray-painted any other color either before or after installation. Cleaning is a matter of soap-and-water sponging, dusting, or vacuum cleaning.

The number of patches needed to do an efficient job in a given room depends on its size and shape and on the degree of control wanted, but Pittsburgh Corning estimates that 50 would be enough in a schoolroom, at an installed cost of $125. Prices "will be competitive with other incombustible acoustical treatments."

Manufacturer: Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22.

FOLDED-PLYWOOD ROOF

Thin plywood sheets glued to light lumber stiffeners form a lightweight roof and floor component called Trofdek, capable of clear spans up to 50 feet. Folded into troughs whose depth is proportionate to the length of the span, Trofdek can be used in three ways: as a removable concrete form, as a permanent part of the roof or floor, or by itself, as a prefabricated roof. If used as a form, reinforcing steel may be laid in the troughs and, if Trofdek is kept in place, wiring and piping may be attached to the wood. The standard width is a multiple of 16 inches, i.e., 48 inches or three troughs, but unmodular units may be ordered. Trough depths vary from $5\frac{1}{8}$ to $15\frac{1}{2}$ inches.

Trofdek is widely used in Great Britain and Canada, and U.S. rights have been acquired by Plywood Fabricators Service, Inc. (an affiliate of the Douglas Fir Plywood Assn.), except for the area stretching from the Canadian border to Virginia, held by Wood Fabricators, Inc. At Plywood Fabricators Service's annual meeting, Trofdek was tested over a 40-foot clear span with a design load of 40 pounds per square foot (live and dead load combined). It failed at 123% pounds per square foot, exceeding three times the...

continued on page 56
UNION HONEYCOMB in OVERHEAD DOORS

Union Honeycomb sandwich cores give exceptional strength, rigidity and durability to door panels. Impregnated paper Honeycomb resists moisture, decay, pests and fungi. The air sealed in each Honeycomb cell insulates against cold or heat. Lighter weight means lower freight costs, speedier handling—and important savings. Versatile Union Honeycomb can be bonded to a wide variety of facing materials for service and eye appeal.

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BUBBLE THRESHOLD

For doors that are not quite even or that miss the sill, a weather-stripped threshold comes with an adjustable vinyl bubble to make a tight seal. If the gap is as much as 1/2 inch, the bubble is raised by moving one end of the aluminum extrusion slightly forward. Smaller gaps may be closed by lowering the bubble proportionately (see photographs).

The Gossen #1001 Adjustable Weather Strip Threshold is fitted to the sill, fastened loosely, adjusted to fit, and then secured. If the door shrinks or swells a little, the bubble may be moved up or down and refastened. A threshold 37 inches long costs $4.25, or $1.42 per foot for any length.


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PORTABLE FLOOR

The steadily increasing use of automatic computers and electronic data processing equipment—and the resultant maze of wiring—prompted a building materials manufacturer to produce a floor which hides necessary power lines yet keeps them easily accessible for service. The Haskelite Plymetl Free-Access Floor extends 10 to 12½ inches above the base floor, leaving 6½ to 9 inches clear for cables, piping, and ducts. According to the manufacturer, the floor is lightweight yet sustains a uniformly distributed load of 200 pounds per square foot or a concentrated load of 1,000 pounds, with minimum vibration.

This decking system is based on the same company's Plymetl panel, 1-inch plywood wrapped in 24-gauge zinc-coated steel sheets, and topped by a 1/8-inch...
floor covering. An extruded aluminum molding runs around the edge of each 36½-inch square. Panels rest on a grid of rolled, formed channel sections. This in turn is supported by adjustable screw jack pedestals at each intersection (see drawing). For easy removal, each panel is beveled slightly and may be picked up by a suction device to expose the wiring underneath.

Components are interchangeable, except for panels which are cut to allow for cables or columns. The standard floor covering is vinyl tile, but other materials may be specified. For the standard panel size and finish, installed costs run to about $5 to $6 per square foot.


"Now you see it, now you don't" is the phrase with which the Guth Co. is introducing its Mystic Gratelite louver-diffuser for lighting fixtures. This diffuser resembles earlier Gratelites except that the longitudinal bars have been sharpened to points, helping the grid disappear and creating the illusion of a solid plastic sheet when seen from certain angles, even though the little cubicles are actually 3/8-inch square (see photo below). The Mystic Gratelite is also available in colors.
Old Type, Heavy, Cumbersome Fire Doors, Now Out-Moded by

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New Flush Design - New Forward Look

Class "A" Rating
3 Hour Fire Test

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Unique design and flush styling is now available with the new D & H Sliding PyroDor for protection of wall openings formerly shackled to a 60 year old standard door type. Now, architects and engineers can specify D & H Sliding PyroDoors and have the same solid structural mineral core construction as the D & H swinging PyroDoors. Modern flush design, concealed hardware and the New UL Pyromatic door closer gives the Sliding PyroDor its attractiveness - its forward look.

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**STICKY FOIL**

Adhesive-coated aluminum foil, which forms a molecular bond when applied to wood or certain plastics, is being marketed by Alcoa. A Philip Morris subsidiary, Polymer Industries, Inc., developed the adhesive, called Dri-Line, which Alcoa uses. Attracted by the foil’s heat-dissipating properties, two furniture manufacturers are sandwiching foil under hardwood veneer to protect tables and chairs from cigarette burns. Even though the first customers came from the Furniture industry, Alcoa expects that the primary market will be in upgrading plywood. In plywood siding, for example, the foil could be a moisture barrier, insulator, light and heat reflector, and grainless paint base. Because Dri-Line refuses to adhere to surfaces other than those for which it was specifically developed, coated foil can be shipped, handled, and stored safely without sticking to itself.

Coated foil is offered in thicknesses from 0.001 to 0.008 inches and widths up to 50 inches. Its cost varies with the foil’s thickness, but generally runs about 3 cents a square foot above uncoated foil. Sample prices for 1,000 square feet of foil 0.001 inches thick: coated on one side, $30.75; both sides, $42.75.

**Manufacturer:** Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19.

**PLASTIC TACK**

Bits of stretchy plastic hold signs, photographs, and blueprints to surfaces indoors or out. Delkote Solid Tab can be used over and over, as it remains pliable in all weather and does not stick to fingers. A box containing two blocks of it, and instructions for use, costs 89 cents.

**Manufacturer:** Delkote Inc., 1419 Foulk Rd. (Box 1339), Wilmington 99, Del.
BRIEFS

A play shelter in Tacoma, Wash., will be the first use of the delta frame, a plywood component designed by Robert Waring, Douglas Fir Plywood's staff architect (see model photo above). In combination with stressed skin panels and other components, the delta frame is adaptable to many building types and design variations.

By drawing molten glass in vertical sheets untouched by any mechanical device to mar the surface, Pittsburgh Plate Glass claims to have a superglass remarkably free from distortion. It will be called Premium Pennverron and will be offered in standard thicknesses of window and heavy sheet glass.

New furniture shapes may be forthcoming as a result of U.S. Rubber's mechanical upholstering process, U.S. Raval, which shapes base, foam cushion, and upholstery fabric into a one-piece cushion or chair back. Though not expected to eliminate hand upholstery, this process will add new shapes to formed cushions. Four furniture manufacturers are offering thinly padded stacking and side chairs made by this process, but plump-cushioned armchairs are planned.

Weighted plastic strips tested in 180-degree water illustrate the nonsag property of B. F. Goodrich Chemical Co.'s hi-temp Geon (left strip), a polyvinyl dichloride. The new vinyl's heat resistance—it withstands temperatures 60 degrees higher than conventional rigid vinyls—leads its developers to predict wide acceptance in hot-water plumbing and hot-acid piping. In plumbing, it could be used as prefabricated kitchen and bathroom piping, and at a cost competitive with that of other piping materials. Hi-temp Geon is in pilot plant production, and Goodrich is working with several pipe manufacturers who will do the actual manufacturing, using Goodrich resin materials.

END

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Grand Central City
to have world’s fastest elevators

“Scheduled for completion in 1962, Grand Central City will be the largest office building in the world, serviced by 65 Westinghouse operatorless elevators and 21 electric stairways. This monumental, 59-story edifice will have a ‘population’ of 25,000 working persons. In addition, 250,000 transients will pass daily from the main concourse of Grand Central Terminal to the main lobby of Grand Central City.

“To provide the fastest and most efficient vertical transportation for the continuing flow of people, we chose Westinghouse for this massive job—a name in which we have the highest confidence based on past performance.

“With the installation of its elevators in Grand Central City, Westinghouse will establish still another ‘first’ in the elevator industry. For the first time, elevators in a high rise bank will travel at the rate of 1,600 feet per minute—the fastest in the world.

“Both we and Westinghouse are proud of this Grand Central City contract. These electronic, operatorless elevators reflect Westinghouse skill in engineering automatic elevator controls to carry great numbers of people up and down—without the necessity of human supervision.

“Future tenants of Grand Central City can be assured of the finest vertical transportation available anywhere.”

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Chairman of the Board
Diesel Construction Co., Inc.

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AIRWALL is a lightweight, completely portable wall that can be utilized anywhere it is desirable to divide valuable floor areas. Weight, approximately 1.8 lbs. per square foot. No floor or ceiling attachments are required. Each panel is simply set in position and the AIRSEAL is inflated providing a rigid wall that will stand indefinitely. Operation is completely pneumatic without messy hydraulic mechanisms.

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AIRWALL is equally practical for use as semi-permanent walls or walls that are constantly being changed to meet varied space requirements. Individual panels are 36" wide, heights to 12'... the tongue and groove joints have been designed so that the walls may be installed in a straight line or in a curved arrangement. “AIRWALL” may be supplied with door panels, 42' wide; pass-through panels; window panels and interchangeable filler panels.

ECONOMICAL...
AIRWALL is economical to purchase and requires no installation or erection costs. AIRWALL is classified as furniture and fixtures and for tax purposes does not become an integral part of the building, therefore it is not depreciated over lease term or building life. If you move, take it with you. AIRWALL will reduce remodeling and redecoration costs through the elimination of permanent, non-bearing walls.

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AIRWALL provides a tight seal at the floor and ceiling level to offer a sound control never before possible with a portable wall. This special seal, patent pending, combined with AIRWALL’s unique construction provides a portable wall that offers approximately the same sound retarding qualities as a permanent wall with 2x4 studs, lath and plaster. When functions of a “noisy” nature are to take place in adjoining areas a double AIRWALL with a 6" air space between walls will assure the elimination of sound interference between areas.

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IDEAL FOR HOTELS... OFFICES...
WIDE VARIETY OF FACING FINISHES AVAILABLE...
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only truly portable wall!

AirWall at the Disneyland Hotel

This photo shows one of the AIRWALLs used in the beautiful Disneyland Hotel, Anaheim, California. The AIRWALLs permit this hotel to quickly and easily set-up various sized rooms to accommodate groups of 25 to 1000 people. In one instance the AIRWALLs were used to build a room within a room to provide dressing facilities for models during a style show.

AND RESTAURANTS

AIRWALL offers architects, building owners, managers and anyone else involved in the problem of dividing space and sound an entirely new flexibility of design. For here is a wall that can be shifted at will—in a matter of minutes—without tools or special craftsmen. Offers new horizons in design possibilities for the construction of all types of buildings. Truly, the applications for AIRWALL are limited only by your most wild imagination.

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United States Gypsum introduces five new gypsum drywall systems specifically designed for non-residential partition, ceiling and wall construction. Their low material cost and reduced erection time cut construction cost. Their factory controlled uniformity assures increased fire and sound control—greater strength and durability for longer life and lasting beauty! They open a new era in economy and performance—open the door to newer and more challenging design possibilities for you. For further information, see your gypsum drywall contractor, your U.S.G. sales representative, or write United States Gypsum, Dept. AF-02, 300 W. Adams St., Chicago 6, Ill.

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Building against fallout

Never since the days of Attila the Hun have humans exhibited such fatalism toward a new threat to their existence as they are demonstrating today in the case of the ultimate nuclear threat—a threat which has mounted with the recent warm-up of the cold war. An example of this detached passivity was the reaction in New York State to the mandatory fallout shelter program which Governor Nelson Rockefeller proposed early in the year. His suggestions were met by reactions of boredom by most New Yorkers, by baffled rage by a few. The state legislature was little disposed in an election year to enact laws forcing families to spend $1½ billion; ultimately, construction of shelters was encouraged in New York State, but left voluntary.

The question in most people's minds seems to be: Why bother? They all carry in a mental locket the newsreel photographs of that vast mushroom of churning radioactivity, and who can believe that huddling in a hole in the ground will be an escape from such a horror? The governor has also been accused, with some justification, of oversimplifying the blast situation and of underestimating the cost of shelters, although his costs are based on a sound professional estimating job by Architects Voorhees, Walker, Smith, Smith & Haines, of New York. In a report to the Institute of Public Administration, prepared under a grant from the Ford Foundation, these architects showed that an effective, if uncomfortable, do-it-yourself fallout shelter could be constructed for as little as $70 in an existing basement; other larger and more elaborate shelters were estimated at contractors' costs as high as $3,500.

There is no doubt that the only sure and economical solution to fallout is also the moral one—to keep an explosion from happening. Civil defense measures, however, can hardly assume this. Their job is to save lives in case of catastrophe, and despite the fact that the governor did not succeed in selling his program, his basic facts bear up under examination.

First, the fallout shelters he suggests are not blast shelters, although most of the people in New York seem to think they are. The governor, like many other people (particularly New York State governors), seems regrettfully to be writing off hope for New York City itself. Unfortunately, he is close to being correct.

The latest available figures of the destructive force of a 20 megaton bomb—the newest, largest, but not necessarily economical, size—indicate it would blast a crater 1 mile wide, more than 200 feet deep, generating temperatures of 4 to 5 million degrees Fahrenheit over an area of roughly 46 square miles. In the 76 square miles surrounding this hell there would be heavy damage, and except under unusual wind conditions considerable...
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fallout would occur over the en-circling 375 square miles or so. This means that in the case of a hit in the center of a city, nothing would remain downtown and in the nearer portions of the surroundings. But 5 miles from the point of blast—even closer than the beginning of most suburbs—there would be a great deal of difference depending on whether the population could get to fallout shelters or not. A family which could crawl into a rudimentary shelter within an hour after impact could live to emerge two weeks later, perhaps sooner; for radioactivity, fortunately, is not impossible to filter from the air. It is not a poison gas, but a lethal dust.

Of course the fatal question then becomes: what kind of world would meet the eyes of this emerging, surviving suburban family? Would not all the water in reservoirs be dangerous? Would not all the crops out beyond the suburbs or all the existing foodstuffs be useless? Would the generators be working? Would there even be kerosene for burning? Would it be any better equipped a world than that which greeted the first fishlike premonition of man that slid out of the primordial slime onto the shore and decided to stay?

It surely would be a distraught, broken world, and the dangers of vast fires and subsidiary blast damage miles from the impact zone should be considered more carefully than the Rockefeller Report treated them, experts have pointed out. But even under the conditions described above, there would be both people and possibilities even closer to the city than the suburbs. If food were covered it probably would be usable; water from drilled wells (or covered reservoirs) would be drinkable; beyond the suburbs some farmland might have to be plowed deep, but not all of it—and instrumentation could indicate which. The alternative is awesome: if the population within the 375 square miles around the hit area did not have fallout shelters, it would be devastated, destroyed slowly by a downward drift of gamma-ray activity. Almost no one would survive, except by accident.

Does not this indicate that some civil defense measures might be taken against the bomb, beyond blowing practice sirens every few months? The Rand Corp. has urged the adoption of a minimal program, simply identifying effective fallout shelters that already exist, such as basements of heavily built buildings. It seems a reasonable start. It hardly can lead to smugness against the terror, but it might save millions of lives some awful day.

People-chairs

For some years now, we have been made distinctly uneasy by a development in one of our sister-arts, the field of furniture design. It seems to us that modern chairs were beginning to look more and more like people. Walk into any room furnished with Charles Eames’ handsome creations, and you get the uncanny feeling that you are crashing a party. Now along comes Jay Doblin to confirm our sneaking suspicions. Doblin, who heads Chicago’s Institute of Design, has designed some chairs for ALCOA, and these chairs actually are people. Or, at any rate, they are designed to look like people (see cut), with heads, arms, legs, and all the rest. When you feel like sitting down, you just seek out the most comfortable lap and hop into it.

Mind you, we are not criticizing Mr. Doblin (or the aluminum company). We are just concerned. When you get to the point where people look like chairs (and vice versa), who is going to know which lap is aluminum, and which lap is off limits? The way some ladies’ garments shape up nowadays, it’s hard enough to tell as it is.
A building of rugged fundamentals

Kahn's laboratory for the cluttered University of Pennsylvania campus proclaims order and suitability in architecture.

BY JAMES MARSTON FITCH

The new building which Louis Kahn is just now completing for the University of Pennsylvania is an act of authentic, almost startling originality. There is little that is familiar and nothing ingratiating about it: it makes no effort to soften the impact of its statement, to modify with soft words and pleasant music the points it has to make. It is as clear and astringent as a sermon by Martin Luther. It says that architecture is a serious affair, in need, just now, of an original bedrock reexamination of its fundamentals. It ridicules, by its very presence, the lace-edged mush that surrounds modern man, the kindergarten result of his acting like a four-year-old and then hoping to escape the consequences of his own foolishness with a singing commercial or a couple of multicolored curtain walls.

And yet, placed in the middle of the most congested and visually anarchic campus in the whole world, Kahn's building achieves a minor miracle of civilized architectural behavior. For it not only stands out in most flattering relief against all the operatic bombast which surrounds it, but it also, by the sheer poise and magnanimity of its forms, bestows upon its bewigged and beribboned neighbors an aura of reflected felicity. Its whole vicinity is enriched by its presence. This is polemical architecture of a very high order—accomplished, adult, humane.

The Richards Medical Research Building is not an easy building to analyze because its visual impact is almost wholly the result of important decisions in plan and structure, not in any surface enrichment or detachable device. In such a design, plan and structure were of course simultaneously developed but to comprehend their interaction it is necessary to discuss them separately. The plan of clustered towers stems from Kahn's conviction that the standard corridor-type layout was unsatisfactory because of its linear nature—yielding spaces which were inhospitable, anonymous, inflexible. With the pavilion concept, framed in a clear span, each department could subdivide its allotted space as it saw fit. The pavilion had also the virtue of permitting the fullest application of Kahn's famous principle of "served" and "servant" spaces—especially applicable in this case...
because of the noxious chemicals and contagious diseases with which the researchers work. Most of these “servant” spaces (including the animal pens) are grouped in the central tower which acts as a sort of spinal column to the stacked pavilions clustered around it. Other vertical “servant” spaces—extra stair towers, foul-air exhausts—adhere to the periphery of the pavilions themselves.

These vertical servant spaces intersect with a deep horizontal zone of servant space below each floor level, which permits a network of wires, pipes, ducts, and tubing to deliver the various energies, fluids, gases, pressures, and vacuums to the individual laboratory benches. The interior dimensions of the pavilion (45 by 45 feet) were derived from a combination of two fixed modules—the 12-foot maximum run allowed from plumbing fixture to soil stack and the minimum depth of 5 feet for workbench and worker.

This plan is developed in three dimensions into a structural system of great sophistication. To begin with, it is of reinforced concrete (like all of Kahn’s structures) because he demands more service from his skeleton than simple transmission of loads to the ground. Often his columns are “wet” (though not here); sometimes they are enlarged into giant tubes to carry elevators and stair towers; in this case the whole central tower of monolithic concrete may be regarded as one such column. Similarly, Kahn’s horizontal elements are more than simple floor slabs. They are three-dimensional cellular constructions which accept the tubes, ducts, and wires “as the bone accepts the marrow.” It is obvious that steel would be an unsuitable medium for such a structural concept. Its forms are too limited and too final. In addition, Kahn feels, steel is actually too fine a material, too highly capacitated, to use in anything but machines!

Though these concrete elements are massive, they are anything but gross. The skeletal members are all precast: the paired H-columns around the pavilions; the great Vierendeel trusses which they support; the lighter intermediate trusses; the spandrel beams. These were all so elegantly detailed, steam-cured to so smooth and dense a surface, that they assembled on the job to tolerances as close as steel construction. Kahn is proud of the fact that this obvious precision proved economic as well as efficient: for all its lack of orthodoxy, the building was erected at a cost about 25 per cent under conventional construction.

Most of the sensuous impact of this building derives directly from such esthetically neutral facts as these. The only arbitrary decisions in the entire design were the choice of the brick (the same purple-pink as the rest of the campus); the decision to leave unburnished the stainless-steel window frames; and the use of a glare-reducing blue glass in the “transoms” above the windows (a decision Kahn now regrets; though the value pleases him, he thinks the color should have been a warm gray). Yet it should not be assumed there was anything “automatic” in this design, in the sense that Kahn would not have been in full control throughout. It is rather that, while he tries to suspend his preconceived
... the sensuous impact of esthetically neutral facts.
ideas of form in order to permit these specific forms to work themselves out, at the same time he subjects them to the sternest intellectual examination. It is from this process that the form emerges with an aesthetic identity all its own.

Of course, the creative process is more complex than this: creation always is. The massed brick towers of this building are bound to remind the more literate observer of the towers of San Gimignano and Bologna. Nor is the transfer of images mistaken: Kahn is a great admirer of these very towers and knows that they were present in his mind when this building took shape. Needless to say, there is no applied historicism here. The towers grew, as has been explained, from functional necessity and would have taken form, Bologna or no Bologna. But, as an extremely sensitive artist, Kahn knows that those earlier towers have, in some pervasive way, played a part in forming his.

Much of his recent work, including this building, has been linked to the movement called the new brutalism. Such a suggestion Kahn brushes impatiently aside. For him the term connotes an attitude, an intellectual posture external to the act of designing and consciously applied to it, like a coat of paint. In any event, the unequivocal gravity of his building he attributes to quite other causes: to the fact, precisely, that he thinks of himself as engaged in a most serious enterprise, the basic examination of the new conditions confronting architecture. This is bound to be reflected in his work. He puts it this way: "One should not be surprised to find, in fact one would expect to find, an archaic quality in architecture today. This is because real architecture is just beginning to come to grips with a whole new order of artistic expression, growing, in turn, from the new set of tasks which society has set for the architect."

And, as he quite correctly points out, such conditions historically produce the phase of art we call archaic. From his point of view, most architects today are evading this task; and the glitter and glibness of even their best buildings seem to him not at all the language of the future but the last efflorescence of an epoch already dead.

The very use of the word "archaic" is dangerous, as he is well aware. He does not want it thought that he is advocating an archaistic mode of expression, which is an eclectic return to a "simpler" past. On the contrary, as a designer, he tries to solve each problem with all the competence and dexterity at his command. But his sense of historical perspective tells him that the problems are still too new and too immense for one generation—even alone one man—to master with that effortless
Good architecture is good promotion

Patrons of outstanding corporate design discuss some of its effects on the company, the customer, and the community.

Ever since King Cheops piled up some 100 million cubic feet of masonry to harbor his corporeal remains, monarchs and merchants have been erecting buildings with varying, and sometimes unexpected, promotional results. The Great Pyramids, extravagant failures as tombs (mainly because they attracted so much attention), have nevertheless proved a boon to Egypt's tourist economy. The opulence of Versailles may have contributed as much to the demise of the French monarchy as it did to Louis XIV's greater glory, but it still lures plenty of sight-seers to Paris. St. Peter's, which almost broke the Roman Catholic Church's treasury at the time, has paid off grandly as a symbol of a city and a whole religious world.

Great architecture, of course, has far deeper purposes than mere promotion. Yet the fact that it does attract people has economic consequences of some import. An imaginatively designed modern shopping center, or hotel, for example, is usually more successful than an unimaginative one. But what, the skeptical businessman might ask, is there in good architecture for an ordinary manufacturer, or a utility, or a bank? Lever House may be lovely, as the saying goes, but does it sell soap?

To many patrons of good corporate architecture, surveyed recently by FORUM, the answer is yes: architecture at its best can provide a lot more than lower maintenance costs or improved production flow. Even discounting an owner's understandable urge to justify his own taste, and a sometimes considerable investment of his stockholders' funds, these gentlemen are a remarkably satisfied lot, and for many of the same reasons.

To take the obvious example first, Lever House, postwar leader of the corporate "showpiece" movement, is still yielding handsome returns. A survey made two years ago showed that its employee turnover was exactly 37 per cent of the average reported for other large companies in New York's competitive labor market. Further, Lever finds it can afford to be highly selective in choosing replacements. Visitors (Lever still has some 40,000 a year, from architectural students to cooking clubs) are generally impressed by the courteous attitude of employees and their pride in the building. While the company declines to place a dollar advertising value on its generous and pioneering design, it feels that estimates of $1 million a year might not be far off. In any case, the promotional value considerably more than offsets the $200,000 or so in annual rents lost by not filling up the permissible zoning envelope with office space and stores.

Ten ways to use a tower

Part of the value, Lever feels, comes from the use to which the building is put. The company arranges continuing exhibits of schoolchildren's art, adult sculpture, and the like in its glass lobby and every Christmas installs a different decorative carousel. Reproductions of the building appear consistently on the company's letterheads, booklets, purchase forms, checks, and Christmas cards, and in its considerable consumer advertising, where the tower reinforces each product guarantee in print and serves as a background for TV commercials (Dove soap's doves fly around it on "The Price Is Right"). Fashion photographers still pose their languid models against its sleek glass sheath and colonnades, and the window-washers' platform still goes up and down, making the obvious inferences about cleanliness to all who pass. Lever's public relations director, J. E. Drew, figures the build-
ing has earned the company something over 1 million column inches and countless broadcast hours of free publicity since 1952. Says Drew: "Many a structure is topped by a flamboyant neon display proclaiming to the world that this is the 'Whozit Building.' We feel the objective can be accomplished much better in the design of the building itself."

Not far behind Lever in setting the new corporate fashion was Manufacturers Trust Co.'s famed "glass bank" on New York's Fifth Ave. and 43rd St. (which it has since followed with a head-office remodeling on Wall St. and distinctive branches elsewhere). "Banking services were identical to those offered in our old branch across the street," says Board Chairman Horace C. Flanigan, "yet during our first year in the new building the number of accounts increased 31 per cent, profits 200 per cent, sales of travelers' checks 50 per cent. In addition, we have had more than 100,000 nonbanking visitors since opening day in October 1954, and they still come at the rate of 400 a month. We conducted a survey and found that 96 per cent of the employees said they had no problems working in a glass house; many said they got a lift from working virtually 'outdoors.' Being under constant scrutiny from outside has made our people more alert, more conscious of their dress, their appearance, their actions. This in turn has resulted in improvements in employee morale and efficiency. As one employee remarked: 'In such a bright, uncluttered place you can't help feeling bright and alert yourself.'" Perhaps the most convincing testimony to Manufacturers Trust's success is its mounting number of imitators, both bright and not so bright: the literally dozens of new glass banks across the U.S.

**New image for insurance**

As banking has broken with its tradition of columned temples and windowless vaults, so has the insurance industry, long preoccupied with solidity and permanence, begun to adopt the "progressive" corporate image. While giant Metropolitan Life still gets advertising mileage out of its grand old 1909 tower ("The Light that Never Fails"), and second-running Prudential has patterned its new regional headquarters somewhat literally after the Rock of Gibraltar, others have employed the sophisticated approach with notable results. Undoubtedly the best known is Connecticut General Life, which describes its striking rural headquarters outside Hartford as "probably the most successful promotional project we have ever undertaken." Not only has the building improved Connecticut General's recruiting and turnover problems in Hartford's big insurance pool, but it has left a strong impression on a good many of the 400-odd national and municipal leaders who helped open it for business in 1957 with a high-level symposium on the new highway program and its challenge to metropolitan planning. This conference, a genuine public-service compared to the usual, tired ribbon-cutting and dedication speeches, has combined well with the bold beauty of the headquarters itself as a continuing stimulus to both management and the community. Observers feel it has undoubtedly helped speed up Hartford's own downtown redevelopment and the formation of a regional planning agency among the area's 28 separate towns.

Connecticut General's example surely must have encouraged the Mutual Insurance Co. of Hartford in the construction of its own smaller headquarters downtown, a trim and graceful modern structure set back behind a plaza and embellished with an arresting sand-cast bas-relief by Sculptor Constantino Nivola. "Our company had been a substantial factor in the property insurance business for 129 years," says Mutual President John Alsop, "yet not too many people knew of our existence, partly because we had always been a name on somebody else's wall. Since the opening of our new building—which we were careful to presell the public as a work of art—the company is much more widely known, and carries more prestige among our large competitors. Where we rarely got an employment application in the old days, we now have people walking in all the time. I feel strongly that the building has already paid off, and above all, that good architecture does not necessarily cost a lot more. In fact our building is, on balance, quite an economical structure. It is a stimulating place in which to work, and has been a big shot in the arm to company morale."

**Architecture for sales**

Among manufacturers, some of those directly involved in the building industry have profited from imaginative architectural demonstrations of their products. Aluminum Company of America, for example, estimates that more than 1,000 multistoried buildings clad in aluminum (much of it Alcoa) have gone up around the country since it handsomely pioneered the idea in its own Pittsburgh headquarters completed in 1952. Reynolds Metals' "showcase for aluminum" headquarters in Richmond and Detroit have drawn countless visiting architects, fabricators, and potential clients, and have given a lift to company sales and office-force morale. (Like a good many others with distinctive headquarters, Reynolds commands a high grade of office help, and attends to its local public relations by conducting building tours, sponsoring cultural events, and lending its auditorium to community groups.)

Manufacturers outside building have espoused good design for a variety of reasons less obviously related to sales. Texas Instruments, whose leadership in the electronics field has been amply reflected in stock-market ratings as well as architecture, describes the thinking behind its handsome Dallas campus: "It has long been established as part of our management philosophy that buildings are not merely places in which to work, but must be designed specifically for the people and for the machines.
Harvard saves half a million dollars by rebuilding the inside of century-old Boylston. Outside, only a new entrance and new windows hint at the change.

Boylston's fifth incarnation

With typical Harvardian reticence, the hulking mass of Boylston Hall stands in the "Yard," traditional center of the university in Cambridge, pretty much as it has for a century. Only a spacious new flight of steps leading to a bronze-framed entrance and great sheets of plate glass filled into old arched openings reveal, on the outside, the total rebuilding of the inside to house modern facilities for the teaching of languages.

The treatment accorded Boylston Hall, the very opposite of "face lifting," has heretofore been saved for national monuments and architectural masterpieces (like the White House or Harvard's own eighteenth-century Massachusetts Hall, rebuilt in the thirties to house the president's office).

Boylston Hall could hardly be classified as such. Built in 1857, just before the high-style excrescence of Victorian Gothic revival, it is not even a key piece in the architecture of the Yard. Its main virtue is, perhaps, solidity—with 2-foot-thick walls of rusticated Rockport granite modeled into an Italianate block surmounted by a Frenchified Mansard roof.

This massive structure had been extensively remodeled before. In 1870 the Mansard roof was added, contributing an extra floor. Further renovation around the turn of the century and in 1929 altered the building further, always to fit a new or expanded use. The present language center is, in fact, heir to the building from antecedents ranging from chemistry to oriental studies.

But in 1958, when the last occupant, the Harvard Yenching Institute, removed to a new building outside the Yard, a program for a new language center requiring 100 offices, classrooms, and a lecture hall for seven language departments was prepared. The Architects Collaborative, under Partner Benjamin Thompson and Job Captain Richard White, undertook to adapt old Boylston to that program.

Their solution was ingenious. By inserting one complete floor in the high-ceilinged space between the old second and third floors, by filling a cavernous old central stair hall, and by constructing a mezzanine over portions of the first-floor space, a 40 per cent increase in floor space (from 39,206 square feet to 53,300 square feet) was obtained.

The 53,300 square feet, virtually new space all, was obtained for a cost of $880,000, or $16.50 a square foot. Equivalent actual new space, TAC estimated, would have cost Harvard nearly $25 a square foot, or $1.3 million.

The remodeled space, air conditioned, fireproofed, furnished, and finished in a warm, trim style, contains, on the first floor, a handsome entrance hall, a 160-seat lecture hall, a lounge and meeting room (with a library on a mezzanine above), and two classrooms. On the ground floor below, three more classrooms and an audio classroom (where students can listen to tapes in their language specialty) were fitted in. Above, on three identical floors, faculty offices ring an interior core of seminar rooms and utilities. Way up are offices for the Public Speaking Department.

These exceedingly modern and generous teaching facilities take their place comfortably in the Harvard Yard. This fitness, perhaps, is the real reason Boylston was remodeled and not replaced. Built over a period of 350 years, all the buildings in the Yard were modern when they were built. Now, some are in style and some are out, but they all belong. Harvard, like some old dower from Boston's Beacon Hill across the Charles River, has always known that time and fashion are fleeting. But she does the best she can from moment to moment, knowing that all will be of a piece if fundamental principles and quality are factors throughout.
Exterior before and after (above and below) shows little change except for new fixed glass filled into the old stone arches formerly filled with heavy wood sash. Stone walls were left as they were, marked with the patina of a century's weather.

Bronze-framed entrance vestibule follows the arch of the masonry wall but reflects newness in elegant hardware and trim and shiny plate-glass panels. The new mezzanine floor can be seen behind fixed glass panels at either side of the door.

Entrance hall (looking from vestibule toward lecture room, above; toward meeting room, below) is floored with slate and decked above in wood. The low, 7-foot ceiling suits the exterior's heavy mood. Glass partitions extend space beyond.
New mezzanine over the entrance hall (above) adjoins the mezzanine over the main lounge-meeting room (below). Mezzanine space is used as a library for language studies and is equipped with audio-listening devices for study of tapes.

Combination lounge-meeting room is handsomely furnished with leather couches and wood armchairs set on a luxurious Moroccan rug. Wood ceiling continues pattern of entrance-hall ceiling. Room is used as part of the library or for social events.

Plans before and after demonstrate how space was obtained by filling in the cavernous central stair hall. First floor contains the lounge-meeting room, a lecture hall, and two classrooms. Upper floors (top) are nearly identical, contain offices around a core of utility spaces and seminar rooms.
Cross-section through entrance hall and lecture room shows how a mezzanine was fitted into high-ceilinged first-floor space and a new office floor was fitted into the upper reaches of the former second floor. 14,094 square feet were gained.

Lecture room (above) seats 160 in theater-type seats. Audio-teaching room on ground floor (photo below, plan not shown) is used for instruction in languages. Instructor can "broadcast" tapes into any cubicle, "tune-in" on individual recitation.

Window detail illustrates how old arched openings provided light for four offices. Arched opening is cut horizontally by new floor, split vertically by new 1 1/4-inch gypsum partitions. Mirror on partition in arch adds apparent size to window.

First-floor classroom (above) is finished with white plaster walls in contrast to smaller seminar rooms on upper floors (below), which are fitted with curved wood-paneled walls that also add space to the surrounding corridor.
Deere & Co. headquarters.

Washington's Dulles Airport.

Bell Laboratories research center.

Yale's Morse and Stiles colleges.
Four new projects, each based on the same "six pillars of architecture," demonstrate that wide variations can be consistent.

BY LAWRENCE LESSING

The diversity of Eero Saarinen

Among the younger architects who have risen with great speed and lift in the last decade, Eero Saarinen is unquestionably of the first rank, the most controversial and hardest to place. As one spectacular building after another has emerged from his office, no two looking alike, criticism has mounted that Saarinen is "reaching" for effects, has "no fixed style," is "irresponsibly" adding to the riot of U. S. forms.

From the great rectilinear exercise of his General Motors Technical Center (1948-1956), probably the most influential industrial architecture of this era, Saarinen went on to mold the curvilinear, domed M.I.T. auditorium (1955), the first sophisticated use of shell construction in the U.S., and the swooping, cable-hung Yale hockey rink (1958), a great whale of a building set down in New Haven's genteel purlieus. Currently, the intricate concrete formwork of his "flying bird" TWA jet terminal is startling transients at New York's Idlewild Airport, while his sedate new U.S. Embassy in London, elegantly fitted into a Georgian-style square, awaits dedication. Meanwhile, moving through Saarinen's busy office are four major projects (left), even more diverse in character.

At the center of this diversity is a stocky, calm, blue-eyed man, son of the late, noted Finnish Architect and Town Planner Eliel Saarinen, who at 50 has gone beyond his father in works accomplished, easy mannered, lively, without "side," the younger Saarinen combines a puckish sense of humor with a driving competitive force, ambidextrous virtuosity with an intense seriousness about architecture. Below the diversity lies a cool rationale for an advancing architecture. To carry out this rationale, Saarinen has been building an organization for the practice of what he calls "responsible" architecture, unique in two ways. It is more oriented toward research than any architectural office of its kind, carrying on research from the original analysis of a client's problem through the testing of design solutions and materials—even to the development of new materials or components (see page 102)—down to the final execution. And this research in turn is used to engage the client in advancing architecture, by showing him how it more closely fits his needs.

Where Saarinen stands

"To the question, what is the scope of architecture," said Saarinen in accepting the Dickinson College Arts Award last spring, "I would answer, it is man's total physical surroundings, outdoors and indoors." He believes that the architect, by historical accident, is practicing in only a narrow segment of his full range, but that he may soon be called upon to widen his role and purpose, which ideally is to shelter and enhance man's life on earth.

In the same revealing speech, Saarinen analyzed the sources of his own diversity. Modern architecture was raised on three great pillars: functional integrity, honest expression of structure, and awareness of the times, especially the new potentials of science and industry. And these principles were raised to great heights by three diverse masters: Wright, LeCorbusier, and Mies van der Rohe. Their hegemony differed in different parts of the world, Corbu being strongest in the Latin countries and in concrete, while Mies's "marvelous discipline" in metal and glass came to dominate the heavily industrial U.S. In the exciting technological and emotional release following World War II, some younger architects refused to stop there. They refused to believe that all modern architecture—an airport, a skyscraper, a girl's dormitory—could be contained in the same rectilinear metal-and-glass jacket or "universal style" that Miesian purists were advocating, but that the future must remain open to the exploration of new forms and principles. Three additional pillars were raised: that a building must make an expressive statement, that it must be concerned with site and environment, and that it must express itself throughout as a unity.

Saarinen was aligned with this new generation from the start, for he had imbued from his eclectic father a strong resistance to being trapped by a style. "I believe," he said at Dickinson College, "that all six principles have to be included to create real architecture and so I try to practice what I preach. The inclusion of the last three inevitably creates a diversity of solutions, and thereby the external form of my work varies greatly. But inside the solution of every problem there are six threads that hold it together, and these six threads—or was it pillars I was calling them—join each building I have done to every other one."

The problem of style, oscillating between petrification and undisciplined chaos, is eternal. But the greater danger today, in an age of transition and of continuing dynamic development in science and technology, is that modern architecture may be prematurely frozen before realizing its full potentials. One of the most obvious potentials to Saarinen is concrete, only the surface of which has been scratched so far in research, prefabrication, and "a whole new form world" for architecture. Many architectural firms maintain at best only an uneasy, arm's length truce with technology. But in Saarinen's office, technology is wrestled with on the bare floor to seek understanding and use of its great potentials.

How Saarinen works

The general pattern of the movement of a project through Saarinen's office is instructive. Charles Eames, close friend and competitor of Saarinen in furniture design, describes him as "one genius in whom you can see the gears working because they're on the out-
side." There are no secrets. Involved in the process are indefatigable studies of a problem from all aspects, carefully thought through, then hundreds of experimental studies of elements in the building, alone, in combination, and in combinations of combinations. No picture of the process can be more than a stop-motion study of phases going on simultaneously and varying widely in length with the nature of the problem. The major phases are:

**The functional program.** By this is meant exhaustive surveys of statistical data, work procedures, use patterns, human requirements, site features, and so on — called operational research in the sciences — to establish what the client really wants and needs (which may be something quite different from what he thinks) and can afford. The Dulles Airport project (page 98) contains the most complete example of this phase, which took roughly six months.

**Expression of the program.** Given the functional needs, the nature of the client and the site, what statement is the building to make in an architectural sense — general form, assertive or adaptive, smooth or rough, etc.? The search is for a controlling concept, which may be, as in the Deere project (opposite), simply an incisive image: ‘An iron building for a farm machinery manufacturer.” Here Saarinen's intuitive sense, the only mystery in the works, cuts through to take the lead. Here, or earlier, model-making begins with a scaled cardboard model of the site and environs, general building forms, for study in three dimensions.

**Structure.** In this phase exploration goes on as to what general species of structure is needed — long span or short, high or low, steel or concrete, etc. — taking into account mechanical considerations and engineering aspects. All along informal ruminations have been going on, with Saarinen's technical people brought in, on what materials, components, or new ideas may feasibly fit the concept. More and more cardboard models are built, torn up, and rebuilt, as choices narrow.

**Design.** This generally begins early, but the actual climax of design usually takes place only after all the basic problems have been thrashed out. Saarinen moves in strongly to harmonize the elements, as his design team builds and rebuilds a master model. Saarinen's methods differ from the conventional in two ways. He separates problems out for solution before total design, and then does over 80 per cent of that design in the round on working scale models. This technique, which Saarinen has carried over from the Renaissance into an entirely new design method, is particularly important for the development of new forms.

**How Saarinen is organized**

The organization behind all this has been described as a "benevolent monarchy.” Around Saarinen, however, are three close aides and partners: Kevin Roche, a brilliant young Irish architect, who came in on the G.M. Technical Center and now heads the design department; Joseph N. Lacy, who heads management and the business office; and John Dinkeloo, who is the resourceful head of the technical department, which includes materials development, production of working drawings, and cost estimates, recently strengthened to bring projects in closer to budget. Operating under these is a string of design captains and project managers, the firm's associates. Altogether, the staff now numbers some 80, notable for its youth and bounce. Eero moves without title from project to project, trailing cigar ash, pipe smoke, matches, Granger tobacco packets, and reams of tracing paper, seeking perfection.

Currently, Eero Saarinen and Associates has three projects in active design and three moving in construction, for a total value of some $110 million, which is about capacity for its mode of operation. Growth and model building crowded the firm out of its original design shed in Bloomfield Hills, Mich., and into makeshift quarters in a neo-Colonial wing of the local Pontiac-Cadillac dealer's establishment in nearby Birmingham, in which it is already overcrowded. The firm is doing more of its own civil engineering, but for structural and other engineering it relies on such creative outsiders as Ammann & Whitney, or Weidlinger, or Severud, plus top consultants in such specialties as lighting, acoustics, and traffic. Critical to this kind of advanced architecture are client relations, which Saarinen handles with finesse, particularly in dealing with large corporations. Drawing these in sufficiently, backed up by research, to engage in the problem, yet not too far to lose architectural control. To bear the out-of-pocket costs of its “exhaustive approach,” the firm uses all forms of contract, as called for, from the traditional percentage fee through lump sum to cost-plus-fixed-fee contract.

This is not inexpensive architecture, though economical in the best sense. Unlike the typical firm, behind whose façade the business department is in control, in Eero Saarinen and Associates there is never any doubt that the design department rules. Occasionally, the pursuit of new designs, research, and extra services eat into earnings, but over all the firm is flourishing. On the next five pages are shown some of the products of diversity. These break down basically into two broad forms: the rectilinear, which still meets the problems of the bulk of building, and in which Saarinen can perform to the purist's taste, and the curvilinear, in which new forms abound.
AN IRON BUILDING FOR FARM MACHINERY

This headquarters building for Deere & Co., to cost over $10 million, was conceived as “an iron building for a farm machinery manufacturer,” with a strong, dark steel structure to express in primitive and boldest form the character of the company and relation to the site (1), a darkly wooded ravine near Moline, Ill.

For this structure, Saarinen’s group searched widely for and found a special, high-tensile alloy steel, used in some engineering structures but never before in major building, which has the property of rusting only to a certain depth, acquiring thereafter a protective, darkly rich, cinnamon patina. A mock-up structural section on the site, to test its color and weathering qualities, showed that this was the material to fit the concept.

The new steel’s tensile strength allows the structural system to straddle the ravine on 120-foot trusses without diagonals (2, 3). It also makes possible ruggedly slender beams and columns, requiring no finishing inside or out. The bare steel, a brownish-black brick, and a new, lightly reflective glass—with glazing held only by neoprene gaskets directly against the steel—comprise the building’s basic elements. These are “repeated and exaggerated and overstated,” even to the use of rough steel strips as sun baffles (4). Engineer: Ammann & Whitney.
A MACHINE FOR JET TRAVELING

For Washington's new Dulles International Airport, on 9,800 acres of rolling farmland in Virginia (1), Saarinen's primary concept was a highly functional terminal building to ease and speed the transit of passengers, the whole given a monumental lift befitting jet travel and the character of the nation's capital. The entire building and service complex works to this end (see cross-section). In scope, it may well be the most influential of Saarinen's designs since the G.M. Technical Center.

Saarinen first decided that the big jet airport was not yet solved anywhere. He began from scratch, with batteries of stop watches and counters, to clock flights and crowds at terminals, find out what travelers do, measure time cycles, and reduce all data to basic charts. These, coordinated with official traffic-rate projections, soon showed that the common finger plan of jet ports was already stretching corridors to enplaning points out to time-consuming walks of a mile or more. The critical area to be cut by design was the time and inconvenience of getting passengers to and from the planes.

Saarinen's novel solution was the "mobile lounge," an idea borrowed and refined from the European airport bus. Lounges would back into and become part of the terminal building to take on waiting passengers, then move out to plane stations near runways and discharge passengers through a front-end flexible coupling directly into the plane. Time and motion studies proved this the fastest and cheapest of all proposed enplaning devices. This radical idea, however, had to be sold to 12 individualistic airlines, and for this Saarinen commissioned Charles Eames to make a colorful, animated movie "short" that pounded home the primary problems and principles of passenger convenience.

The mobile lounge was the key to the design plan (2). With it, planes could be conveniently grouped around service cores on a mammoth apron near runways, cutting down expensive taxiing and allowing underground piping in of fuel, expected to reach requirements of 1.2 million gallons a day at Dulles Airport by 1975. And for the terminal, mobile lounges allowed a single compact building, with all services, restaurants, shops, and the like conveniently concentrated. This concentration cuts walking distances from arrival point through check-in to passenger lounge, on almost a straight line across the building, to an average of less than 300 feet.

The esthetics of the building, set on the great flatness of an airport site, were based in Saarinen's mind on the image of a hovering slab. To give this a soaring, monumental quality, it was conceived as a great, cable-hung, concrete roof slung like a continuous hammock between two rows of giant, gracefully bent concrete columns (3). This creates a single great room, 150 feet wide, 600 feet long, and 40 to 65 feet high, designed on two levels—the upper for enplaning, the lower for deplaning passengers—extensible for future expansion (4).

In two new colleges for Yale University, to be built at a cost of some $6 million, Saarinen put himself to the difficult task of adapting to a cramped, asymmetric site (1) between two neo-Gothic rock piles of earlier vintage, and to a social purpose re-oriented toward individualism, monastic study, and academic life. This adaptation raised the devotional concept of a rough-textured, staggered series of polygonal dormitories, dining halls, and masters' quarters, to be modern yet medieval in flavor (2), the opposite of repetitive conformity and slickness.

Searching for the material form to carry this concept to its ultimate conclusion, Saarinen took up an ancient building method called rubble construction, observed in a modern revived form in Norway, and directed his group to find a means of adapting it to larger stones and mechanizing it for economic U.S. construction. The result is a masonry bearing wall that goes up rapidly—stone rubble is dumped into wall frames, injected with cement mortar under pressure, then pressure-hosed after setting to get a rough, freestone effect—retaining an unplumbed air of the ages. Saarinen thinks it will be adaptable to many modern uses.

To intensify the concept, these rubble walls for the new Samuel F. B. Morse and Ezra Stiles Colleges at Yale (3) will form an amazing series of individual, odd-angled rooms, no two alike in shape or dimensions, each with its focal point a study desk instead of the traditional fireplace. All this to stress individualism, work, and a linking of past with future in a grammar of new forms and shapes that is quite unlike anything Saarinen has done before.
MIRRORED LOFT FOR A LABORATORY

In a new research center for Bell Telephone Laboratories at Holmdel, N. J. (1), eventually to contain over 1 million square feet of floor area, Saarinen has raised into a guiding concept a radically new big block or loft plan for laboratories (4). The same plan, in a quite different design, is being used by Saarinen for a smaller laboratory (not shown here) under construction for International Business Machines Corp. at Yorktown, N. Y.

Behind the loft plan lies a complete restudy of laboratory needs. For nearly 25 years the modern research laboratory has followed a pattern set by Ralph Walker in his design of Bell Labs' Murray Hill complex: buildings on a narrow finger plan, oriented on a single-corridor axis, in a campuslike setting. But as research has grown, corridors have stretched out (up to 1,750 feet in one Murray Hill extension), stretching services and communications. More importantly, in the interim, the rise of air conditioning, high-level artificial lighting, and research needs for controlled environments, privacy, and greater intercommunication made the finger plan wasteful and obsolete.

Saarinen turned to the big windowless block plan to effect at one stroke economies in construction, concentration of utilities, flexibility of space, and shorter communications lines.

In the great box Saarinen conceived for Bell Laboratories, offices and research spaces are sequestered on short cross-blocks in the windowless interior, while the main corridors, to compensate for the lack of interior view, run like open galleries around the rim of the window-walled exterior (2). This window wall is made possible, without sunshades, by a new mirrored glass that reflects away about 75 per cent of the sun's heat. The new laboratories will be built in two 135 by 700 foot superblocks (3, 4), the first block to be ready in 1961, the whole eventually to house 4,000 science workers.
Saarinen's development: materials and ideas

Few younger architects have initiated and developed more new materials and ideas than Eero Saarinen and Associates. This deep concern with industrial materials and processes was once a vital part of the modern movement, weakened today by advocacy of a single set of materials and overdependence on stock catalogues. Yet the building industry cannot be depended on for original developments. Many of the developments following were secured outside the building industry, often after having been turned down by its largest units. Generally, Saarinen finds, the larger the company, the less it will risk on a new idea. He does not claim any of these ideas as wholly original, and has never tried to patent or exploit them, but many have become flourishing businesses for others.

*Curtilain walls and gaskets.* Perhaps the most familiar development of Saarinen's office, out of the G.M. Technical Center, was the first curtain-wall system, integrating porcelain-on-steel sandwich panel, frame, glass, and neoprene gasket. For the idea of gasketing, now the leading method for sealing panels and glass against leaks, he reached into the automobile industry. Finding no takers for gasket manufacture among regular calking compound sources, he got G.M.'s own Inland Division into it, where it remains a growing business. For the porcelain panel, he went to the ubiquitous American gas station and suppliers. When the first panels showed a troubling tendency to delaminate, Saarinen's Dinkeloo turned to the Wolverine Porcelain Enameling Co. of Detroit, which quickly developed a panel that worked. Soon after, Dinkeloo found a company ready to try a new idea of laminating porcelain-on-aluminum, a combination with still greater potentials. This was a small Connecticut firm, Hamlin-Stevens, Inc., which was living on the sale of green porcelain-on-aluminum strips to band Texaco service stations, and which since has turned the bulk of its expanding business to building panels.

The Saarinen office has not ceased to refine its curtain-wall ideas and to experiment with a variety of sandwich panels. One of these is a new metal-to-metal laminate—a thin porcelainized aluminum sheet rolled to flatness and then laminated ripplefree to a thicker undersheet for rigidity—which will be used in a black matte finish to sheath Dulles Airport's control tower because it can be worked or rolled into curves without cracking. In another development, the 2-inch-thick G.M. sandwich panel has been reduced to a wafer-thin 5/16 inch—porcelainized aluminum sheets on asbestos cement core—for the lightest curtain wall yet (3 pounds per square foot), used on a new IBM plant in Rochester, Minn.

*Concrete.* In working out the rubble-wall or intrusion-wall technique for the Yale project, Saarinen's Dinkeloo hunted at wit's end for a concrete firm willing to try it, finally remembered hearing of an obscure firm, Prepakt Concrete Co., that repairs dams and other works by pumping in concrete around rubble. He tracked them to Cleveland, and they are now enthusiastic collaborators. The main trick is to use an expanding agent in the grout to prevent it from contracting on setting, thus tightly bonding the stones.

In developing the giant piers for Dulles Airport, a light-colored concrete with a large-sized aggregate inclusion was sought so that, upon bush-hammering, it would have a large-grain, marblelike texture. But orthodox methods of mixing aggregates caused large sizes to segregate unevenly in the mix. A search of the world's concrete literature found only a single, obscure paper from India that applied to the problem: by leaving out the middle section of aggregate sizes, called gap grading, a uniform distribution of large sizes is obtained. The paucity of really basic research and development of techniques in the concrete industry is to Saarinen the main drag on greater use of concrete in U.S. building.

*Reflective glass.* The idea of a mirrored glass to bounce off a major portion of the sun's heat has been a challenge for some time. But only now has it been carried through to a practical material by Saarinen and Associates, seeking to correct the major technical flaw of the glass building, its immensely wasteful, discomforting hot-house effect. This became possible to Saarinen with the development in space research of highly controlled techniques for the vacuum deposition of ultrathin metal films on space vehicles to ward off radiation. To get someone to try these reflective metal films on glass, Saarinen's office finally worked out a collaboration between the Kinney Vacuum Division of The New York Air Brake Co., which is doing space work, and Laminated Glass Corp. of Detroit, a tiny maker of replacement safety glass for the auto market. The result is a laminate, like safety glass, with a thin film of silvery aluminum or pure gold bonded between the panes for weather protection. Extensive tests show that this reflective film rejects some 75 per cent of the sun's heat (against about 40 per cent heat-rejection by absorption types of colored glasses) at 25 per cent light transmission, a seeing level about the same as that for glare-reduction glasses. The reflective glass will be used by Saarinen to begin with on Bell Labora-
For instance, the M.I.T. auditorium roof began to leak under a new, acrylic plastic coating, lacking in weathering experience, but this was solved on the Yale hockey-rink roof by developing a superior neoprene rubber sheet roofing, while new polyvinyl compounds are coming along which will be used on the TWA terminal shells, where a transparent sealant is required to show the concrete.

The ultimate test is whether a building works. And in this respect Saarinen's buildings rank high, the Yale hockey rink being pronounced by players and spectators alike a superb sports arena, the M.I.T. auditorium being much sought after by performers for high-fidelity recording sessions because of its acoustic quality.

Architecture as development

Esthetic judgments are harder to arrive at. "I believe," says Kevin Roche, with some bias, "that this firm in 30 years will have done the most significant work in the country in expressing the finest relationship between architecture and society. We have the secret of growth. Whereas those who come up against the stone wall of a single form are stuck with it, our approach has unlimited possibilities." That, at least, expresses the Saarinen pride in and philosophy of architecture as a continuing development.

Certainly the more intense critics of this position have little basis for their odd theory that somehow something went wrong with Saarinen after the G.M. Technical Center, since much of his work is still outstandingly in that idiom. Moreover, some of the extreme criticism has that high irrational pitch that invariably greets innovation and new forms, while other tones reveal a plain desire to rest on the plateau of a tried form, endlessly refining it, rather than to make the strenuous effort that is required to develop or understand new ones.

On the other hand, diversity in architecture has the ever present danger of excess, while experimentalism daily courts disaster. Saarinen would be the last to deny that some of his bold excursions have been less successful than others. Moreover, there is a strain of now-native American exhibitionism in him, presaged in his 1949 design for a river-front national park memorial in St. Louis, to be completed in 1964, which has as its centerpiece a giant, Paul Bunyanesque arch, 630 feet high in stainless steel, symbolizing the Gateway to the West. (For this arch, Saarinen is carefully exploring mathematical formulae to get the most perfect catenary curve possible, and a new type of elevator to get people to the top of it.) And running through his later works, particularly the new TWA terminal, the Yale colleges, and the John Deere project, is a new strain of exaggeration, off-beat rhythms, bold underlining of elements and materials, which seems to be in that line of avant-garde development called, for want of a better term, the new brutalism, yet with a lyric and internal harmony that is Saarinen's stamp. This new strain in architecture is still too much in flux for cool judgment, and it is probably a correct assessment that it will take the better part of another decade to see Saarinen's work in perspective in all its relationships between architecture and society.

Meanwhile, it is salutary to have a man of large talents and integrity striving to enlarge the vocabulary of architecture to meet the multiple, fast-changing problems of the age. This is the mark of an open society.
Uniform roof line characterizes all existing buildings around the capitol, and Thiry matched it with the height of his stack tower. This roof line was established to permit the dome of the capitol to be visible at a distance above the lesser buildings surrounding it. Below: the library as seen from the capitol.
Harmony without imitation

Modern library building faces Washington State's neoclassical capitol in a manner befitting both.

When Architect Paul Thiry was commissioned to design the state library for Washington's Beaux-Arts capitol campus at Olympia, he had to solve four problems that are becoming more and more common as new buildings are added to the existing inventory of old buildings worth preserving: first, how to match the scale of the existing campus; second, how to fit into the existing composition; third, how to conform to existing materials and details without imitating the past; and fourth, how to achieve monumentality and government character in a modern idiom.

Thiry solved these problems with remarkable success: although his library had to be considerably smaller than the existing buildings on the campus, he matched their scale by placing his building on a higher site. Next, he located his building on axis with the domed capitol, thus completing the Beaux-Arts composition (originally conceived by Architects Wilder & White around 1912) and closing off a heretofore nondescript vista with an imposing addition to the campus. Third, he used the same sand-limestone employed by his predecessors and developed numerous lesser details (such as the recessed panels under windows) that recall the classical idiom without copying it. Finally, he created a formal, near-symmetrical structure, fronted by a colonnade and raised up on a pedestal —thus suggesting a sense of dignity, monumentality, and repose that spells permanence and government.

The state library is to the state capitol what the Library of Congress is to the federal capitol—a place in which records and documents are kept, largely for reference use by the legislators. The main floor is the principal public area, easily controlled from the main desk. Documents and reference books are stored in the seven-story stack to the rear of this glassy, public space. The new facilities will be adequate for another 20 years.

The library has been a striking success, and those who were skeptical about the possibility of relating a modern building to a neoclassical campus have now changed their minds. Because of this success, Architect Thiry has been retained to develop a new master plan for the state capitol grounds, to meet the needs of the future.
Art enriches the library in several important areas. The bronze fountain (above) by Everett Du Pen depicts the fish and wildlife of the Pacific Northwest. Because it is visible from the capitol grounds, its character is representational so as not to clash too violently with the traditionalism of the campus. The abstract mosaic (below) by James Fitzgerald is in the main desk area, and the painting by Mark Tobey dominates the library staff offices. A hand-hammered sundial by John W. Elliott stands in the plaza in front of the building (page 104). Not shown is a large mural by Kenneth Callahan, located in the downstairs “Washington Room,” which tells the story of the Northwest.

Section through the 60,000-square-foot library (below) shows the stack tower in relation to the two principal public areas: the entrance level above, and the lower level containing maps, special documents, and microfilm facilities. If and when necessary, the stack tower can be doubled in size by an addition planned to extend to the rear of the building.

Plan of main floor (below) reflects the central concept of the library—i.e., that it should be capable of being completely controlled from the main desk. In addition to serving the capitol, the library functions also as the loan center for libraries throughout Washington State. The total cost of the building was about $1.3 million—or $350,000 less than the appropriation made by the legislature!
Main floor is essentially one big room. The entrance (above, left) is through a frame of sand-lime-stone set into the glass wall; it leads directly to the main desk and catalogue card files. View from the mezzanine overlooking main floor (above, right) shows the stack tower with its concrete waffle slab, designed for 150-pound loads. The general reading area (below) overlooks the Deschutes Basin and the town of Olympia beyond it. Interior color schemes are muted and keyed to the paintings and mosaics in each area. "The whole building is an open invitation to the user to enter and be welcomed," says the enthusiastic librarian of her openly planned space.
The ingenious design of parking lots at Detroit's Lafayette Park helps architecture win out in its war against automobiles.

BY WALTER McQUADE

Where are the parked cars?

Forum:

Your coverage of Mies's Lafayette Park development in Detroit (Forum, May '60) has been generous, but it still leaves me unconvinced about one thing which you seemed to like very much: the merits of the parking design. Granted that it seems a good idea to dig in the parking lots, as you mentioned, so that the cars shouldn't stand there in all their glandular obesity, but is this merely a "good idea" or does it really work? If you depress the parking lots, isn't there trouble with drainage, or do you just let the water pool, in order to really conceal the cars? I would not be against putting most of them (but not mine) under water, but is it practical? And how about snowdrifts? Too few of the pictures you printed showed cars, except in front of the tall apartment building. Do you have others?

VINCENT MOSCARELLA
New York City

The photographs Forum published showed few cars. On receipt of Reader Moscarella's letter more photographs were made to illustrate Lafayette Park's defeat breakthrough in the war between architecture and automobiles. That it should have taken place in Detroit is appropriate; that it has some shortcomings in some of its applications is perhaps natural. But Forum agrees with Moscarella that the subject is worth further investigation.

First, however, a further definition of the problem: most people agree that cars, however handsome they may be individually, create an ugly scene when massed together, new and old, well kept and poorly kept, obliterating the city scene.

In city neighborhoods, some of the best solutions to the parking problem have been inherited from the past, when the personal transportation problem itself was not industrial, but animal.

As an example, take old Charleston. The designers of houses like this one were forced to plan for accommodating the horse and carriage; the horse had to be kept in out of the rain or he would take cold and die. In time the horse vanished, replaced by more compact horsepower, but note how the car now disappears—or, at any rate, diminishes—down the path to his erstwhile stable. There is also a second crucial point to be observed in this situation:

The main floor of this house is raised to stoop level. Anyone inside looks across the street above the cars.

With this as background, we submit the pictures on the following three pages which show how Mies van der Rohe and Ludwig Hilberseimer used variations of the Charleston techniques to subdue the automobile at Lafayette Park. (Drainage, incidentally, is pitched out toward the street system, here, and snowdrifts so far have not buried the cars.)—ED.
There are three parking solutions at Lafayette Park, one each for the three different types of housing.

**The large lot—a mere beginning**

Beside the apartment slab are two fields of paved parking. Attempts are made to sink them into the grade—at one end, wheel level is 2 to 3 feet below sidewalk level. As seen in this view from the building, the vista is still of car roofs. On the other hand, this photograph taken toward the apartment slab from the end of the parking space at street level shows that this effort to control the mechanical monsters is too feeble, or there simply are too many monsters. The trim rectangularity of the tower is saved from being murdered by the mass of cars only by being raised on stilts, the Charleston principle. The parking device does not work. To control this many cars, it would be necessary to dig them in somewhat deeper than was done here. A few miles out of Detroit, at General Motors Technical Center, Architect Eero Saarinen took almost as big a field, depressed the wheel level 3½ feet, and added a hedge, totally hiding the cars. Here is a view into this attractive lot and...

... a view from the other side, looking over it.
The successful small lot

The second kind of parking at Lafayette Park is in smaller 22-car lots which each service two rows of the two-story houses. Here is a view of one of these lots from the air, indicating how apparent they must be to robins . . .

. . . but when the observer comes down to ground, what has happened? . . .

Here is a hint—a close-up showing just how much the lots are depressed (3½ feet from yard level, 4½ feet from interior floor level).

Even viewed from the same angle, but from across the street, the cars have a tendency to disappear.

And in this photo, although there appear to be a good many cars in the background, in the large lot before the apartment tower, one has to look very carefully to see the medium-sized lot closer by. So this medium-sized lot begins to look successful.
Best of all: the boat slips

Even better is the third variation, shown here in the air view. In this scheme, the owner of each single-story row house parks in front of his doorway. Too obvious? No, the important thing is that he also parks below his doorway. His front yard is lifted close to 3 feet from the street and parking level. Here is a view from the roof of a neighboring two-story unit . . .

. . . and here the camera is down to pedestrian level for the real view.

The cars slide neatly into the landscape, are available within 20 feet of the front door, but do not usurp the architecture. The mounds on which the glass-walled houses sit also preserve privacy from sidewalk pedestrians, and there is still another bonus: the view out those glass walls is not into the side of a car.

Boat slips have always been pleasant places; their counterpart on dry land, boat-slip parking for cars, is also pleasant.
Architecture with a flourish

By long sweeps of time, if not rhythmically by centuries, architecture takes directions toward grimness or gaiety. In the last few decades it has traveled on the functional canal, straight and narrow, where gambling was not permitted, but honesty and industrialism have been the major concern. Now, however, many architects seem to have grown discontented with this design morality, and it looks as if the architectural stream ahead has a few eccentric turns in it. For this reason alone, it is worth recalling one of the gayest of all periods of design, when a Bavarian ruler made his court dwarf into an architect, and the dwarf grew into a mighty one.

The ruler was Max II Emanuel of Bavaria, the dwarf was François de Cuvilliés, the time, the eighteenth century; the places were the light-opera countries stretching from Prussia to Bohemia. The Thirty Years War was over, the light wines were freely flowing, rulers were status-conscious, cathedrals and palaces were abuilding. The result—or perhaps even part of the cause—of all this: the German Baroque. Architect Cuvilliés and others with majestic names like Fischer von Erlach, Balthasar Neumann, Domenikus Zimmerman, and Lukas von Hildebrandt, concocted a high kind of folk art, seasoned it with fervent imagination, and served it up as a full-fledged architectural style. Many examples still stand on the Teutonic landscape.

It was an architecture which cherished cherubs, gilt, flourishes, cartouches, and other intricate ornamental detail, and which integrated painting and sculpture into itself. It was a very sane architecture, which knew the value of wide-scale planning, designing city squares before buildings, and then the interiors of the buildings before their exteriors. (If there was energy left over, the exteriors received just as much attention as the interiors.) It was an architecture essentially of space, which declined to define floors, walls, and ceilings as purposes in themselves, but insisted instead on wrapping the visitor in an elaborate enclosure which sacrificed clarity for grandness. It was a newly scientific architecture—descriptive geometry had just been invented, and for the first time draftsmen could really draw and control intricate ornament. It was an impudent architecture; among its greatest artisans were the painters who could fake wood paneling into exquisite marble, veining it better than Mother Nature.

The extraordinary photographs on these pages come close to describing the surprisingly calm end-result of all this artful elaboration: great spaces which live on serenely—peace through joy.

*Photographs by Architectural Designer Nathan Silver, taken under a William K. Fellows Traveling Fellowship from Columbia University.*
Side altar in a parish church in Stams, The Tyrol, Austria, done about 1755, features this sentimental statuary, probably the work of Joseph Anton Feuchtmayer, who was noted for his child figures and the vividly ecstatic posture of his work.
Vaulted ceiling of the great Residenz in Würzburg (top), by Architect Balthasar Neumann, completed in 1742, has allegorical frescoes by Tiepolo.

Interior of Schloss Schönbrunn (bottom), near Vienna, was designed by Niccolo Pacassi after drawings by Fischer von Erlach, finished in the 1760’s.

Freising Cathedral (top) was a Romanesque church decorated in 1723-24 in Baroque by the Asam brothers. Photo shows the triforium.

Stairway in palace at Brühl (bottom), near Cologne, is by Balthasar Neumann, finished in 1748. The colored marble panels are not real—painted stucco, waxed.
Vierzehnheiligen, a pilgrimage church by Balthasar Neumann in the Main Valley, begun in 1744, finished in 1772, is the most famous German Baroque work.
Neues Schloss (top) in Bayreuth (1754-59) has stucco spallierwork in the foreground by Johann Baptist Pedrozzi. Dining room, beyond, is cedar with giltwork.

Brilliant ceiling of Church of the Wies (bottom), 1745-54, near Oberammergau in Bavaria by Domenikus Zimmerman, is decorated by his brother, Johann Baptist Zimmerman.

Schloss Weissenstein, Pommersfelden (top), completed in 1718, is by Johann Dientzenhofer. Photo shows the ceiling in the main hall.

"Million Gulden Room" in Schloss Schönbrunn (bottom — see also page 114) is decorated in Baroque "Venetian," a particularly rich theme.

Helbinghaus, Innsbruck (right), is an example of middle-class Baroque, a town house featuring ornate external decoration in stucco.
The influx of nonwhites is compounding the big cities' slum problems and focusing attention on the inadequacies of the nation's public housing and renewal programs.

Three quarters of the estimated 13-million substandard housing units in U.S. city slums are occupied by Negroes and other nonwhite racial groups, most of them recently migrated from rural areas. Last month, FORUM examined the sources of this new urbanite population, and the economic, ethnic, and social forces causing it to huddle in teeming and growing slums. This month, FORUM considers the major necessity without which the integration, urbanization, and free advancement of this new group of city dwellers cannot begin to be solved, which is decent housing. And, although the record to date is bleak, there are some real stirrings toward a more hopeful future.

The housing market for Negroes has traditionally been a trickle-down market, but only in the past decade or so has the trickle amounted to much. Though Negroes have expanded into formerly white residential areas, their chances of moving on, outside the city limits in the wake of families with the same economic and social characteristics and ambitions, are slim at best. Thus Negroes have been blocked off from becoming truly middle class in terms of housing, for he is banned from that great oasis of middle-class mores, the suburb. The case of Grosse Pointe, Mich., an upper-income suburb of Detroit, exemplifies the smug exclusiveness that has intensified the minority housing problem. That community has devised a system of ratings for potential home buyers, who are investigated by a detective and screened by a special panel. The ratings are based on ethnic background, accent, clothes, and other important measures of desirability. Negroes, however, do not get rated at all. The furor over this bit of nonsense has already prompted state officials to consider legislative action to bar any further employment of such rating scales.

Government has attacked the problem of the slum ghettos with two basic weapons—slum clearance and public housing. Both seem sound in principle. Certainly the worst slums should be destroyed, and ideally they should be rebuilt with new, healthy housing, available on an open-occupancy basis to low-income groups. However, neither federal urban renewal nor public housing has come close to solving the overall problem of slum proliferation and misery. In many respects, they have intensified the problems.

The failure of federal solutions

The federal public housing program has just about ground to a halt. Last year, only 21,427 units were completed, and this year less than that will be built. Five years ago, when the program was cut to 35,000 units per year, its advocates howled, but the sad fact is that even this is much more than the cities can digest. Several weeks ago, acting Public Housing Commissioner Lawrence Davern was asked by a Senate committee why cities were no longer requesting federal aid for public housing, and he replied that northern cities, in particular, were not requesting more aid, despite demonstrated shortages in low-income housing, because of integration problems. City officials, Davern maintained, are unwilling to approve sites where neighbors might object to public housing (which must have open occupancy in almost all northern cities, although federal law does not require it), or
the city housing crisis

BY DAVID B. CARLSON

where integration might prove difficult.

Many cities are gravely concerned about the heavy concentrations of Negroes in public housing projects. Chicago public housing is 88 per cent Negro, Washington over 90 per cent, and New York City 39 per cent. Yet it is the Negro families that need housing most, and they can hardly be restricted by quotas or any other such artificial means as long as they are least privileged in housing choice. It has been estimated that average Negro income for the nation as a whole is only 60 per cent that of whites, and that three out of every four families are Negro families with incomes under $4,000 per year.

The fact that what little public housing there is has been increasingly Negro does not enhance its popularity, and the overpublicity given to the anti-social behavior of a few problem families in public housing sours many cities' taste for more. Much of the blame for the failure of the program must be laid directly to the local authorities and to the PHA itself (FORUM, June '57). Unrealistic income and building-cost ceilings, unworkable regulations, too few large dwelling units, and other failings have all been charged at various times, in various cities, but none of these is as important as the misguided notion that public housing could be used to create new neighborhoods, isolated from the rest of the community. From this misconception grew the goliath developments that cover block upon block of New York, Chicago, and other cities, unfriendly monstrosities that are never referred to by their inhabitants as anything but "the project." Problem families are indeed a problem, and always will be, but problem building need not be duplicated year after year.

Philadelphia and Baltimore, among other cities, have discovered that new neighborhoods cannot be created by public housing, and that the effort is likely to result only in the exchange of new blight for old. These two cities have pioneered a more sensible approach to the problems of housing low-income families, based on upgrading their housing and neighborhoods by judicious rehabilitation of single units, accompanied by vigorous social work to educate the new urbanites in the ways of urban living. They have successfully attempted scattered site and conversion programs, and have encouraged new design concepts. The settlement-house approach, wherein the newcomers are drawn into a neighborhood rather than walled off from it, has worked and is being refined. In Baltimore, the usual one-year in-city residence rule has even been waived in public housing, and it has not led to any rush of new urbanite families, but rather made it possible for the Authority better to serve those families which are most in need of help.

In New York City, the biggest public housing program of all has fallen short in many respects. Planner Raymond Vernon, author of Anatomy of a Metropolis, perhaps summed it up best when he observed that "the redevelopment of neighborhoods through the subsidized construction of low-income housing has generally not greatly altered the density or distribution of population." Thus, despite 26 years of effort and a total of 110,000 units built, New York's public housing, though it has greatly augmented the supply and quality of housing for the least privileged, has hardly made a dent in the cruel pattern of segregated, congested slums.

Of course, the greatest failure of public housing has simply been its insufficiency. Every big city in the nation has a long waiting list for public housing, and relocation agencies have long decried the lack of it for eligible families uprooted from slums by government action of one sort or another. There are currently 326,000 units in active planning or under construction, but this can hardly meet the challenge of 13 million substandard dwelling units occupied by more than 13 million families, due to doubling up.

Gilding the ghetto

If public housing has not helped low-income families, particularly minorities, by dint of its insufficiency, poor design, and administrative shortcomings, the urban renewal program has, indeed, been a real obstacle for these families. In the first place, though it is, like public housing, a slum-clearance program, urban renewal was never designed to provide housing for the slum families it must, of necessity, dislocate. Its purpose has been to draw middle-income families back into the central city with attractive new housing. No one argued with this notion back in 1949, when the urban renewal program was passed, because no one then foresaw the utter collapse of public housing, with a consequent loss of housing opportunity for those families uprooted. As a result, low-income families are constantly being ousted from their slums, and shifted to other slums, unless they can get into public housing. This not only adds to the congestion of the already crowded slums, but propages and intensifies the slum ghetto, for the majority of dislocated families are usually forced into Negro slums not very different from those being cleared.

Urban renewal, like public housing, attempts to create new neighborhoods, but it seems to have a better chance of succeeding. For one thing, urban renewal can operate on a vaster scale. Philadelphia's Eastwick area, for instance, will eventually be rebuilt with 10,000 units of new housing, selling for $10,000 to $12,000. As Development Coordinator William Rafsky says:

continued on page 190
Three prototypes in one school

Junior high school for 1,100 pupils demonstrates that variety in planning and construction need not mean high cost.

The 150,000-square-foot Minnesota school shown on these pages has some of the raw, unlandscaped look of many brand-new buildings (a tree-planting program is now under way); but in contrast to the bleakness of the landscape, the building itself is rich in ideas and details that belie its low unit cost (only $16.75 per square foot, including fees).

The school consists of three separate, square structures linked to one another by glazed passages and ramps. The first of these structures is enclosed with solid brick walls and contains the gym and auditorium. The second, containing all the classrooms, is enclosed with a curtain wall that is part brick and part glass, set in a staggered pattern. This building has a “square doughnut” plan, with a court in the center. Finally, the third structure is all glass and contains shops and other facilities. It has a peripheral corridor for circulation.

Each plan type, together with its particular exterior treatment, serves its special purposes well. The blank-walled, all-brick building, for example, contains only spaces that do not require natural light. The brick-and-glass structure contains classrooms planned compactly around the central court, an arrangement which avoids noise problems often encountered in double-loaded corridor plans. (The “doughnut plan” has only 5 per cent more corridor space than an equivalent double-loaded scheme.) And the all-glass building, containing shops, uses its outside corridors to protect interior spaces against sky glare and the harsh climate.

The architects split their plan into three separate units to overcome sharp changes in existing grades: each of these units has a different elevation, and levels are bridged by the connecting links. This has worked out especially well in the ramp connection between classrooms and shops, which enables pupils and teachers to reach any level in the building without having to climb stairs.
Glass-and-brick building (above, right) contains 24 classrooms on two levels. Its curtain wall cost $4 per square foot (as compared with $2.90 for the all-brick wall, and $4.50 for the all-glass wall around the shops—above, left). The staggered brick-and-glass pattern is a welcome relief from the monotony of repetitive curtain-wall systems. All curtain walls in this building are based on a Mullion grid made up of 14-gauge hollow metal sections similar to those used for standard metal door frames. Glass or brick panels are then fitted into this grid. The slim elegance of the building which has resulted from such detailing has created a public-relations problem for the architects: many laymen refuse to believe that the school was really economical to build—especially in view of such apparent “luxury features” as paved and planted interior courts (below, right), glass-enclosed ramps (above), single-loaded corridors, and handsome finishes.
All-glass building (above, left) is actually two stories high, although only one story shows above grade on the uphill side. The building is surrounded by a glazed, 10-foot-wide corridor (photo below, right) which forms an effective weather barrier between the outdoors and the spaces inside: in the summer, the corridor becomes a deep sun shield that helps protect the shops; and in the winter, it becomes a thermal barrier heated to only 65 degrees to help insulate the shops. All interior spaces borrow light from the glazed corridor, through walls of translucent glass. For added illumination of art shops, etc., the architects provided a 50-foot-diameter skylight dome over a small, central court (photo, right). Since the all-glass building is at the center of the three-unit school, it contains several spaces that should be in a controlling position, e.g., all administrative offices, the library, and the cafeteria.
Pride of Middletown

To some people a garage is a garage, and there isn't much that can be done about it. But to Architect Harold Goetz Jr., and other good citizens of Middletown, Ohio, their new Municipal Service Building is proof that almost any building can be a credit to the community without costing a lot—that indeed it is in a town's humbler, often neglected buildings that architecture counts the most.

Middletown's new service structure, built for $245,000 (just under $10.50 per square foot), houses 50 vehicles, extensive maintenance shops, and pleasant, air-conditioned offices for the street and sewer, water and sanitation departments. The low office wing in front has enough modest monumentality to suggest a civic purpose, plus a low, clean Wrightian look of its own (1). Materials are low cost and left in their natural finish: lightweight concrete block stacked with neat vertical joints; precast concrete roof panels which cantilever slightly to form a cornice overhang; copper and redwood trim. Around a short screen wall, the offices look back to a small planted terrace and the main entrance to the garage (2). Inside (3), trucks are lined up under an exposed ceiling of precast slabs carried on 70-foot girders set 25 feet apart, high and wide enough to permit exposed steel at low fire rates. At night the whole building is handsomely floodlighted, more than saving the cost of a night watchman and setting off one of Middletown's proudest sights.

A branch bank for the air age

The newest, and handsomest, of First National City Bank’s 86 branches in metropolitan New York is this trimly tailored structure in black steel, rising near the entrance road to the city’s vast new International Airport at Idlewild (1, 2). Actually a headquarters in its own right, the two-story building houses the main vault, management, and bookkeeping for five smaller branches in various terminal buildings, which it services with a small Volkswagen bus. The main branch also handles major transactions for departing and arriving businessmen, as well as serving airlines, local industry, and many of the airport’s 25,000-odd employees. Raised for visibility among larger neighbors, the bank’s exposed steel frame shelters three drive-in tellers’ windows at the rear, and covered entrance terraces toward parking lots on the sides (3). Stairs with crisply detailed handrails in white-painted steel make an inviting composition at the front, leading up to a banking floor left largely open to accommodate payday lines with a minimum of crowding (4). Signs with simple, dignified letters in white plastic, lighted from behind, are mounted directly on the building’s fascia line, combining with rows of pinpoint ceiling lights to give the bank a clean, bright look after hours. Architects: Skidmore, Owings & Merrill. Engineers: Weiskopf & Pickworth (structural), Cosentini Associates (mechanical). Contractor: Turner Construction Co.
A pool house on pontoons

Necessity, more than once the mother of inventive architecture, helped produce this unusually graceful shelter for an indoor training pool at the U.S. Coast Guard's Alameda, Calif, base. When soil tests revealed that bearing piles would have to go down through 80 feet of mud off San Francisco Bay, Architect Ernest Kump and Engineer Walter Dickey decided instead to float their building on “pontoons”: hollow perimeter footings of concrete which displace a mass of mud equal to the building’s weight (see section, below). To keep the building’s weight within bounds, they made the superstructure a light, flexible tent of laminated fir bents and cedar decking, warped from the ridge to a row of staggered piers. The strongly crimped shape not only conceals in advance the unsightly distortions of roof line that may be caused by uneven settlement, but also acts as a wind- and earthquake-bracer. It also provides a pleasantly rippling roof line not inappropriate to the building’s use. Long “gargoyles” at each valley are designed to spill water clear of the base and to help resolve the roof’s form as it approaches the ground. To complete the nautical salute, Kump dressed up his wood with a spanking coat of spar varnish inside, added a slate-gray roof, white piers and window trim, and flashing and fascias of bright Coast Guard blue. Cost of the building came to $284,000, less than $19 per square foot. Construction consultant: Perry E. West. Mechanical and electrical engineers: Keller & Gannon. General contractor: Payne Construction Co.

Staggered piers support a rippling roof; the hollow footings below literally “float” the structure like pontoons, taking up the thrust from the bents.
Glass—set across each end, along the ridge, and well in from the piers along the sides—completes the enclosure with a sunny, almost weightless air.
Technology

Outdoor lighting:
an expanding new technology

Many new buildings have an evening glow, but the typical American city has yet to adopt the recent developments in outdoor illumination.

By David Allison

Not since the flamboyant twenties has night lighting enjoyed such a vogue in architecture as today. In that early era such buildings as Chicago's Wrigley Building, San Francisco's Pacific Gas and Electric tower, and Pittsburgh's Koppers Building were turned into shining landmarks on the night sky. The depression dimmed such radiance, and it was not until the new building wave of the fifties that it began to return in new and dazzling forms.

The principal incentive to night lighting is perhaps more commercial today. A building owner is now more likely to light his building at night because it is one of the least expensive forms of advertisement. "For a $100,000 investment," says one builder, "my building becomes a landmark."

But night lighting is also spilling into many fields other than building, into shopping centers, parks and plazas, malls, and prominent streets, as witness the Avenue des Champs-Élysées (left), which was relighted to new brilliance after the war as a special inducement to tourist activity. Moreover, the design approach to building illumination is quite different from what it was in the twenties, when a building would be lighted only as an afterthought. Today a nighttime lighting plan is likely to be integrated into a building's overall design. An example is New York's Seagram Building (photo, page 130), which was conceived as a "tower of light" by its architects and Lighting Consultant Richard Kelly.

Recent technical developments have given night lighting a broad range of applications and allowed designers to create spectacular effects. Indeed, lighting developments of the past few years have been extraordinary. Virtually any beam pattern can be obtained with existing equipment and, as one designer says: "If the fixtures we need do not exist, chances are good that someone will modify an existing lamp or produce a new one to our specifications." Much equipment now standard came into being in this way.

The three sources

The major sources of illumination—incandescent, fluorescent, and mercury vapor lamps—are undergoing continual improvement. The incandescent lamp, for example, which is still the most widely used source of street lighting, has been improved somewhat in efficiency since the forties. During the same period, the fluorescent lamp, which is higher in efficiency than the incandescent but lacked sufficient light output for outdoor use, is now an important outdoor light source, with about three times the output of the best fluorescents of the mid-forties. Similarly, today's mercury-vapor lamps have about three-and-one-half times the output of earlier types and are of better color quality. Here are some recent developments on these fronts:

Among the recent advances in lighting technology is General Electric's new tungsten-filament tube of pure quartz, about the size of a pencil. It can be exposed to the worst weather conditions without breaking and is only about 1/200th the size of a conventional filament lamp of equal wattage. Unlike ordinary incandescent lamps, the new lamp has a special "iodine cycle" that keeps it free of the blackening which causes other incandescents to decrease in light output with use. The iodine cycle causes the evaporated tungsten to redeposit on the filament, rather than on the glass envelope, thus keeping the glass clean during the lamp's 2,000-hour life. One of the first installations of this new light source is at a race track outside Boston.

Another type of quartz lamp, which emits infra-red heat, was installed during the winter outside the Chicago store of Carson, Pirie Scott & Co. This lamp emits sufficient heat to keep the sidewalk area comfortably warm and encourage winter-weather shopping.

For many years, the conventional incandescent lamp has been the most important source of outdoor illumination, particularly in street lighting. But the incandescent, compared with the other major types of lighting, is lower in efficiency. (Efficiency is measured by the amount of light produced for each watt of power consumed.) Thus, though original incandescent installations may cost less than either fluorescent or mercury vapor types, the extra expenditure for power will often offset the saving.

Mercury-vapor lamps have been improved markedly in the past few years, both in color and efficiency, and now hold several advantages over the incandescents: for example, in the 400-watt range, a mercury lamp gives about four times as much light for the power consumed, and has about twice the life, i.e., 6-7,000 hours. Used with certain metal curtain walls, standard mercury lamps yield a more striking effect than either incandescents or the newer color-corrected mercury vapor lamps. For example, standard mercury lamps were used by Lighting Consultant Abe Feder on New York's Tishman Building to create a sharp, cold glow from the building's patterned aluminum façade. On the other hand, Feder plans to light the stone shafts of the new Time-Life Building with incandescent lights "which pick up the texture of the stone better than mercury's do." Because of their longer life and higher efficiency, mercury lights have been gaining on incandescents in such areas as street lighting (some 15 per cent of all street lights are now mercury) and park lighting. Feder used mercury to light the plaza and parking areas of New York's International Airport (Idle-
Tower of light: Seagram Building in New York is an excellent example of the integration of architecture and lighting design. To avoid a "cavelike" atmosphere, the lobby was lighted to a very high level, using 200- and 400-watt incandescents.

Only in the past few years, have fluorescent lights begun to gain an important place in outdoor illumination. Until recently, fluorescents were impractical for outdoor use, because they could not provide the bright, directional light needed for outdoor use. But many developments, as typified by a new lamp from Westinghouse which increases the fluorescent's operating efficiency through a new mount design, have made the fluorescent light an attractive outdoor source. Another example of this is a recently developed high-output fluorescent which more than doubles the lumen output of the ordinary fluorescent lamp. Sylvania has developed a new concept of reflector design on the basis of this lamp's high output. It is called controlled fluorescent reflectance: when applied in a lamp, it directs the light so that there is a distinct angle of cutoff, allowing directional lighting with no exposed light to cause glare. This enables the lighting designer to place the fluorescent light source close to the ground, below eye level, without casting light into the visual field. Such a lamp can be applied to the lighting of streets, airport runways, and, in special instances, to building facades where insufficient space exists for the placement of conventional projector and reflector lamps.

**Lighting and design**

Perhaps the greatest hazard to successful outdoor illumination is the seeming simplicity of the task. This is demonstrated each Christmas, when the U.S. is turned into a nation of lighting experts, with lawns and main streets blossoming into a wild gamut of outdoor lighting designs. Amid this national fetish for improvisation, the professional lighting designer must somehow convey the message that there is a little more to nighttime illumination than merely spotlights in the shrubbery. Succeeding in this, he must next try to show that the best time to design an outdoor illumination scheme is before the architectural plan has solidified, rather than after all other work has been completed. As Richard Kelly says: "You don't just floodlight the façade after the building is complete and call it exterior lighting."

This is especially true with the metal and glass curtain-wall building. Note, for example, the difference in effect between Los Angeles' Tishman Building (page 131), which is lighted by exterior units, and the Seagram Building, where interior lighting serves as the source of nighttime illumination. The Seagram "tower of light" effect is achieved with a separate nighttime circuit of fluorescent lamps in the building's luminous ceiling. The exterior lighting for this building is only incidental—for "sparkle." It comes from newly installed underground lights, which highlight the trees, and from lights in the pools, which accent the fountains.

The necessity for early planning of nighttime illumination is most urgent in the case of an office tower. Nonetheless, even in the planning of large plazas and parking areas, which once
Fan of light is provided by these wall-mounted units on Texas Power & Light's building in Waco. The light-and-shadow pattern will be less apparent as the shrubbery grows taller. The lamps are 200-watt units.

Facade of Taylor's department store, in Cleveland, is lighted by fluorescent uplights and incandescent downlights, both of which are mounted on the canopy surrounding the building. The fluorescents are mounted some 10 feet from the vertical surface.

Special fluorescents are tested at the Almy, Bigelow & Washburn store in Salem, Mass. Sketch (left) shows how the fixtures are mounted to the top of the building. Sketch (above) shows how a specially designed fluorescent reflector intensifies the light which is beamed out of the lamp, through a narrow aperture.

Dallas office tower, the new Southland Center Building, was lighted at ground level by means of 500-watt incandescent lamps, mounted in a specially designed twin-cone fixture (sketch, left).

65 stories of light: two months ago, the plaza side of 30 Rockefeller Plaza was lighted by means of batteries of mercury reflector lamps, mounted on buildings across the street (photo and sketch, left).

High-intensity floodlights were necessary to light the Tishman Building in Los Angeles because of its high rise. The lights were mounted on building's canopy, then aimed by means of a two-way radio which enabled an observer to stand at a distance and instruct a second man who aimed the lamps.
had been looked upon as "daytime" areas with little regard for nighttime use, the lighting consultant is now an important member of the design group. This was the case in the design of New York's Idlewild Airport and Washington's new Dulles International Airport in Virginia.

At Idlewild, the 160-acre plaza and parking area is lighted by clusters of mercury lamps atop 43 poles, each 75 feet off the ground. Thus, each of these units illuminates an area of four acres, providing the field with a level of illumination ranging from three to eight foot-candles—a further indication of the increased power of today's lamps.

The lighting of Washington's new Dulles International Airport at Chantilly, Va., will differ significantly from that at Idlewild. Instead of using fixtures very high off the ground, the designer—in this case, Richard Kelly—will place his lights quite close to ground level. Both the architect, Eero Saarinen, and Kelly feel that tall poles are esthetically irritating, both in daytime and at night. To achieve the desired effect, Kelly adopted a device he and Saarinen had used before, dropping the parking areas below road level, so that incoming drivers look down into parking areas as they approach them. Thus, although the parking-lot lights will be mounted atop 14-foot poles, the light sources will still be below the eye level of the approaching driver. To carry this idea further, he is designing all luminaires on the roadways to be mounted well below eye level, some 3 feet from the ground. "We did not want to draw any attention away from the airport structures themselves," says Kelly. "Thus, we have tried to light the approaches and parking areas as brightly and as unobtrusively as possible."

Lighting and the city

Probably no section of the urban community would benefit more from a generous application of night lighting than the downtown areas of our large cities. The operators of the most successful suburban shopping centers have demonstrated the value of ample lighting to the commercial life of the development. Many of the great cities of Europe have energized their tourist trade by lighting up their popular promenades and thoroughfares, such as Paris' elegantly lighted Champs-Élysées. Yet, in the U.S., the importance of good illumination to the commercial life of the city has often been overlooked.

To be sure, most large cities have their well-lighted honky-tonk sections, such as the Times Square area of New York. And several have learned that high-level illumination in parks and "tough" neighborhoods is an excellent deterrent to crime. Flint, Mich., for example, experienced a 60 per cent decrease in nighttime crime in the downtown area in the first six months following its lighting modernization program. A recently completed six-year lighting program in Cleveland has been accompanied by a 44 per cent decrease in attacks and assaults on women and a 27 per cent decrease in street robberies.

No U.S. city seems yet to have exploited the potential of plentiful nighttime illumination to attract people into the downtown shopping district after dark. Indeed, the utility of good outdoor lighting is wasted if it is only applied as a new arm of the law. Beyond making downtown a safer place at night, good lighting can transform downtown into a festive place to which people will want to come.

A few years ago, before lighting devices had reached their present high levels of light output and efficiency, such a transformation would have been an expensive undertaking. Today, when a single fixture can supply more light than six fixtures of the past, a high level of nighttime illumination is within the reach of most cities which seek ways to revitalize downtown. It is a matter now of simply applying the new technology of lighting. With wise application, night lighting can enhance architecture, stimulate commerce, and perhaps restore some of the village-green spirit to suffering cities.
Screens for acoustics ... lighting for rent ... tactics for debirding

Many acoustical materials are decorative in themselves, but often it is desired to cover them with a custom-designed screen without interfering with their sound-absorbing qualities. To do this, architect Ernest Born uses natural-finished redwood panels composed of offset strips that are acoustically but not visibly transparent.

In the three prototype panels designed by Born (see photo), the wood strips are set 3/4 inch apart to allow air-borne sound full access to the sound-absorbing materials installed between the supporting wall studs or ceiling beams. The front panel consists of overlapping 1 by 3 inch strips that have a slightly fluted front surface, intended primarily for walls that may be touched or rubbed against. The center panel is made of 2 by 3 inch strips with a more deeply fluted front surface, for walls where a shadow of greater depth or stronger texture would be appropriate. The rear panel is made of 1 by 2 inch strips and is meant mainly for ceilings, where the greater distance from the observer makes the use of irregular-edged offset baffle strips unnecessary. The new products committee of the California Redwood Assn. is studying the feasibility of stimulating commercial production and marketing of panels like these by its members. Meanwhile, an architect or builder who is interested in producing similar wood panels for concealing acoustically treated walls can have the strips milled locally to his own specifications.

There is scarcely a city where kindly, well-meaning souls do not feed the pigeons in parks or public areas, oblivious to the nuisance and the cleaning and repair expenses their bounty causes. The pampered birds multiply in great numbers, nest in droves on the ledges of buildings, and continuously deface the façades. Starlings and sparrows, although not usually fed, also become a bane when an entire flock roosts on a building.

Working on the ounce-of-prevention theory, Architect Robert H. Alexander, one of the designers for the new Los Angeles County Hall of Records, commissioned Sculptor Malcolm Leland to make a study of methods for coping with the bird nuisance. Leland found various strategies for beating the bird problem.

For example, there are the "distress-call" recording experiments by the U.S. Air Force, which likes to keep starlings out of its hangars. In these experiments the Air Force held a captured starling by the legs and, while shaking it roughly, recorded its calls on a tape recorder. Later these calls were broadcast over mobile loudspeakers, and they rid one town of starlings after broadcasts for five nights.

Commercial chemical repelents applied to building surfaces are sometimes successful against pigeons, says Leland, but are often messy and need to be reapplied periodically. Although it may be a never-ending process, trapping has been highly successful and relatively inexpensive in Los Angeles (around its city hall) and in some eastern cities. A city can employ a trapping service if it does not wish to build or rent traps and assign city workers to this job. If traps are used, birds can be removed and destroyed unobtrusively and humanely.

Conventional mortgage financing for a new building or a major modernization project ordinarily covers only about two-thirds of the total cost, and the owner must put up the other third in cash. In some cases, however, when capital can be used more profitably for other operations or under tax rules that allow rent payments to be treated as pre-tax expenses (instead of being treated as capital expenditures that must be depreciated over a long term), it may be advantageous to purchase new elevators or other major equipment on a rental-purchase contract (Forum, March '59).

In the latest extension of rental-financing in the building field, the Smithcraft Corporation, of Chelsea, Mass., has announced a nationwide plan for easy-credit financing of electrical and lighting modernization, including sound-conditioned ceilings, if desired. At present, Smithcraft's plan requires that two-thirds of the job use a single national manufacturer's electrical and lighting products, but the purchaser can choose his own electrical contractor. After 10 to 20 per cent down, payments can be spread over a five-year period.

Although they have not yet financed the electrical and lighting installation in a new building, Smithcraft officials have received a number of inquiries about this possibility. They believe it is feasible, subject to an appropriate waiver or agreement with the holder of the permanent mortgage, and they expect that the first deals of this type will be negotiated in the near future. In such cases both the initial cost and equity investment in the building would be reduced. The owner, however, would have to pay the full cost of the equipment in rent charges over the next five years, instead of paying the portion that would have been included in the mortgage over the longer amortization period of the mortgage. In new construction this rental-sale plan is expected to encourage owners to make better-quality installations. Another advantage: if costs for a building rise sharply during construction and if the owner is pressed for cash but unable to obtain a larger permanent mortgage commitment, his financial position could be eased considerably by separating the electrical and lighting work from the main construction contract and having this installed on rental-financing.
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GENOA TURRET

Italy's domination of contemporary church architecture is strengthened by this bold tower in an awkward corner of Genoa. Rising above a street that dead-ends in a terraced hillside, the tower admits visitors to the church at various levels. On the street floor is a small parish hall; on the main level is the church proper, whose floor (see section) slopes up to the altar; on a higher, interim level is the entrance to the women's balcony, which overhangs the church floor; above the balcony is an apartment for the priest and, above that, the bell tower. The architects, Adolfo De Carlo, Andrea Mor, Ludovico Quaroni, and Angelo Sibilla, have clearly marked the front of the church with a 32-foot, wrought-iron cross.
GERMAN ILLUSION

It seems fitting that the last word in curtain walls should come from a textile research institute. For such an institute in Krefeld, West Germany, Architect Bernhard Pfau designed this wall, which looks like rows of plate-glass panels held in space by nothing more substantial than their narrow frames. Actually, the frames are tied into the building's reinforced concrete structure by narrow steel tubes at each of the three floors.

INDIAN PLANTATION

Verandas, shadowed porticos, and broad roofs that catch the breeze are basic to the vocabulary of tropical, aristocratic architecture in the U.S. or elsewhere. In India, the wealthy mill owners of Ahmedabad have commissioned several houses from followers of Le Corbusier who express these hot-climate features in the master's strong idiom. The Chinubhai House, by Vasu Shilpa, with its living areas and balcony bedrooms raised above a ground-floor porch, is one of the more notable plantations.

RIVIERA AVALANCHE

Tumbling down into the Mediterranean along the Italian Riviera is this precipitous apartment development, planned by Architects Mario Galvagni and Carlo Fellenberg. As well as standardized tourist units, the cliff-hanging development includes facilities for more permanent residents: a theater, shopping center, sports center, church, and library. But the most remarkable feature of the development is that it exploits the views offered by the site without defacing the landscape in the process.
The latest building projected for Brasilia is Oscar Niemeyer’s theater, which recalls in form the Aztecs’ truncated pyramids. The theater is actually two auditoriums (the larger for opera, the smaller for drama) on either side of one lofty stagehouse. In both auditoriums the orchestra level may be adjusted by hydraulic lifts; and in the larger (capacity: 2,000), stage elevators and rolling platforms allow five scene changes to be made in a matter of seconds. Atop the stagehouse is a penthouse restaurant and lounge.

No other theater in Europe has been so successful in combining the machines necessary for professional theatrical productions with the artistic talents necessary for a proper cultural environment as the 1,050-seat Gelsenkirchen Civic Theater in the Ruhr. In planning the theater, Architects Werner Ruhnau, Ortwin Rave, and Max von Hau sen heeded professional demands that the backstage spaces be vast (see plan, above), that the stage be flexible enough to suit various dramatic demands (three different proscenium locations and openings are allowed), and that a smaller “experimental” theater be built alongside (at left in photo left, above). The blue abstract mural beside the glazed drum of the staircase (lower photo) is by Yves Klein.

Vittorio Gassman, better known for his stage and screen activities than for design, is credited with the creation of this portable theater, shown being erected in Rome’s Borghese Gardens. The structure consists of two elements: 1) a domelike, steel-framed auditorium, which, when roofed over with drop cloths, seats 3,000 spectators; 2) a 65-foot-high stagehouse.
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Airviews ... anthologized Wright ... dymaxion Fuller


Aerial photography, an intelligence tool capable of generating ample international friction, can also contribute some surprising perspectives to man's understanding of his fellows and his world. The value of this book is that it tends to confirm the visual man's belief that life can be ordered in patterns of beauty and meaning.

The spectacle of nature and civilization at work is perhaps nowhere so richly concentrated as on the small, green, crowded continent of Europe, where successive centuries have carved a fantastic variety of landscapes seen fully only from the air: the plantlike patterns traced by the retreating tide on the mud flats of the North Sea (photo left); the full, simple grace of Belgian harvest fields; the deadly beautiful star shape of an old fortified Italian town. Among 184 photographs from several dozen sources are others of varying freshness and merit (including 11 color plates), from new angles on old architectural masterpieces to old angles of new industry, transportation, and urban spread. The book, nicely printed in Switzerland and translated with occasional sharp insights from the German, tried to embrace too much to be a truly pointed work.

But the best of it provides some unexpected beauty, and the fascination of inspecting other people's problems from above.

Of the two, the latter is the more helpful. It contains not only a well-developed sequence of writings but an accompanying series of pictures and building plans. At the back is a handy up-to-date list of the buildings built to Wright's designs.

Gutheim's book, in paperback, has the same well-known drawbacks of the earlier hard-cover edition: the writing has been too heavily cut, thus achieving the lamentable goal of making the anthology harder to understand or enjoy than the original.


This is an affectionate biography of one of the outstanding engineers of our time, David B. Steinman, the designer of more than 400 bridges, including Michigan's famed Mackinac Bridge, which is perhaps continued on page 114
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The biography traces the dazzling career of Steinman, from his childhood days in New York City to his present position of eminence among the honored scientists of the world: in 1964, for example, he received the William Proctor Prize for Scientific Achievement, regarded as the highest scientific honor in the Western Hemisphere.

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Dr. Parkinson wryly noted three weaknesses in the architect's armor.

There are a number of obstacles to beauty which the architect himself tends to introduce. I shall limit myself to three, mainly in case the crowd should get ugly and I should have to escape by the fire exit.

The architect's first temptation is to think himself a god. He devises a master plan—Capital "M"—Capital "Plan." And this we are to understand is to control a city's destiny for the next half century. Master plans, as we all know, are always discarded after 20 years, and usually after five. The sad fact is that the architect is not God, and especially he is not God in not being immortal. We don't live long enough to implement any master plan and our successors when they succeed us are apt to have ideas of their own.

If there is to be a plan, I beseech you to avoid having all the streets at right angles. This has been a bugaboo of the U.S. for a very long period. It seems to have been based on some beautiful nineteenth-century rational idea of man's mastery over nature. Looking at the Middle West from an aircraft I was able to remark afterward, though I had not seen the whole of Illinois, I felt that I could readily find the parts I hadn't seen.

The architect's second temptation is to use the word "functional," which he derives as a concept from John Ruskin. Knowing nothing whatever about building but endowed with a remarkable literary gift, Ruskin was responsible for a work called The Seven Lamps of Architecture. It was Ruskin's inspiration that a building should be honest, should express—I quote—"integrity," express its person, its purpose, and like every Victorian Masterpiece on canvas, tell its story.

From this injection of Victorian morality, our schools of architecture have never fully recovered.

There are still people about who want a water tower to look like, heaven help us, a water system. John Ruskin would have loved them. But the whole idea of functional architecture should surely have been buried with Queen Victoria. If we must talk dribble, let us find some more recent dribble than that period.

The architect's third temptation—and here I am treading on even more delicate ground—is to read and absorb architectural journals. The modern architect studies the professional journals. And, ask him to design a building on a hillside, he will begin with bulldozers, muddling the while about its technical advantages—chiefly to save him visiting the site more than once.

From that point all can be done on the drawing board. It then becomes obvious that the emerging plans are not intended to satisfy the client at all. They are meant first and foremost to publish in the journal. And publishing them in the journal, the chief motive is normally to annoy some other architect.

One result of this can be seen in the contemporary auditorium. You know the building I mean. I first saw this umbrella or big-top design at the Festival of Britain, where it was called "The Dome of Discovery." It followed me to the Far East and turned up at Singapore. I next saw it under construction at the much revered University of Illinois. Every campus is bound to have one in the end. It is invariably planned amid talk about classical concepts but is actually used for playing basketball.

The idea may be an excellent one but I question whether so many different problems—different in climate and local background—should only be solved, or should all be solved in the same way.

MALLED TO DEATH

A clear statement that malls by themselves are not the answer to downtown problems was made by John W. Hyde, professor of planning in the College of Architecture and Design at the University of Michigan, in "The Michigan Journalist."

Unless the mall is developed as part of a revitalized whole, together with buildings, reorganized space, adequate parking service areas, and settings for buildings; unless the whole area is conceived of and designed as a unit, the mall may easily be only a temporary solution and a perpetuation of present disorganized conditions.

There is real danger that lack of planning may permit some cities to be mailed to death. A more complete approach to the city's problems may not be taken because of blind belief in the power of malls to save an old commercial district.

A downtown area gets nowhere by trying to retain businesses which, however justified originally, aren't going to survive. There must be an economic justification for a business. If it can be carried continued on page 148
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on more efficiently in the suburbs, then it should be in the suburbs.

An urban business center is really a cultural center, a place where people like to meet, where they like to shop. Private and public agencies need to be aware of this. If these areas are properly handled and reorganized, they will naturally furnish the best possibilities for renewed activity.

Besides malls, cities have given little attention to overcoming their physical and functional obsolescence. Other approaches must be considered. Downtown businessmen, as well as public bodies, haven't used enough of their capital for redevelopment. Government subsidies and redevelopment corporations are used mainly in aiding housing projects, not downtown business areas. Redevelopment should involve an integrated approach to problems of housing, commercial areas, and industrial renewal as well.

DP'S IN THE CITIES

Both highway and redevelopment programs are creating a class of American D.P.'s. M. Carter McFarland, director of the HHFA's Division of Economics and Program Studies, recently described the class status in "The Construction Review."

Some observers have asserted that the bulldozing of slums results in no net improvement in living standards. They hold that displaced families crowd back into the remaining slums. It is certainly true that the uprooting of downtown neighborhoods causes difficult social adjustments. In any neighborhood, no matter how substandard its structures, families develop strong ties with neighbors, merchants, and social institutions, as well as with religious groups. Slum clearance inevitably disrupts these ties. Unfortunately, the problems arising in the course of clearance of slums have not been adequately evaluated. On the basis of these considerations alone, it is not surprising that slum clearance does not always meet with full acceptance by some community leaders. While more complete answers need to be found to the problem of social adjustment in slum clearance—and quite often the adjustments do take place in the course of time—the process of rehousing must be sufficiently advantageous, to both displacees and the community at large, to justify the dislocation problems and should anticipate them as much as possible.

The charge that large numbers of displaced families move back into other slums is hard to substantiate from the record so far. Only 7 per cent of the 76,464 families relocated from urban renewal projects as of June 30, '59, are known to have been rehoused in substandard structures. The record shows that 47 per cent of the displaced families went into standard private housing (with or without help from the local redevelopment agency), and that 27 per cent were continued on page 151
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relocated in public housing. The remaining 19 per cent involve cases where the family moved out of the city, the condition of the unit was not yet reported or inspected, or the whereabouts of the family was unknown.

As federally assisted urban renewal programs grow and the volume of family displacement mounts, it can be expected that the problems of relocation will become more difficult. Although precise statistics are lacking, it is possible that in the future displaces resulting from the Federal Interstate Highway Program will add to the competition for available accommodations, which up to now has been caused mainly by those displaced in the urban renewal process.

It is thus becoming increasingly evident that more formal devices for improved integration of urban highway construction and urban renewal activities and for relating both to a comprehensive land-use plan for an entire urban area are desirable.

TECHNOLOGY OF THE SENSES

The director of Texas A&M’s Architectural Research Division, Ben H. Evans, has investigated the surprising number of technical skills that should be applied to architecture if problems of environment are to be more perfectly solved. His findings were published in a recent issue of Texas Engineering Experiment Station’s “News.”

There are many physiological and psychological factors which enter into the proper design of space for human occupancy. These factors can be grouped into something like five areas: visual, sonic, thermal, spatial, and esthetic environments. Their respective importance depends upon the feelings of the particular designer involved and his client’s needs.

There are many things which we do not understand about the seeing process and about how to condition our surroundings to provide the sensation we desire once we know what it is. Beside the architect whose particular duty is to bring together into a harmonious whole all of the five sensual areas, there are various engineers and consultants who understand and can communicate to us the proper methods for lighting and decorating whatever environmental atmosphere we choose to develop. But perhaps more important is the psychologist.

The psychologist has studied man’s mental attitudes toward his environment and can point out patterns of behaviour and attitudes toward certain concepts of the visual design. Designers are sometimes shallow in their concepts, and could use psychologists and philosophers to much greater advantage.

Unfortunately, all of the facts about sound and how it reacts to various materials and structural shapes are not yet known. Even the acoustical engineer does not know all the answers. This, then, is where the physicist enters the picture. Along with the research architect, research engineer, and research analyst—all of the professional researchers—he is pursuing better sonic conditions.

Another sense that we bring into play in reacting to our environment is that of touch—or feeling. Feeling consists primarily of four “subsenses,” pressure, pain, cold, and warmth. There is also the emotional feeling—that brought about by stimulation beyond the physical. Many designers are inclined to pay only token attention to the subsensations, and to concentrate on the emotions. They are wrong in believing that “any good mechanical engineer can take care of that other staff.”

Architects, medical doctors, physiologists, landscape architects individually understand certain things about the sensual stimulations. Each has something to contribute in this area toward creating an environment that will satisfy man’s needs.

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Aluminum has a natural affinity for oxygen. Leave aluminum outdoors and a protective, transparent film of aluminum oxide will form on the surface. Anodizing (Alumilite treatment) is a process of forming heavier oxide coatings by utilizing electric current and an acid solution to convert the surface to aluminum oxide.

"How is Color Achieved by Anodizing?"
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"Does the Alloy Have Any Effect on Color?"
An anodic coating on pure aluminum is clear and transparent. But commercial aluminum has alloying elements which remain in the anodic coating, imparting a color to the otherwise transparent coating. Certain alloying elements have characteristic colors; therefore, this principle is used to produce colored anodic coatings by utilizing different alloy combinations. The handsome gray finishes used in major buildings around the country, for instance, obtained their color from particles of silicon suspended in the aluminum oxide coating. Soon there will be alloys that, when anodized, produce new colors including gold.

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grace and lyricism which typically marks the mature phase of an art—e.g., Hellenistic.

Kahn's temperament plays a decisive role here—and this temperament lies rather closer to the Old Testament Prophets than to the Puritan poet, John Milton. He has old-fashioned ideas about the worth and permanence of architecture. He thinks it should be built to last, if not for ages, at least for a long time, and he argues that it is immoral to think otherwise. Of course, he knows that, to survive, architecture must have the capacity of adaptation to the needs of later generations ("my client's grandsons," as he puts it). This implies that it must be as generalized in form and function as is consonant with sound specialized performance today. He does not think the two are mutually exclusive and cites his new laboratory as an illustration of his point.

The problem of immortality (or at least long life) in architecture is closely related to that of monumentality. Traumatized, like all architects, by the terrifying impermanence of fashionable idiom, Kahn tries consciously to expunge such devices from his building. Hence the deliberately limited and sober range of color and texture of materials employed. On the other hand, there are aspects which he thinks have a permanent validity. The joint is one of these. This is a highly articulated building both in terms of the connections of its masses and the joints of its skeletal and walling tissues. In both cases, the event is made the occasion for a celebration. Thus the served and servant areas are grouped together in a sort of community of forms. Although their disposition was determined by functional relationships, in three-dimensional reality they nevertheless take on almost the aspect of those convocations of personages that are sometimes found in Byzantine mosaics. And the joint (which Kahn considers to be the point of origin of all ornament) is also raised to the level of artistic fact, whether between two members of his skeleton, or between the brick infilling and the spandrel beam, or between the glass and the stepped profile of the cantilevered spandrel. All these features add interest to his façade, and he thinks this interest will survive because it is umbilically tied to simple structural truth.

While satisfied with his laboratory building and confident that he has done a good job within the limits given, Kahn is extremely careful in his estimates of it. He sets a very high minimum standard for what he calls architecture (as opposed to what he calls building which, while essential, exists at a qualitatively lower level). Part of this standard involves excellence of conception and execution; but part of this is dependent upon the program itself. Kahn is not one of those who believe that a sow's ear can be styled up into a silk purse. Neither does he believe that a pumping station can be raised to the order of magnitude of a temple, no matter what skill or resources are brought to bear upon the problem. At the very most, the result will only be good building (though that too, of course, is also necessary).

But architecture, for Louis Kahn, is always marked by two overarching qualities—"a harmony of systems" and a "hierarchy of ennobling spaces." The first of these will be found even in good building but the latter is the *vitaqua non* of true architecture. As a type, the laboratory not only does not call for this type of exalted spatial experience, it does not by its very nature permit it. This fact conditions Kahn's judgment of his University of Pennsylvania building. But it need not limit the judgment of others.

America has many gifted architects. Today, most of them seem to be watching each other to find out, as they say in the notions-and-novelties trade, "what the competition is up to." This is the only conclusion that can be drawn from their work, since so little of it shows that stylistic independence and consistency of development which is the infallible reflection of firm esthetic conviction. Against such a background, Kahn's work is electrifying, demanding respect because it is so clearly grounded on granite principle and not the pink Jello of Madison Avenue expediency.

... an infallible reflection of firm esthetic conviction.
they house, and must be good art as well. Industry in the U.S. spends billions of dollars every year in new construction. To us there is little question that each of these buildings can, and should, make a specific contribution to the beauty and culture of the community in which it is located."

S. C. Johnson & Son, which had Frank Lloyd Wright design its famous headquarters 21 years ago and its "heliolab" tower a decade later, is satisfied that as Racine, Wis.'s major landmark it still attracts able employees and some 7,000 visitors a year. The building, Johnson feels, has "strengthened the company's position of leadership; it gives a clear image of a corporation that dares to be different." Johnson executives also believe that through working in a "nonconformist" building, they and their employees have developed a healthy indifference to conformity, and an appreciation of good design which shows up in advertising, packaging, and other efforts—a fact which may have something to do with the company's leadership in its field.

In the pharmaceutical business, Detroit's Parke, Davis & Co. also ascribes its distinguished branch office and warehouse building program to a conscious, if simple, corporate policy: "We seek out the best in modern, enlightened architectural design, just as we are on the lookout for the most up-to-date laboratory equipment or anything else."

In Pasadena, fast-growing little Stuart Co. has welcomed some 15,000 visitors in the last year to its romantically Stone-screened, white and gold "pill palace." 6,000 of them doctors whose product opinions are not unimportant in the highly competitive ethical drug business. Says Vice President Ludwig Lauerhass: "The building has made for excellent public relations both with professional and lay groups. As far as employees are concerned, it has been superb. Personnel turnover and absenteeism are remarkably low. Our workers take great pride in the building, and bring their families during evenings and week ends to enjoy a swim in the outdoor pool and a barbecue or picnic supper in the pavilion. The publicity we have received throughout the industry, and the world, could not be purchased at any price."

While corporations watch the thin line between architecture and pure show business in using design to become known and loved, one company actually in show business offers some interesting comments. As architecture, Capitol Records' office building in Hollywood has played to mixed reviews, but at least it stands out with flair in the show business capital. Says President Glenn Wallichs: "Most people assume that our tower, which resembles a stack of phonograph records, was a conscious effort at identification on our part. Actually the architect, Welton Becket, came to us with a plan for a circular office building, a notably functional design with many advantages of space and layout. At the time we thought we wanted something more substantial, more 'dignified.' I'm thankful Mr. Becket was persistent. The tower is the city's only real landmark, and with 6 million tourists visiting Hollywood every year, we feel we gain identity in the minds of countless potential record-buyers. The actual advertising worth of the building is pure guess-


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work, of course, but we feel it probably accounts for an added $500,000 in promotional impetus a year.”

Contagious design

In studying the experience of businessmen with their architecture, one might be drawn to several conclusions and probably be right. A building can be not only a powerful physical focus for corporate identity, but often a more convincing one than less tangible forms of advertising and public relations, and a solid framework around which to build good will. Fresh architecture can, and has, proved both the impetus and the opportunity for corporate reorganization, new policies, new forward thrust. But beyond this, more businessmen are realizing that architecture, as the most public of the arts, is something of a public utility as well. It is probably significant that utility companies, often most sensitive to community opinion, recognize it as such. Among architecture-conscious companies in the field—which include General Telephone of the Southwest in San Angelo, Tex., and Missouri Public Service outside of Kansas City—the attitude of British Columbia Electric of Vancouver might be considered typical. “Being a public utility,” says Executive Vice President H. L. Purdy, “and a large company by local standards, we feel a strong obligation to set a good example in matters of civic betterment. We wanted to erect a building which would be a civic asset, and one which might encourage others in our city to aspire to a higher standard of architecture.”

Good architecture spreads as one company sees the wisdom of another. It also spreads, more subtly, through the civic sinews of the community. Since the Washington Water Power Co., for example, built its handsome, well-landscaped headquarters outside Spokane, downtown business leaders have formed a committee to raise $150,000 among themselves for a professional study aimed at rehabilitating the rest of the city’s river front and a good part of downtown as well. Coincidentally or not, Spokane is also going through a reorganization of its city government, and businessmen have filed for mayoral and city council posts. Says WWP President Kinsey M. Robinson: “Businessmen today are beginning to appreciate the fact that a community is only as good as its leadership, and that this leadership is their responsibility. By their participation, and by their sponsorship of the best in planning, architecture, and landscape design, they can create a more attractive climate for new business. And equally important, they can create a more beautiful and efficient city for themselves.”

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of space. Everett Shepherd and Page Sloss conceived the idea and developed it into the biggest shopping center in Alabama.

Builder, H. A. Brice, Sr., gave it a backbone of USS Structural Steel—417 tons of it. “A builder can make longer spans, and do the job quicker with structural steel,” says Mr. Brice, “and most important, it’s economical and we can get it right here in Birmingham from United States Steel.”
"This will be the first large supply of new housing available to Negroes in Philadelphia and it may become the first large-scale integrated area of the city."

Most cities say their renewal programs are not far enough along yet to gauge fairly the final result. But it is already apparent from progress in New York City, Chicago, and several other large cities that most projects will not accomplish much more than clearing patches of slums and substituting new housing. By and large it is housing that will not accommodate those living in the replaced slum or the surrounding neighborhood, so in effect, it must attract a different breed of city dwellers, usually older, well-to-do couples without children, or professionals who have long spurned the suburbs. Moreover, though urban renewal housing is thought of as open-occupancy housing, it is for whites only. This is due simply to high rents, too prohibitive for any but the tiniest minority of high-income, Negro professional families. One New York housing expert, when asked his opinion of the effect of housing white families in Harlem Title I projects, scornfully characterized such integration as "gilding the ghetto." Neither public housing nor urban renewal has done much to solve the basic problem of housing the vast number of Negro families, new and old urbanites, in central cities. Basically, this has been because neither program has been big enough to solve the housing shortage which underlies the whole problem. In New York, scene of the nation's biggest urban renewal and public housing programs and its biggest private apartment boom, a total of 380,000 housing units has been produced in the past decade; yet, according to a recent analysis by J. Anthony Panuch, the city today has the same basic housing shortage it had ten years ago. It still lacks 450,000 units in meeting its needs, and this was exactly the deficiency in 1950. Thus 38,000 units a year on the average (25,000 of them new) are only enough to keep New York standing still. At this pace, it will be 20 years before the city pulls abreast of today's needs.

A hopeful augury

Urban experts agree that the future of the slums depends in large measure on the slum dwellers themselves—largely, the new urbanites. Yet, the fate of the new urbanites is in turn tied to the progress of the older generations of Negro city dwellers. In housing, both groups suffer equally from the patterns of residential segregation which have operated for years to compress the poorest racial minorities into the poorest housing in central city slums. No single factor has limited the drive to establish a stable Negro middle class more than residential segregation. Yet there is now real hope that a completely free housing market, which city officials in every northern and western city see as indispensable to Negro progress, is attainable, and indeed may become a reality within a generation.

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STANDARD

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This hopeful augury comes from two directions: 1) the growing experience of builders with interracial housing and coincident dispelling of many of the myths that formerly limited such building, and 2) the growing inclination of governments at all levels to insure more carefully the extension of democratic rights to all persons. The latter is of even more recent vintage than the former although the first privately developed interracial development is less than a quarter century old. Since the Supreme Court made restrictive covenants unenforceable in 1948, government has slowly moved toward recognition of the full constitutional rights of racial minorities, and has even devised legal means of insuring them. New York has been a pioneer in this regard. The state, several years ago, passed a law banning discrimination in the sale or rental of publicly subsidized housing (13 other states have since passed similar legislation), and New York City recently passed the nation’s first law banning discrimination in the sale or rental of private housing. (Pittsburgh has since followed this lead.) Although New York officials admit that such laws have not obliterated bias in one fell swoop, they maintain that they are a critical factor in diminishing discrimination.

Another vital governmental action, since the 1948 decision, has been the elimination of bias in federally insured housing by the Federal Housing Administration and Veterans’ Administration. This is a significant reversal of FHA policy, which for years supported the notions of the real estate and home-building lobbies that racially integrated neighborhoods were by definition unstable and contributed to declining property values. While FHA has not been as vigorous as many civil-rights exponents would like in the prosecution of its no-bias dictum, it is at least in step with the progressive action being taken by many cities and states.

Equally important as these bias-curbing actions by government has been the building of interracial housing itself. In the postwar years, about 10,000 units (an admittedly small part of the 12-million total) have been built as interracial housing by private developers. Many of these have been sponsored by social-religious groups such as the American Friends Service Committee, and most of the others have been put up with less regard for profit than for social purpose. Still, the profit record of almost all of the 50 interracial projects erected in the U.S. in the past two decades is good, according to a recently published survey (Privately Developed Interracial Housing, by George and Eunice Grier). More important, these projects have laid to rest some closely held myths of the building business:

- Whites have bought housing knowing that Negroes would be their neighbors. (Half of the projects built involved home ownership, 32 per cent were cooperatives, and 18 per cent were for rental.) In fact, 30 per cent of the projects are stabilized with over 59 per cent of the units occupied by nonwhites, a much higher percentage of nonwhites than is generally considered feasible.
- It is possible, though difficult, to get financing for interracial projects, and in the past year or so, large lenders have become more receptive to such projects in certain northern and West Coast areas.
- It is possible, though difficult, to find sites which will be attractive not only to nonwhites, whose housing choice is limited, but to whites who have much wider choice. The caliber of housing in an interracial project must generally be higher than in white-only housing at the same price, sometimes to compensate for fewer desirable sites available for such housing.
- There has been almost no friction in such interracial projects once occupancy was stabilized. When all occupants are selected strictly in terms of character and credit, the results are no different than those in all-white developments.
- It is possible for a development that was once all-Negro to become integrated, without public aid. Hillview, a California rental project with 316 units, once a predominantly Negro neighborhood, now has a majority of white families. In fact, the project was never successful financially until it became interracial.

Probably the best-known builder of interracial housing today is Morris Milgram, president of Modern Community Developers, Inc. in Princeton, N. J. With initial backing from wealthy Philadelphia Quakers, Milgram built...
several interracial developments near Philadelphia, and has since branched out into the suburbs of other cities. His most famous project is in Deerfield, Ill., near Chicago, where his recent efforts to erect 51 units of high-priced homes to be sold on an interracial basis have met with angry local opposition. Recently, the district court determined that the town of Deerfield was within its constitutional rights in condemning Milgram’s land, to be used ostensibly as a town park. Meanwhile, Milgram is continuing with plans to build interracial homes in suburbs of Washington, Wilmington, Del., Waterbury, Conn., and Princeton.

Another myth that has been laid to rest, though some realtors are still fighting a holding action to protect it, is that the entry of nonwhites into white neighborhoods will depress values. Early this year, a pioneer work appeared, called Property Values and Race, by Luigi Laurenti. Like the Griers’ book, this one was issued by the Commission on Race & Housing, a private organization backed by the Fund for the Republic. After studying housing experience in seven different cities, Laurenti concluded that rather than depressing values in areas of racial transition, the entry of nonwhites usually results in a long-term strengthening of property values.

**Needed: full participation**

Despite the work of the Griers and Laurenti, and the steadfast willingness of a handful of builders to demonstrate painfully that interracial housing can be profitable, the great majority of businessmen and government officials in the construction industry, those who could solve the critical dilemma of equal housing opportunities for all, still seem unconvinced. In a democratic society, the building industry, or indeed the white majority as a whole, cannot be forced to adhere to democratic principles. But there is growing hope that, even if the building industry cannot devise means or muster the effort to build enough housing to meet the most critical shortages, it can be induced to make its wares available to all comers on a fully equitable basis. This must start in the cities, of course, and indeed it has been in the cities, under the impetus of urban renewal and public housing open-occupancy rules, that a free housing market is already developing. But, as long as the mobility of racial minorities is restricted to central city housing, there can be no ultimate solution, either for the fast-growing Negro middle-income groups, or for the new urbanites who are striving to attain that status.

Negroes themselves are the first to deny that open occupancy in suburban housing would lead to a flood of Negro families to the suburbs. Those families that could afford such housing are generally those that are happily housed in the finest residential areas of the city. There are few Negro families, regardless of how high their incomes or status might be, who would care to face the uncertainty of living in what would most likely be—at least at first—an inhimal environment.

The growth pattern of the great metropolitan areas is coalescing the city and the suburbs, and within this framework the role of the new urbanites becomes more meaningful. As the influx of new urbanites slows down, and it already has in most cities, the housing situation in central cities will become more stable. As housing opportunities are opened up, and they are already opening up, middle-income Negroes and other racial minorities will be able to participate fully in the cultural and economic development of the U.S. community. Such participation is not only badly needed today to counterbalance the dangerous tendency toward homogeneity of thought and action in the American community, but it is also vitally needed for the fullest proliferation of the democratic dynamic.

The new urbanite of today, like the European immigrant of half a century ago, seeks in the city that opportunity which is unavailable in his old land. He comes for freedoms formerly denied. That he is at first not discouraged by his environment, the slum, and its inevitable social desolation is only a mark of the stubbiness of his expectations. Aside from all the readily evident evils coincident to the slum ghetto and its perpetuation is the other greater evil that befalls the newcomer whose aspirations become strangled by ignorance and poverty of principle. He can see in his plight only the final tragedy: the negation of the American dream.
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THOROUGH THEATERS
Forum:
Your issue “Building for the Performing Arts” (FORUM, June ’60) was long overdue. I am delighted you turned out such a thorough job.
DONALD OENSLAGER
Stage designer
New York City

CHANGING CITIES
Forum:
I greatly enjoyed Part I of your New Urbanites series (FORUM, June ’60) and have, in fact, begun a series of excerpted insertions in The Congressional Record under the general heading of “The Changing Face of American Cities.”
DONALD J. IRWIN
U. S. Representative
Washington, D. C.

Part II begins on page 118.—ED.

Forum:
“The new urbanites” ably reviews the social facts in connection with the population shift that has taken place in the last ten years, and concisely details the resultant social and economic effects with the public-policy questions they raise.
The cities’ task in connection with these new migrants is to help them to speed up the process of assimilation and to help them to become, in as short a time as possible, productive and responsible citizens who find opportunities open to them and who respond to new opportunities as did the immigrants of an earlier generation.
RICHARD J. DAILY, mayor
Chicago

AUSTRALIAN DISTINCTIONS
Forum:
The location of the Australian Academy of Science building (FORUM, Oct. ’59—photo at left) is Canberra, not Melbourne, where you misplaced it.
Furthermore, Melbourne citizens, even though they claim many distinctions which may or may not be correct, are hardly subject to “the searing sun.” (Melbourne’s mean annual temperature: 59 degrees F.)
M. LOBL, engineer
Sydney, Australia

GREENBELT LESSONS
Forum:
Your excellent article on Chatham Village in May happened to coincide with a meeting held by the Washington Chapter of the American Institute of Planners at Greenbelt, Md. (one of the pioneering planned communities in the early thirties). It might be of interest to follow up the Chatham Village story with one about the Greenbelt towns and to discuss why more such planned towns have not been developed in recent years.

I. JACK GURAL, architect
President, Washington Chapter
American Institute of Planners
Silver Spring, Md.

SHOPTING CENTERS
Forum:
I was very anxious to read your story, “What next in shopping centers?” (FORUM, Apr. ’60). It is extremely interesting, and I plan to pass it around the office for the edification of our real estate and store people.
FREDERICK C. PECK
Vice chairman of board
Peck & Peck
New York City

DETROIT SUCCESS
Forum:
I congratulate you on the fine job you did in handling the Lafayette Park story in your May issue. The article treats fairly both the successes and the problems.
The photographic treatment of the project was, similarly, excellent.
CHARLES A. BLESSING
Director of City Planning
Detroit

This month—on page 108—FORUM takes a critical look at Lafayette Park’s unusual parking facilities.—ED.

A MATTER OF COST
Forum:
I compliment you on your very concise and comprehensive treatment of air conditioning in sealed buildings (FORUM, Apr. ’60).
However, you indicated that radiant-panel heating and cooling is less capable than an induction system to cope with wide fluctuations of heat gain and loss caused by large glass façades. You also mentioned that such a system cannot be imposed upon any exterior design; that if a radiant system is to be effective, the building’s design must match with the system’s capabilities.
What may have been implied, but was continued on page 200
not explicitly stated, is that these difficulties are easily overcome mechanically and that the only question is one of cost.

J. K. JUSTIN
John-Mansville Sales Corp.
New York City

PRINCETON BUILDING
Forum:
I have noticed your recent interest in the architectural situation at Princeton (FORUM, Feb., March, and May '60), and so I'm sending you a copy of a letter which I wrote to the Princeton Alumni Weekly.

"The resignation of Enrico Persusetti and the unflattering editorial in the March FORUM seems to be a rather strong hint that Princeton take its architectural responsibilities more seriously. Certainly this responsibility is recognized at most of the other leading universities, such as Harvard and M.I.T. Yale, to use a particularly outstanding and rather forceful example, not only has buildings by such eminent modern architects as Kahn, Saarinen, and Rudolph, but also has given the chairman of its architecture department (Paul Rudolph) the responsibility for the design of the future arts building. In Princeton's vast $80 million building program, its department of architecture was not even consulted, according to Persusetti. Does—or will—Princeton have any significant modern architecture worth even mentioning in architectural circles? Or is all its architecture to be "terribly adequate"? If a university will not publicly sponsor progressive and imaginative architectural creations, who will? And, far more important, how can it teach the subject to its students? I can only echo the title of the FORUM's editorial: 'Poor Princeton.'"

JOHN H. BROOKS, III
New Haven, Conn.

RETURN OF ROMANCE
Forum:
"The Romantic Necessity," by Professor Hudnut in the December 1959 issue, seems to be largely concerned with the need for symbolism and its function of bringing to be largely concerned with the need for symbolism and its function of bringing to life a work of art. There are, of course, equal-scale plans of famous buildings published by the students of the School of Design in Raleigh, N.C. (FORUM, March '60). The drawings shown are not, however, the work of the students at Raleigh; some were drawn by me; others by students at Tulane and the School of Architecture of Tucuman, Argentina.

The final book, which will be published by the University of Buenos Aires, will have more plans, more text, and a bigger size than the preview published in Raleigh.

EDUARDO SACRISTE, architect
Buenos Aires

FOOLISH OWNERS
Forum:
I congratulate you on raising the question "To rent or to own?" (FORUM, March '60). It should give those occupying large buildings something to think about.

I would only adjust your figures for an average vacancy of 10 per cent of the space rented to the public. It would be rather foolish for the owner-occupant of a building not to allow additional space for his own expansion. This additional space would, of course, have to be rented to the public in a competitive market. If the building is outside the city's core area, the rental of the excess space would be extremely hazardous over a long period of time due to changing transportation and traffic patterns to accommodate changing growth trends in the metropolitan area.

STERLING BIGLER, building manager
Girard Trust Building
Philadelphia

FOOTPRINTS
Forum:
I read your interesting commentary on my "Building Footprints," the series of psychosomatic reactions to any intensely active perceptual experience. The soaring lines of an RCA building force us to raise our eyes up, up past the cells wherein are hatched payola, payoff, and patronage; up to where and what purpose? Does the massaging effect on our muscles meet the demands of the "romantic necessity"?

MILTON D. LOWENSTEIN
Assistant professor
School of Architecture
Arizona State University
Tempe

ERRATUM
FORUM regrets that in its description of Montreal's Place des Arts (Jan. '60—photo, below) credit for the design of the Great Hall was not given to Architects Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud, Sise. The architects are also responsible for the proposal for development of the entire block, except for the design of the commercial strip along St. Catherine St.

EDUARDO SACRISTE, architect
Buenos Aires
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